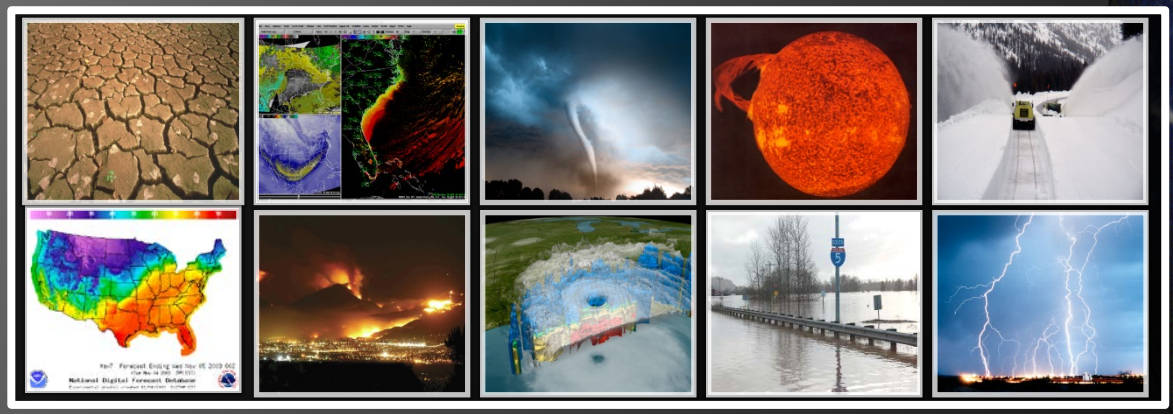
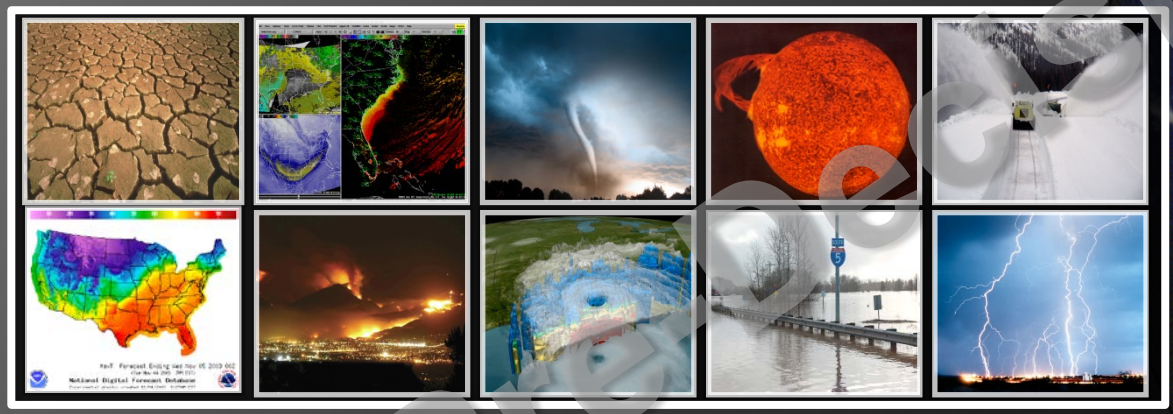
OWA Leadership and Congressional Briefings, OWA Deliverables



The following is a compilation of several quarterly briefings to NOAA leadership and members of Congress, as well as working-level final slides for OWA Phases 1-3

Operations and Workforce Analysis (OWA) – Phase 1 Findings



Briefing document

September 2015

Objectives for today's discussion

- Review the objectives and approach for the Operations and Workforce Analysis (OWA) project
- Discuss Phase 1 findings on the current state baseline and gap assessment
- Gather input and feedback on the materials

Executive Summary of Operations and Workforce Analysis (OWA) Phase 1 Deliverable: Current State Baseline and Gap Assessment

Details follow

Overview of OWA: Purpose of the OWA project and objectives for Phase 1

Methodology: Criteria to select and finalize site visits, interviews, surveys, and Core Team members

Phase 1 baseline and gaps: The objective of Phase 1 is to develop fact-based findings and insights against each assessment area, including information on variation in particular roles and regions as well as themes from external stakeholders and internal staff. Synthesized findings are as follows:

- **Workforce:** Controlling for differences, there is a mismatch in some areas between today's workforce and today's workload. In addition, there is a difference between the current and desired skill level for skills identified as important to IDSS, including written and oral communications
- **Operating Model (including Impact-Based Decision Support Services (IDSS)):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there are a number of definitions of IDSS, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where overall lower health was observed but strengths in motivation and external orientation were also identified – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and organizational model, and continue to communicate and engage with internal and external stakeholders throughout the process

The Operations and Workforce Analysis (OWA) intends to achieve six objectives

FROM THE ORIGINAL STATEMENT OF OBJECTIVES

Objectives

1. **Stakeholder Engagement and Change Management:** Develop the capacity to involve stakeholders throughout the project
2. **Evaluation of IDSS:** Better qualify and quantify IDSS across the entire organization (it will vary geographically and organizationally)
3. **Current State Baseline:** Understand and baseline current state operations and workforce model through a comprehensive assessment and analysis
4. **Current State Gaps:** Identify gaps in the current state operations, workforce, and organization required to support IDSS and achieve a Weather-Ready Nation
5. **Recommendation of Alternatives:** Develop recommendation(s) for evolving NWS from current to future state to close gaps, leverage state-of-the-art science and technology, consider geographic differences and enable services and workforce concepts in NWS strategic documents
6. **Implementation Planning:** Advance recommendations to action through plans, quick wins, and phased implementation

The OWA program is structured to address the six objectives by the end of 2015

● Objective ▭ Current focus

Duration	Base year (total 8 months)			Year 1	Year 2
Phase	**PHASE 1: ASPIRE AND ASSESS**	**PHASE 2: ARCHITECT**	**PHASE 3: BEGIN TO ACT AND ADVANCE**	**PHASE 4: BRING TO SCALE**	**PHASE 5: ADAPT AND EXPAND**
Description of work	**1 Change Management and Stakeholder Engagement** Project governance structure and teams; stakeholder map and outreach plan			**7 Execute Roll-Out Plan** ▪ Change agents ▪ Field and Forum ▪ Leader-ship coaching ▪ Rapid ROI review	**8 Launch New Programs** ▪ Field and Forum ▪ Weather event review ▪ Pilot review ▪ Program report
	2 Evaluation of IDSS **3 Current State Baseline** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model **4 Current State Gaps**	**5 Recommendation of Alternatives** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model	**6 Implementation Planning** ▪ Quick wins ▪ Higher risk/reward options ▪ Implementation and roll-out plans including – Project teams – Milestones – KPIs		
Timing	12 weeks	10 weeks	10 weeks	1 year	1 year
Deliverables	▪ Project governance structure and stakeholder map ▪ Communications plan ▪ Comprehensive report on current state baseline and gaps ▪ Workshop to review results and path forward	▪ Report with description of alternatives and prioritized selections for planning ▪ Workshop to review and decide on recommendations ▪ Stakeholder engagement report and “change story” content	▪ Detailed implementation, communication, and roll-out plan ▪ Workshop to share plan and build support ▪ Plan for ongoing change management efforts	▪ Training content ▪ Leader-ship materials ▪ Report rapid ROIs and roll out	▪ Training content ▪ Review weather events ▪ Review pilots ▪ Report on program

During Phase 1, data from a variety of sources were analyzed to complete the baseline and gap assessment

Sources	Details
Data collection	▪ Data were collected from NWS' Office of the CIO and NOAA's Department of Workforce management on: – Historical and current vacancies and positions breakdown – Retirement eligibility and tenure – Hours (regular and overtime) worked ▪ Additional data collected on office characteristics (e.g., area of responsibility, terminal aerodrome forecast (TAF) responsibilities, warning, watches and advisories (WWA) and weather event data by office)
Surveys	▪ Two surveys were conducted: – Voluntary Organizational Health Index (OHI) survey sent to all NWS staff (~50% response) – IDSS survey sent through Warning Coordination Meteorologists (WCMs) to external stakeholders (>700 responses)
Site visits	▪ Completed site visit to 42 offices (~20% of all offices) including a diverse set of office types (e.g., Weather Forecast Offices (WFOs), River Forecast Centers (RFCs) ▪ Offices were located in 20 locations, including at least one in each of 6 regions
Interviews and focus groups	▪ Conducted >560 interviews with ~360 internal staff and ~200 external stakeholders during 1:1 interviews and focus group discussions

Phase 1 site visits included a representative sample of ~42 offices in 20 locations, totaling ~20% of all NWS offices

Selection approach

- First, a list of all NWS locations was generated including data on the following criteria:
  - Office type (WFOs, RFCs, Regional HQs, CWSUs, TWCs)
  - Marine vs. land-based coverage
  - Population density
- Second, locations were randomized to be representative across the above criteria to ensure:
  - At least 2 visits per region in continental US
  - 1 visit per region in Pacific/Alaska
- Then, a national perspective was taken to consider:
  - NCEP locations
  - Other factors (e.g., type of weather events like fire weather, IDSS needs)

Site visit list

- Eastern
  - Taunton, MA (WFO, NERFC)
  - Cleveland, OH (WFO)
  - Charleston, SC (WFO)
- Southern
  - Ft Worth, TX (WFO, CWSU, WGRFC, RHQ)
  - Key West, FL (WFO)
  - Miami, FL (WFO, CWSU)
  - Norman, OK (WFO)
- Pacific
  - Honolulu & Hilo, HI (WFO, RHQ, ITIC, PTWC, DCO, CPHC)
- Central
  - Grand Forks, ND (WFO)
  - Kansas City & Pleasant Hill, MO (WFO, RHQ, NWSTC/OPG, MBRFC)
- Western
  - Boise, ID (WFO, NIFC)
  - Elko, NV (WFO)
  - Sacramento, CA (WFO, CNRFC)
  - Seattle, WA (WFO, CWSU)
- Alaska
  - Anchorage & Palmer (WFO, RHQ, APRFC, NTWC, AAWU)
  - Fairbanks (WFO)
- Other
  - NCEP (SPC, NHC, AWC, EMC, WPC) in College Park, MD; Miami, FL; Norman, OK; and Kansas City, MO

- **Phase 1 site visit plan** enabled ~42 site visits to distinct offices in 20 locations:
  - 16 WFOs
  - 6 RFCs
  - 5 NCEPs
  - 4 Regional HQs
  - 3 CWSUs
  - 2 TWCs
  - 1 NIFC
  - 1 CPHC
  - 1 AAWU
  - 1 DCO
  - 1 ITIC
  - 1 NWSTC/ OPG
- **During Phase 2,** additional sites will be visited

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- **Operating Model (including Impact-Based Decision Support Services (IDSS)):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there are a number of definitions of IDSS, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
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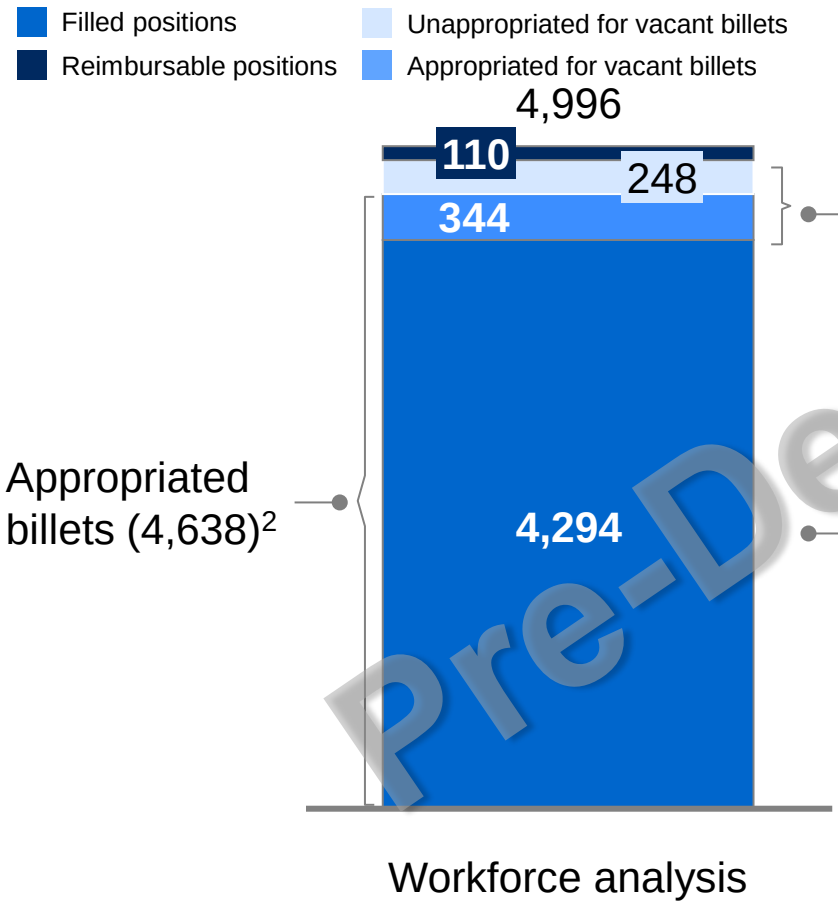
Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and organizational model, and continue to communicate and engage with internal and external stakeholders throughout the process

The workforce analysis, including both analysis of workforce supply as well as the workforce and workload analysis model, is based on data from the NWS Table of Organization

NWS 2015 FTE appropriated and Table of Organization[1]

FTE 1 position = 1 FTE



Vacant billets (592) represent the difference between the Table of Organization's positions (4,886) and filled positions (4,294); 344 vacant appropriated billets

Workforce and workload analysis model (4,404) based on Table of Organization filled positions (4,294) and reimbursable positions (110 total, of which 72 are filled[3])

1: Data from Table of Organization for NWS; not included are the 87 pathways positions (7 filled) or unfilled temp billets
2: In 2015, NWS was appropriated 4,638 billets
3: 72 of the 110 reimbursable positions are filled

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

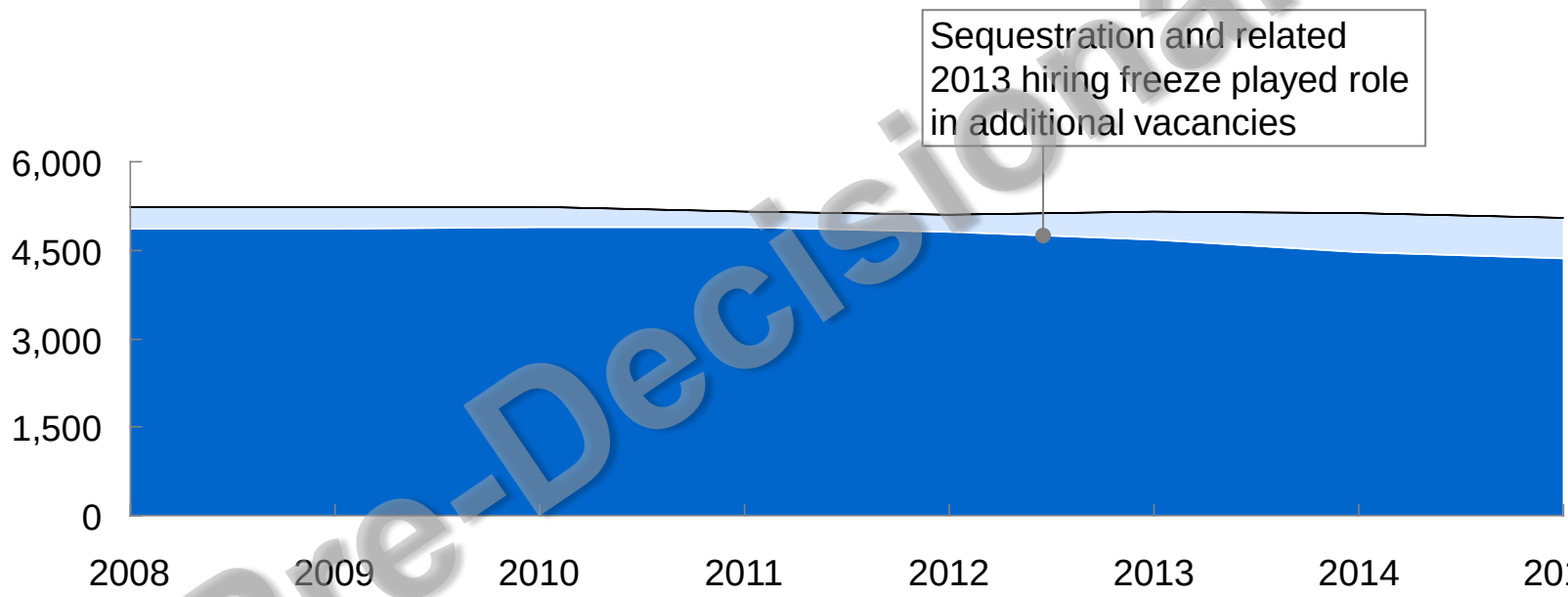
WORKFORCE SUPPLY

Reduced hiring rates and increased attrition have led to a rise in vacancies* even as the number of FTEs has remained constant

NWS FTE positions filled and vacancies*

All FTE and unfilled positions

XX% Rate by year | Positions filled | Vacancies*



	2008	2009	2010	2011	2012	2013	2014	2015
Attrition rate[1]:	5.7	5.0	5.5	5.2	6.0	6.0	5.8	--
Vacancy Rate*	7	7	7	5	6	9	12	12

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

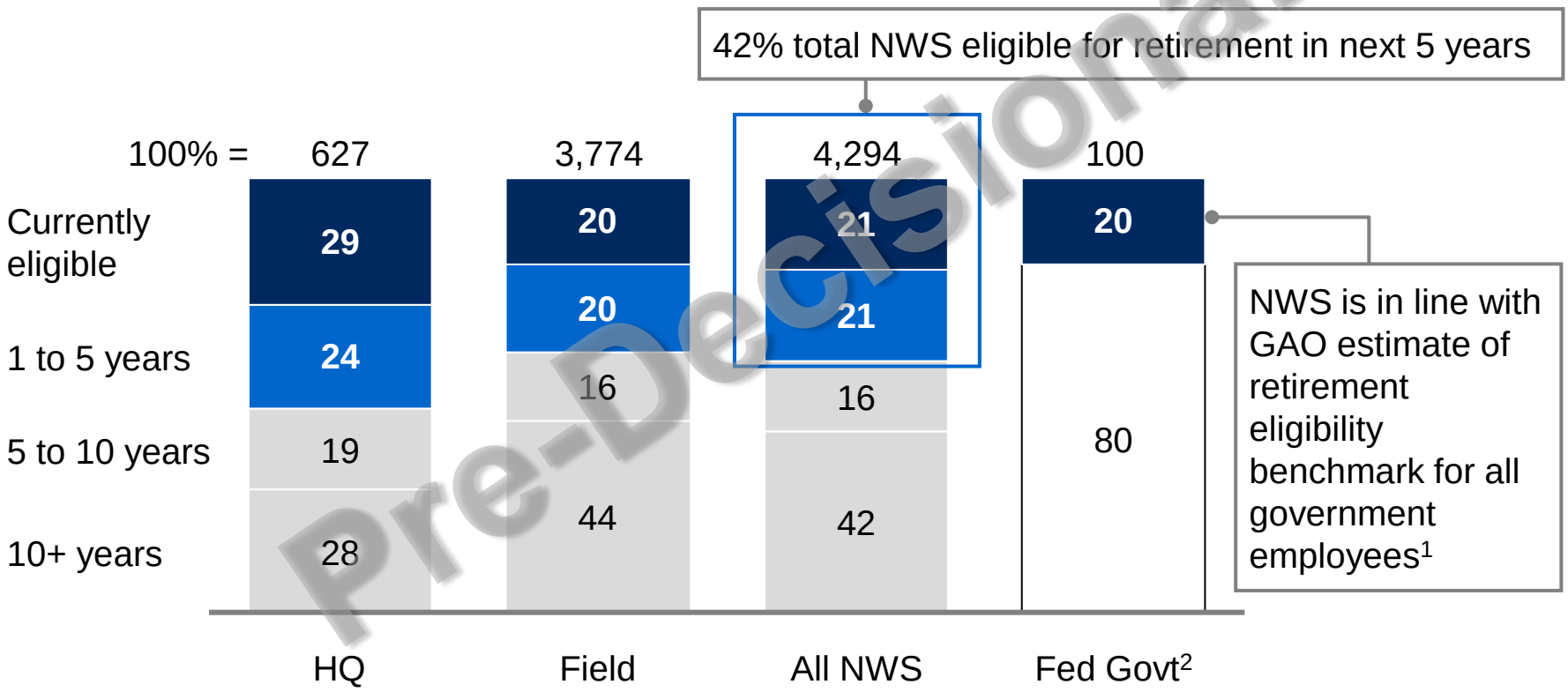
1: NWS attrition rate also referred to as separations

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

In terms of retirement, 42% of current NWS FTEs will be eligible in the next five years

FTEs by years until eligible for retirement

% of total employees



1 Retirement defined by the number of years left before a federal employee can retire from federal work; assumes that federal employees retire soon after they have achieved retirement eligibility

2 Federal government average based on GAO report projecting retirement eligibility for US government in 2012

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; GAO 2012 US government prediction of federal workers' retirement eligibility

The analysis applied to WFOs projects the difference between actual and expected workload (based on statistically significant drivers) from 2008-'14; there are limits to what the model can do

Description

- **Model is a multivariate regression with statistically significant results[1] across:**
  - All 122 WFOs[2]
  - From 2008-2014
- **Dependent variable**:
  - Workload is equated to total FTE hours including overtime by office
- **Independent variable**
  - Drivers of differences in workload between WFOs (statistical significance of each driver specified *on next page*)
  - Model uses these variables to project an **"expected" workload** for each WFO
  - Analysis compares "expected" to actual workload for each WFO to determine the **relative difference** across all WFOs

Application

- **What the model can do:**
  - Help identify patterns in workload across NWS
  - Identify if there is an overall gap between workload and workforce across all WFOs
  - Highlight WFOs that may be relatively overburdened
  - Provide a jumping-off point to discuss next steps to overcoming workload challenges
- **What the model cannot do:**
  - Match exact workload hours to drivers of workload (e.g., tropical storms cause X# hours of workload)
  - Provide an absolute understanding of whether WFOs do or do not have the "correct" workload
  - Account for vacancies within offices, as vacant positions do not count positively or negatively towards workload
  - Provide a recommended "list" of offices in which to make changes

1: Statistical significant variables all significant to 95th percentile for 2008-2014, treating each year and WFO as an independent observation; F-statistic 32.02 with a confidence interval of >99%; all included variables statistically significant in the 95th percentile; r-squared for regression = .5392

2: Offices included in analysis currently only constitute WFOs; other types of offices (RFCs, CWSUs, WSOs) not included in sample as they would not provide a homogenous sample to compare office to office; to date the RFC statistical analysis has not yielded statistically significant results

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

The regression analysis, including statistically significant workload drivers, indicated a difference between expected and actual hours worked in most WFOs

	Workload driver	Impact
Statistically significant[1] (N=770)	▪ Population ▪ Population density	▪ Larger population leads to increased potential for loss of lives and property and to larger number of IDSS stakeholders
	▪ Marine area of responsibility	▪ Larger marine area of responsibility increases expected workload
	▪ Land area of responsibility	▪ The larger the area of responsibility, the higher the expected workload
	▪ Number of watches, warnings, and advisories	▪ The higher the number of WWAs, the higher expected workload in office[2]
	▪ Aviation responsibilities (e.g., number of forecast airports)	▪ The higher the number of airports covered by WFOs, the higher the expected workload
	▪ Regional location[3]	▪ Regional differences lead to additional variation in expected workload
	▪ Severe weather events and cost	▪ Number of severe events increase workload and average cost for severe weather event
	▪ Non-precipitation event	▪ Number of non-precipitation events
Not currently significant	▪ Other weather events	▪ Count of events not individually significant: fire, tropical, winter, marine, heat, and flood
	▪ Cost of other weather events	▪ Average costs of events not categorized as “severe”

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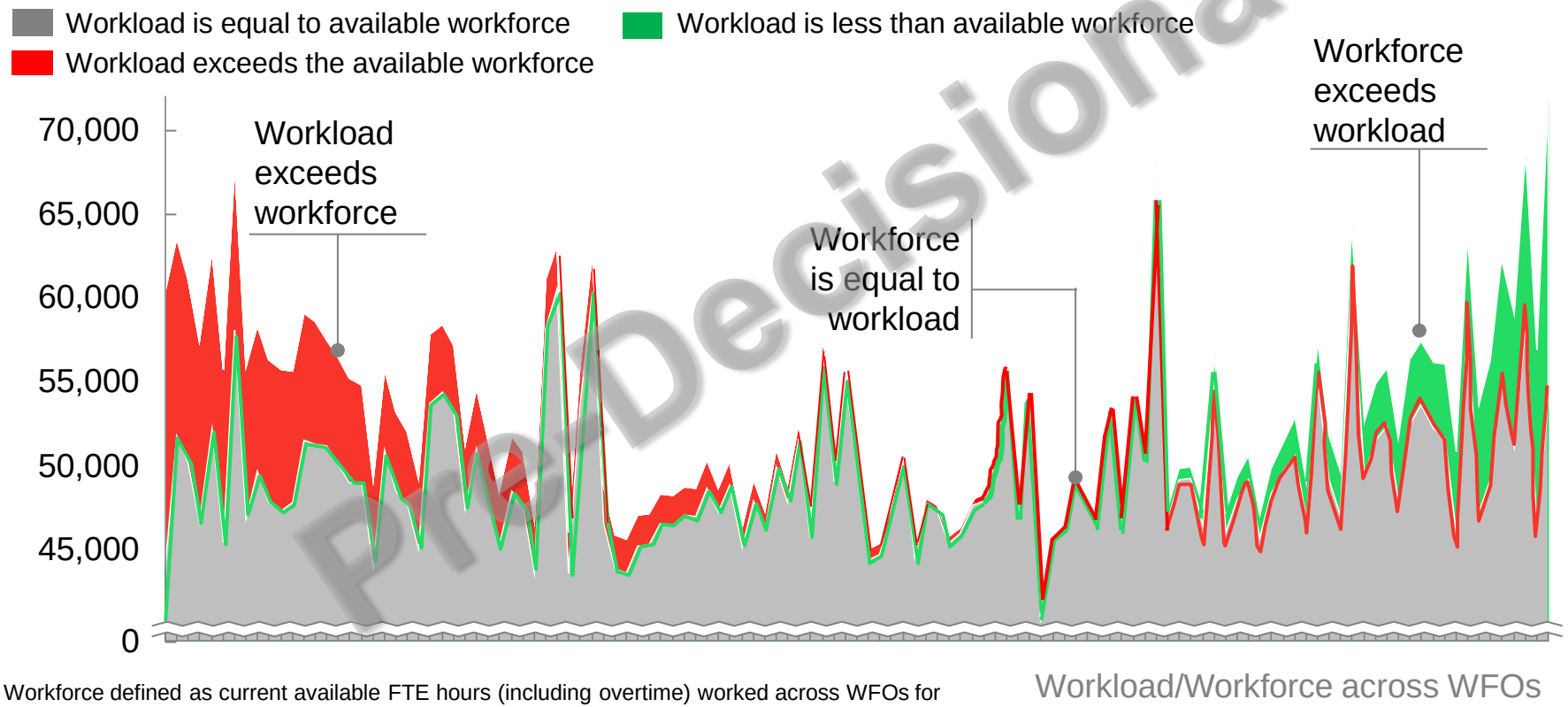
3: in our model, the western and pacific regional variables were statistically significant, possibly because of unique drivers of workload not captured in other drivers (e.g., IMET program, manual observation requirements)

SOURCE: NWS Overtime data by biweekly pay period, 2002-’15; NWS CFO’s FTE data by year, 2008-’14; NWS WWA data, 2008-’14, 2008-’14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

The workforce[1] and workload[2] varies across WFOs; overall the expected workload exceeds the workforce, with some offices over and others under supplied

WFO Workforce available compared to expected workload (based on statistically significant workload drivers from the regression analysis), 2014

Hours by WFO



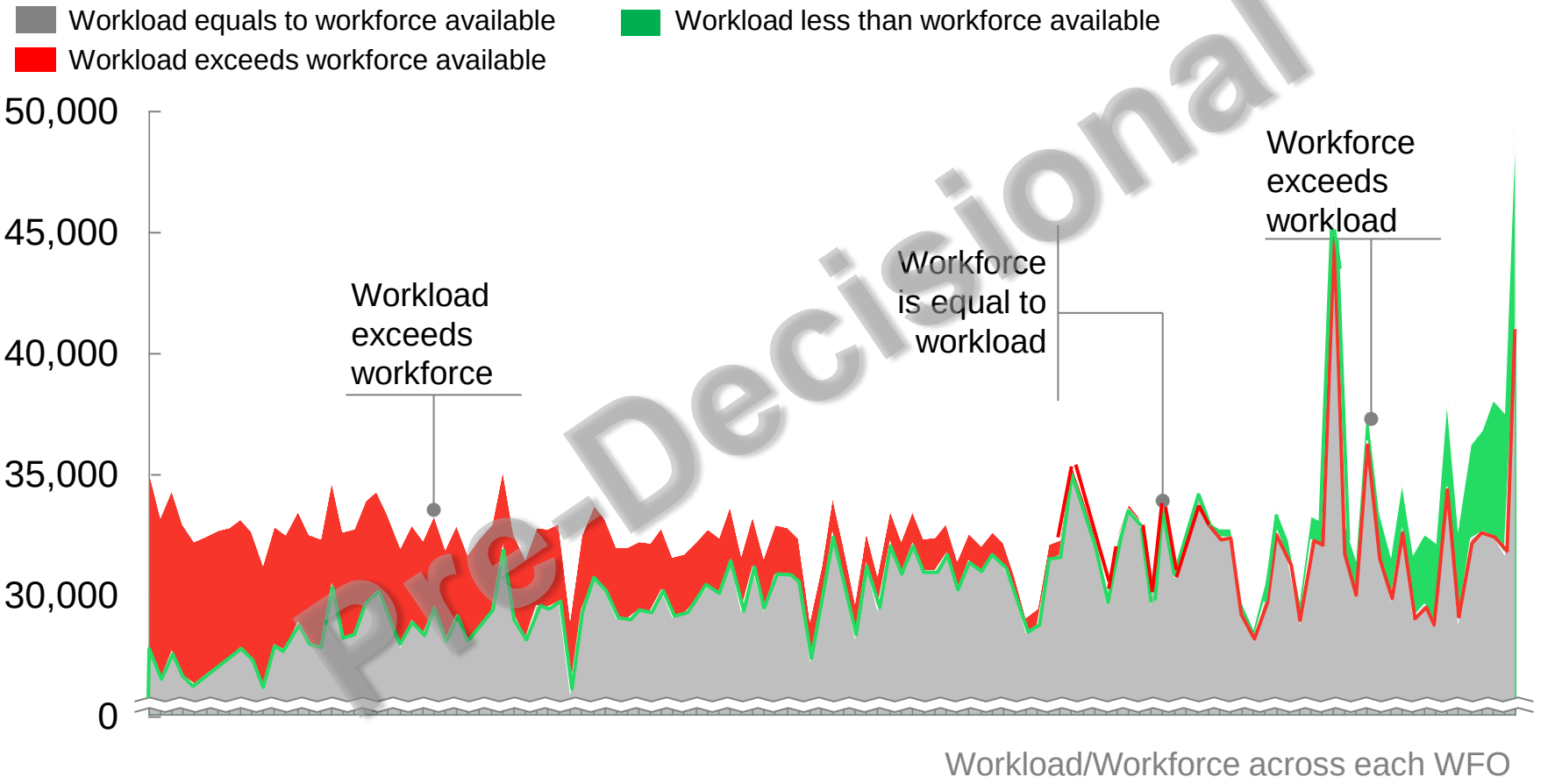
1: Workforce defined as current available FTE hours (including overtime) worked across WFOs for all positions represented within a WFO
2: Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

Analysis was also completed for a subset of WFO employees – series 1340 meteorologists – where the findings indicate a more consistent gap between workload[1] and workforce[2]

WFO Workforce available compared against expected workload based on workload drivers, 2014

Hours of series 1340 meteorologists by WFO



1 Regression analysis returned statistically significant results with p-value of 0.00 and overall lower r-squared of .2444; variables that were not statistically significant in this regression but were significant in the full regression were population, pop. density, land area of responsibility, advisories, and the Western and pacific region dummy variables; variables that became statistically significant were the number of fire, tropical and marine events; and the eastern and Alaskan region dummy variables

2 Workforce defined as all FTE and overtime hours worked by series 1340 FTEs, which would include and supervisory positions in series 1304

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

The skill assessment, conducted by MICs, revealed gaps especially for those skills identified as important to IDSS and for the intern position

Top quartile
Second Quartile
Third Quartile
Bottom Quartile
Top 3 skills

Outcome scores based on MIC evaluation of current and desired skill level

Skills	Importance to IDSS[1]	Gap between current and desired scores, rounded			
		Forecaster	WCM	Intern	HMT
Problem solving	4.4	0	1	2	1
Applying weather science	4.4	1	0	2	1
Data collection	4.2	0	-1	2	0
Analytics and stats	4.4	1	0	2	1
Computer and IT tech	4.8	1	0	2	0.5
Customer service	3.6	2	1	3	0.5
Leveraging diversity	3.8	2	1	1	0
Quality focus	4.2	0	0	2	1
Teamwork	3.6	2	2	2	1
Creative thinking	4.4	1	2	2	0
Judgment/decision-making	4	1	1	2	0.5
Leadership	4.4	2	2	1	1.5
Partnering	4.4	2	0	2	1
Written communications	4.6	3	1	2	1
Oral communications	4.6	3	2	1	1
Coordination	4.2	2	0	2	1
Information gathering	3.8	1	-1	1	1

1 Based on a scale of 0-5 where 0 indicates it is not important to IDSS and 5 that it is critical to IDSS
SOURCE: NWS Skill assessment; Representative sample of NWS WFOs, CWSUs, and RFCs

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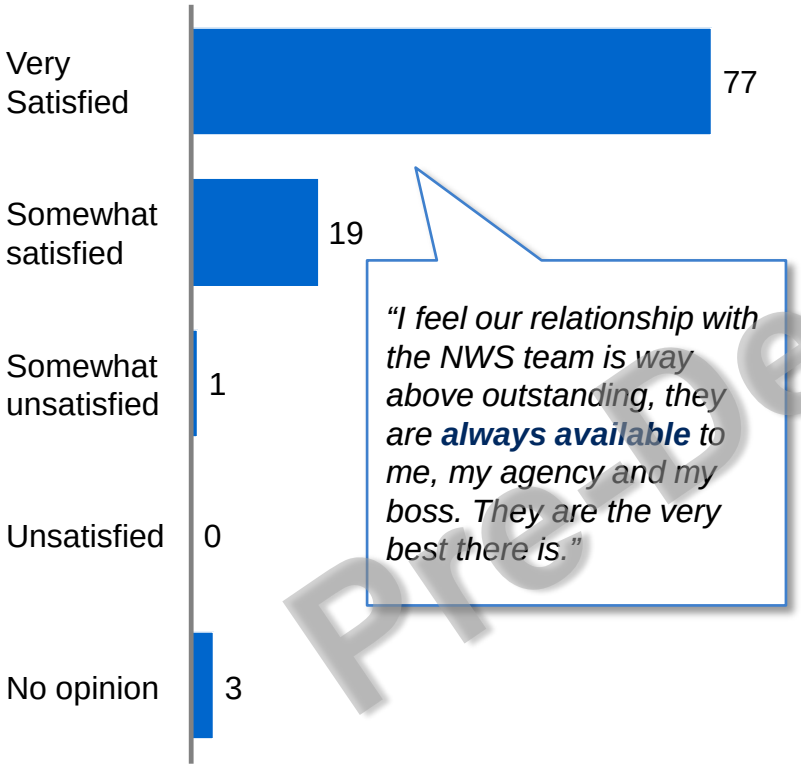
Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and organizational model, and continue to communicate and engage with internal and external stakeholders throughout the process

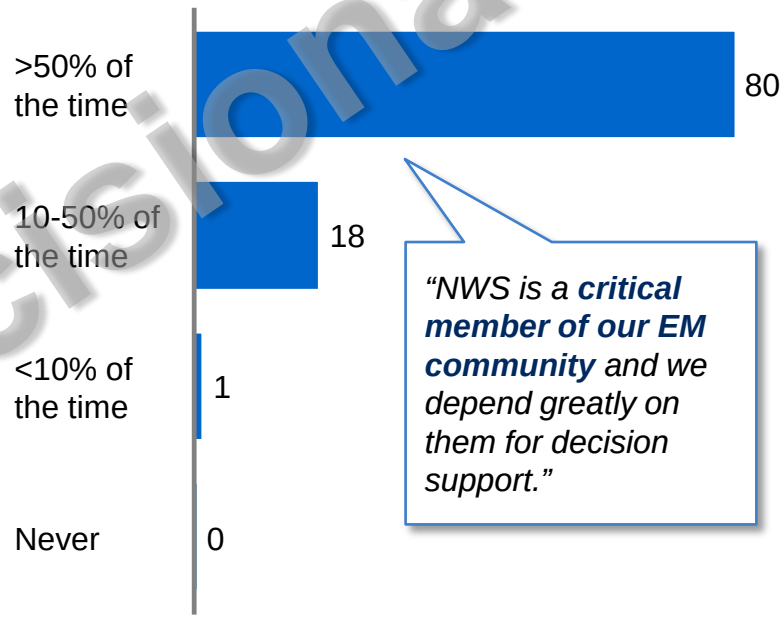
External stakeholders report high overall satisfaction with NWS impact-based decision support services (IDSS) and frequently use NWS information to make decisions

Overall satisfaction with IDSS from NWS (%)



*"I feel our relationship with the NWS team is way above outstanding, they are **always available** to me, my agency and my boss. They are the very best there is."*

How often NWS information affects stakeholder decision-making (%)



*"NWS is a **critical member of our EM community** and we depend greatly on them for decision support."*

1 Stakeholders identified by local NWS WCMs as critical partners with whom they work

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27, 2015

External stakeholders praised NWS for trust, accessibility, accuracy, and relevance, but many are confused about the scope of IDSS

Dimension	Representative quotes
Trust	*"In an emergency, **trust is the most important part** of our relationship. I count on NWS, I know the person behind the forecast."*
	*"I trust my partners at NWS and **I know them** – the tone of their voice, the way they report out to us. And they know me."*
Accessibility	*"They're on Twitter, on social media, and in my email every morning; **I always know what I'm up against** when I start my day "*
	*"I have never worked with an agency that is **so accessible**. They are remarkably proactive and in many ways – email, phone, social media."*
Accuracy	*"It's not like the other weather brands. **I go by what the Weather Service tells me; not by anyone else"***
	***"The technology has improved so tremendously**; we can't see private companies keeping up with the products NWS has now"*
Relevance	*"It's our livelihood; **we're a weather-dependent economy** on our the best days."*
	*"During a severe weather event, NWS helps us ensure **there's not going to be a large loss of life."***

Confusion about scope of IDSS

*"We have to know what the NWS can do for us, but **we also have to know what they can't do, or we'll ask them to do everything**, and, God help them, they'll try and give it to us"*

*"It's challenging for the private sector to know where they should play a role, how they can play a role **when what the NWS does varies from event to event**"*

SOURCE: Site interviews

There is variation in how the official definition of IDSS is being interpreted and what is provided, how, to whom, and when

Details follow

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

	Less expansive		More expansive	
What	Communicate through **standard products** that address stakeholder needs	*"We focus on ensuring our website has all of our products."*	Create **customized information** for specific stakeholders	*"After issuing products, we will follow up to key stakeholders with more specific information."*
How	Provide a **narrow set of services** to events (e.g., only conference calls)	*"We don't do IDSS because we don't have the resources to dedicate to it."*	Provide a **broad range of services** (e.g., deploy staff to a sporting event)	*"We would like to deploy meteorologists to graduation ceremonies."*
Who	**Define core partners** as emergency managers, govt. officials, and media	*"We focus on government entities top-down because they can deploy resources."*	**Include an extended set of partners** (e.g., schools, event operators, the public)	*"Our schools signed up for NWS Chat to discuss overnight weather in the winter."*
When	Perform **episodic IDSS** in response to severe weather (e.g., storm briefings)	*"We developed a flexible model to provide IDSS during severe events."*	Perform **recurring IDSS** (e.g. in fair weather) for ongoing effective and informed decisions making	*"We help our partners make decisions every single day."*

1 From the NWS Weather Ready Nation Strategic Roadmap

SOURCE: HQ and site interviews, June-July 2015

WHAT

Similar products are disseminated by different entities within NWS depending on the weather event

Authority to issue standard products by weather event

	Outlook	Watch	Warning
Severe thunderstorms / tornado	SPC	SPC	WFO
Winter storm	WPC	WFO	WFO
Hurricane / tropical storm	CPC: hurricane seasonal outlook	NHC: coastline	NHC
	NHC: Weekly	WFO: water going out 20 mi.; inland OPC: >60 miles	WFO
Flood	WPC: excessive rainfall	WFO/RFC	WFO/RFC

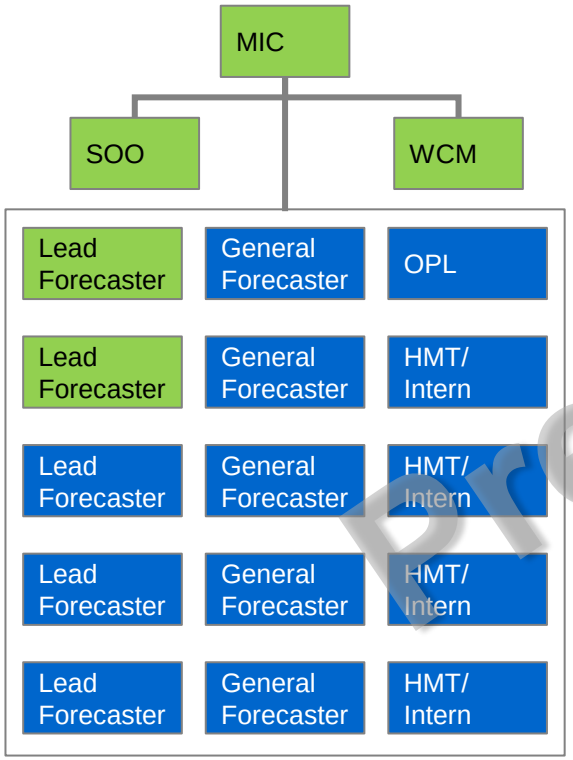
SOURCE: National Weather Service briefings, Site interviews

HOW

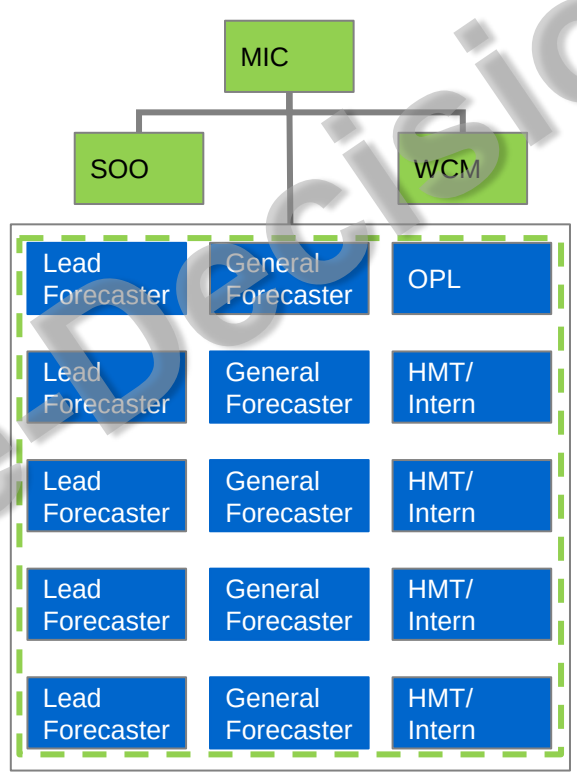
There are 3 primary archetypes for how WFOs align their staff to perform IDSS

Staff dedicated to IDSS — IDSS shift

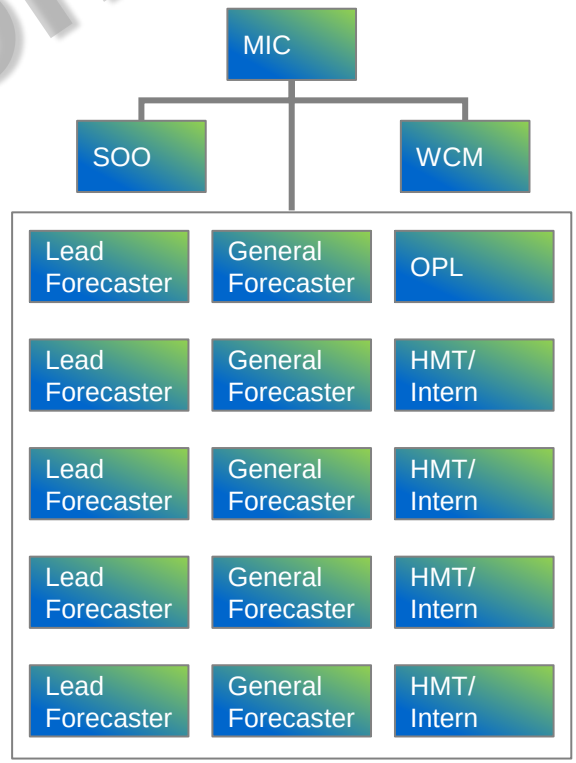
Type 1: Only select staff manage external relationships on behalf of the office



Type 2: Operational staff rotate through dedicated IDSS, media, or public desk shifts



Type 3: All staff provide IDSS support and during severe weather events flex to provide support



SOURCE: Site interviews

WHO

There is variation in how the official definition of "core partner" is being applied

Official definition of "core partner" via NWS directives

"Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the National Weather Service."

- Core partners clarified to include:
  - Member of the emergency management community
  - Government partners
  - Members of the electronic media

OPPSD clarification of NWS Directive describing core partners and WFO employee quotes regarding the definition of IDSS stakeholders

- State emergency manager ✓
- Fire Department ✓
- Local TV station ✓
- Hospital X
- School principal X
- NWS spotter X
- Public utility X
- Storm chaser X

"Of course hospitals make decisions on whether to evacuate large numbers of people; they also control the lives of large numbers of people."

"What about public schools? Not all public schools have emergency managers who relay information to them like the large cities do."

"We have private industry (a nuclear power plant) running critical infrastructure; why aren't they a core partner?"

"Utilities have to know days in advance of a weather system—that doesn't affect property?"

SOURCE: NWSI 01-103, Appendix A; "Public-Private Partnership" presentation, May 29, 2014; "Proposed Enhanced Impact-Based Decision Support Services" Service Description Document, May 2014

Executive Summary of Operations and Workforce Analysis (OWA) Phase 1 Deliverable: Current State Baseline and Gap Assessment

Details follow

Overview of OWA: Purpose of the OWA project and objectives for Phase 1

Methodology: Criteria to select and finalize site visits, interviews, surveys, and Core Team members

Phase 1 baseline and gaps: The objective of Phase 1 is to develop fact-based findings and insights against each assessment area, including information on variation in particular roles and regions as well as themes from external stakeholders and internal staff. Synthesized findings are as follows:

- **Workforce:** Controlling for differences, there is a mismatch in some areas between today's workforce and today's workload. In addition, there is a difference between the current and desired skill level for skills identified as important to IDSS, including written and oral communications
- **Operating Model (including Impact-Based Decision Support Services (IDSS)):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there are a number of definitions of IDSS, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where overall lower health was observed but strengths in motivation and external orientation were also identified – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and organizational model, and continue to communicate and engage with internal and external stakeholders throughout the process

The Organizational Health Index (OHI) survey measures organizational health and performance

What organizational health is

Organizational health is the ability of an organization to:

- Align behind common goals, strategy, and culture
- Execute with excellence to meet them
- Innovate and adapt to change

What the survey measures

- OHI survey was used to assess practices at NWS in order to show how they contribute to the organization's health and performance rather than employee satisfaction (covered in FEVS)
- OHI data set currently has over 700 organizations and 1.3 million respondents

About the NWS OHI survey

- OHI survey was open at NWS from June 8, 2015 to June 24, 2015
- Participation was n=2,162 with a response rate of 49% with a margin of error at the 95% confidence level
- The distribution of responses within the organization by office type and tenure and was representative of the overall distribution of the workforce
- NWS was compared to the OHI global benchmark as well as a public sector benchmark (27 surveys, n=47,159) and the professional scientific and technical services benchmark (27 surveys, n=17,849)

OHI measures health in two ways – outcomes and practices (the scores for each can differ significantly)

Outcomes

What you **are**

VS

Practices

What you **do**

- The individual health analogy for outcomes includes measuring blood pressure and weight, and for practices includes evaluating eating and lifestyle
  - A person may be skinny but have a poor diet, or be overweight but exercise regularly
  - Both sets of information are needed to design effective interventions
- At an organizational level, the combination of these scores helps understand strengths and gaps and develop a customized and actionable plan

NWS has an overall health score in the bottom quartile, but has clear strengths in Motivation and External Orientation outcomes

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Overall OHI score

53

Percent agreement on outcome effectiveness

Overall response rate of 49%

- Direction **50**
- Accountability **52**
- Coordination & Control **32**
- External Orientation **70**
- Leadership **53**
- Innovation & Learning **28**
- Capabilities **74**
- Motivation **71**
- Culture & Climate **49**

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Comparison to benchmarks reflects strength in Motivation and External Orientation and relative weakness in Innovation & Learning and Coordination

Global Benchmark
Top Quartile
Second Quartile
Third Quartile
Bottom Quartile

Comparison to Benchmark
Stronger (> +5)
Weaker (< -5)
Comparable

Percentage agreement on outcome effectiveness

	NWS OHI Score	Public Sector	Professional Scientific and Technical Services
		Difference between organization and benchmark median, %	
Direction	50	-3	-9
Leadership	53	-5	-18
Culture & Climate	49	9	-18
Accountability	52	-3	-15
Coordination & Control	32	-7	-22
Capabilities	74	9	-5
Motivation	71	30	14
Innovation & Learning	28	-16	-36
External Orientation	70	19	0

SOURCE: Source: OHI3_NWS (n=2,162); Public Sector (n=47,159, no. surveys=27), Professional Scientific and Technical Services (n=17,849, no. surveys=27)

Senior level managers perceive higher outcomes, which is a common result, with the greatest differences in Direction, Leadership, and Culture & Climate

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile
- Statistically significant at the 95% Confidence level

Percentage agreement on outcomes

	Responses	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Individual Contributors: I do not directly supervise other employees	1680	51	48	49	45	50	30	73	69	27	68
Middle Management: I directly supervise other front-line employees	376	58	53	58	58	58	35	75	76	31	74
Senior Leadership: I directly supervise other managers	106	70	74	86	76	68	43	78	85	35	81
Difference between Senior Leaders and Individual Contributors		+19	+26	+37	+31	+18	+13	+5	+16	+8	+13

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

NWS has 34 of 37 practices in the bottom quartile, including the 5 "power practices" that tend to correlate most with overall health

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

Power practices are practices correlated most with overall health

Direction
- 44 Shared vision
- 39 Strategic clarity
- 22 Employee involvement

Accountability
- 34 Role clarity
- 39 Performance contracts
- 18 Consequence mgmt.
- 40 Personal ownership

Coordination and Control
- 33 People perform. review
- 35 Operational mgmt.
- 22 Financial mgmt.
- 73 Professional standards
- 32 Risk mgmt.

External Orientation
- 52 Customer focus
- 35 Competitive Insights
- 76 Business partnerships
- 63 Gov. & community relations

Leadership
- 44 Authoritative leadership
- 43 Consultative leadership
- 49 Supportive leadership
- 37 Challenging leadership

Innovation and Learning
- 17 Top-down innovation
- 24 Bottom-up innovation
- 25 Knowledge sharing
- 13 Capturing external ideas

Capabilities
- 24 Talent acquisition
- 37 Talent development
- 32 Process based capabilities
- 20 Outsourced expertise

Culture and Climate
- 45 Open & trusting
- 18 Internally competitive
- 47 Operationally disciplined
- 32 Creative & entrepreneurial

Motivation
- 26 Meaningful values
- 33 Inspirational leaders
- 31 Career opportunities
- 15 Financial incentives
- 23 Rewards & recognition

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

NWS employees reported high Motivation at the outcome level, a platform on which to build, despite lower scores at the practice level

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

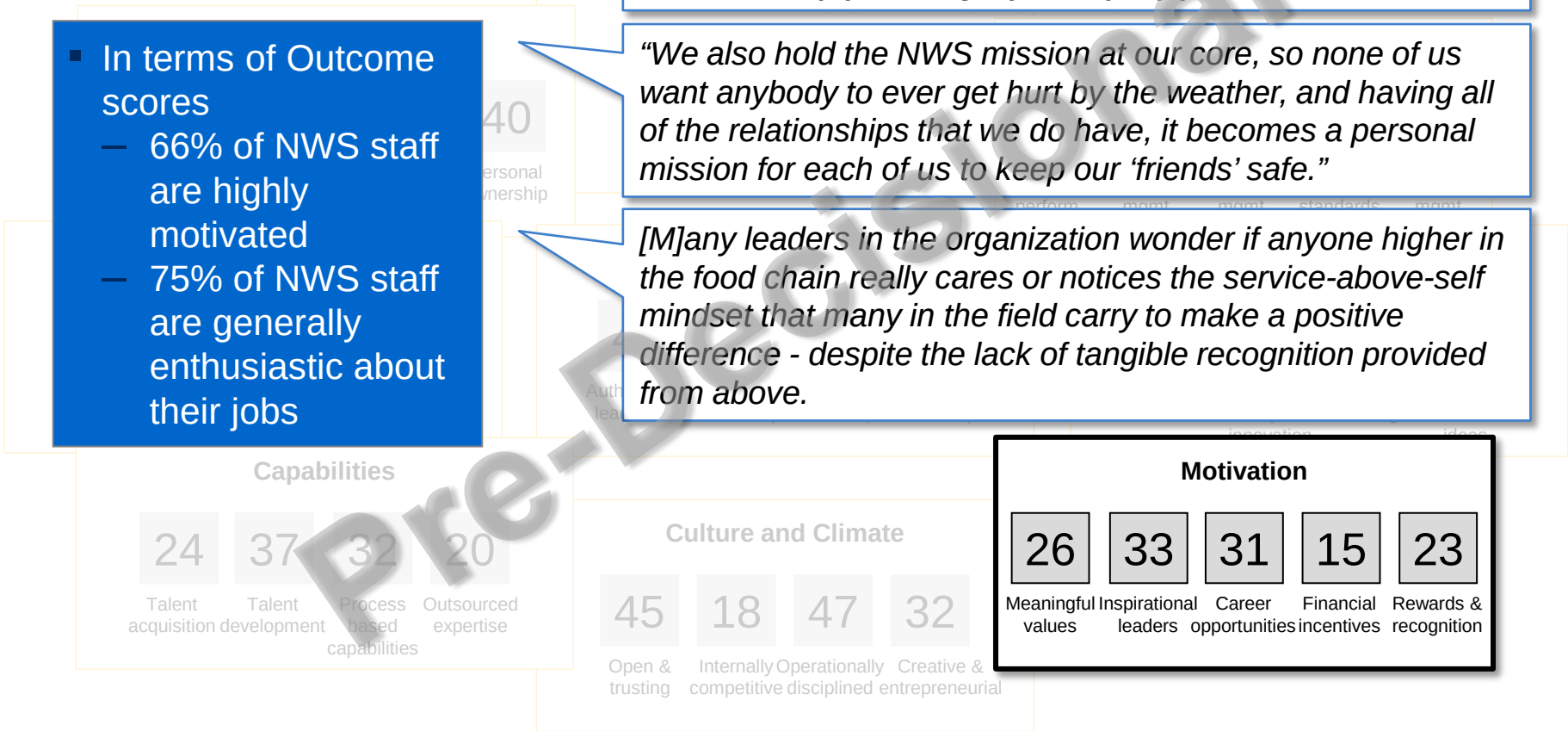
Percentage agreement on practice frequency

- In terms of Outcome scores
  - 66% of NWS staff are highly motivated
  - 75% of NWS staff are generally enthusiastic about their jobs

"The National Weather Service is one of the greatest places to work. I enjoy making my hobby my job."

"We also hold the NWS mission at our core, so none of us want anybody to ever get hurt by the weather, and having all of the relationships that we do have, it becomes a personal mission for each of us to keep our 'friends' safe."

[M]any leaders in the organization wonder if anyone higher in the food chain really cares or notices the service-above-self mindset that many in the field carry to make a positive difference - despite the lack of tangible recognition provided from above.



SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Employees lack clarity and buy-in around the vision and strategy of NWS, and feel they are not involved enough in the direction setting process

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

Direction

44	39	22
Shared vision	Strategic clarity	Employee involvement

Accountability: 34 Role clarity; 39 Performance contracts; 18 Consequence mgmt.; 40 Personal ownership

Coordination and Control: 35 Operational mgmt.; 22 Financial mgmt.; 73 Professional standards; 32 Risk mgmt.

External Orientation: 52 Customer focus

Culture: 45 Open & trusting

<50% of all employees say their day-to-day behaviors are guided by the NWS's vision and strategy

"It seems like there has been little information provided from leadership to the line offices on how to implement a plan to achieve a Weather Ready Nation."

"Too many people in higher up position making decisions for the field sites that have never been in the field and are clueless of how their decision will affect the field offices."

"The NWS has lost its ability to communicate within the organization. It appears the field is being told only what someone above feels appropriate. Consequently, the field is left in the dark on many issues."

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

NWS is relatively externally oriented but does not often capture these ideas and quickly translate them into innovation or knowledge sharing among staff

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

- 26% of staff agree that NWS effectively adapts to changes in its external environment
- 11% of staff believe the NWS is able to adjust rapidly to new ways of doing things

External Orientation

52	35	76	63
Customer focus	Competitive Insights	Business partnerships	Gov. & community relations

Innovation and Learning

17	24	25	13
Top-down innovation	Bottom-up innovation	Knowledge sharing	Capturing external ideas

[There is a] lack of encouragement to new ideas and innovation sticking to useless products methods and lack of initiative to improve them

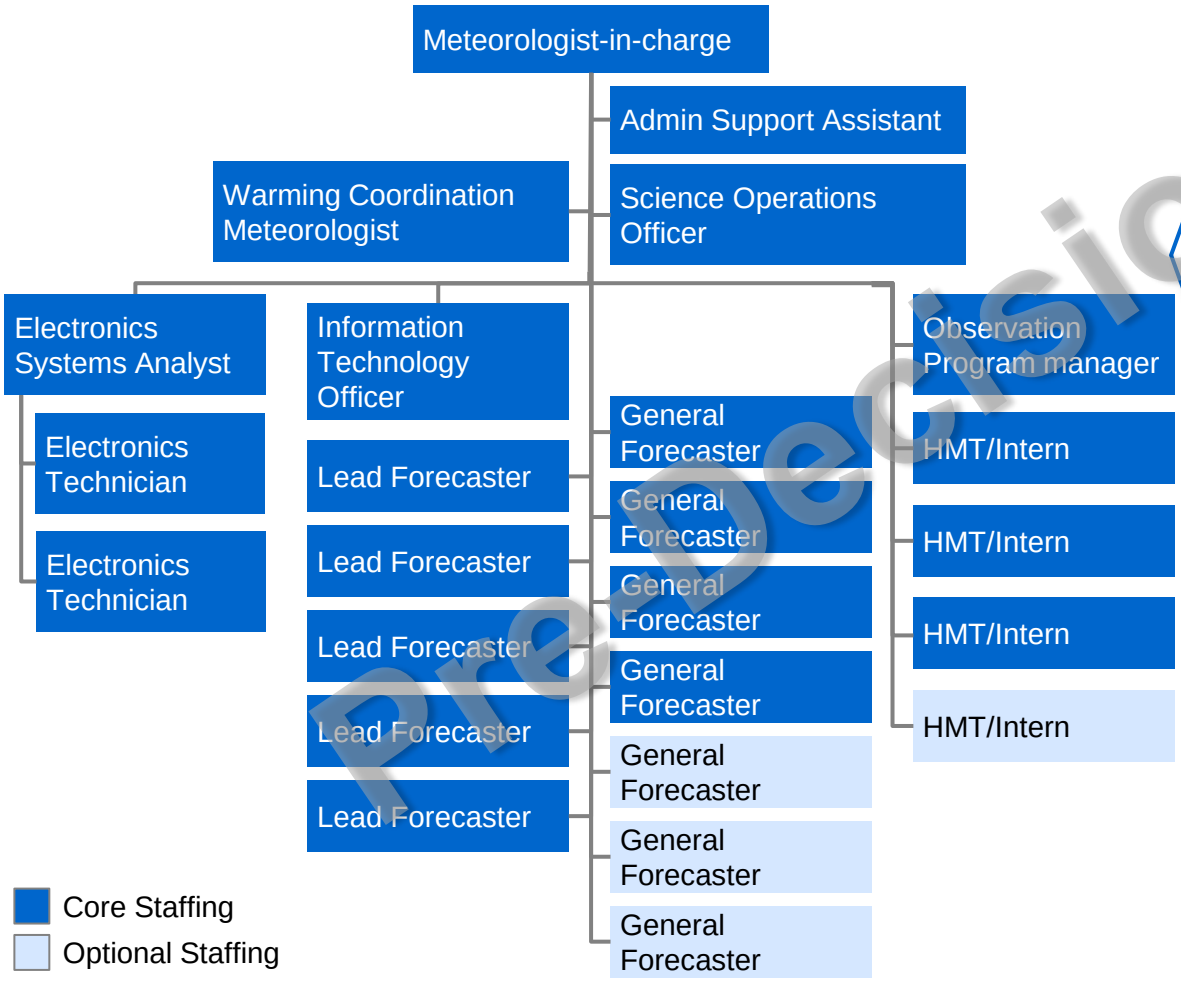
Least Rewarding: "The increasing bureaucracy and inability to innovate due to focus on "consistency." If we don't start somewhere, we will never move forward! Innovation should continue to come bottom-up but with support and early buy-in from the top for resources."

"Knowledge should flow upward as well as downward; NWS needs to be quicker to adopt trending technologies; …; More empowerment - managers must allow decisions to be made at the lowest possible level"

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Today a standardized staffing model is applied uniformly across WFOs

WFO Staffing Structure



One-size-fits-all staffing model cannot account for key drivers of workload, including:

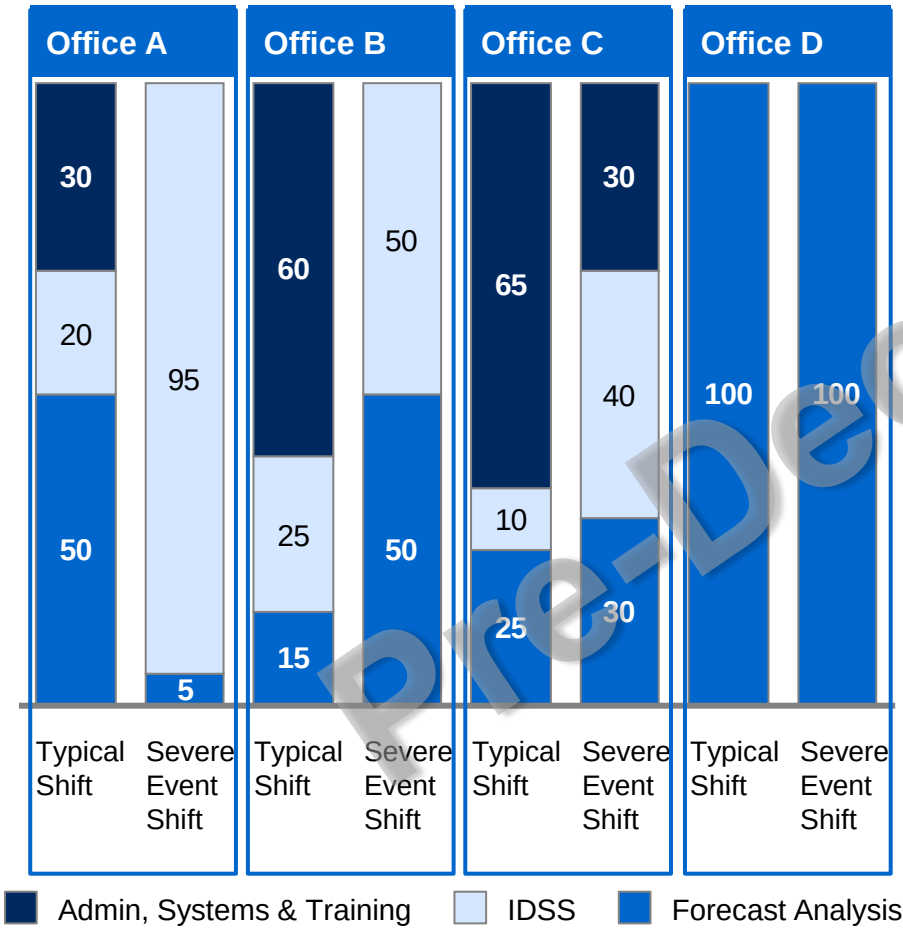
- Population
- Population Density
- Marine area of responsibilities
- Land area of responsibility
- Frequency of watches, warnings and advisories issued
- Aviation responsibilities
- Regional location
- Types and number of severe weather events

1:22 span of control (number of employees reporting to a given person) is high relative to best practice

SOURCE: NWS; Site visits and interviews

To cope with a standardized staffing structure that may not meet their distinct needs, WFO field offices have unofficially adopted different operating models

Selected adaptations in time management[1]



Selected adaptations in workforce structure

Work overtime	*"Our overtime is the equivalent of having **an extra 2 to 3 people on around the clock**."*
Reduce leave	*"**People still get sick, have deaths in the family, take vacation**. One of those is easier to put off."*
Managers work many shifts	*"A lot of the time **managers will work shifts** or people will give up training."*
Drop a shift to create training or IDSS shift	*"Region told us '**you must have all of management working, mandate OT, and eliminate leave before you can drop a shift**.' Well guess what, that happens all the time."*

1. All shifts last 8 hours unless otherwise indicated
SOURCE: Site interviews

Employees describe organizational disconnect between field offices and regional/national headquarters

	Perception of Self	Perception by Others
National Headquarters	*"If it's **public safety and economic resilience**, it's in our lane." - HQ*	*"**It's like our voices are not being heard at all.** There's lack of morale, mistrust in management." – WFO*
	*"We take a **collaborative approach** to decision-making." - HQ*	*"National and regional headquarters don't support us, **we support them**.'" – WFO*
Regional Headquarters/ Operations Center	*"We use WFOs' local expertise to **put the big picture together**." - ROC*	*"**We don't need them**. They're an additional layer that blocks communication." – WFO*
	*"The ROC was one of the **first attempts at structuring DSS**." - Region*	*"**I talk about regional and national senior leadership the same** – maybe they're different, I don't know." – WFO*
NCEP	*"Our relationship with the field is **so organic**." - NCEP*	*"**They embargo information. It's a joke.** If they release something to the AP, I come in and partners want to know about it and I'm caught off guard." – WFO*
Other Field Offices	*"**National experts in hydrology** from the summit to the sea." - RFC*	*"It's **culturally very different** state to state.'" – Regional HQ*
	*"I believe our forecasters are **best at forecasting in this area**." - WFO*	*"There's a **kneejerk reaction to embed WFO people without training** and say 'we're doing DSS.'" – NCEP*

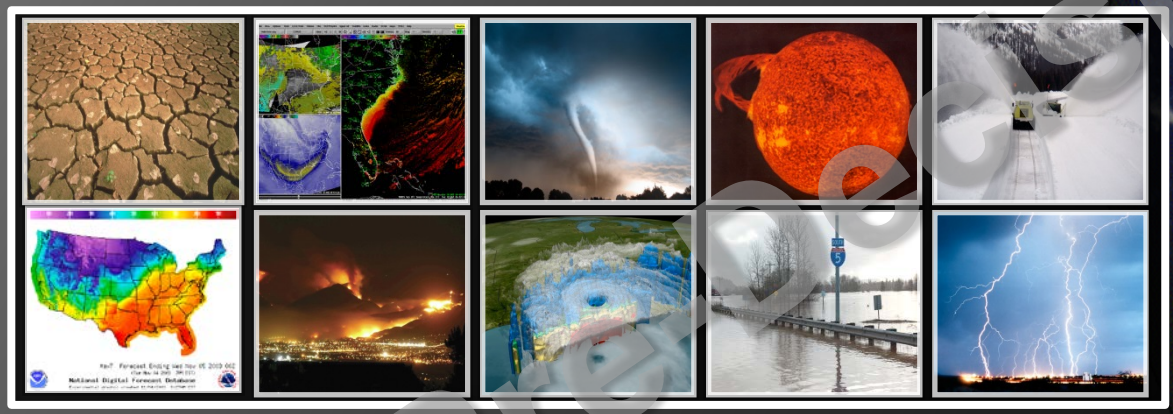
SOURCE: Site interviews

Your questions and feedback

Your questions and feedback

- What would you like to know about the methodology or Phase 1 findings?
- What feedback do you have about the findings?
- What additional questions do you have?

Operations and Workforce Analysis (OWA) – Phases 2 and 3



December 2015
Preliminary and Pre-decisional

Objectives for today's discussion

- Review the approach to Phases 2 and 3 of the Operations and Workforce Analysis (OWA) project
- Discuss ideas developed during Phases 2 and 3 to address Phase 1 findings
- Gather input and feedback on the materials

During Phase 1, several insights were generated about the workforce, operating model, and organization structure

Phase 1 baseline and gaps: The objective of Phase 1 was to develop fact-based findings and insights against each assessment area, including information on variation in particular roles and regions as well as themes from external stakeholders and internal staff.

Synthesized findings are as follows:

Workforce	Controlling for differences, there is a mismatch in some areas between today's workforce and today's workload. In addition, there is a difference between the current and desired skill level for skills identified as important to IDSS, including written and oral communications
Operating model	Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there are a number of definitions of IDSS, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
Org structure	Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where overall lower health was observed but strengths in motivation and external orientation were also identified – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Executive Summary of Phases 2 and 3

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluating impact-based decision support services (IDSS), understanding the NWS current state and gaps, developing options and alternatives, and testing and evaluating options to move forward

Methodology: During Phases 2 and 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO were been engaged in idea generation and refinement

Foundational ideas: Based on the OHI findings, the "market shaper" recipe and three practices – role clarity, open and trusting, and capturing external ideas -- were prioritized along with the IDSS "deep relationships" philosophy; together, they provide the foundation for additional ideas refined

Actionable ideas: Several ideas were refined during Phases 2 and 3:

- **Workforce**: progression model for meteorologists, onboarding course for new hires, orientation course for new MIC/HICs, and greater supervisory authority for other roles in the field
- **Organizational structure**: roles of the National Service Programs with respect to the integrated field, better alignment of the Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner categorization criteria and office review

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

During Phases 2 and 3, ideas were developed and refined to address Phase 1 findings

Current focus *Italics* indicates "to be determined"

Duration	**Year 1**			**Year 2**	**Year 3**
Phase	**Phase 1: aspire and assess**	**Phase 2: develop ideas**	**Phase 3: refine ideas**	***Phase 4***	***Phase 5***
Timing	May – Aug.	Aug. – Oct.	Oct. – Dec.	2016	2017
Description of work	**1 Change Management and Stakeholder Engagement** Project governance structure and teams; stakeholder map and outreach plan			▪ *Proposal development* ▪ *Change agents* ▪ *Field and Forum* ▪ *Leadership coaching* ▪ *Test and evaluate*	▪ *Field and Forum* ▪ *Weather event review* ▪ *Test and evaluate*
	2 Evaluation of IDSS **3 Current State Baseline** ▪ Workforce ▪ Organizational structure ▪ Operating model (including IDSS) **4 Current State Gaps**	**5 Identification of ideas** including ideas across: ▪ Workforce ▪ Organizational structure ▪ Operating model (including IDSS)	**6 Refinement of ideas** ▪ Refine fully integrated field structure ideas ▪ Refine a set of actionable ideas for: – Workforce – Organizational structure – Operating model (including IDSS)		

Multiple stakeholders were involved in the process of identifying and refining ideas

Phases 2 and 3 focused on involving core team members, OWC Executive Champions, SMEs and other stakeholders in identifying and refining ideas

Core team weekly meetings and workshops	▪ Core teams kicked off with ~20 team members across the four workstreams with weekly meeting cadence established ▪ During phases 2 and 3, seven workshops were held to align on actionable ideas and CSE efforts within workstreams ▪ In addition, an integrated core team workshop was held to integrate ideas across workstreams
OWC Executive Champions	▪ Senior leaders from across NWS played an active role in the identification and refinement of actionable ideas as workstream "champions" ▪ In addition, OWC members provided input on the fully integrated field structure
NOAA, manager and all staff engagement	▪ An additional ~93 interviews were conducted with ~73 internal staff and ~20 external stakeholders ▪ Three Toolkit Chapters were presented to managers and all staff, including on Phase 1 findings, IDSS "deep relationships" philosophy, and workforce actionable ideas ▪ CSE team participated in two regional MIC/ HIC meetings to share Toolkit Chapters ▪ Additional staff, including members of hydro strategy team, were engaged regularly to provide input on fully integrated field structure
NWSEO leadership engagement	▪ Discussed IDSS operating model philosophy and other ideas with NWSEO leadership ▪ Collected input from NWSEO leadership and incorporated into Phase 3 ideas ▪ Discussed options for on-going engagement
External stakeholder engagement	▪ Supported NWS Director and Deputy Director with talking points for engagement of emergency managers at IAEM and Big City EMs and commercial sector at EISWG conference

Executive Summary of Phases 2 and 3

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Foundational ideas: Based on the OHI findings, the "market shaper" recipe and three practices – role clarity, open and trusting, and capturing external ideas -- were prioritized along with the IDSS "deep relationships" philosophy; together, they provide the foundation for additional ideas refined

Actionable ideas: Several ideas were refined during Phases 2 and 3:

- **Workforce**: progression model for meteorologists, onboarding course for new hires, orientation course for new MIC/HICs, and greater supervisory authority for other roles in the field
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- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner categorization criteria and office review

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

During Phases 2 and 3, both actionable ideas as well as the fully integrated field structure were developed

Foundational ideas

Organizational Health Index (OHI) recipe and priority practices

- Market shaper recipe
- Priority practices: role clarity, open and trusting, and capturing external ideas

IDSS "deep relationships" philosophy

- Focus on "deep relationships" with core partners and a "core service level" provided by all NWS offices

Phase 2 and 3 ideas developed and refined

Actionable ideas

- **Workforce:** Progression model, onboarding course for new hires, orientation course for new MICs/HICs, and greater supervisory authority for other roles within field offices
- **Org structure:** roles of the National Service Programs with respect to the integrated field, alignment of Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS:** Philosophy syndication, IDSS and communications training, and policy for "core service level"

Fully integrated field structure

Based on the results of the OHI survey, an organizational "recipe" and priority bottom quartile practices were prioritized

Market shaping, externally focused recipe

Shaping market trends and building a set of solid, innovative products and services that delivers relevant value to customers

OHI practice[1]	Definition
Role clarity	▪ Driving accountability by creating a clear structure, roles, and responsibilities and communicating them effectively
Open and trusting	▪ Encouraging and role modeling transparency, honesty, and candid, open dialogue across all levels
Capturing external ideas	▪ Identifying, evaluating and sharing ideas and best practices from outside the organization

1 All 3 practices were in the bottom quartile relative to the benchmark sample set

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

To respond to Phase 1 findings, three ideas were developed for an IDSS operating model philosophy and one was prioritized

Prioritized philosophy

	Philosophy 1: "Core competency"	Philosophy 2: "Broad reach"	Philosophy 3: "Deep relationships"
What	▪ Communicating by **standard products** that address stakeholder needs	▪ Communicating by **standard products** that address stakeholder needs	▪ Creating **information** for specific stakeholders
When	▪ Supporting **episodic IDSS**, including products and interpretation/data	▪ Supporting **episodic IDSS**, including products and interpretation/data	▪ Performing **recurring IDSS** for mitigation, preparation, response, and recovery in addition to support for episodic events
Who	▪ **Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media	▪ Growing stakeholder network beyond existing core partners and **disseminating weather data to as many people as possible**	▪ **Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media (with general service to others on request)
How	▪ Providing a **narrow set of services** (e.g., conference calls)	▪ Providing a **narrow set of services** (e.g., conference calls)	▪ Providing a **broad range of services** (e.g., embedding)

To achieve a "deep relationships" IDSS operating model, a consistent "core service level" could be established

	From	To
What	▪ Similar products are disseminated by different entities within NWS depending on the event, and NWS is not capturing best practices to share across the organization	▪ Core partners know what standard products are offered by different NWS offices; additional products are provided to core partners and then those improved products are spread throughout the organization
When	▪ Offices make decisions about whether to provide recurring or episodic IDSS services without a framework of prioritization criteria	▪ Core and non-core partners have more clarity on when NWS will provide recurring or episodic IDSS; NWS is able to predict and track IDSS events better
Who	▪ There is variation in who is provided IDSS services and how the definition of core partner is applied	▪ Offices define core partners[1] with similar criteria ensuring greater consistency of IDSS products and services
How	▪ There is a great deal of variability in how offices are structured to provide IDSS and what staff are responsible for IDSS	▪ Staff understand what will be expected during IDSS and are properly trained for it, improving the office's "situational awareness"

1 NWS will still serve non-core partners through such activities as IT-based outreach (e.g., webinars), core partner amplification, and surge capacity

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Methodology: During Phases 2 and 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO were been engaged in idea generation and refinement

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Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

In Phase 2, the workstream core teams identified a number of actionable ideas to address Phase 1 findings and OHI results

Actionable ideas

Ideas identified for first wave of refinement in Phase 3

Work-force

- Create a progression model for meteorologists
- Create an onboarding course for new hires
- Create an orientation course for new MICs/HICs
- Enable greater supervisory authority for other roles within field offices
- Transition HMTs into 1340 series
- Refocus COOP & transition OPL FTEs into 1340s
- Nationalize SMART groups
- Address span of control for RDs
- Centralize some admin tasks at region
- Standardize job announcements & interview questions
- Hire MIC/HICs under general mngt. series
- Amend 1340 series requirements

Org. Structure

- Clarify roles of the NSPs with respect to the integrated field
- Address the question of how to better align the work of the Tsunami Centers
- Convene a field-manager level group to share and collaborate ideas
- Assign field offices partner offices to provide support during events
- Establish FTE rotation across NWS
- Create region-wide strategy meetings led by the field
- Increase alignment and connectivity between RFCs

Op Model

- Syndicate the IDSS operating model philosophy
- Provide IDSS and communications training
- Develop a policy to create IDSS “core service level”
- Create categorization criteria for IDSS
- Create a nationally-run IDSS office review system
- Create process maps for standardized activities
- Create a comprehensive set of performance metrics

During Phase 3, the core teams refined and further developed a first wave of actionable ideas based on leadership feedback

	Actionable ideas	Benefits
Workforce	▪ Create a progression model for meteorologists ▪ Create an onboarding course for new hires ▪ Create an orientation course for new MICs/HICs ▪ Enable greater supervisory authority for other roles within field offices	▪ Enhances OHI practices of role clarity, open & trusting, talent development, and shared vision ▪ Addresses skills gap identified by MICs in Phase 1 ▪ Reduces span of control in field offices ▪ Strengthens leadership pipeline
Org. Structure	▪ Clarify roles of the National Service Programs (NSPs) with respect to the integrated field ▪ Address the question of how to better align the work of the Tsunami Centers ▪ Convene a field-manager level group to share and collaborate ideas	▪ Enhances OHI practices of role clarity, shared vision and capturing external ideas ▪ Improves consistency of service ▪ Improves communication between field offices and national HQ
Operating Model	▪ Syndicate the IDSS operating model philosophy ▪ Provide IDSS and communications training ▪ Develop a policy to create IDSS “core service level” – Develop core partner categorization criteria – Develop additional guidance for providing IDSS – Develop “office review”	▪ Enhances OHI practices of role clarity, open and trusting and capturing external ideas ▪ Improves consistency in application of IDSS between regions ▪ Provides clarity on the scope and intent of IDSS for core partners and other external stakeholders

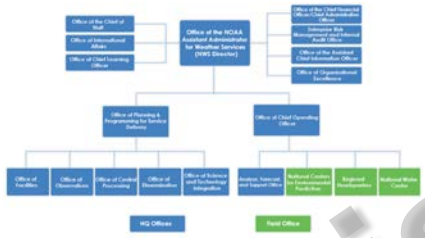
An example workforce idea includes the new 3-part onboarding process: 1) local office training, 2) an in-residence NWS 101 & 3) role specific training

Description of Investment

1 **Local office training could include online and on the job training**

2 **An in-residence NWS 101 training could include:**

Gov 101 – an overview of DOC, NOAA and NWS role within the larger organization



NWS org. structure – an overview of the NWS' budget, governance, requirements and policy processes

NWS mission & culture – an introduction to NWS' mission, history, vision (including IDSS) and culture

Team building – an introduction to team work, collaboration and communication at the NWS

- **All hires new to the NWS would participate**[1]. A diverse class of varying seniority and job functions from different offices will help lead to sharing of ideas and a more open and trusting environment
- **Training could be offered 4 times per year for one-week or more.** On average ~133 new NWS employees are hired per year, which would allow for class sizes of ~33 people per quarter
- **Lecturers could be drawn from across the organization.** Experienced / seasoned staff could be drawn from across the organization to speak to their specialty or lead breakout groups, potentially fulfilling one of their own IDP goals

3 **Role specific training could include in-residence, online, and/or on the job training; in addition strength assessments could be administered, which would inform individual dev. plans (IDP)**

1. Materials developed for NWS 101 could be made available to all employees through web modules and/or incorporated into other trainings

An example organizational structure idea includes increasing role clarity between NSPs and integrated field by drawing dividing lines along key, shared functions

Noteworthy change from current state

Guiding principles:

- **The National Service Programs (NSPs)** focus on strategy, planning and policy – providing support to and serving the field, acting as a check and balance against desired requirements & budget constraints, & raising issues to the Mission Deliver Council when appropriate
- **The integrated field offices** are operationally focused on mission delivery – providing products and services, such as analyses, forecasts (IDSS), forecast warnings, observations and infrastructure

Functions	National Service Programs (NSPs)[1]	Integrated Field
Strategy	▪ Coordinates strategy with the field	▪ Proposes strategic objectives
Requirements	▪ Aggregates needs & proposed reqs. from internal & external partners & stakeholders, to conduct evidenced-based trade-off analysis, serving as an impartial broker	▪ Proposes needs and requirements based on input from core partners
Planning	▪ Leads NSP long-term planning (e.g., 3-years), with a focus on their entire service program	▪ Focuses primarily on execution year, and collaborates with NSPs to develop 3-year plans
Budget	▪ Advises AFSO director on mission critical needs of programs with input from the entire field	▪ Advises respective directors (e.g., RDs, NCEP Director) on budget needs
Policy	▪ Proposes and develops national policy based on requirements	▪ Implements and enforces policy which is based on requirements
Accountability	▪ Held accountable by AFSO director, who reports to the COO	▪ Held accountable by respective directors, who collaborate with the AFSO & report to the COO
Knowledge sharing	▪ Provides forum for feedback loop regarding policy & planning for the entire field	▪ Provides technical and operational expertise – including best practices
Organizational perspective	▪ Provides high-level view of entire field and across the NSPs	▪ Provides technical and operational expertise – including core partner knowledge

1. The OWC recommends that next steps include examining imbalance between different NSPs and appropriate GS level for NSP leads

An example IDSS idea includes establishing a "core service level" process paired with an office review mechanism

PRELIMINARY FOR DISCUSSION

Proposed IDSS "core service level" process for an individual NWS office

1 List and categorize core partners	2 Develop plan	3 Act on the plan (pre-event)	4 Act on the plan (during an event)	5 Review and refine the plan	Return to step 1
▪ **Create a list** of core partners ▪ **Categorize using IDSS criteria** ▪ **Establish relationships**	▪ Conduct **partner needs assessment** and **develop IDSS plan** ▪ **Integrate** into an office-wide plan	▪ Provide **recurring** IDSS – e.g. table top exercises, scenario planning, and co-training	▪ Provide **episodic** IDSS – e.g. deployment or remote, direct or group support	▪ Conduct **after-action self-assessment** ▪ **Refine** the list of partners and revise plans	

Proposed IDSS office review to drive consistency and effectiveness

Office review process will assess and guide offices on each step of the IDSS "core service level" process

- Is the office's **identification and categorization of core partners** consistent and appropriate?
- Are the office's **engagement plans** comprehensive and properly integrated together?
- Does the office provide a **sufficient level of recurring IDSS** to develop "deep relationships"?
- Does the office provide **consistent and effective episodic IDSS** that meets its partners' needs?
- Does the office **conduct and incorporate lessons learned from self-assessments** after events?

Executive Summary of Phases 2 and 3

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluating impact-based decision support services (IDSS), understanding the NWS current state and gaps, developing options and alternatives, and testing and evaluating options to move forward

Methodology: During Phases 2 and 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO were been engaged in idea generation and refinement

Foundational ideas: Based on the OHI findings, the "market shaper" recipe and three practices – role clarity, open and trusting, and capturing external ideas -- were prioritized along with the IDSS "deep relationships" philosophy; together, they provide the foundation for additional ideas refined

Actionable ideas: Several ideas were refined during Phases 2 and 3:

- **Workforce**: progression model for meteorologists, onboarding course for new hires, orientation course for new MIC/HICs, and greater supervisory authority for other roles in the field
- **Organizational structure**: roles of the National Service Programs with respect to the integrated field, better alignment of the Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner categorization criteria and office review

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

A range of technological, workforce and cultural enablers are needed to successfully shift to a new, collaborative model

Enablers of change in 0 hour to 1 week forecast-related functions and assumptions around change

✓ **Success of National Model Blend[1]**	▪ National Model Blend could provide accurate model data to support post-processing of local forecasts for all offices in NWS, requiring less intervention "in the grids"[2] ▪ FY17-18 timeline for testing of short-range (Day 0-3) forecasts; FY19 move towards probabilistic models ▪ Data and models could continue to support the National Model Blend through its iterations given data, processing and bandwidth requirements; forecast offices could receive data through available processing ability, bandwidth, and AWIPS II
✓ **Increased communication & collaboration from NCEP to forecast office) [3]**	▪ NWS could increase and support a structural feedback loop on accuracy of National Model Blend forecasts ▪ Forecast offices could provide feedback on model in a timely manner to NCEP ▪ Additionally, NWS could create structural lines of communication and processes to support forecast offices-to-NCEP collaboration across NWS
✓ **Shift towards managing information flow[3] Day 1+**	▪ For Hour 18 and beyond, forecasters could embrace change to manage information flow rather than tweak data during fair weather ▪ Forecaster ability to provide situational awareness during severe weather or in Day 0 could be maintained even with shift "out of the grids"[2]
✓ **NWS-wide cultural shift in support of change**	▪ Providing IDSS to core partners is critical to creating a "Weather-ready nation" ▪ NWS enterprise prepared to change and support cultural shift ▪ Training and support could be provided to offices to support collaboration ▪ Offices and staff prepared to be more flexible and collaborative in day-to-day

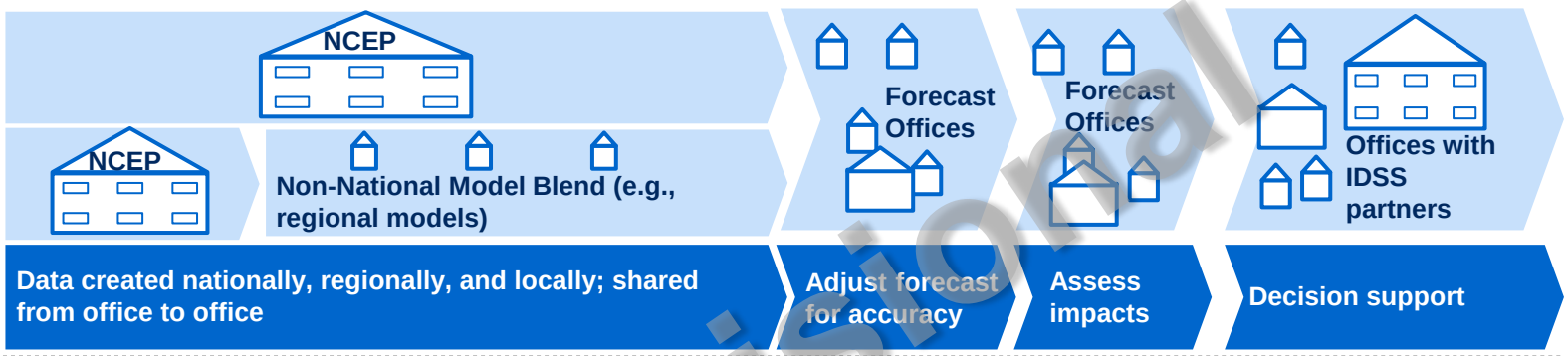
1 Also, with reference to CWSUs and aviation weather, a national aviation model is critical; additional, for hydro program, a national water model is discussed further in next pages ; 2 "In the grids" or "out of the grids" references the NWS used term that refers to forecast activities adjusting gridded forecasts
3 Forecast offices includes all office performing forecast duties, including WFOs, CWSUs, ROCs, and certain NCEP

SOURCE: NWS interviews

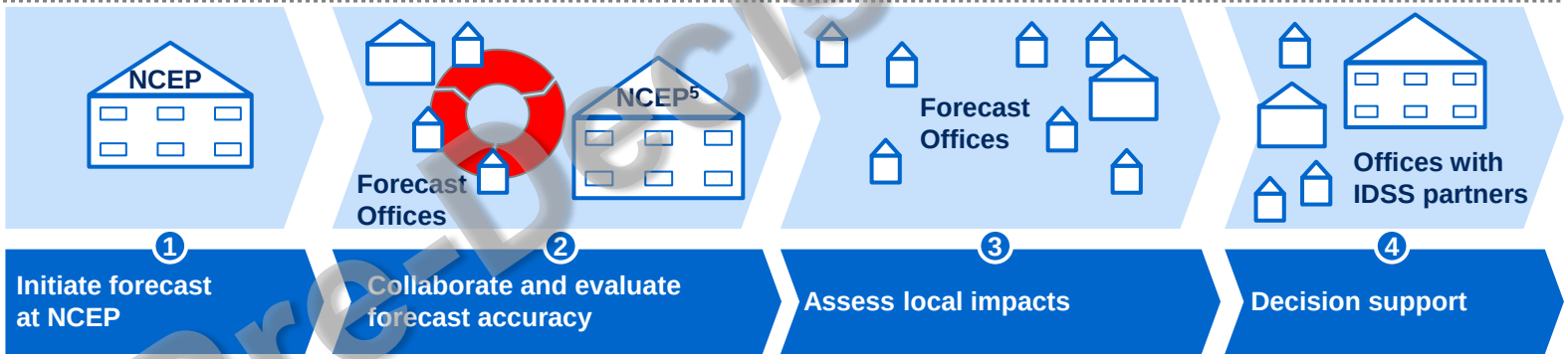
A fully integrated field structure and collaborative process flow could allow local focus on core partner needs and NWS-wide excellence in meteorological science

Description of change in process flow for Day 2+ forecasts between NCEP and forecast offices

Current process flow



Potential future process flow *based on National Model Blend as single source for gridded forecasts*



- MDL calibrates National Model Blend
- WPC[4] receives NMB[5]
- WPC refines and puts out forecast with other NCEP (NHC, SPC, SWPC)

- **Forecast offices contact WPC to give feedback**
- WPC incorporates feedback from entire field to adjust forecast
- WPC provides feedback on Blend to NCO/MDL when necessary

- **Forecaster shifts spend less time "in the grids"**
- Forecasters focus around core partner impact thresholds, meteorology, service programs, and WWAs

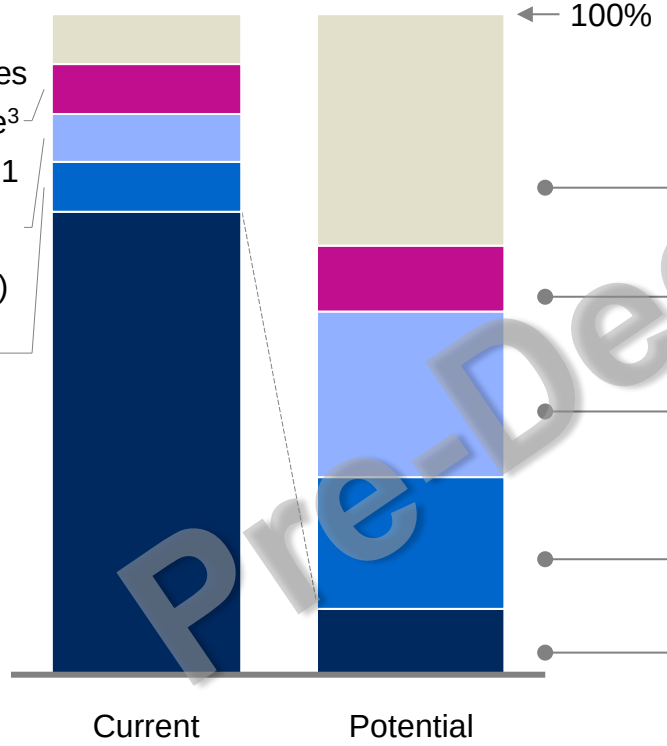
- **Decision support delivered interactively for maximum impact** to core partners and to wider audience via technology

1 Forecast offices includes all office performing forecast duties, including WFOs, CWSUs, ROCs, and certain NCEP; 2 MDL refers to Meteorological Development Laboratory, which developed and manages National Model Blend; 3 NCO refers to NCEP Central Operations ; 4 WPC refers to Weather Prediction Center; 4 National Model Blend 5 Includes all NCEP in collaborative process

SOURCE: NWS interviews

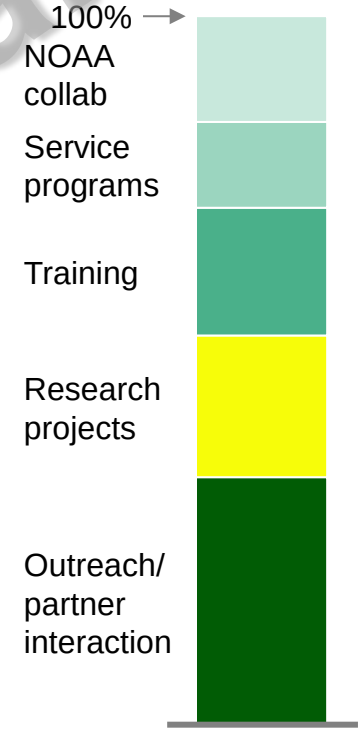
Forecast offices could shift time away from gridded forecast adjustments and focus time on impacts and other responsibilities

Illustrative breakdown in typical WFO workload from current to proposed state



- **Other responsibilities** include[2]:
  - NOAA collaboration
  - Service programs
  - Training
  - Independent research projects
  - Outreach/partner interaction
- **Infrastructure[3]** critical to maintain
- Additional time for **forecasting impacts and dissemination** for better preparedness
- Situational awareness **expanding** during shifts
- "In the grid" forecast adjustments **as necessary**

Example breakdown of other responsibilities:



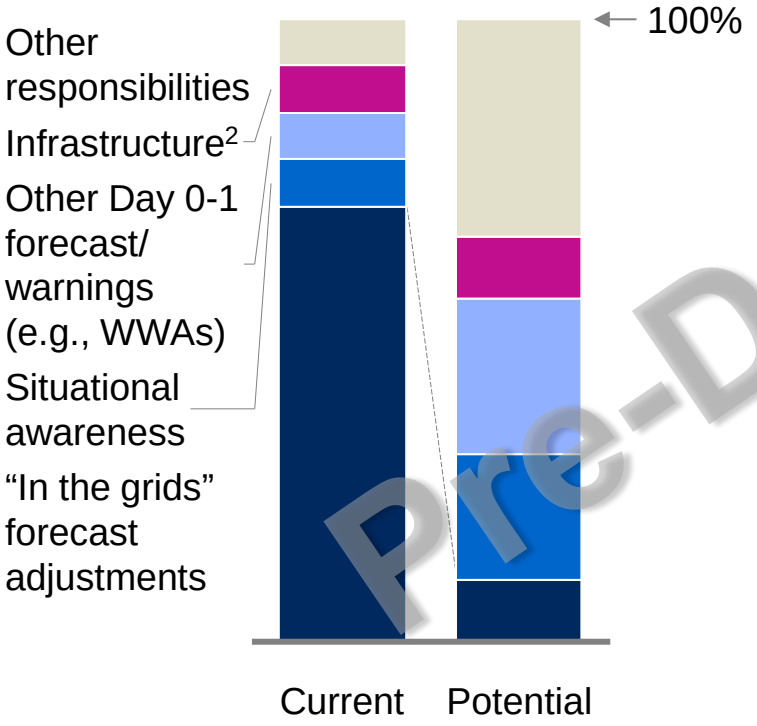
1 Illustrative of what WFOs are tasked with currently; does not account for operational variation at WFOs that have adapted their shift structure to other operational models 2 Not an exhaustive list of other responsibilities 3 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

NWS could strategically resource newly available time in WFOs to address NWS-wide workload variability over time and across locations

Newly available time at WFOs could be thought of as a collective resource across all field offices

WFO[1] potential workload
% workload



NWS could address its systematic workload variability by strategically resourcing this time:

Strategic resourcing allows NWS WFOs to:

1 Focus

- **What it looks like:** NWS allocates resources as needed to address mission critical local responsibilities and solve workload imbalances
- **Solves challenge of workload variability location to location**

2 Flex

- **What it looks like:** Deployable forecasting workforce, like IMETs, shared between offices during severe weather events
- **Solves challenge of workload variability during weather events**

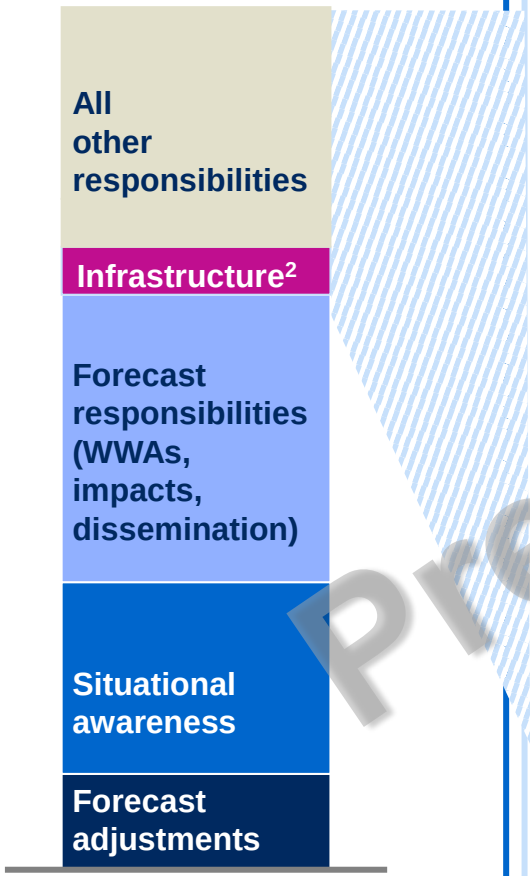
1 Illustrative of what WFOs are tasked with currently; does not account for operational variation at WFOs that have adapted their shift structure to other operational models; 2 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

1 NWS leadership could decide the "focus" of offices across field in order to match workforce to local resource needs (1/2)

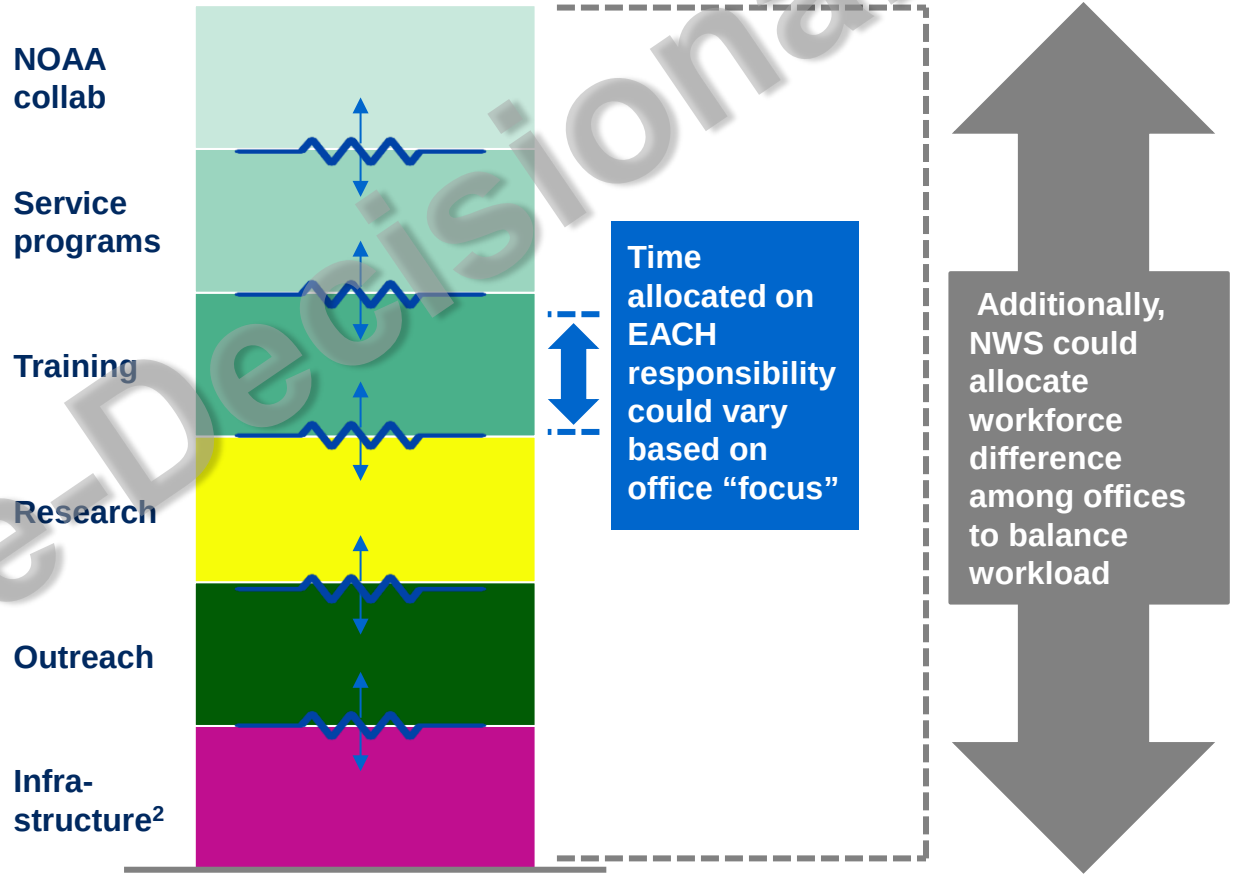
Forecast offices continue forecast and IDSS responsibilities . . . .

WFO[1] workload breakdown
% workload



. . . AND focus on mission critical responsibilities using additional freed capacity to focus on the unique local needs of their area

Breakdown of infrastructure and all other responsibilities, % remaining workload



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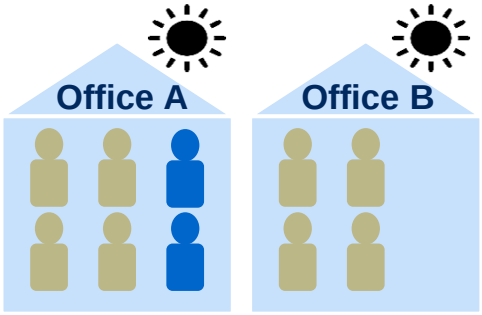
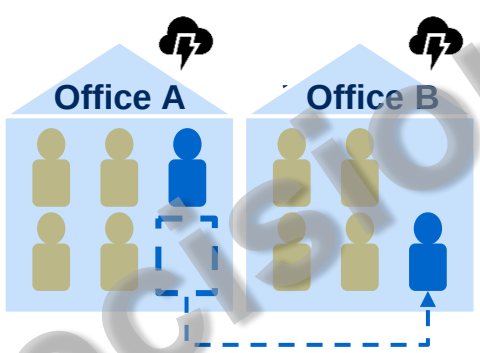
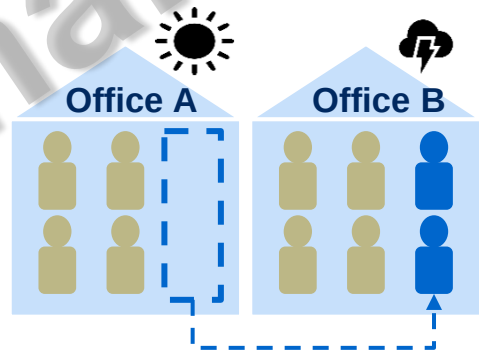
SOURCE: NWS interviews

2 NWS could expand this idea and utilize a flexible (e.g., deployable or virtual) staffing pool to satisfy high demand for staff during severe weather events

Deployment of staffing pool during severe weather events between two offices (e.g., WFO, ROC, region)

= deployable/virtual

	No severe weather	Severe weather event	
	At Office A or Office B	At Office A and Office B	Only at Office B
Example structure			
Described deploy-ment	▪ Deployable forecasters sit at Office A (could be ROC, WFO, etc.) and have other responsibilities when there is no severe weather event	▪ When there is severe weather at both offices, forecasters are "shared" ▪ Deployment based on need per office	▪ When Office B has a severe weather event, forecasters are deployed to fulfill workload demand
Potential impacts to consider	▪ System still implies that Office A and Office B would need to be relatively proximate to each other and have similar weather	▪ Deployable forecasters do not "belong" to either Office A or Office B ▪ To reduce conflict deployment determined by RD, not WFO-level leadership	▪ All deployable forecasters could be deployed *if necessary* ▪ NWS could also investigate efficacy of other types of remote support for offices

SOURCE: NWS interviews

Regions and ROCs could play a critical role to ensure consistency and collaboration across offices, and surge capacity within region

Institutional attention to maintaining consistency and collaboration critical

- **As offices "Focus" time on local needs, CONSISTENCY could become more of a challenge** for NWS leadership to address
- **As offices "Flex" forecasters between each other, COLLABORATION critical** to ensure all forecasters can provide excellent services whether or not they are deployed
- **Regions and ROCs could provide the structure from which to ensure both consistency and collaboration**, both within regions and across regions
- **To do so, NWS could ensure the right regional/ROC alignment to a new field blueprint**

NWS could consider changes to ROCs and regions

No change	▪ 6 regions total ▪ 1 Regional Operating Center (ROC) to each region ▪ Regions maintained based on current structure
Regions and ROCs changed	▪ Additional regions and ROCs to match needs of organizational field structure ▪ Could be aligned to new field structure (e.g., based on span of control)
Current regions remain; ROCs change	▪ Administrative regions remain the same ▪ ROCs change and aligned to "blueprint"; ▪ Could potentially be more ROCs than regions

SOURCE: NWS interviews

Executive Summary of Phases 2 and 3

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Methodology: During Phases 2 and 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO were been engaged in idea generation and refinement

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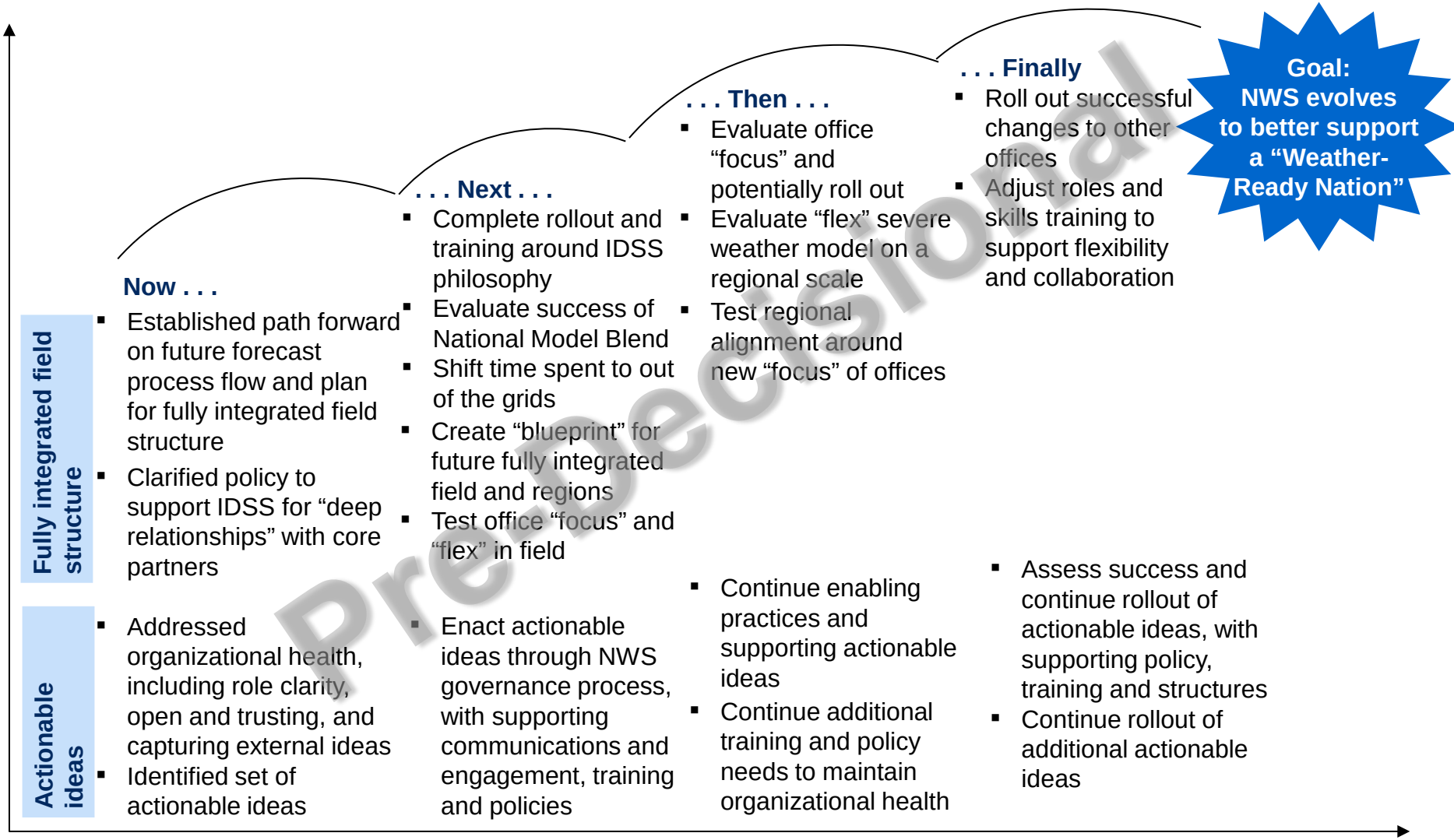
Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

There are several next steps for the OWA project to help evolve NWS and better support a "Weather Ready Nation"



National Weather Service Operations and Workforce Analysis (OWA)

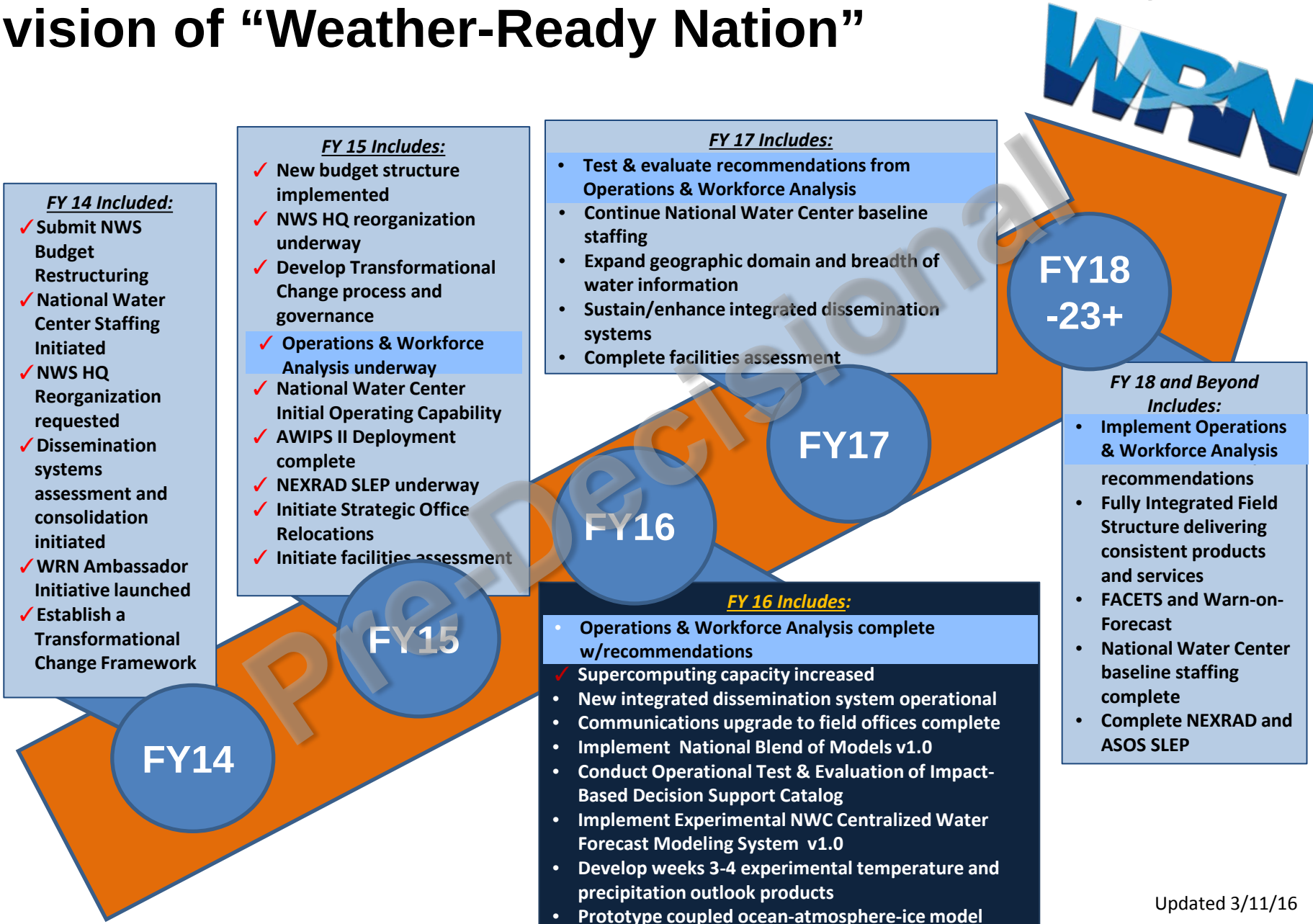
Briefing document
April 2016

Preliminary and Pre-decisional

Today's discussion

- **The Operations and Workforce Analysis (OWA) is a part of evolving NWS**
- The OWA diagnostic in 2015 showed a need for changes across the operating model, organizational structure, and workforce to deliver on the Weather-Ready Nation vision
- NWS has made draft, planning decisions about its core *functions* in support of Weather-Ready Nation; work is now underway to define the changes to *form* needed to deliver those *functions*. These draft decisions will form the basis of testing and evaluation going forward
- NWS is engaging internal and external stakeholders in support of the plan
- NWS will deliver a full draft of the OWA plan to NOAA in early summer, building toward testing and evaluation starting in FY17

OWA helps evolve NWS and reach the strategic vision of "Weather-Ready Nation"



FY 14 Included:

- ✓ Submit NWS Budget Restructuring
- ✓ National Water Center Staffing Initiated
- ✓ NWS HQ Reorganization requested
- ✓ Dissemination systems assessment and consolidation initiated
- ✓ WRN Ambassador Initiative launched
- ✓ Establish a Transformational Change Framework

FY 15 Includes:

- ✓ New budget structure implemented
- ✓ NWS HQ reorganization underway
- ✓ Develop Transformational Change process and governance
- ✓ Operations & Workforce Analysis underway
- ✓ National Water Center Initial Operating Capability
- ✓ AWIPS II Deployment complete
- ✓ NEXRAD SLEP underway
- ✓ Initiate Strategic Office Relocations
- ✓ Initiate facilities assessment

FY 16 Includes:

- Operations & Workforce Analysis complete w/recommendations
- ✓ Supercomputing capacity increased
- New integrated dissemination system operational
- Communications upgrade to field offices complete
- Implement National Blend of Models v1.0
- Conduct Operational Test & Evaluation of Impact-Based Decision Support Catalog
- Implement Experimental NWC Centralized Water Forecast Modeling System v1.0
- Develop weeks 3-4 experimental temperature and precipitation outlook products
- Prototype coupled ocean-atmosphere-ice model

FY 17 Includes:

- Test & evaluate recommendations from Operations & Workforce Analysis
- Continue National Water Center baseline staffing
- Expand geographic domain and breadth of water information
- Sustain/enhance integrated dissemination systems
- Complete facilities assessment

FY 18 and Beyond Includes:

- Implement Operations & Workforce Analysis recommendations
- Fully Integrated Field Structure delivering consistent products and services
- FACETS and Warn-on-Forecast
- National Water Center baseline staffing complete
- Complete NEXRAD and ASOS SLEP

Updated 3/11/16

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- NWS has made draft, planning decisions about its core *functions* in support of Weather-Ready Nation; work is now underway to define the changes to *form* needed to deliver those *functions*. These draft decisions will form the basis of testing and evaluation going forward
- NWS is engaging internal and external stakeholders in support of the plan
- NWS will deliver a full draft of the OWA plan to NOAA in early summer, building toward testing and evaluation starting in FY17

The diagnostic identified several areas of opportunity across workforce, organizational structure, and operating model

Key insights:

Workforce

- Controlling for differences, there is a **mismatch** in some areas between today's **workforce and today's workload**
- In addition, there is a difference between the current and desired skill level for skills identified as important to IDSS, including written and oral communications

Org. structure

- Though NWS ranked very highly in terms of motivation and external orientation, potential opportunities for improvement exist both in terms of health – where NWS scored **lower on overall health** than other public and private organizations – and structure – where HQ has reorganized, but the field remained constant**, lacking role clarity** across national, regional & local offices
- **Spans of control** vary across the organization, being larger than peer organizations in several important management levels, making coaching and training difficult

Op. model

- Though generally high customer satisfaction was observed, IDSS is **inconsistently delivered**, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
- The forecast process today involves **some duplication of effort** and results in **inconsistent messages** and **may not make best use of emerging technological developments**

Today's discussion

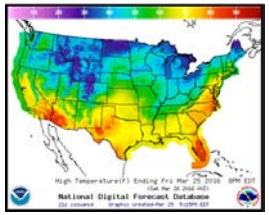
- The Operations and Workforce Analysis (OWA) is a part of evolving NWS
- The OWA diagnostic in 2015 showed a need for changes across the operating model, organizational structure, and workforce to deliver on the Weather-Ready Nation vision
- **NWS has made draft, planning decisions about its core *functions* in support of Weather-Ready Nation; work is now underway to define the changes to *form* needed to deliver those *functions*. These draft decisions will form the basis of testing and evaluation going forward**
  - **Deepening our service to partners: "deep relationships" impact-based decision support (IDSS)**
  - Improving our forecasts and spending our time in the highest value-add ways: a collaborative forecast process
  - Developing a vision for the Fully Integrated Field Structure: the *form* needed to support the functional change, including strategic staffing, future roles, and organizational structure
- NWS is engaging internal and external stakeholders in support of the plan
- NWS will deliver a full draft of the OWA plan to NOAA in early summer, building toward testing and evaluation starting in FY17

NWS is improving its service to partners, focusing on decision support both before and during events, with the goal of building a Weather-Ready Nation

Today:
Inconsistent service that at times doesn't go "beyond the forecast" to explain impacts to partners

Core service level

- Similar products are disseminated by different entities in NWS
- NWS is not capturing best practices to share across the organization
- Offices make decisions about whether to provide recurring or episodic IDSS services without a framework of prioritization criteria

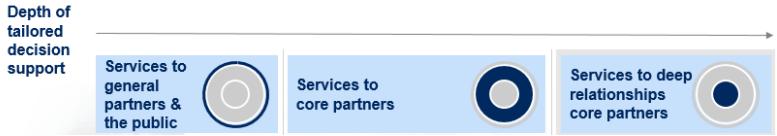


Partners served

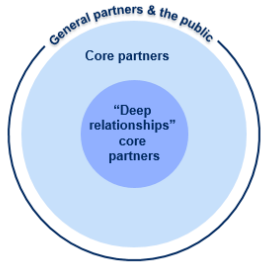
- Variation in who is provided IDSS services and how the definition of core partner is applied

Future with "deep relationships":
NWS provides consistent levels of decision support both before and during events, with the goal of building a Weather-Ready Nation

- Partners know what standard products are offered by different NWS offices and when they can be expected
- Local NWS offices know what partners need and are able to tailor messages to support decision-making



- Offices define core partners with similar criteria allowing decision support to be more consistently offered throughout the organization



“Deep relationships” impact-based decision support (IDSS) increases service overall and ensures tailored support for partners most critical to achieving Weather-Ready Nation

Depth of tailored decision support →

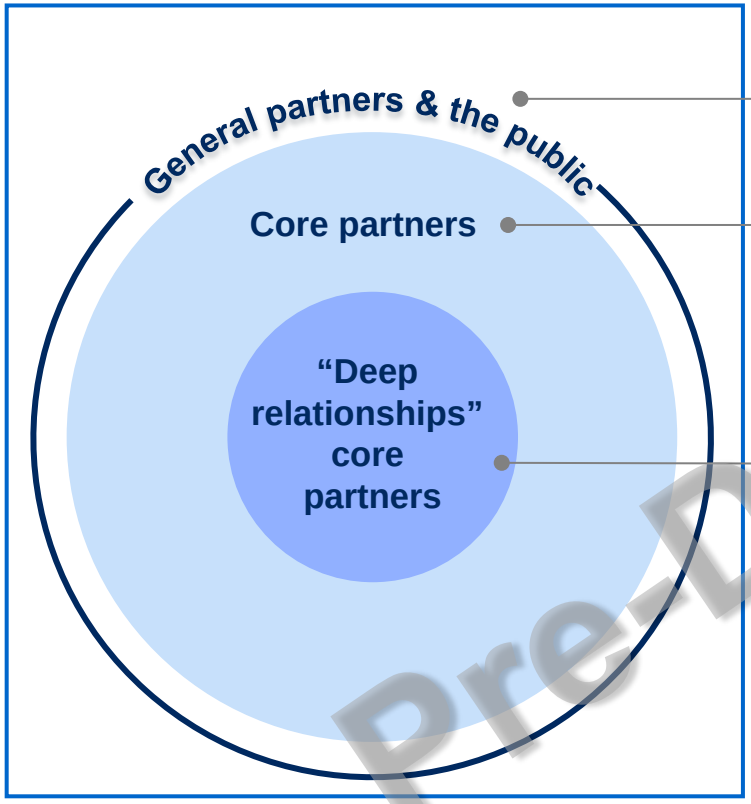
Partner service level

Services to general partners & the public	Services to core partners	Services to deep relationships core partners
✓ Routine production (e.g. NDFD, model output) ✓ Website ✓ Social media ✓ NWS dissemination services ✓ Outreach, preparedness education	General partner services and event-driven services, such as: ✓ NWS initiated calls ✓ Webinars, briefing, and email alerts ✓ NWSChat and iNWS[1] ✓ Spot forecasts, plume modeling ✓ Annual talks/trainings/exercises ✓ Specialized briefings, emails, and graphics for *episodic support* ✓ Occasional on-site deployments	General partner and core partner services plus frequent other interactions, such as: ✓ Specialized briefings, emails, and graphics for *recurring support* ✓ Multiple yearly exercises, e.g. tabletop ✓ After-action event reviews ✓ Local Emergency Planning Committee (LEPC) exercises/briefings ✓ On-site deployments

1 Media should only receive services for general partners and the public, plus first three listed core partner services

SOURCE: IDSS workstream team

“Deep relationship” core partners are those whose decision making is most essential to public safety and achieving a Weather-Ready Nation



Partners that fall outside of the core partner definition, e.g. general public, private businesses

Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the NWS[1]

“Deep relationship” core partners are a subset of core partners that are members of the emergency management community or are government partners with NWS nexus. Offices determine their “deep relationship” core partners according to criteria:

- Pertain to **legal or national security** interests
- Exercise a **large degree of authority or influence** on public safety relative to other core partners
- Serve a **population or entity particularly vulnerable to weather**
- Act as a **force multiplier to help amplify NWS message**

Level of impact based **decision-support** provided **matches the level of decision-making of partners**

1 NWS Policy Directive 1-1003, Appendix A
SOURCE: NWS Policy Directive 1-1003, March 2016 OWC, IDSS team

Recent severe weather events in the south highlight how “deep relationships” increases service and increases consistency

Event

- A tornado outbreak across the northern Gulf States and SE U.S.
- A moderate risk is eventually issued for the northern Gulf States, with a slight risk surrounding it across much of the Deep South

Partner relationship	Services received: 1 – 3 days before event	Services received: Day of event	Services received: Days following event
General partners	▪ Website forecast discussion ▪ Social media ▪ Media interviews	▪ Watches and warnings ▪ Media interviews and calls	▪ Event summary ▪ Website forecast discussion ▪ Social media
Core partners	**General partners service plus:** ▪ Email briefings 2x per day ▪ Special webinar ▪ Private calls ▪ Federal Executive Board (FEB) briefing ▪ Integrated Warning Team Activation	**General partners service plus:** ▪ NWS chat ▪ iNWS ▪ NAWAS 700 or 800 MHz warning ▪ Phone calls on current threats	**General partners service plus:** ▪ Phone calls
Deep relation-ships partners	**Core partner services plus:** ▪ On-site briefings ▪ On-site deployment to state level EOC if needed ▪ Political briefings to back decisions	**Core partner services plus:** ▪ Frequent phone calls on threats ▪ On-site deployment ▪ Current threat and search and rescue support	**Core partner services plus:** ▪ Surveys ▪ Informal after event review ▪ On-site deployment demobilization

SOURCE: IDSS workstream team

“Deep relationships” also helps partners understand what services to expect during normal weather events

Partner relationship	Services received		
	Daily/weekly	**Weekly/monthly**	**Quarterly/annually**
General partners	▪ Website forecast discussion ▪ Social media updates ▪ Public phone inquiries	▪ Media interviews	▪ Outreach, preparedness education
Core partners	**General partners service plus:** ▪ Occasional trainings/talks/meetings ▪ Spot forecasts	**General partners service plus:** ▪ One-pager email briefings for planned events in support of public safety ▪ Run daily formatters to populate special IDSS forecast webpages	**General partners service plus:** ▪ Occasional talks/trainings/exercises
Deep relation-ships partners	**Core partner services plus:** ▪ Weekly webinar on weather expected over the next week, any longer term pattern shifts expected, and calls for planned events	**Core partner services plus:** ▪ Attend and present at meetings ▪ Conduct trainings	**Core partner services plus:** ▪ Plan and participate in exercises ▪ tabletop exercises ▪ Local Emergency Planning Committee (LEPC) exercises/briefings

SOURCE: IDSS workstream team

Today's discussion

- The Operations and Workforce Analysis (OWA) is a part of evolving NWS
- The OWA diagnostic in 2015 showed a need for changes across the operating model, organizational structure, and workforce to deliver on the Weather-Ready Nation vision
- **NWS has made draft, planning decisions about its core *functions* in support of Weather-Ready Nation; work is now underway to define the changes to *form* needed to deliver those *functions*. These draft decisions will form the basis of testing and evaluation going forward**
  - Deepening our service to partners: "deep relationships" impact-based decision support (IDSS)
  - **Improving our forecasts and spending our time in the highest value-add ways: a collaborative forecast process**
  - Developing a vision for the Fully Integrated Field Structure: the *form* needed to support the functional change, including strategic staffing, future roles, and organizational structure
- NWS is engaging internal and external stakeholders in support of the plan
- NWS will deliver a full draft of the OWA plan to NOAA in early summer, building toward testing and evaluation starting in FY17

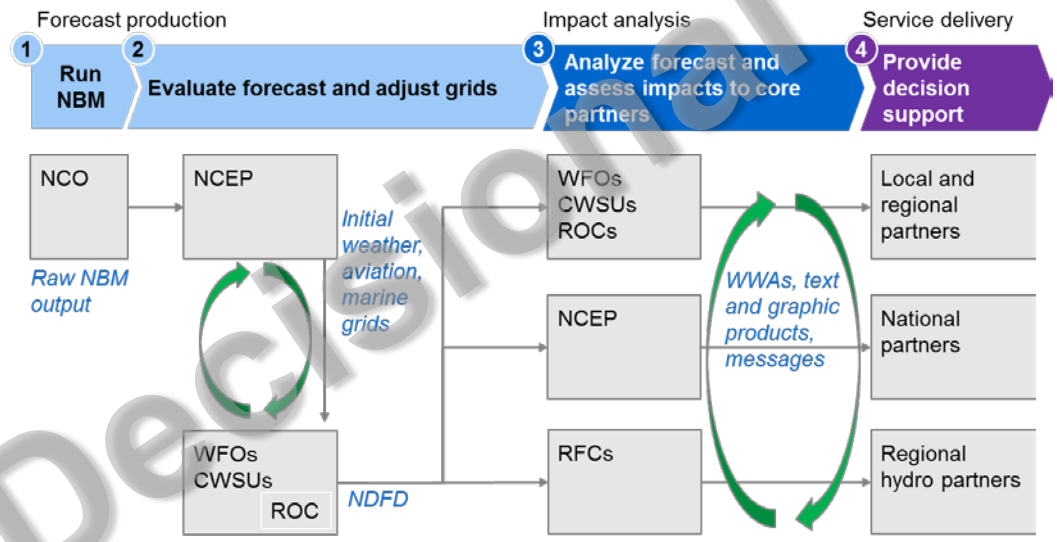
A collaborative forecast process clarifies roles, reduces duplication, and makes better use of new technology…

PRELIMINARY

From…

- Many forecasters **manually determine which models to use**
- WFOs, RFCs, and NCEP **overlap in forecast production**, both short-term and extended
- Time spent de-conflicting forecasts **limits time to collaborate messages**
- Local forecast production requirements **constrain capacity for IDSS**
- Process sometimes results in **inconsistent and conflicting forecasts**
- Everything **coming out** of an office is **produced in that office**

To…



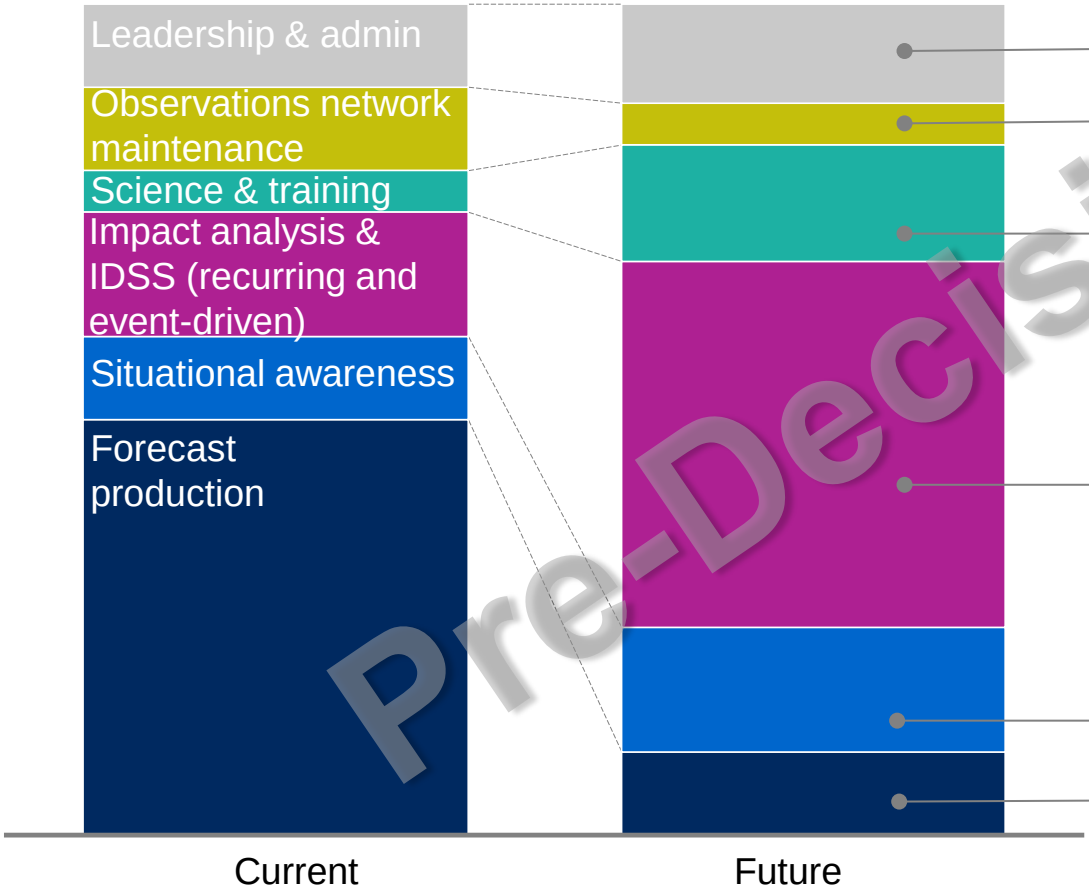
- Process **begins with National Blend of Models**, which automatically determines optimal mix of models
- Hand-offs between NCEP, WFOs, and RFCs ensure **each office adds expertise where most valuable**
- Forecasters spend more time analyzing impacts, and determining and **communicating a unified message** to partners
- Offices **draw on expertise** from across NWS and NOAA

…shifting staff focus to highest value areas, including impact-based decision support services for partners

WFO workload breakdown[1]

Estimated prioritization of time in a WFO

ILLUSTRATIVE



Key changes

- Increased capacity for **coaching and support for innovation**[2]
- Cross-office support for **observations maintenance** in line with needs[3]
- Additional time for[4]:
  - Training
  - NOAA collaboration
  - Independent research projects
- Increased time for **preparation/ exercises** and **understanding partner impacts**
- Additional time for **developing and delivering IDSS messages**
- Reduced public outreach, in line with partner prioritization
- **Increased situational awareness,** and strategic thinking across contexts
- "In the grids" production **only as needed in the short-term forecast**

1 In the absence of a time study, view is based on best data available including standard role mix, position descriptions, and interviews; testing and evaluation in FY17 will quantify time saved 2 Including IT 3 Assumes use of autosondes. Includes dissemination, AWIPS, QA/QC data, and observations network maintenance 4 Not exhaustive

SOURCE: Interviews and job shadowing during ~40 office site visits from May 2015 – January 2016; Staffing data from the NWS Table of Organization as of Jan 2016

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Now that NWS has made initial decisions about its key functions in support of Weather-Ready Nation, questions on form remain

	Questions	Current state of the field
1 WHERE functions are performed	▪ How do we best position our resources in the field to support IDSS deep relationships? ▪ How do we best position our resources to support the collaborative forecast process?	▪ Forecasters and others work in rigid, "one-size-fits-all" offices in terms of size ▪ Some forecasters are deployed (IMETs) or embedded for IDSS
2 WHO performs functions	▪ What **roles** are required in the future? ▪ What **skills** will be needed to fill those roles? ▪ How should **hiring and training** be adjusted to reflect roles and skills needed?	▪ Local offices are rigid, "one-size-fits-all" in terms of role mix ▪ Forecaster hiring focuses only on skills in climatological science, without considering additional skills needed for IDSS ▪ Limited training for IDSS

In considering options for the Fully Integrated Field Structure, NWS is using several criteria

- **Deepen service to partners** in line with vision for Weather-Ready Nation
- Continue as a **science-based, service provider**
- Provide opportunity for **professional growth** of individuals, agency and culture
- Increase **agility** of the organization
- Improve the **overall health** of NWS through practice improvement
- Demonstrate that **consistency doesn't always mean uniformity**
- **Promote innovation** and draw on best practices

OWA is now working to define the "Fully Integrated Field Structure," which will ensure NWS can deliver on its functional changes

The Fully Integrated Field Structure…

- **Enables** field offices to **work collaboratively** to deliver on the vision for Weather-Ready Nation by:
  - Matching resources to changing and emerging demands
  - Increasing flexibility for managers in deciding how to meet local needs
  - Leveraging expertise from across NWS and NOAA, including using information developed by others to deliver IDSS
  - Engaging the whole office in delivering IDSS
- **Defines** what is done at which offices by whom, including but not limited to CWSUs, NCEP, NWC, RFCs, NOC, Regional Headquarters, ROCs, Tsunami Warning Centers, and WFOs
- **Achieves the vision** of one event, one forecast for one nation that is weather-ready

NWS leadership is working to define the Fully Integrated Field Structure within a set of boundary conditions

Core principles

- Assess all proposed changes against becoming a more **science-based service organization** and against the **requirements of core partners**
- Take a **test-and-evaluate approach** that involves our partners and stakeholders along the way

What will stay the same?

- **Commitment to deliver on the mission** through IDSS, based on robust observing networks and accurate, consistent forecasts and warnings
- **Current NWS employees are critical to the mission** and those who have a job today will have a job tomorrow
- **Local presence will be maintained** to ensure the deep relationships IDSS philosophy is achieved through our science-based service organization

What might change to be nimble and agile?

- **Field office role mix and functions** may change
- **Staffing levels** may change within and among offices
- **Shift requirements** such as 2 people per shift and 24/7 operations may change to reflect local needs
- **Regional functions and structure** may change to better support field offices and core partners
- **Forecaster roles** merge and responsibilities may shift towards leveraging grid information to provide enhanced IDSS, with less time spent in grid editing
- **Forecast process** may become more collaborative through changes to grid policies, coordination protocols, and forecasting techniques, including use of the National Blend of Models

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Building Awareness: Internal Engagement

Toolkits delivered by NWS for NWS	In person meetings	Peer to peer calls
▪ 4 toolkits total with 1,476 official participants, most recent with 341 official participants[1]	▪ 25+ MICs and HICs plus OCLO, Facilities, AFS/OCOO, and Alaska held staff meetings	▪ 10 members of CSE made 4 calls each = 40 direct outreach

Additional support from:

- Core teams made up of field leaders, who co-develop ideas
- Operations and Workforce Committee (OWC) decision-making body, chartered by the Executive Council

1 Numbers likely higher as more than 1 person participates in each dial in

SOURCE: Communications and Stakeholder Engagement (CSE) activities, including webinar Q&A, insider feedback, peer-to-peer calls, and MIC meeting responses

Building Awareness: External Engagement

Emergency Managers	Congress and General Public	Private Sector
▪ International Association of Emergency Managers (IAEM) ▪ National Emergency Management Association (NEMA)	▪ Congressional Briefings ▪ American Meteorological Society (AMS) ▪ National Weather Association (NWA)	▪ Scientific Advisory Board

Insights and input:

- Overwhelming support from the EM community for continuation and improvement of NWS IDSS
- Private sector supportive of IDSS philosophy, but wants to continue the private/public partnership conversation

SOURCE: CSE activities

Agenda

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OWA improves services to partners, ensures highest value use of resources, and increases agility of NWS – all in line with the vision of Weather-Ready Nation

ILLUSTRATIVE

How deep relationships and a collaborative forecast process will feel to partners

Future ...

Local forecasters in 15 Weather Forecast Offices (WFOs) each see a possibility of significant snow next week

The Weather Prediction Center (WPC) issues an extended forecast showing the potential for snow – WPC, local forecasters, and the Regional Operations Centers (ROCs) decide how to message the risk, and **forecasters proactively reach out to their partners**

Over the next few days, WPC updates the extended forecast and discusses with WFOs – **local forecasters have additional time to understand partner needs, analyze potential impacts, and communicate risks to partners**

Managers are able to flex their staffing in support of the event

Two days out, WPC and the WFOs review potential watches together, considering impacts to partners, and issue all watches together

Partners receive a consistent message and receive information tailored to aid their decision making

As the storm develops, each WFO adds precision on timing, location, and amount of snow to the forecast in ways that are of highest value to partners

To ensure partners are prepared, each WFO updates local watches, warnings, and advisories, and **continues communication** with partners

SOURCE: NWS interviews Jan – Mar 2016

Appendix of slides to bring if needed – not presented

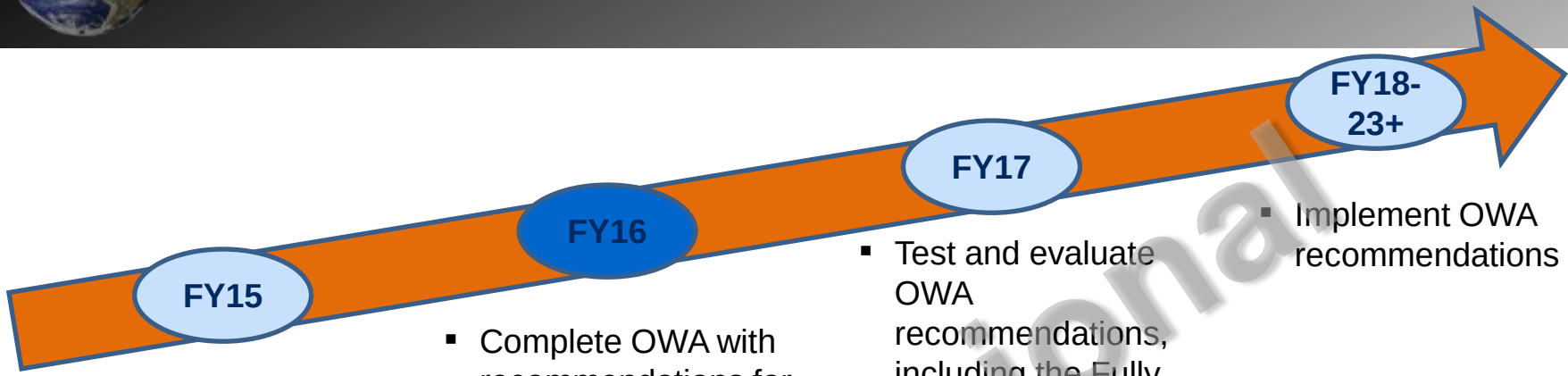
NWS began the Operations and Workforce Analysis (OWA) in 2015 to reach the strategic vision of "Weather-Ready Nation"

Objectives

1. **Diagnostic: Current state baseline and current state gaps**
   - Understand and baseline current state **organizational structure, workforce model, and operating model** through a comprehensive assessment and analysis
   - Focus in particular on better qualifying and quantifying Impact-Based Decision Support Services (IDSS), which is the support provided to partners to translate forecasts into decisions
   - **Identify gaps in the current state** operations, workforce, and organization required **to achieve a Weather-Ready Nation (WRN)** and thus support IDSS
2. **Stakeholder Engagement and Change Management:**
   - Develop the capacity to involve stakeholders throughout the project
3. **Recommendation of Alternatives:**
   - Develop recommendations for evolving NWS from current to future state to close gaps, leverage state-of-the-art science and technology, consider geographic differences, and enable services and workforce concepts in NWS strategic documents
4. **Implementation Planning:**
   - Advance recommendations to action through plans, quick wins, and phased implementation

OWA plan for FY15-18 and beyond

Where we are today



	FY15	FY16	FY17	FY18-23+
Overall	▪ OWA diagnostic on baseline and gaps to support WRN across org structure, workforce, and operating model	▪ Complete OWA with recommendations for collaborative forecast process and Fully Integrated Field Structure (FIFS)	▪ Test and evaluate OWA recommendations, including the Fully Integrated Field Structure	▪ Implement OWA recommendations
Details	▪ Clarify IDSS policy ▪ Conduct OHI survey ▪ Identify actionable ideas	▪ Rollout IDSS policy ▪ Evaluate and enhance forecasting process ▪ Give guidance on Fully Integrated Field Structure (FIFS) design ▪ Drive actionable ideas	▪ Test and evaluate FIFS organizational changes ▪ Refine IDSS approach ▪ Continue NBM[1] ▪ Reassess OHI ▪ Launch new actionable ideas	▪ Complete FIFS ▪ Ensure NBM in all regions ▪ Adjust roles and skills ▪ Assess and support actionable ideas

Engage and communicate with internal and external stakeholders

1 NBM refers to the National Blend of Models

The OWA project began with a diagnostic to develop a baseline of the current state and understand gaps in being able to achieve Weather-Ready Nation

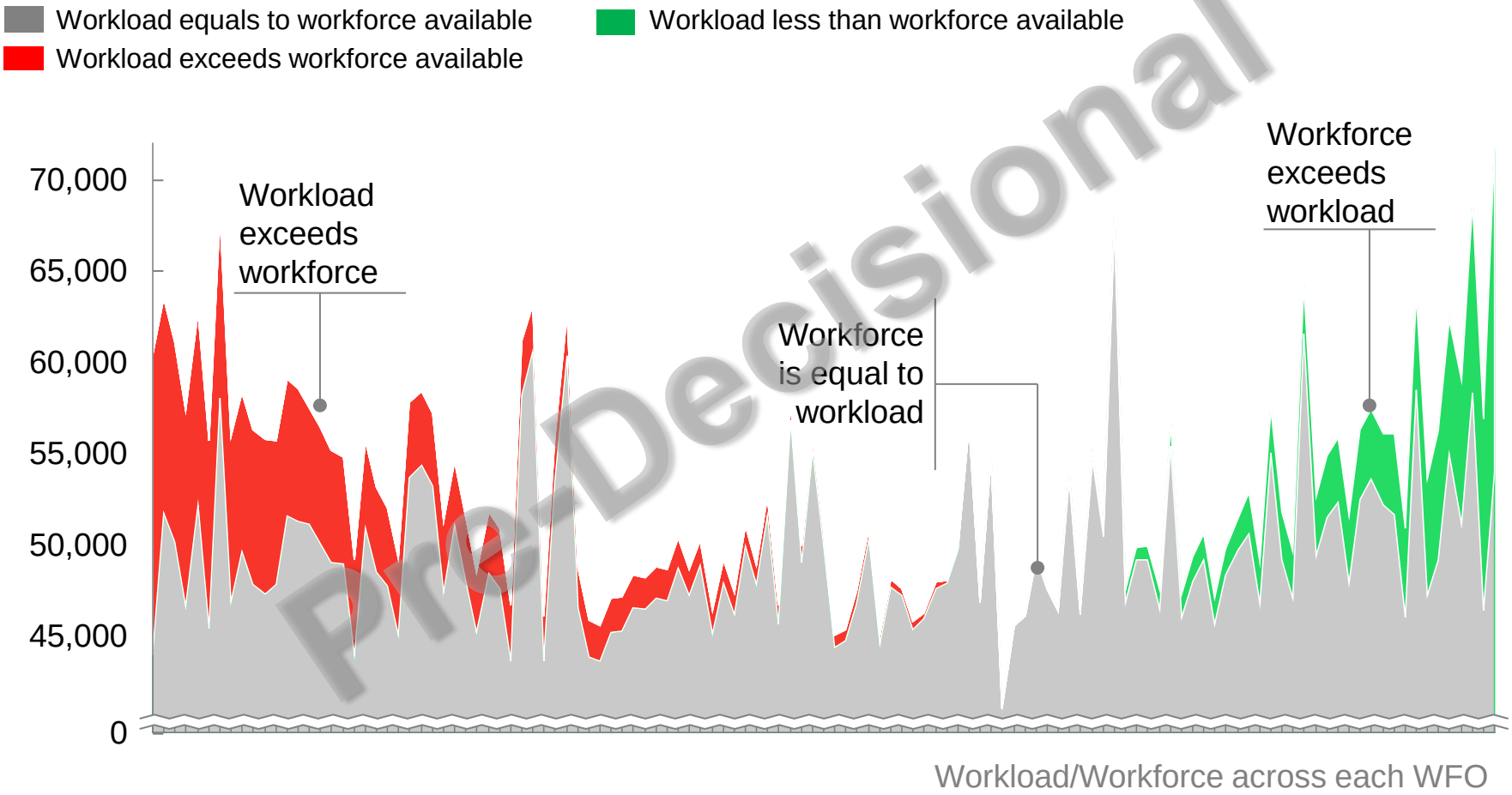
The diagnostic used several approaches to gather insights:

- Organizational Health Index (OHI) survey, with ~50% NWS employee response
- IDSS external stakeholder survey (>700 responses)
- >40 office site visits
- >560 interviews with internal and external stakeholders
- NWS data analysis

Workforce: The diagnostic found that workforce[1] and workload[2] vary across WFOs

WFO Workforce available compared against expected workload based on workload drivers, 2014

Hrs work by WFO



SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

Org. structure: The diagnostic found NWS has an overall health score in the bottom quartile, but has clear strengths in Motivation and External Orientation outcomes

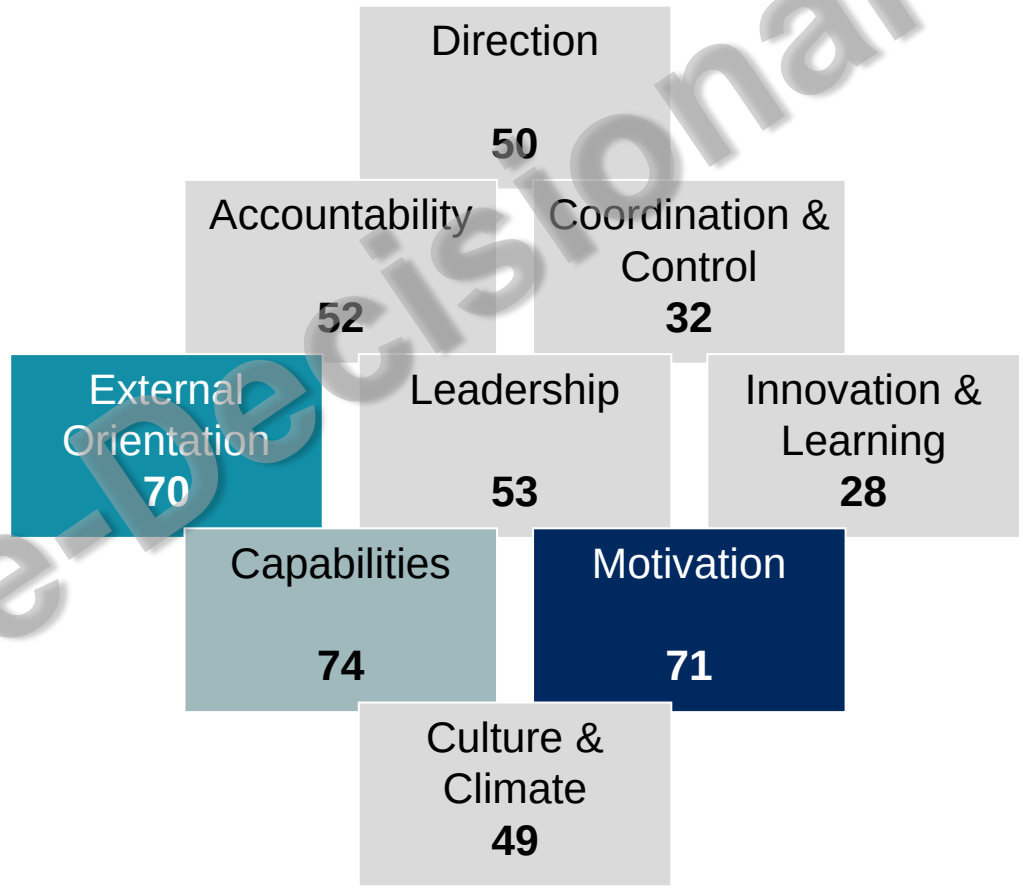
Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Overall OHI score

53

Bottom quartile

Percent agreement on outcome effectiveness



SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Operating model: The diagnostic found considerable variation in IDSS provision

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

Less expansive ← → **More expansive**

	Less expansive		More expansive	
What	Communicate through **standard products** that address stakeholder needs	*"We focus on ensuring our website has all of our products."*	Create **information** for specific stakeholders	*"After issuing products, we will follow up to key stakeholders with more specific information."*
How	Provide a **narrow set of services** to events (e.g., only conference calls)	*"We don't do IDSS because we don't have the resources to dedicate to it."*	Provide a **broad range of services** (e.g., deploy staff to a sporting event)	*"We would like to deploy meteorologists to graduation ceremonies."*
Who	**Define core partners** as emergency managers, govt. officials, and media	*"We focus on government entities top-down because they can deploy resources."*	**Include an extended set of partners** (e.g., schools, event operators, the public)	*"Our schools signed up for NWS Chat to discuss overnight weather in the winter."*
When	Perform **episodic IDSS** in response to severe weather (e.g., storm briefings)	*"We developed a flexible model to provide IDSS during severe events."*	Perform **recurring IDSS** (e.g., in fair weather) for ongoing effective and informed decisions making	*"We help our partners make decisions every single day."*

1 From the NWS Weather-Ready Nation Strategic Roadmap

SOURCE: HQ and site interviews, June-July 2015

“Deep relationships” IDSS was chosen from among three options

Details to follow

	Philosophy 1: “Core competency”	Philosophy 2: “Broad reach”	Philosophy 3: “Deep relationships”
Who	**Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media	Growing stakeholder network beyond existing core partners and **disseminating weather data to as many people as possible**	**Defining IDSS core partners** as emergency management community and government officials
When	Supporting **episodic IDSS**, including products and interpretation/data	Supporting **episodic IDSS**, including products and interpretation/data	Performing **recurring IDSS** for mitigation, preparation, response, recovery, and training in addition to support for episodic events
What	Communicating by **standard products** that address stakeholder needs	Communicating by **standard products** that address stakeholder needs	Creating **information**[1] for specific stakeholders. **Integrating** with core partners
How	Providing a **narrow set of services** (e.g., conference calls)	Providing a **narrow set of services** (e.g., conference calls)	Providing a **broad range of services** (e.g., embedding)

1 Examples: Specialized webinars, briefings, graphics; IDSS web briefing page; Spot forecasts; plume modeling.

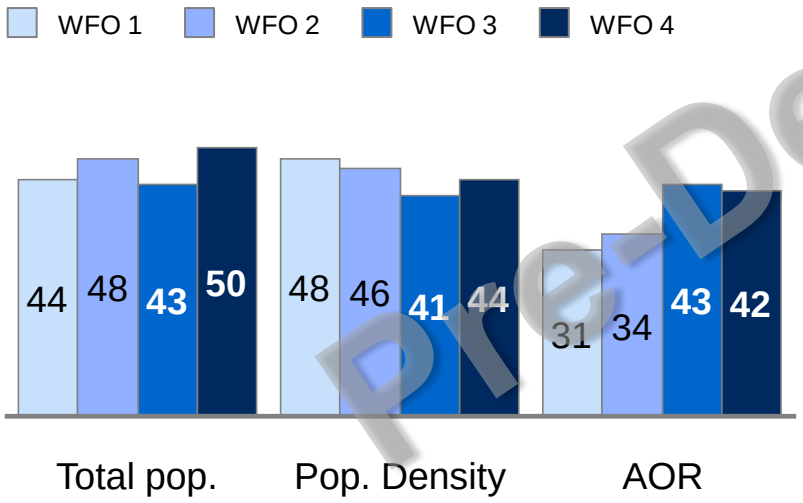
Current understanding of partner types varies widely, however, implying the need to implement "deep relationships" via more than a policy

What occurred

Four WFOs from a region with **similar characteristics**: total population, population density and area of responsibility (AOR) were compared[1]

Percentile rank among all WFOs

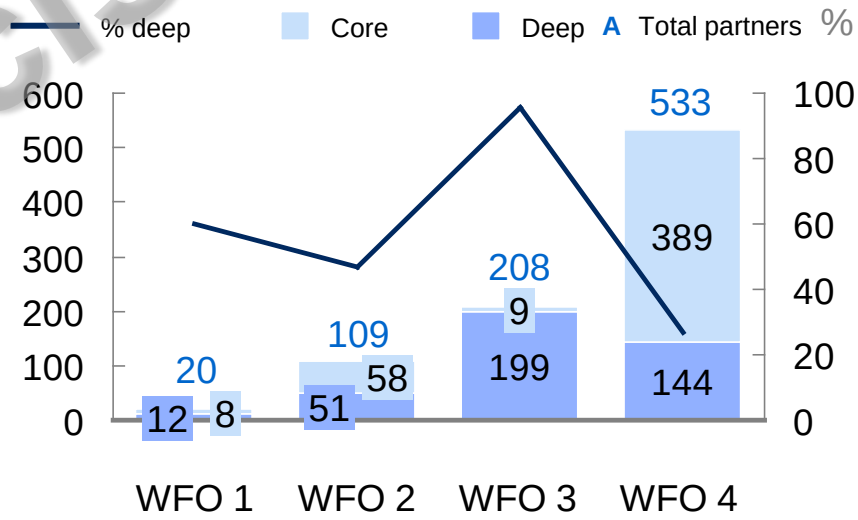
%



New insights

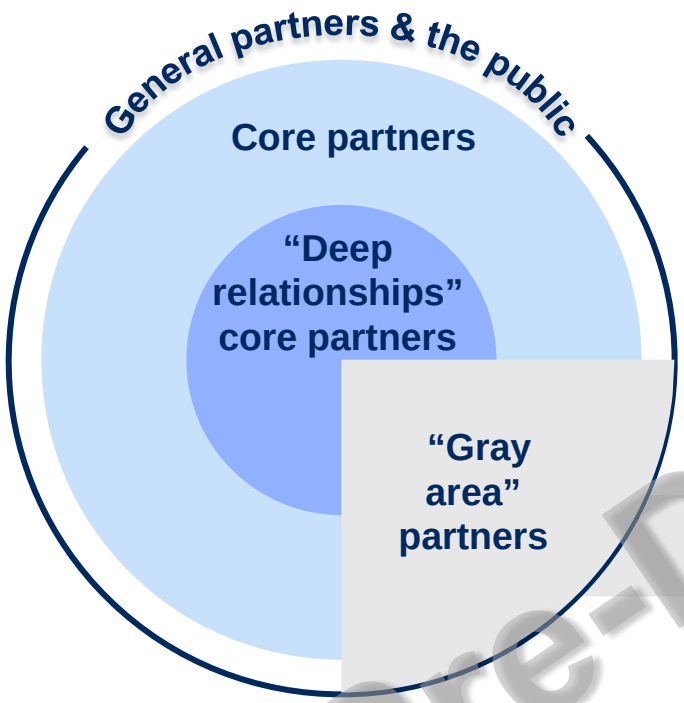
Despite similar characteristics among offices, there was a **wide disparity in number of core and deep partners and percent deep**

core partners and deep relationship partners per office



SOURCE: Core partner data request February 2016

Data received from offices also revealed that "gray areas" exist in defining who is a core partner



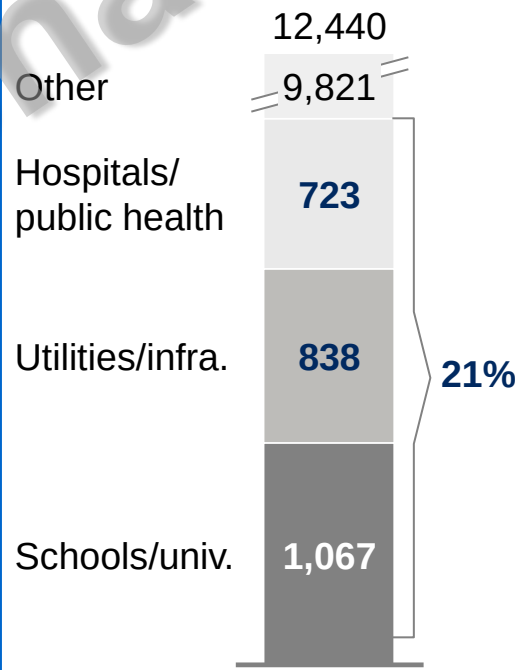
Hospitals and other public health entities

Utilities and infrastructure providers

Schools and universities

Total core partners who fall into "gray areas"[1]

Number of core partners



92% - WFOs with at least one "gray area" core partner

9 - the average number of gray area partners per WFO

SOURCE: Core partner data request February 2016

1 Gray areas partners are entities identified by IDSS team as needing further clarification in partner application. This list of gray areas is non-exhaustive and IDSS tabletop will help provide further clarification on definition

Specific guidance has been provided on some "gray area" partners, though case-by-case consideration is needed – implying the need to implement via more than a policy

Specific guidance

"Gray area"	Core partners	General partners/public
Hospitals and other public health entities 	▪ 911 dispatch centers ▪ CDC[1] ▪ EMs at large hospitals[2]	▪ EMS/ambulance personnel ▪ Other health care facilities
Utilities and infrastructure providers 	▪ Dam operators with NWS nexus	▪ Phone/electricity linemen ▪ Dams that do not impact water resources for RFCs
Schools 	▪ Directors of emergency operations for entire school districts ▪ EMs for large colleges and universities with NWS management approval	▪ Other individuals within school districts or large colleges and universities ▪ Athletic departments ▪ University venue/event organizers

Entities not listed will be considered on a **case-by-case basis** in the initial office review process

1 Per MOU 2 Only per core partner request (in writing); otherwise, direct support is not provided to hospitals, but they many receive emergency support through other NWS core partners

To begin to implement "deep relationships," NWS is using an IDSS tabletop exercise

Operational approach: Regional Directors will lead tabletop exercises to review initial partner lists and deliver training on the IDSS "deep relationships" core service level

Outcomes:

- Generate a preliminary **list of core partners** and a subset of deep relationship partners, with gray areas resolved
- Strengthen OHI priorities to create a more **open and trusting organization**, build role clarity, and capture external ideas
- Serve as a **"training" opportunity for local offices** on the types of services provided to all partners
- Provide **input into later policymaking** around "gray areas" and "deep relationship" partners and **help prioritize** the most critical partners to serve **nationwide**

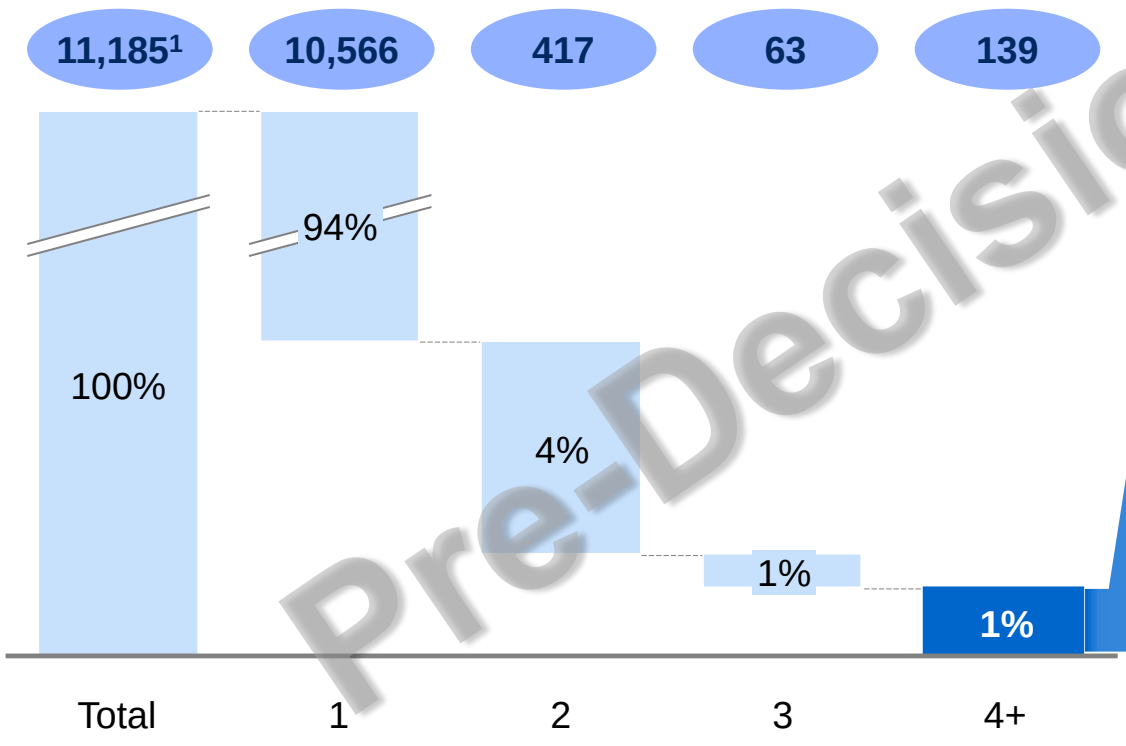
SOURCE: IDSS workstream team

For instance, the IDSS tabletop exercise will help NWS take the perspective of their partners and make sure relationships are clear

xx Total partners

Core partners served by multiple offices

Percent of all core partners



Texas Forest Service is served by multiple offices

- Brownsville
- Amarillo
- Corpus Christi
- Dallas/Fort Worth
- Houston
- Midland
- Oklahoma City/Norman
- Shreveport
- Lubbock
- San Angelo

1 Number of unique core partners = 11,185, overall 12,440 core partners were listed including repeats

SOURCE: Core partner data request February 2016

NWS considered but did not select three other options in place of the Collaborative Forecast Process

Alternative	Benefits	Limitations
Increase collaboration in current process, across CWAs, WFOs, CWSUs, ROCs, and NCEP	▪ Reduces seams and inconsistent forecasts	▪ Increases local forecaster time spent on producing grids ▪ Unlikely to eliminate seams and inconsistencies
Adopt regional blends and increase cross-CWA and WFO, CWSU, ROC, NCEP collaboration	▪ Reduces seams and inconsistent forecasts ▪ Frees some local forecaster capacity	▪ Fragments development resources across blends ▪ Requires significant time collaborating grids across regional boundaries
Adopt national blend at WFOs and increase collaboration; do not involve NCEP in routine forecasting	▪ Reduces seams and inconsistent forecasts ▪ Frees some local forecaster capacity ▪ Maintains local forecaster engagement	▪ Introduces variability in forecasts as local forecasters make synoptic adjustments ▪ Does not free up sufficient local forecaster time ▪ Does not build central capabilities for routine forecasting

SOURCE: NWS interviews Jan – Mar 2016

Working sessions were held across the field to understand unique cases for change and future visions for NWS

Overview

In February and March, the OWA team held **eight 1-2 day working sessions with all regions, NCEP, and NWC;** during these sessions, the OWA spoke with:

- 40+ regional leaders
- 16 NCEP leaders
- 9 NWC leaders
- 9 field leaders who are part of OWA core teams

Sample working session objectives

Day 1: **Future functions & operating model opportunities**

- Establish understanding of the case for change and needs from a new field structure
- Explore opportunities to shift functions across local offices, Regional HQ, and ROC, including changes to the forecast process

Day 2: **Strategic staffing and organizational structure**

- Consider changes to strategic staffing based on envisioned function changes and workload differences
- Consider changes to the organizational structure of the region overall

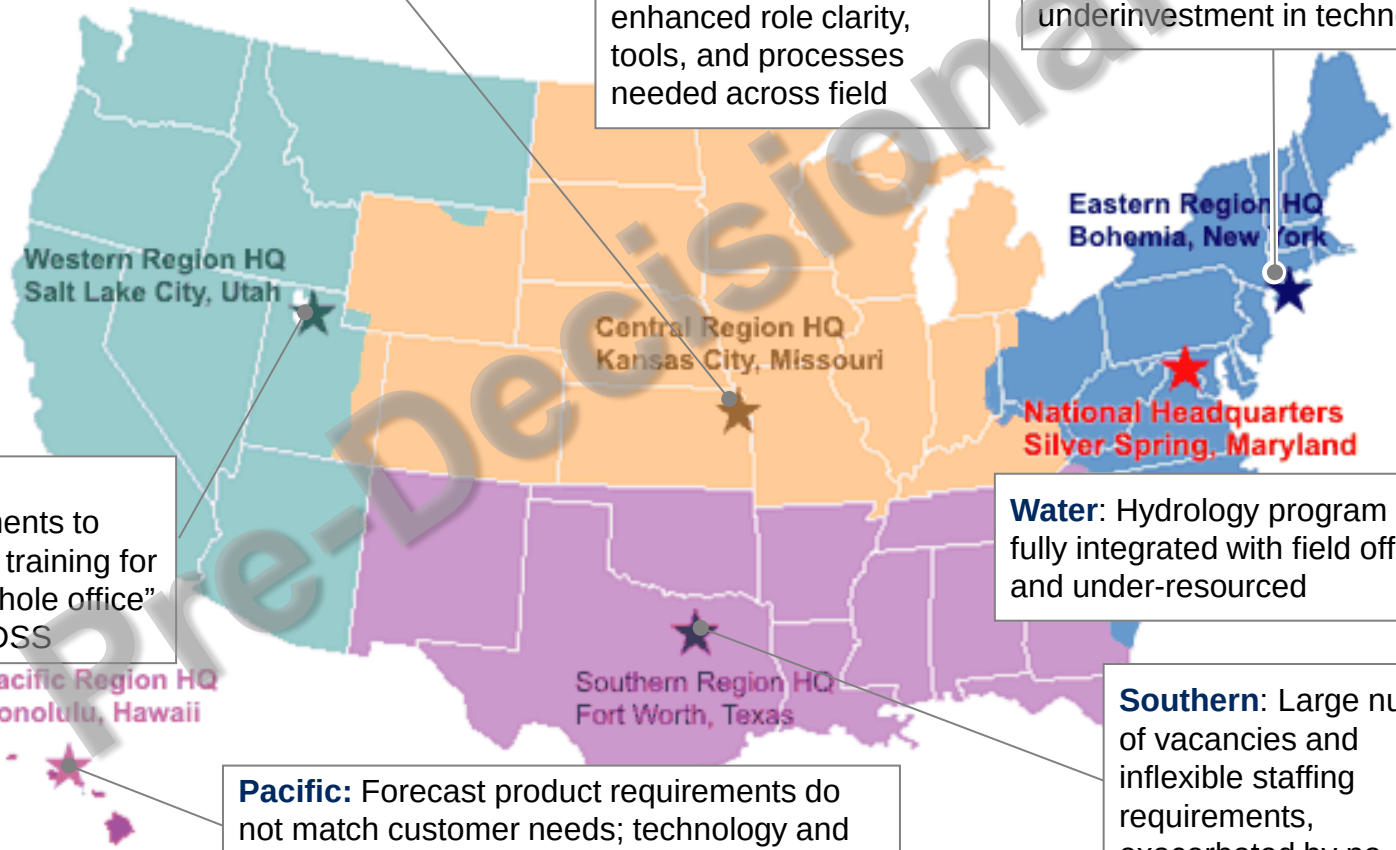
Across regions, there is a compelling case for evolving NWS

Alaska: High turnover outside of Anchorage, frequency of weather events, and data sparsity

Central: Resources do not match new IDSS demands; need to shift towards partner-decision making cycle

NCEP: Demands for precision, collaboration, and IDSS are increasing; enhanced role clarity, tools, and processes needed across field

Eastern: Resources mismatched to meet IDSS demands; severe underinvestment in technology



Western: Insufficient technological investments to meet mission; lack of training for IDSS, especially if "whole office" is meant to provide IDSS

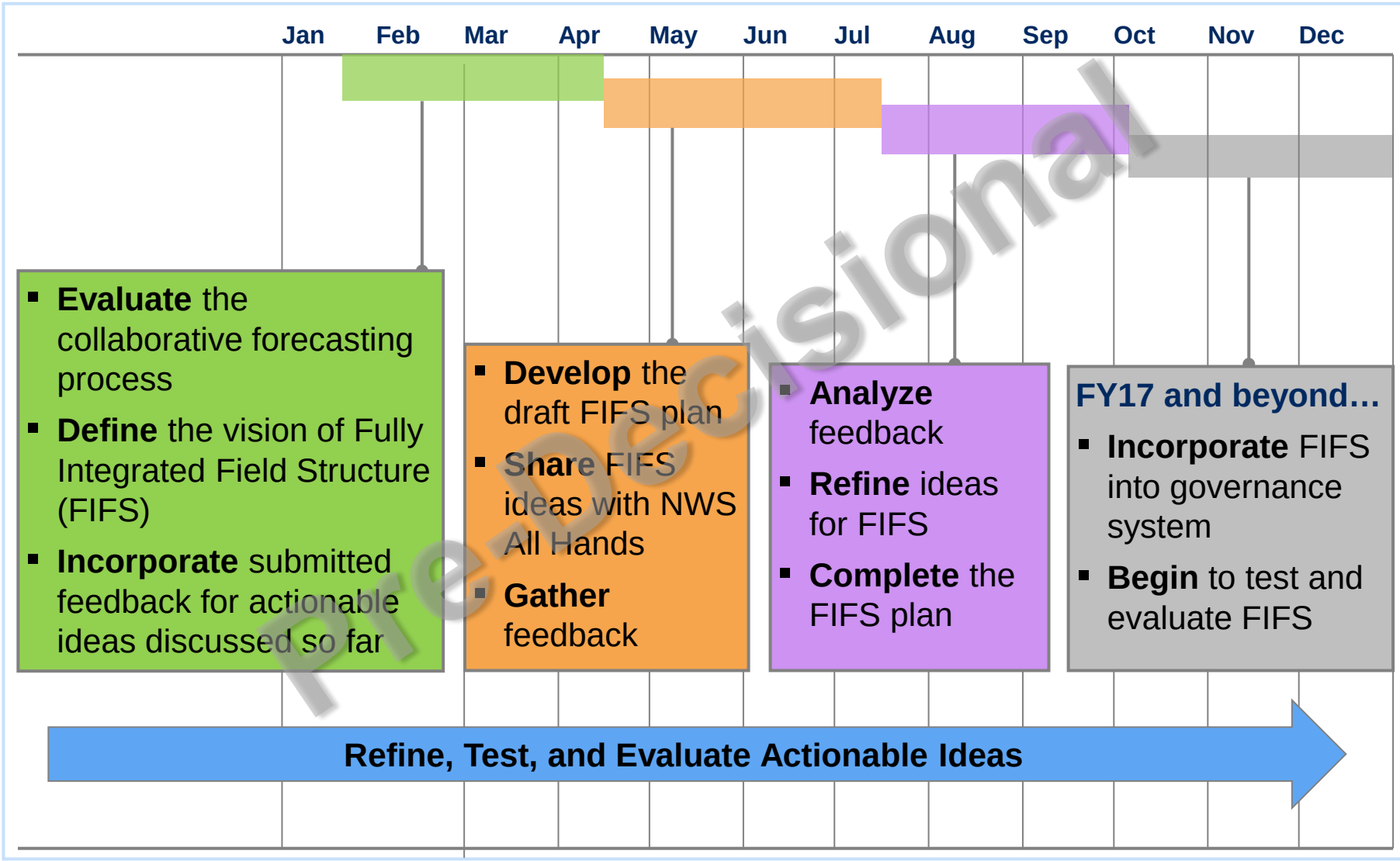
Water: Hydrology program not fully integrated with field offices and under-resourced

Pacific: Forecast product requirements do not match customer needs; technology and guidance often unsuited to regional needs; addt'l international missions strain resources

Southern: Large number of vacancies and inflexible staffing requirements, exacerbated by no "break" in weather

SOURCE: Regional working sessions, Jan – Mar 2016

NWS will deliver an initial full plan to NOAA by early summer, to be refined with input



Other OWA work underway in support of Weather-Ready Nation

- **Several "actionable ideas" are underway** with support from teams of field leaders, including: New progression model for meteorologists; Onboarding course for new hires; Orientation course for new field leadership; Field Leadership Committee; Adding supervisory authority to other roles in the field to reduce spans of control
- Additionally, based on the OHI findings, **three practices – clarifying roles, becoming more open and trusting as an organization, and improving the ability to capture external ideas – have been prioritized** for action planning

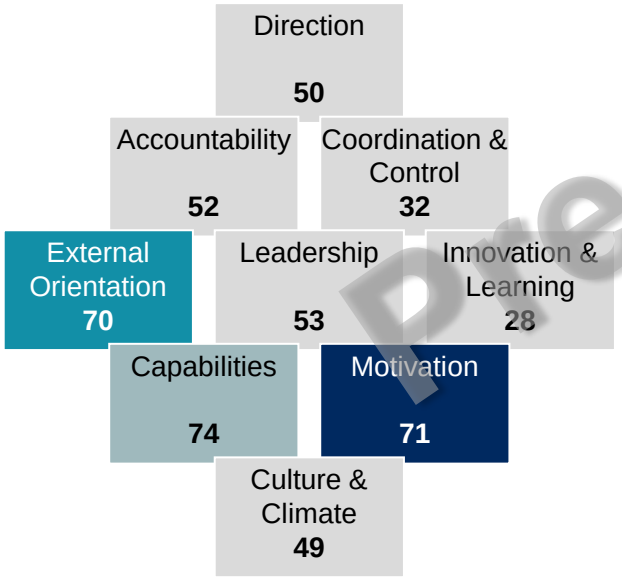
Work continuing to improve NWS – actionable ideas with a focus on Organizational Health Index (OHI)

Details follow

Overall OHI Score

53

Percent agreement on outcome effectiveness



OHI practice[1]	Description	Actionable ideas
Role clarity (Score = 34)	▪ Driving accountability by creating a clear structure, roles, and responsibilities and communicating them effectively	▪ Progression model for meteorologists (GS 5-12) ▪ Onboarding course for new hires ▪ Orientation course for new MICs and HICs
Open and trusting (Score = 45)	▪ Encouraging and role modeling transparency, honesty, and candid, dialogue at all levels	▪ Field-manager level group to share ideas and collaborate ▪ Sharing “drumbeat” of communications on OWA program through toolkits, webinars, etc.
Capturing external ideas (Score = 13)	▪ Identifying, evaluating and sharing ideas and external best practices	▪ Developing IDSS and communications training to support engagement with external stakeholders

1 All 3 practices were in the bottom quartile relative to the benchmark sample set

Actionable idea: “NWS 101” onboarding

NOT EXHAUSTIVE

What was learned:

- There is no uniform onboarding course for new hires in the NWS
- Individual offices are responsible for setting the culture and tone
- Staff across NWS – at all levels and regions – have said an onboarding program would be helpful, exciting, and build lasting connections between staff

> “It took me a good 10 years to really figure out how NWS worked. If I’d known that from day one I could have been much more effective.” – *NWS manager*

Vision for the future:

From…

NWS does not have a uniform onboarding course for employees new to the organization

To…

The NWS has an onboarding course for new hires, “NWS 101,” that provides an orientation to NWS mission, culture, and role within NOAA and Commerce

SOURCE: Site interviews, OHI survey

Actionable idea: new MIC and HIC orientation course

What was learned:

NOT EXHAUSTIVE

- 60% of NWS employees are managed by MICs or HICs, but there is not an orientation course specific to the complexities of those roles that is timed with starting in these roles
- There is significant variability in MIC and HIC managerial and leadership competencies (both self and peer reported)
- Many MICs and HICs expressed interest in getting greater training and peer connections

> "I've had 6 MICs and their managerial abilities varied widely. It takes a toll when they are weak – and made a huge difference when they are leaders." – *NWS forecaster*

From…

MICs/HICs oversee approximately 60% of the NWS workforce and have enormous responsibility and autonomy, but they are not offered a uniform onboard training

To…

There is a national in-residence training specifically for new MICs/HICs that builds on leadership training that has been integrated throughout the NWS career path

SOURCE: Site interviews, OHI survey

Actionable idea: new Field Leadership Committee

What was learned:

NOT EXHAUSTIVE

- There is a disconnect between the field and senior management, which was identified in the diagnostic
- A forum is needed to better identify best practices and regional opportunities for improved consistency across the organization
- A structured method is recommended to discuss forecasting needs and proposed requirements with NSP leads
- MIC/HICs desire greater access and involvement in the governing process

From…

No single forum exists for MIC/HICs to listen, collaborate, advise, and share best practices from the field and elevate issues of importance to senior leadership

To…

The Field Leadership Committee will **listen** to their peers, **collaborate** to elevate best practices & issues of concern, **advise** leadership on grassroots ideas, and **share** what they learn with their peers

SOURCE: Site interviews, OHI survey

NWS Operations and Workforce Analysis Update

Briefing document | October 2016

VISION

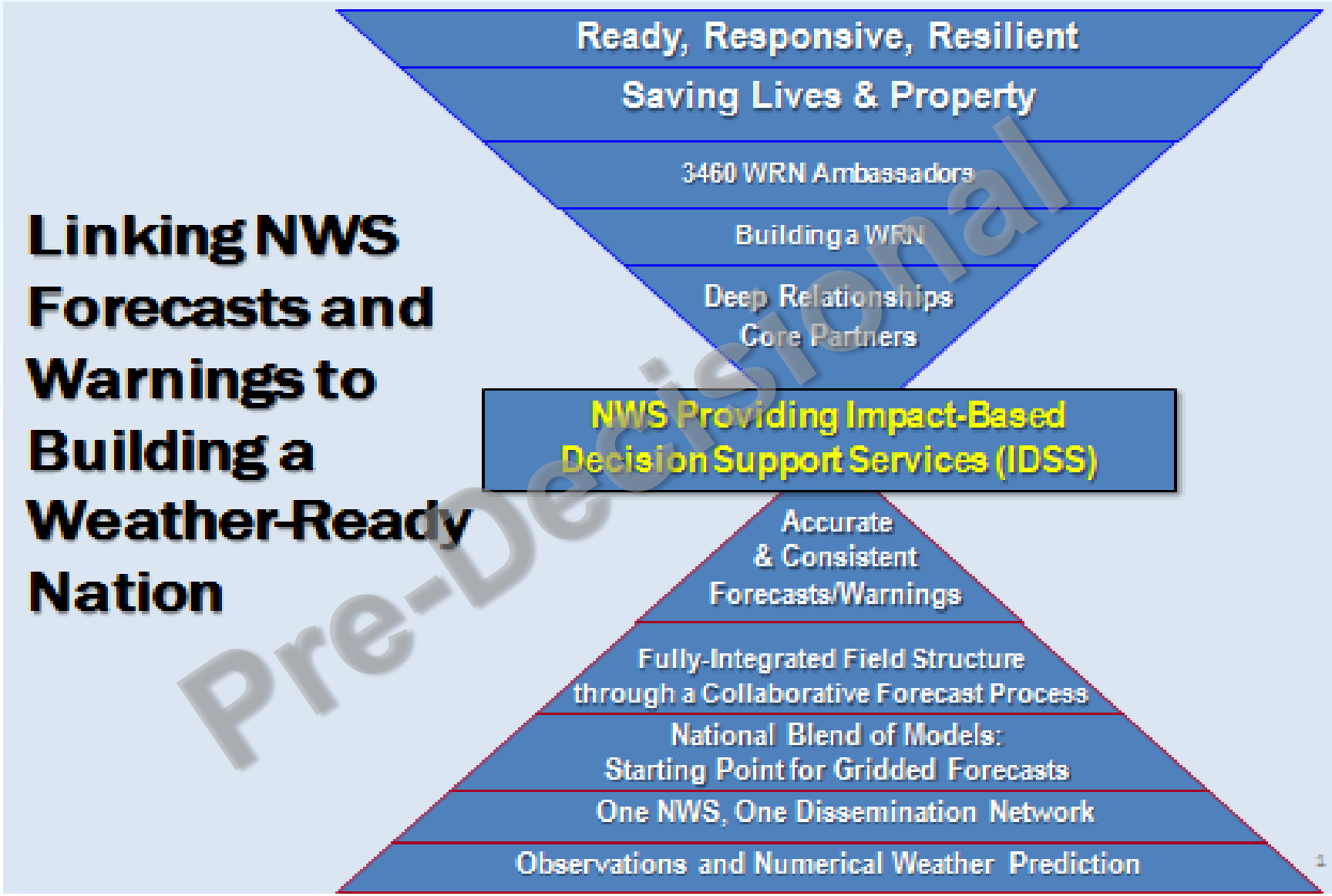
Build a Weather-Ready Nation where Society is prepared for and responds to Weather-Dependent Events

MISSION

Provide weather, water, and climate data, forecasts and warnings for the protection of life and property and the enhancement of the national economy[1]

1 The NWS Mission highlighted in Chapter 3 of "Mission Mystique: Belief Systems in Public Agencies“ – Goodsell, 2011

We are evolving to achieve a Weather-Ready Nation



NWS Mission: To provide weather, water, and climate data, forecasts and warnings, for the protection of life and property and the enhancement of the national economy

We are evolving NWS by:

- **Better serving partners** by enhancing quality and consistency of IDSS at all levels of the organization, in all current locations because analysis shows 94% of partners are local partners[1] – no office closures
- Improving **effectiveness of forecasting in support of IDSS** through a collaborative process that makes the best use of technology, reduces duplication, and ensures consistency of the forecast
- **Matching workforce to workload** across the organization and **building a healthy organizational structure** to better meet the needs of NWS partners
- Building a **workforce the NWS needs to deliver science-based service:** both through enhancing skills today and hiring for tomorrow
- Supporting **critical science, research, technology and innovation** to best meet NWS's mission

We will build on the current local footprint and field staff of the National Weather Service to achieve these goals

1 NWS IDSS core and deep partners identified through national training, data call, and review May – July 2016

Evaluation of IDSS showed strong partner support for targeted, deeper service

Surveys Sent to EMs & Interviews Conducted *(Summer 2015)*

Analysis of Data Performed *(Fall 2015)*

*"We have to know what the NWS can do for us, but **we also have to know what they can't do, or we'll ask them to do everything**, and, God help them, they'll try and give it to us"*

*"I trust my partners at NWS and **I know them** – the tone of their voice, the way they report out to us. And they know me."*

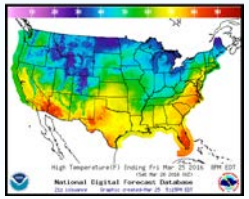
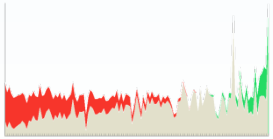
*"We all **hold the NWS mission at our core**, so none of us want anybody to ever get hurt by the weather, and having all of the relationships that we do have, it becomes **a personal mission for each of us** to keep our 'friends' safe."*

Identified the need for **service consistency** & **role clarity** for both internal operations and external IDSS

NWS and EMs embrace IDSS

Many different definitions of IDSS are being used

OWA diagnostic led to a vision for how NWS can achieve a Weather-Ready Nation

FROM TODAY…	HOW	TO THE FUTURE…
 Variation in partners served	Deep Relationships IDSS	 Defined IDSS partner types
 Inconsistencies in forecast, duplication of effort without best use of technology	Collaborative Forecast Process	 Clear roles supported by technology to create information partners need
 One-size-fits-all staffing mismatched with demand	Strategic Staffing and Organization	 Workforce aligned to workload, with supporting org. structure
 Production-oriented workforce trained only in science	Create a workforce of tomorrow	 Diverse, versatile workforce trained in science-based service model
 Org. not best positioned to take advantage of innovations in science and technology	Science, Technology to support field	 Field structure is supported with needed science, technology, and innovation to meet mission

Improving service to partners through IDSS, with the goal of building a Weather-Ready Nation

Diagnostic findings

From inconsistent service that at times doesn't go "beyond the forecast" to explain impacts to partners

Vision

To consistent levels of decision support before, during and after events, focused on "deep relationships" partners

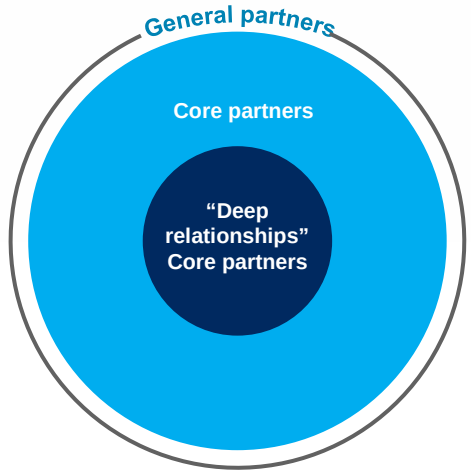
CORE SERVICE LEVEL

- Similar products are disseminated by different entities in NWS
- Offices make decisions about whether to provide recurring or episodic IDSS services without a framework of prioritization criteria

- Partners know what standard products and services are offered by different NWS offices and when to expect them – before, during, and after events
- Local NWS offices know what partners need for key decision points and are able to tailor messages to support decision-making

PARTNERS SERVED

- There is significant variation in who is provided IDSS and how the definition of core partner is applied



- Offices define core partners with similar criteria allowing decision support to be more consistently offered throughout the organization

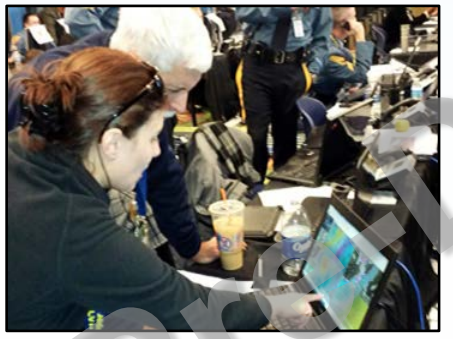
SOURCE: Interviews and job shadowing during ~40 office site visits from May 2015 – January 2016, OWA IDSS team, April 2016

NWS protects lives and property through Impact-Based Decision Support Services

Intrinsic Value is realized through providing Impact-Based Decision Support Services (IDSS)

Provide the best hydrological and meteorological forecasting in the world – focused on impacts that matter to public safety

\+ **Develop Relationships and know partner needs**



\+ **Support partner decision making before, during, and after events**

\+ **Embed when needed**

\+ **Build trust**

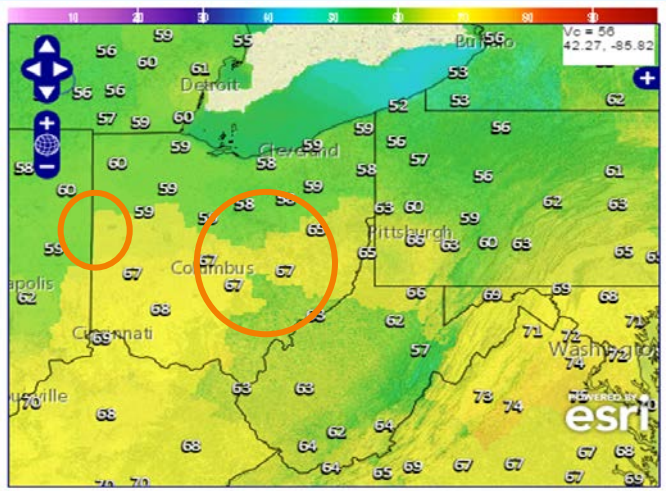
= IDSS

“Ready, Responsive, Resilient”

Developing a collaborative forecast process that results in a common operating picture, which is critical for IDSS

Diagnostic findings

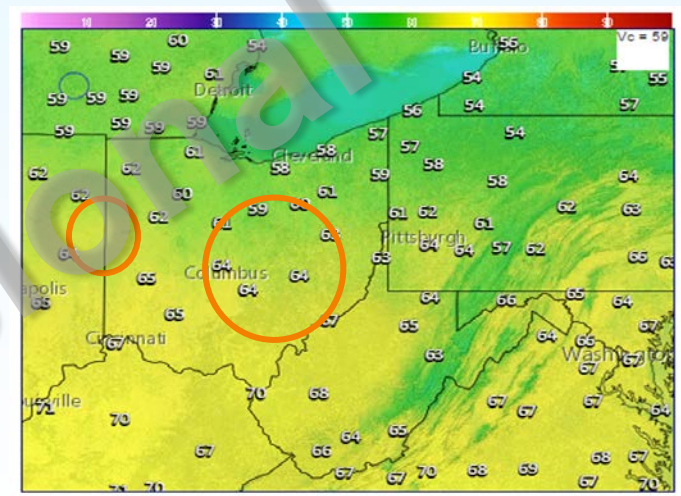
From multiple forecasts…



- WFOs, RFCs, and NCEP overlap at times resulting in inconsistent forecasts and duplicated effort
- Many forecasters manually determine which models to use
- Forecasts may contain “seams”
- Each office is not fully leveraging all the expertise NWS has to offer

Vision

…to a common operating picture



The goal is one event, one forecast – because multiple forecasts is no forecast at all

- Clear roles and responsibilities for each field office
- Common operating picture for the forecast produced at NCEP & NWC, based on the National Blend of Models and National Water Model, and increasingly probabilistic
- Seamless forecast for partners, with local detail incorporated where it matters most for IDSS
- Expertise across NWS layered on to the forecast and message

SOURCE: NWS interviews Jan – Mar 2016; OWA Fully Integrated Field Structure team working session April 2016

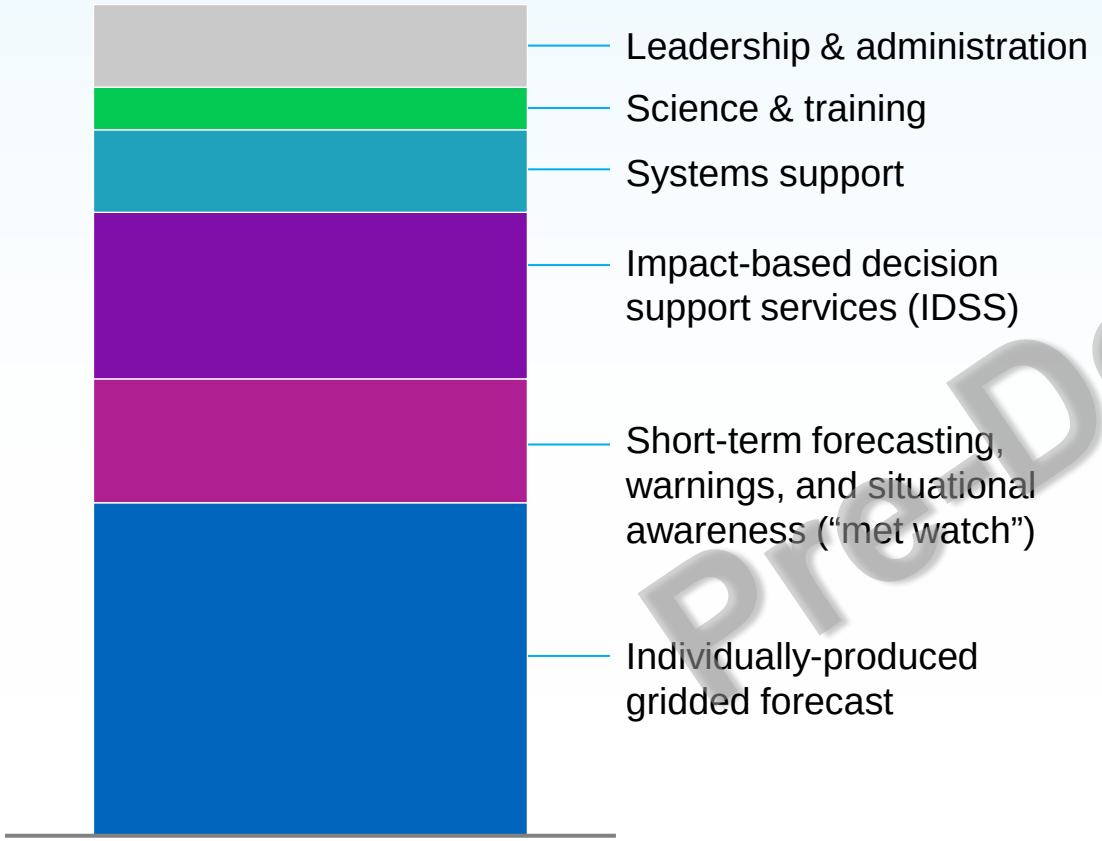
Our efforts will result in increased staff time for supporting partner decision-making, which is critical to our public safety mission, delivered at the local, state, and national levels

ILLUSTRATIVE

Diagnostic findings

From siloed production…

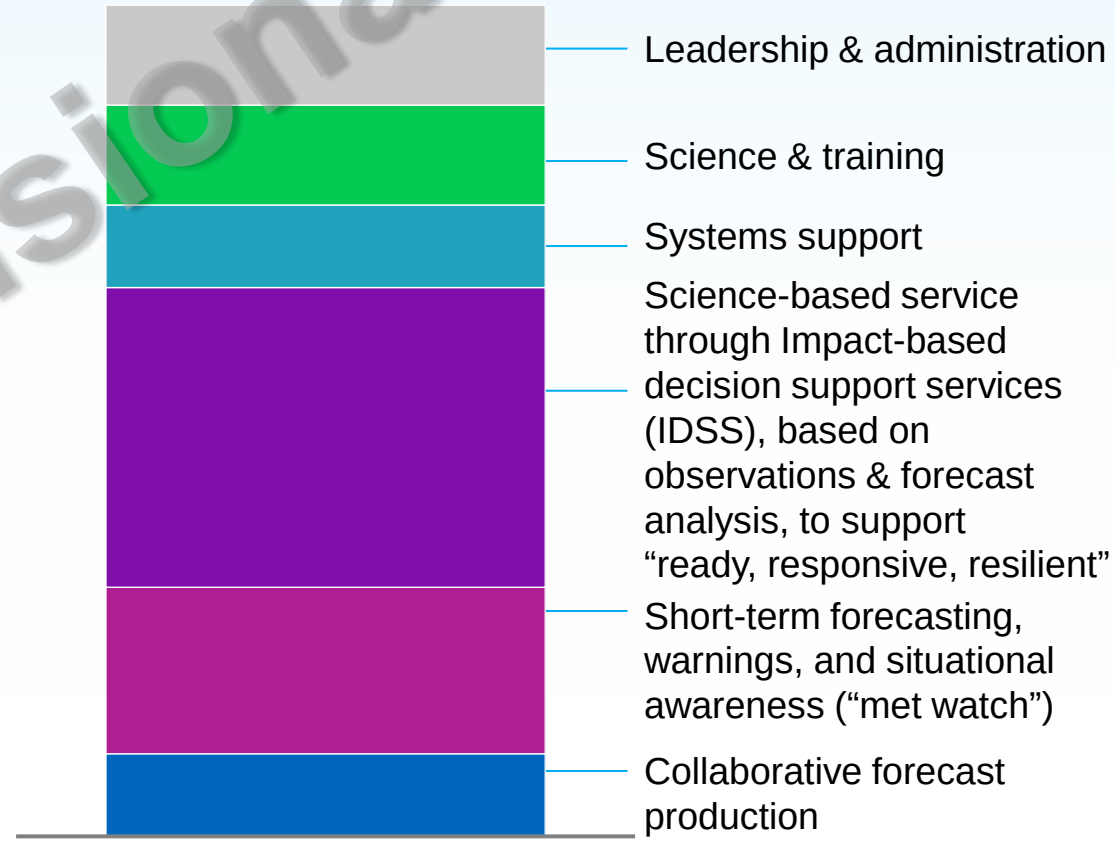
Current illustrative time allocation **across <u>all field offices</u>**



Vision

…to science-based service in a fully integrated field structure

Future illustrative time allocation **across <u>all field offices</u>[1]**



1 Chart represents an average time allocation across all field offices, including WFOs, RFCs, CWSUs, RHQ, ROCs, NCEP, NWC – time allocation at each office will be different according to the focus of each office in support of a Fully Integrated Field Structure

SOURCE: Interviews and job shadowing during ~40 office site visits from May 2015 – January 2016, OWA IDSS team, April 2016

To support our functional changes, we have developed a vision for a Fully Integrated Field Structure

Vision for evolving to a Fully Integrated Field Structure built on collaboration

Diagnostic findings

From the operations and workforce of today …

- Production focus, with staff operating forecast “desks”
- WFO staff constrained by 24/7/365 shift requirements
- “One size fits all” staffing based on requirements of the past
- Siloed operations - each office must fully support itself
- Overlapping roles and requirements across field offices

Vision

…to a fully integrated field structure through a collaborative forecast process, involving all offices at all levels

- Service delivery focus, with staff focusing on areas of highest impact – including analysis, forecasting, warnings, and partner support
- Local staff work hours set strategically to meet partners’ needs
- Staffing levels based on meeting partner needs
- Field offices work collaboratively to support each other and their partners
- Functions aligned to expertise, increasing role clarity and making best use of resources

SOURCE: OWA Strategic staffing team

In the Fully Integrated Field Structure, functions are aligned to expertise, increasing role clarity and making best use of resources

LOCAL OFFICES

Linking observations, forecasts and warnings to **IDSS** for partner decision making

Assessing guidance and producing probabilistic **forecast**

NATIONAL CENTERS

Local offices are the tip of the spear for supporting partner decision-making through IDSS and WRN through expertise in partner needs and preparation, analysis and nowcasting, assessing impacts, and communicating warning information – critical given that over 90% of partners are served by local offices

Field offices support each other in filling gaps that can't be best filled at the national or local level (e.g., regional level, as with RFCs). Offices work together to collaborate on forecasts and warnings, provide surge capabilities through mutual aid, coordinate IDSS, produce research, and deliver training

National Centers (including National Water Center) deliver the starting point for the forecast, as well as provide IDSS and collaborate with other field offices

SOURCE: OWA Strategic staffing team

Future time allocation across **local offices** reflects the science-based service operating model

ILLUSTRATIVE

LOCAL OFFICES

Linking observations, forecasts and warnings to **IDSS** for partner decision making

NATIONAL CENTERS

Assessing guidance and producing probabilistic **forecast**

FUTURE TIME ALLOCATION ACROSS ALL LOCAL OFFICES (i.e. WFOs, RFCs and CWSUs)

SOURCE: OWA Strategic staffing team

Future time allocation across **National Centers** reflects the science-based service operating model

ILLUSTRATIVE

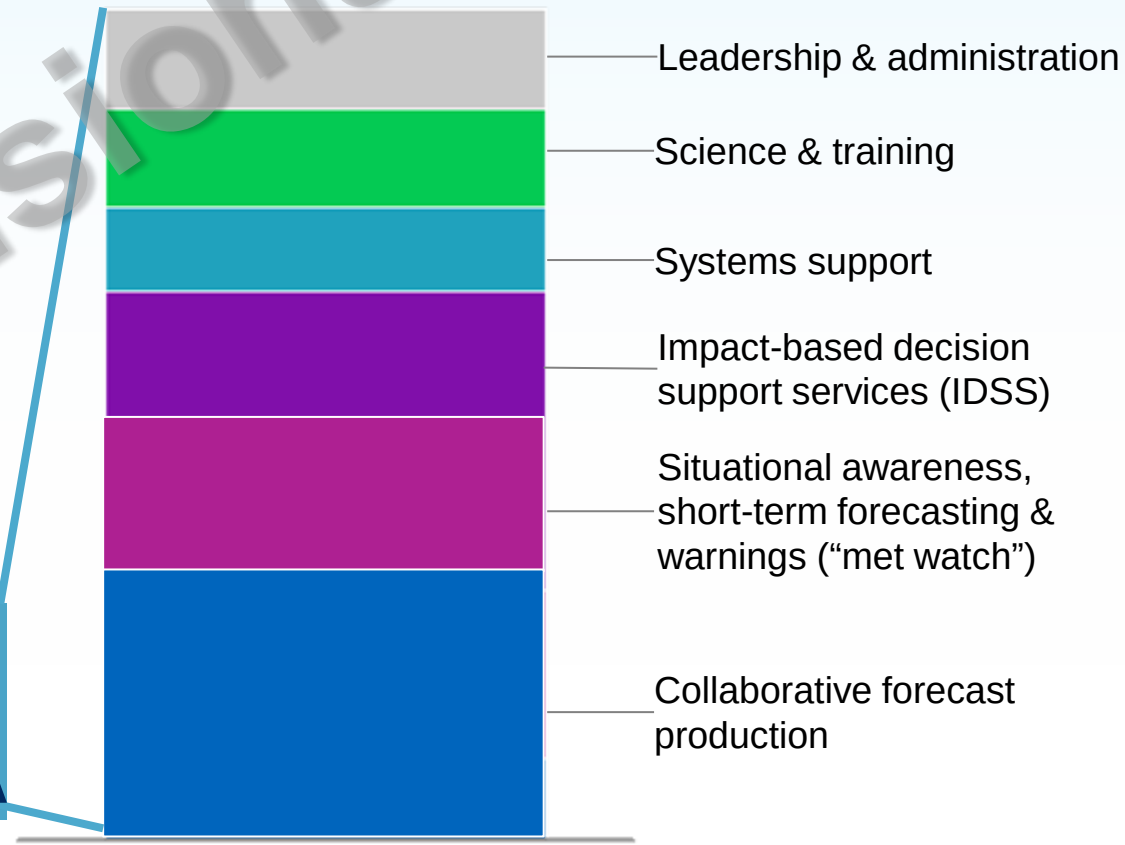
FUTURE TIME ALLOCATION ACROSS NATIONAL CENTERS

LOCAL OFFICES

Linking observations, forecasts and warnings to **IDSS** for partner decision making

Assessing guidance and producing probabilistic **forecast**

NATIONAL CENTERS



SOURCE: OWA Strategic staffing team

To enable a Weather-Ready Nation, and to respond to diagnostic findings, meteorologists at all levels will need enhanced science and service skill-sets

Skill development dimensions

1. **Data collection, info. mgmt. and quality control**
2. **Forecast and warning generation**
3. **IDSS**
4. **Management, teamwork and leadership**
5. **Integration of science and technology**

Expertise in:

- **Identifying imminent deadly hazards using both in-situ as well as complex sets of remotely sensed data** such as Satellite, NexRad Dual-Pol, & MADIS (weather, water, & climate observations)
- Evaluating a wide range of emerging national, local, and regional threats **using a nearly continuously updated ensemble of predictive numerical weather guidance** (200+ predictions per day)
- **Assessing probabilistic predictions** to understand hazard contingencies in terms of the **most likely scenario**, **most dangerous scenario**, **and possible extent or scale of the impacts** (cities, transportation, critical national infrastructure)

Expertise in:

- Ensuring **community readiness,** within the National Incident Management System framework, **to face deadly weather and water threats by assessing, developing and exercising plans and tactics with** city, state, and national, **emergency response personnel**
- **Enhancing the collective emergency response** to diverse set of life-threatening scenarios **by providing precise, targeted, and timely forecasts & warnings** both in-person and remotely **to Emergency Operation Centers and Incident Command Posts**
- Building **community resilience** against a variety of weather, water, and climate risks **through diverse stakeholder engagement** that demonstrate NWS capabilities, identifies susceptibility & risk, and results in robust and effective mitigation strategies

SOURCE: OWA Workforce team, Strategic staffing team

Achieving the vision

Understanding IDSS need – where do we need local presence most?

Dimensions	Key considerations
PEOPLE, PROPERTY, AND INFRASTRUCTURE	▪ What is the size of the covered population (including seasonal flows), and with what density? ▪ What are the critical assets and economic activity levels in the area?
WEATHER AND WATER IMPACT	▪ How high impact are the weather types in the region? ▪ How high impact are water concerns in the region?
FREQUENCY OF NEED	▪ How often, or for what part of the year, is the area at risk? ▪ How often is event-driven IDSS needed?
VULNERABILITY	▪ To what extent are the population, property, and infrastructure particularly vulnerable to weather, water, or climate?
CORE AND DEEP PARTNERS	▪ To what extent are there additional high-demand customers in the area (e.g., aviation, national security, ports, dams)? ▪ To what extent are there force multipliers in the area?

A qualitative and quantitative approach has been taken to estimate IDSS need across CWAs – vulnerability and core partners are particularly difficult to quantify

SOURCE: OWA FIFS and strategic staffing teams

The current service-delivery operating model does not meet growing need for IDSS

Additional need for IDSS beyond what is provided today

Low — Extreme

Preliminary estimate of IDSS needs vs current IDSS capacity by WFO[1]

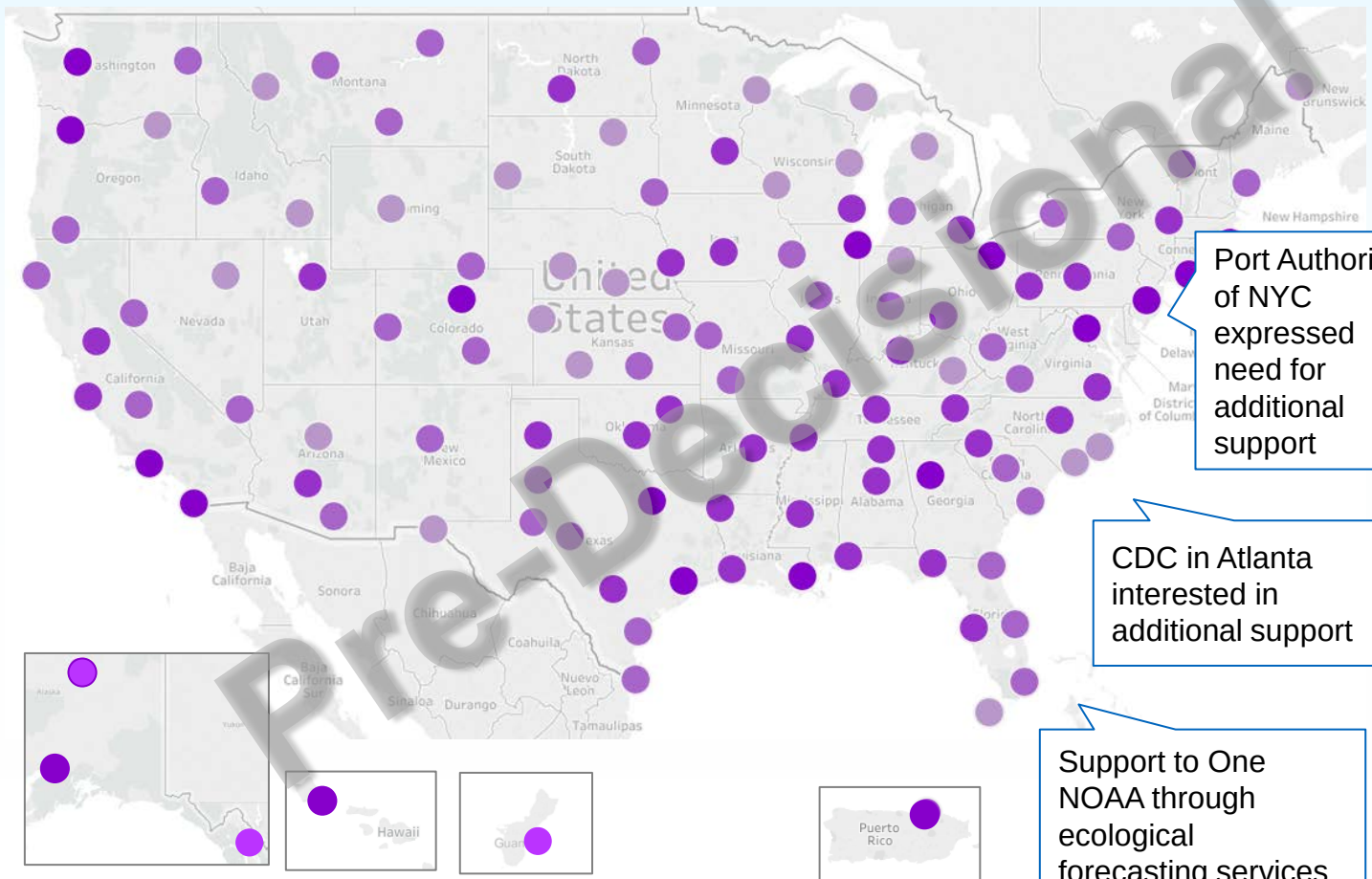
More ecological IDSS opportunities in Great Lakes region

More IDSS efforts focused on flood frequency and severity in the Upper Plains

Montana state EM could benefit from co-located fire expert

Additional opportunity to work with Flood Control Districts and Water Districts

NORTHCOM Alaska expressed need for additional support



Port Authority of NYC expressed need for additional support

CDC in Atlanta interested in additional support

Support to One NOAA through ecological forecasting services

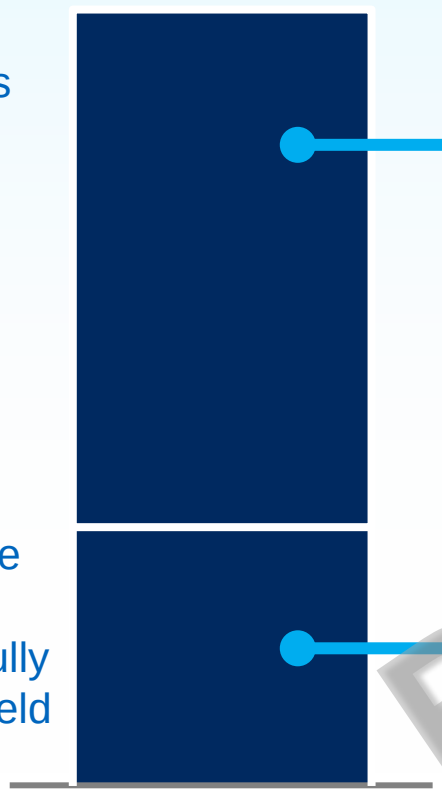
Maui County could use in-person support more often than it receives now

- Every NWS office serves partners with IDSS needs, however the level of need varies across offices
- Better serving **partners** by enhancing quality and consistency of IDSS at all levels of the organization, in all current locations because analysis shows 94% of partners are local partners[1] – no office closures

1 NWS IDSS core and deep partners identified through national training, data call, and review May – July 2016

SOURCE: OWA Strategic staffing team

Meeting IDSS need requires NWS to find additional flexibility within current staffing levels of the “service-delivery” employees



NWS needs additional staff time and flexibility beyond what is available today for **local weather, water, climate IDSS**, based on estimates of risk in each CWA and potential staffing level needed to support partners in each CWA

NWS also needs additional **staff time and flexibility to support the collaborative forecast process and fully integrated field structure**:

- National centers
- Regional Operations Centers, IDSS liaisons, roles to reduce manager to staff ratios, and cross-office support roles
- Operations Proving Ground and test beds
- Training center, regional, and local training staff

SOURCE: OWA Strategic staffing team

NWS has identified several ways to meet resource needs, by unlocking time and increasing flexibility within our current office footprint and staffing levels

Seven functional and form "unlocks" can provide significant flexibility for NWS field offices

1	STRATEGIC STAFFING	NWS will move away from "one-size-fits-all" staffing, allowing staff to be distributed to meet partners where they are
2	COLLABORATIVE FORECAST PROCESS	Field offices use a common operating picture to ensure consistency and create a more efficient process that frees up valuable, needed staff time
3	GS5-12 CAREER PROGRESSION	Updated career progression for interns increases time spent by GS 5-11 meteorologists on high value activities contributing to IDSS
4	AUTOLAUNCHERS	Automated launches free up staff at upper air sites and allow for flexibility in scheduling shifts
5	SHIFT SCHEDULING FLEXIBILITY	Office operating hours are set strategically to address partner needs, so not all offices devote resources to staying open 24/7. Requires offices to collaborate through mutual aid for met watch during off hours, while sustaining situational awareness and surge capacity
6	STAFFING LEVEL FLEXIBILITY	Offices set staffing levels to best serve partners, without requiring each shift to have two staff members
7	STRATEGIC POSITIONING	Offices and roles are located to best serve partners and meet internal NWS needs (e.g., IDSS staff near partners, maintenance staff near strategic needs)

Addresses need to align staff to workload

Address internal processes and role assignments that limit time needed for IDSS

Address form constraints that limit flexibility needed – if unable to be unlocked, 40% of IDSS needs will remain unmet

SOURCE: OWA Strategic staffing team

Staff across NWS have contributed to these ideas

1 STRATEGIC STAFFING

"Grades and staffing levels don't reflect the accretion of duties at all WFOs since [MAR], especially coastal offices that have marine and tropical responsibilities as well as the new IDSS component"

2 COLLABORATIVE FORECAST PROCESS

"The use of blended models and good tools could allow us to have one person handling grids and others doing IDSS"

"[When all elements] are modeled correctly, forecasters will accept the reduction in forecast grid editing."

90% of MICs surveyed support the move away from grid production towards IDSS

3 GS5-12 CAREER PROGRESSION

90% of MICs surveyed reported that they would support a new GS 5-12 meteorologist development model

"Separate Intern and Forecaster rotations [limit IDSS] – combining would allow better shift and IDSS coverage"

4 AUTOLAUNCHERS

"We know our partners would rather have us working with them instead of being out launching weather balloons, when machines can do that"

5 SHIFT SCHEDULING FLEXIBILITY

"To really effectively allocate staff resources, I need to be able to count on having specific staff members/or focal points available in the day time, when core partners can meet"

"The health effects are well documented including low morale, depression, poor family life, and poor performance…We made this choice to work here, but that doesn't mean it can't be changed for the better"

6 STAFFING FLEXIBILITY

"I really don't need 2 people on the midnight shift or 3 on the evening shift. Those duties could be better accommodated during the day"

"Requirement of 2 staff on midnight shift [limits IDSS]"

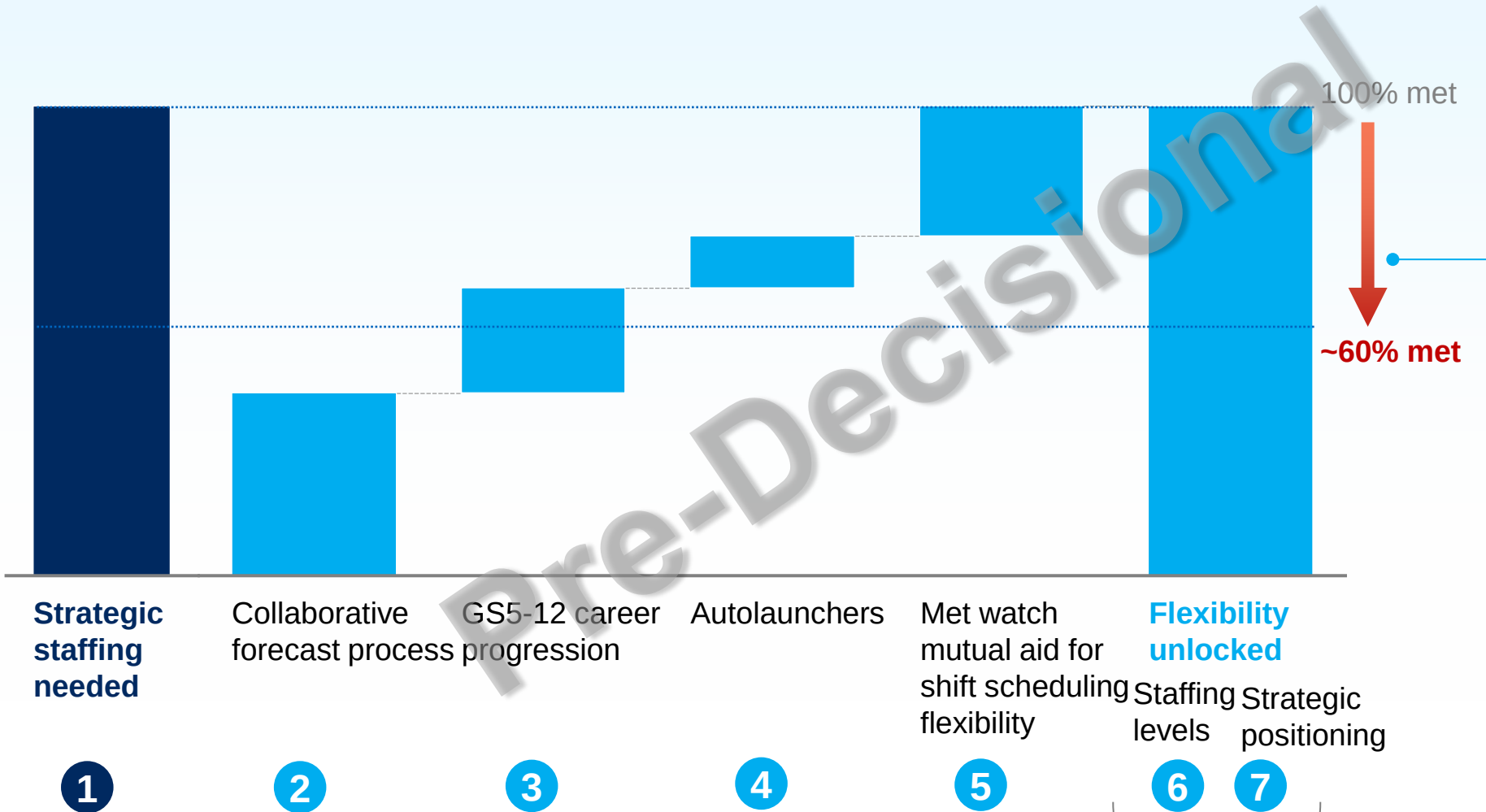
7 STRATEGIC POSITIONING

"Our current office footprint isn't based on our partners' needs – it's based on radar, and that means in many places we're too far to serve our partners well"

SOURCE: NWS Insider feedback on OWA, OWA MIC survey April 2016, Interviews and working sessions with OWA team members

NWS will pursue full flexibility in the operating model in order to deliver WRN vision

Relative amount of flexibility contributed by each “unlock”

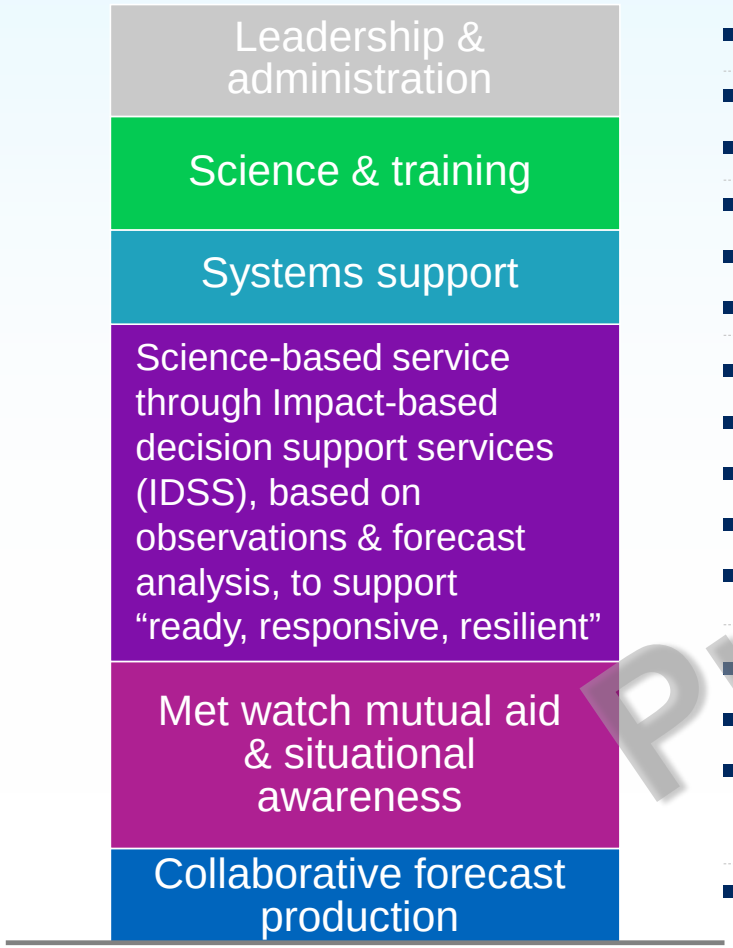


If in the future all offices are still 24/7/365 with two people required per shift, NWS will lose significant flexibility needed to enable a WRN – and organizational health issues will not be addressed

SOURCE: OWA Strategic staffing team

As flexibility is unlocked over time, NWS will move positions to areas of greatest need, and ensure that all partners receive as much or more support as they do today

Conceptual diagram for strategic staffing



Considerations for strategic staffing across all frontline field offices

- Overall size of office
- Best practice manager-to-employee ratio of 6-8 staff per manager
- Number of operational staff
- Proximity to / relationship with universities, other NOAA offices
- Number of ASOS, radar, COOP, upper air sites, river gauges
- Distance to / ease of access to observation sites
- Products and systems supported or developed on-site
- Population, property, and infrastructure
- Weather, water, climate impact
- Frequency of need
- Vulnerability
- Core and deep partners
- Frequency of hazardous weather and water activity
- Role in supporting met watch mutual aid across offices
- Use of latest advances for situational awareness i.e. HRRRv2, FACETS
- State of model guidance for the service area and/or geography

Presence will be maintained in all offices, and NWS will use a comprehensive **methodology to evaluate when and where to move positions to match workload**

SOURCE: Strategic staffing team preliminary output, May 2016

Next Steps

Where we are today

FY15

Diagnostic

OWA diagnostic on baseline and gaps (internal & external)

FY16

Ideas & Refinement

Complete analysis by generating ideas & developing recommendations

FY17

Test & evaluate begins

Testing & evaluation of recommendations, including feedback from external partners & field staff

FY18-23+

Continued testing & implementation

Implementation of OWA recommendations as concepts proven through test and evaluate

Involve, engage and communicate with internal and external stakeholders throughout

Analysis & Idea Development
Developed by members of NWS Field Offices, HQ & NWSEO

Recommendation Review & Decisions
NWS Senior Leadership committee

Realizing the vision – improved science and services for tomorrow

IMPROVING FORECASTING & WARNINGS

- Working from a common operating picture to ensure coordinated forecasts and messages
- Making the most of expertise from across NWS & NOAA
- Fully leveraging scientific and technological advances

PROTECTING LIVES & PROPERTY & ENHANCING THE ECONOMY

- Providing more staff on shifts where there is partner need to support preparation, mitigation, and recovery for hazardous weather, as well as routine high-value IDSS
- Deepening operational support available during events
- Developing and leveraging experts across field offices

STRENGTHENING ORGANIZATIONAL HEALTH & CULTURE

- Limiting rotating and overnight shift work when not needed to create a sustainable and healthy workplace
- Allowing staff to spend more time on high-impact meteorology and hydrology
- Creating additional career pathways through specialist roles and management positions at different levels

Appendix

Understanding IDSS need – where do we need local presence most?

Dimensions	Key considerations
PEOPLE, PROPERTY, AND INFRASTRUCTURE	▪ What is the size of the covered population (including seasonal flows), and with what density? ▪ What are the critical assets and economic activity levels in the area?
WEATHER AND WATER IMPACT	▪ How high impact are the weather types in the region? ▪ How high impact are water concerns in the region?
FREQUENCY OF NEED	▪ How often, or for what part of the year, is the area at risk? ▪ How often is event-driven IDSS needed?
VULNERABILITY	▪ To what extent are the population, property, and infrastructure particularly vulnerable to weather, water, or climate?
CORE AND DEEP PARTNERS	▪ To what extent are there additional high-demand customers in the area (e.g., aviation, national security, ports, dams)? ▪ To what extent are there force multipliers in the area?

A qualitative and quantitative approach has been taken to estimate IDSS need across the country – vulnerability and core partners are particularly difficult to quantify

SOURCE: OWA FIFS and strategic staffing teams

Meeting IDSS need requires NWS to find additional flexibility within current staffing levels

NWS needs additional staff time and flexibility beyond what is available today for **local weather, water, climate IDSS**, based on estimates of risk in each CWA and potential staffing level needed to support partners in each CWA

NWS also needs additional **staff time and flexibility to support the collaborative forecast process and fully integrated field structure**:

- National centers
- Regional Operations Centers, IDSS liaisons, roles to reduce manager to staff ratios, and cross-office support roles
- Operations Proving Ground and test beds
- Training center, regional, and local training staff

SOURCE: OWA Strategic staffing team

The diagnostic identified several areas of opportunity across workforce, organizational structure, and operating model

Key insights:

Workforce

- Controlling for differences, there is a **mismatch** in some areas between today's **workforce and today's workload**
- In addition, there is a difference between the current and desired skill level for skills identified as important to IDSS, including written and oral communications

Org. structure

- Though NWS ranked very highly in terms of motivation and external orientation, potential opportunities for improvement exist both in terms of health – where NWS scored **lower on overall health** than other public and private organizations – and structure – where HQ has reorganized, but the field remained constant**, lacking role clarity** across national, regional & local offices
- **Spans of control** vary across the organization, being larger than peer organizations in several important management levels, making coaching and training difficult

Op. model

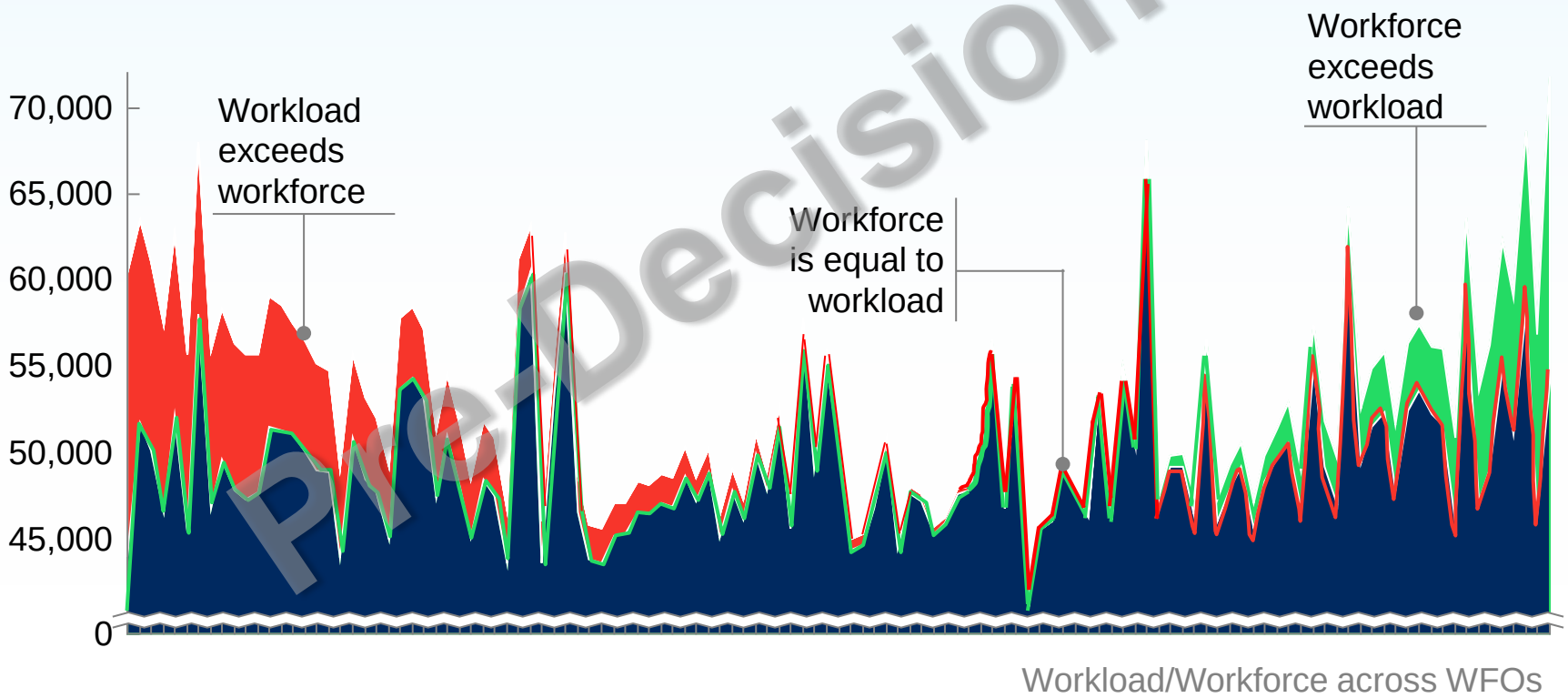
- Though generally high customer satisfaction was observed, IDSS is **inconsistently delivered**, including in terms of what IDSS products are provided, how IDSS is delivered, when IDSS is delivered and to whom IDSS is being delivered
- The forecast process today involves **some duplication of effort** and results in **inconsistent messages** and **may not make best use of emerging technological developments**

The workforce[1] and workload[2] varies across WFOs; overall the expected workload exceeds the workforce, with some offices over and others under supplied

Workload is equal to available workforce | Workload is less than available workforce | Workload exceeds the available workforce

WFO Workforce available compared to expected workload (based on statistically significant workload drivers from the regression analysis), 2014

Hours by WFO



1: Workforce defined as current available FTE hours (including overtime) worked across WFOs for all positions represented within a WFO
2: Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

External stakeholders praised NWS for trust, accessibility, accuracy, and relevance, but many are confused about the scope of IDSS

Dimension	Representative quotes
Trust	*"In an emergency, **trust is the most important part** of our relationship. I count on NWS, I know the person behind the forecast."*
	*"I trust my partners at NWS and **I know them** – the tone of their voice, the way they report out to us. And they know me."*
Accessibility	*"They're on Twitter, on social media, and in my email every morning; **I always know what I'm up against** when I start my day "*
	*"I have never worked with an agency that is **so accessible**. They are remarkably proactive and in many ways – email, phone, social media."*
Accuracy	*"It's not like the other weather brands. **I go by what the Weather Service tells me; not by anyone else"***
	***"The technology has improved so tremendously**; we can't see private companies keeping up with the products NWS has now"*
Relevance	*"It's our livelihood; **we're a weather-dependent economy** on our the best days."*
	*"During a severe weather event, NWS helps us ensure **there's not going to be a large loss of life."***

Confusion about scope of IDSS

*"We have to know what the NWS can do for us, but **we also have to know what they can't do, or we'll ask them to do everything**, and, God help them, they'll try and give it to us"*

*"It's challenging for the private sector to know where they should play a role, how they can play a role **when what the NWS does varies from event to event**"*

SOURCE: Site interviews

NWS has an overall health score in the bottom quartile, but has clear strengths in Motivation and External Orientation outcomes

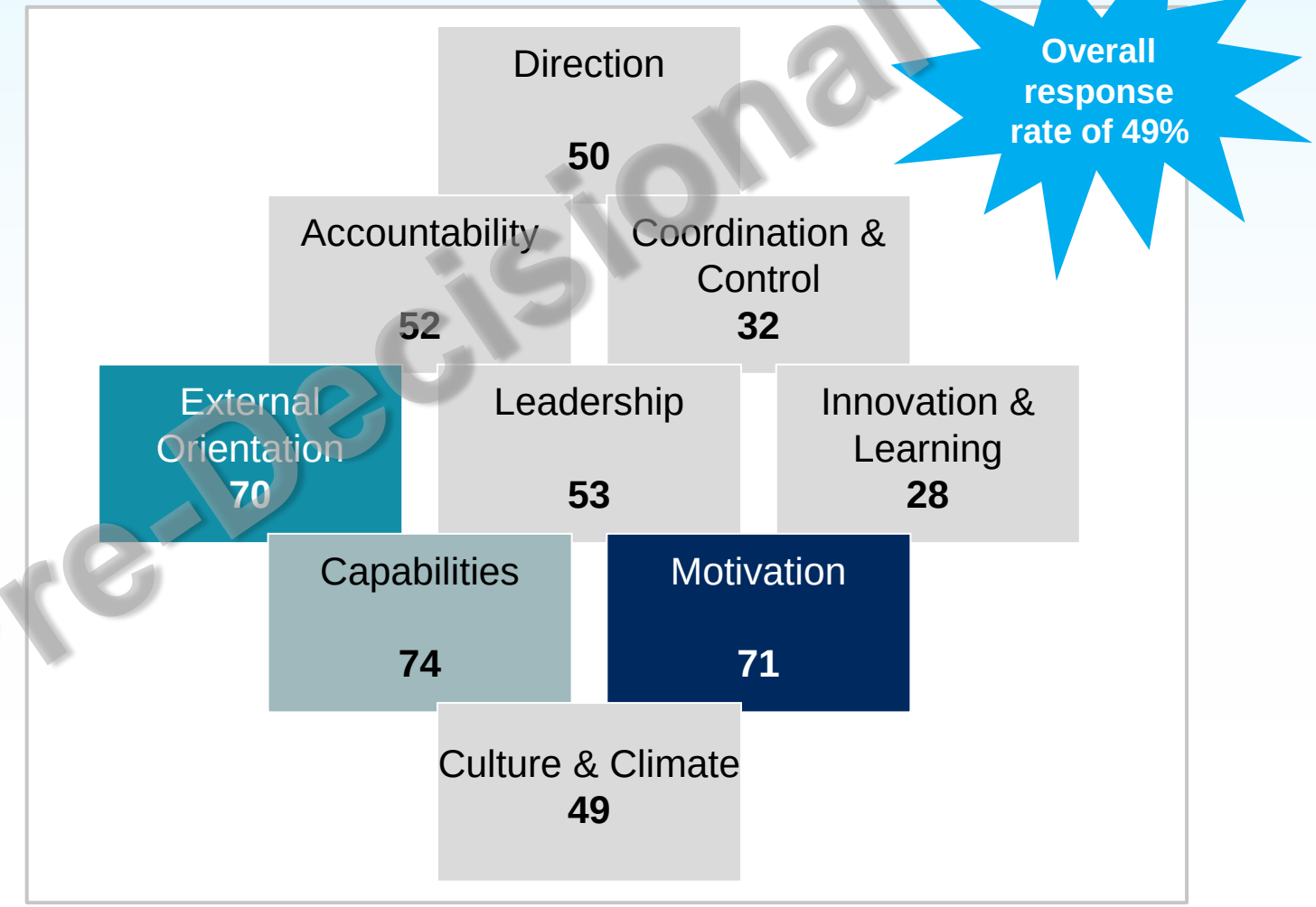
Benchmark

Top Quartile | Second Quartile | Third Quartile | Bottom Quartile

Overall OHI score

53

Percent agreement on outcome effectiveness



SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Senior level managers perceive higher outcomes, which is a common result, with the greatest differences in Direction, Leadership, and Culture & Climate

Benchmark

Top Quartile | Second Quartile | Third Quartile | Bottom Quartile

Statistically significant at the 95% Confidence level

Percentage agreement on outcomes

	Responses	Overall	Direction	Leadership	Culture & Climate	Accountab-ility	Coordinat-ion & Control	Capabilit-ies	Motivation	Innovation & Learning	External Orientation
Individual Contributors: I do not directly supervise other employees	1680	51	48	49	45	50	30	73	69	27	68
Middle Management: I directly supervise other front-line employees	376	58	53	58	58	58	35	75	76	31	74
Senior Leadership: I directly supervise other managers	106	70	74	86	76	68	43	78	85	35	81
Difference between Senior Leaders and Individual Contributors		+19	+26	+37	+31	+18	+13	+5	+16	+8	+13

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

The skill assessment, conducted by MICs, revealed gaps especially for those skills identified as important to IDSS and for the intern position[1]

Top quartile | Second Quartile | Third Quartile | Bottom Quartile | Top 3 skills

Outcome scores based on MIC evaluation of current and desired skill level

Skills	Importance to IDSS[1]	Gap between current and desired scores, rounded			
		Forecaster	WCM	Intern	HMT
Problem solving	4.4	0	1	2	1
Applying weather science	4.4	1	0	2	1
Data collection	4.2	0	-1	2	0
Analytics and stats	4.4	1	0	2	1
Computer and IT tech	4.8	1	0	2	0.5
Customer service	3.6	2	1	3	0.5
Leveraging diversity	3.8	2	1	1	0
Quality focus	4.2	0	0	2	1
Teamwork	3.6	2	2	2	1
Creative thinking	4.4	1	2	2	0
Judgment/decision-making	4	1	1	2	0.5
Leadership	4.4	2	2	1	1.5
Partnering	4.4	2	0	2	1
Written communications	4.6	3	1	2	1
Oral communications	4.6	3	2	1	1
Coordination	4.2	2	0	2	1
Information gathering	3.8	1	-1	1	1

1 Based on a scale of 0-5 where 0 indicates it is not important to IDSS and 5 that it is critical to IDSS

SOURCE: NWS Skill assessment; Representative sample of NWS WFOs, CWSUs, and RFCs

Our job doesn’t begin or end with forecasts and warnings

“What is a Good Forecast? An Essay on the Nature of Goodness in Weather Forecasting”

by Allan H. Murphy; Weather and Forecasting (June 1993)

“First, it should be understood that forecasts possess no intrinsic value. They acquire value through their ability to influence the decisions made by users of the forecasts.”

“Deep relationships” IDSS is the strategic direction for NWS[1]

Official IDSS definition[1]

“The **provision of relevant information** and **interpretative services** to enable **core partners**’ decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods”

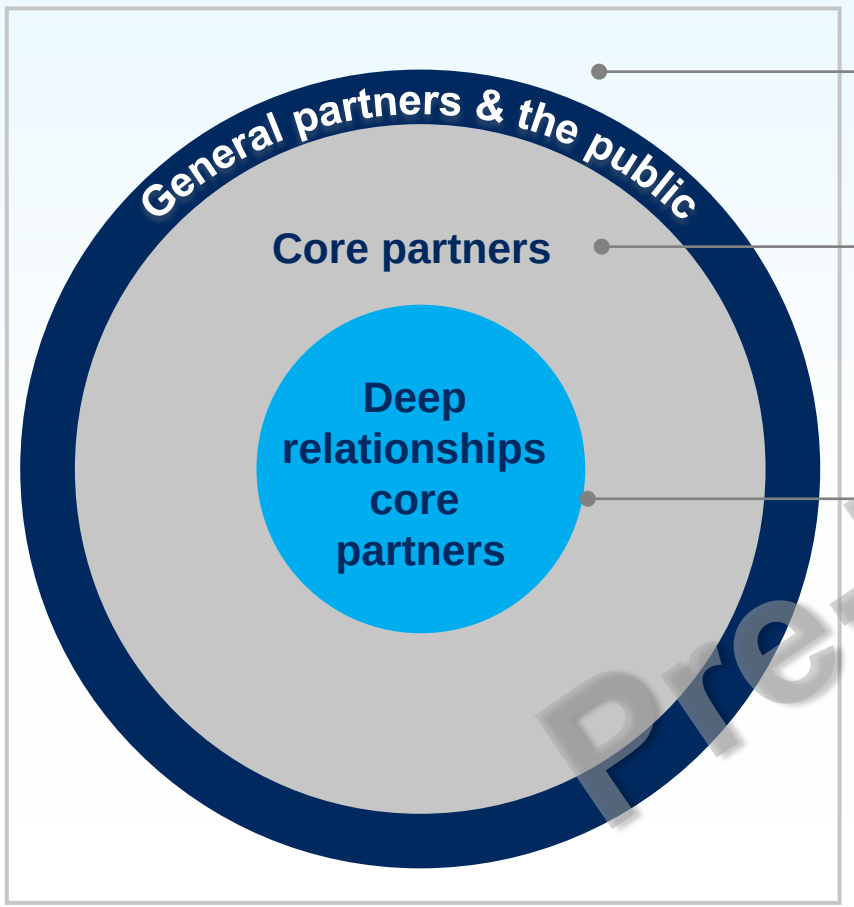
	“Deep relationships” Philosophy
Who	**Defining IDSS core partners** as emergency management community and government officials
When	Performing **recurring IDSS** for mitigation, preparation, response, recovery, and training in addition to supporting events
What	Creating **information[1]** for specific stakeholders. **Integrating** with core partners
How	Providing a **broad range of services**

1 Examples: Specialized webinars, briefings, graphics; IDSS web briefing page; Spot forecasts; plume modeling

1 NWS Policy Directive 1-1003, Appendix A

SOURCE: NWS WRN Road Map: http://www.nws.noaa.gov/com/weatherreadynation/files/nws_wrn_roadmap_final_april17.pdf

Deeper detail on deep relationship core partners



Partners that fall outside of the core partner definition, e.g. general public, private businesses

Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the NWS[1]

"Deep relationship" core partners are a subset of core partners that are members of the emergency management community or are government partners with NWS nexus. Offices determine their "deep relationship" core partners according to criteria:

- Pertain to **legal or national security** interests
- Exercise a **large degree of authority or influence** on public safety relative to other core partners
- Serve a **population or entity particularly vulnerable to weather**
- Act as a **force multiplier to help amplify NWS message**

1 NWS Policy Directive 1-1003, Appendix A

SOURCE: NWS Policy Directive 1-1003, March 2016 OWC, IDSS team

“Deep relationships” IDSS increases service overall and ensures tailored support for partners most critical to achieving Weather-Ready Nation

Depth of decision support

Partner service level

General partner/ public services

- ✓ Routine production (e.g. NDFD, model output, forecasts, watches, warnings, advisories)
- ✓ Website
- ✓ Social media
- ✓ NWS dissemination services
- ✓ Outreach, preparedness education

Core partner services

General partner services and event-driven services, such as:

- ✓ NWS initiated calls
- ✓ Webinars, briefings, and email alerts
- ✓ NWSChat and iNWS[1]
- ✓ Spot forecasts, plume modeling
- ✓ Annual talks/trainings/exercises
- ✓ Specialized briefings, emails, and graphics for *episodic support*
- ✓ Occasional on-site deployments

Deep relationships core partner services

General partner and core partner services plus frequent other interactions, such as:

- ✓ Specialized briefings, emails, and graphics for *recurring support*
- ✓ Multiple yearly exercises, e.g. table top
- ✓ After-action event reviews
- ✓ Local Emergency Planning Committee (LEPC) exercises/briefings
- ✓ On-site deployments

1 Media should only receive general partner services plus first three listed core partner services

OWA improves services to partners, ensures highest value use of resources, and increases agility of NWS – all in line with the vision of Weather-Ready Nation

ILLUSTRATIVE

How deep relationships and a collaborative forecast process will feel to partners

Local forecasters in 15 Weather Forecast Offices (WFOs) each see a possibility of significant snow next week

The Weather Prediction Center (WPC) issues an extended forecast showing the potential for snow – WPC, local forecasters, and the Regional Operations Centers (ROCs) decide how to message the risk, and **forecasters proactively reach out to their partners**

Over the next few days, WPC updates the extended forecast and discusses with WFOs – **local forecasters have additional time to understand partner needs, analyze potential impacts, and communicate risks to partners**

Managers are able to flex their staffing in support of the event

Two days out, WPC and the WFOs review potential watches together, considering impacts to partners, and issue all watches together

Partners receive a consistent message and receive information tailored to aid their decision making

As the storm develops, each WFO adds precision on timing, location, and amount of snow to the forecast in ways that are of highest value to partners

To ensure partners are prepared, each WFO updates local watches, warnings, and advisories, and **continues communication** with partners

SOURCE: NWS interviews Jan – Mar 2016

The OWA project is grounded in external guidance and has strategic alignment with the Department of Commerce

External Guidance

- The Weather-Ready Nation strategic vision, rooted in the concept of decision support services, has strong support across NOAA, DOC, Congress, and other stakeholders
- Conducting a workforce analysis was supported by the House and Senate (both authorization and appropriations), and was a recommendation from recent external studies by NAPA and NAS
- Studies emphasize that NWS cannot make changes to its operations and/or workforce alone but can do so in collaboration with our stakeholders

Strategic alignment

- Department of Commerce FY14-18 Strategic Plan: Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation. Key Strategy: Evolve NOAA's National Weather Service
- "The Weather-Ready Nation Roadmap 2.0 describes a more flexible and agile approach to management practices, services, workforce, science, and technology. As the roadmap's new approaches are implemented, the NWS will be more effective in supporting EMs, first responders, etc.."

From the briefing in May 2016…Fully Integrated Field Structure initial “boundary conditions”

A Fully Integrated Field Structure changes the way NWS works...

- Makes use of expertise from across NWS and NOAA, including **using information developed by others to deliver IDSS consistently**
- **Requires** field offices to **work collaboratively**
- Matches **resources to changing and emerging demands**
- Increases **flexibility** for managers in deciding how to meet local needs
- Engages the **whole office** in IDSS

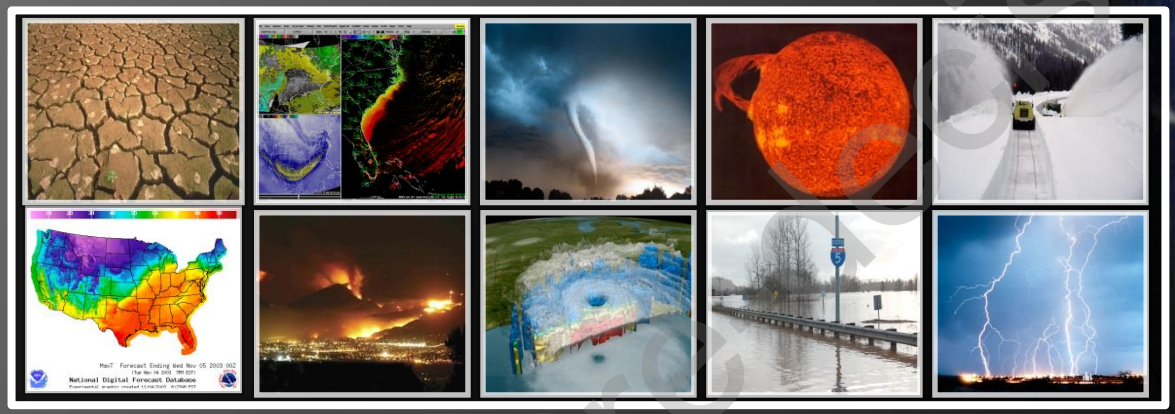
…but many critical things stay the same

- **Commitment to deliver on the mission** through science-based service, with robust observing networks and accurate, consistent forecasts and warnings
- **Current NWS employees are critical to the mission** and those who have a job today will continue to have a job
- **Local presence will be maintained,** given the deep relationships IDSS increases the importance of being close to our core partners
- **Positions could move – not people:** those who want to move may have the opportunity to do so but no one will be asked to move

Operations and Workforce Analysis Phase 1-3 Deliverables

These slides are the reports of the work done under the first 3 phases of the Operations and Workforce Analysis (OWA) in 2015-2016. The ideas and analysis presented in these slides do not represent an implementation plan or connote decisions made by the National Weather Service to change its operations or workforce structure. Any future changes to NWS operations or workforce will be tested and evaluated before consideration for implementation, and appropriate communications and consultation will take place with Congress, the Administration, employees and external stakeholders.

Operations and Workforce Analysis (OWA) Phase 1 Deliverable: Current State Baseline and Gap Assessment



August 2015

Executive Summary of Phase 1 Deliverable: Current State Baseline and Gap Assessment

Overview of OWA: Purpose of the project, objectives for Phase 1 baseline and gap assessment

Methodology: Criteria and decisions to select and conduct site visits, interviews, surveys, team, SMEs

Baseline, gap analysis and insights: Against each assessment area, share fact-based findings and insights, including variation in particular roles and regions as well as themes from external stakeholders and internal staff

- **Workforce:** Controlling for differences, there is a gap in some areas between today's workforce and today's workload (e.g., due to increase in severe weather, proliferation of programs), which is expected to increase in the short-term given constraints on supply and increased demand but could be offset in the longer-term given changes to technology and operating procedures
- **Operating Model (including IDSS):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there is a lack of alignment on what IDSS means, lack of clarity on roles, and lack of consistency on process and metrics used to evaluate outcomes
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where we observed overall lower health but strengths in motivation and external orientation – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and the organization model, and continue to communicate and engage with internal and external stakeholders throughout

The Operations and Workforce Analysis (OWA) intends to achieve 6 main objectives working within a set of constraints

FROM THE ORIGINAL STATEMENT OF OBJECTIVES

Objectives

1. **Stakeholder Engagement and Change Management:** Develop the capacity to involve stakeholders throughout the project
2. **Evaluation of IDSS:** Better qualify and quantify IDSS across the entire organization (it will vary geographically and organizationally)
3. **Current State Baseline:** Understand and baseline current state operations and workforce model through a comprehensive assessment and analysis
4. **Current State Gaps:** Identify gaps in the current state operations, workforce, and organization required to support IDSS and achieve a Weather-Ready Nation
5. **Recommendation of Alternatives:** Develop recommendation(s) for evolving NWS from current to future state to close gaps, leverage state-of-the-art science and technology, consider geographic differences and enable services and workforce concepts in NWS strategic documents
6. **Implementation Planning:** Advance recommendations to action through plans, quick wins, and phased implementation

Constraints

- **A** Ensure no adverse impact to mission
- **B** Provide appropriate transparency and engagement
- **C** Consider demographics and unique/regional challenges
- **D** Leverage previous analysis and recommendations from previous studies
- **E** Bottom-line reductions in workforce are not a driving factor and should not be a main consideration
- **F** Assess infrastructure/facilities implications without seeking office closures
- **G** Project future science and technology changes as a factor in recommendations
- **H** Complete all Base Period Performance Objectives within the first 8-15 months

The OWA program is structured to address the 6 objectives while working within the 8 constraints by the end of 2015

● Objective ▭ Current focus

	Base year (total 8 months)			Year 1	Year 2
Duration					
Phase	**PHASE 1: ASPIRE AND ASSESS**	**PHASE 2: ARCHITECT**	**PHASE 3: BEGIN TO ACT AND ADVANCE**	**PHASE 4: BRING TO SCALE**	**PHASE 5: ADAPT AND EXPAND**
Description of work	**1 Change Management and Stakeholder Engagement** Project governance structure and teams; stakeholder map and outreach plan			**7 Execute Roll-Out Plan** ▪ Change agents ▪ Field and Forum ▪ Leader-ship coaching ▪ Rapid ROI review	**8 Launch New Programs** ▪ Field and Forum ▪ Weather event review ▪ Pilot review ▪ Program report
	2 Evaluation of IDSS **3 Current State Baseline** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model **4 Current State Gaps**	**5 Recommendation of Alternatives** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model	**6 Implementation Planning** ▪ Quick wins ▪ Higher risk/reward options ▪ Implementation and roll-out plans including – Project teams – Milestones – KPIs		
Timing	12 weeks	10 weeks	10 weeks	1 year	1 year
Deliverables	▪ Project governance structure and stakeholder map ▪ Communications plan ▪ Comprehensive report on current state baseline and gaps ▪ Workshop to review results and path forward	▪ Report with description of alternatives and prioritized selections for planning ▪ Workshop to review and decide on recommendations ▪ Stakeholder engagement report and "change story" content	▪ Detailed implementation, communication, and roll-out plan ▪ Workshop to share plan and build support ▪ Plan for ongoing change management efforts	▪ Training content ▪ Leader-ship materials ▪ Report rapid ROIs and roll out	▪ Training content ▪ Review weather events ▪ Review pilots ▪ Report on program

Phase 1 (Aspire and Assess) focused on establishing the current state baseline and gaps

Partially completed
✓ Launched/ completed
Meeting

	Planning	Collecting and analyzing data	Analyzing and synthesizing data	
Phase 1 approach	Mid-May - June	June – July	July – early August	**Phase 1 outputs**
Workstream 1: Communications and stakeholder engagement	**Governance structure:** Operations and Workforce Committee, Core team and SMEs ✓ **Stakeholder map** and communications plans ✓		Operations and Workforce Committee **(July 28)**	▪ Project governance structure ▪ Stakeholder map and communications plan
Workstream 2: Organizational structure	**Organizational Health Index (OHI) survey** ✓ preparation and launch	Staff responses to OHI ✓	Survey analysis ✓	▪ OHI survey results
Workstream 3: Operating model (including IDSS evaluation)	Plan for **site visits , interviews**, and survey ✓	Site visits and interviews ✓ IDSS customer survey ✓	Data and survey analysis ✓	▪ IDSS evaluation, including skills assessment and organization
Workstream 4: Workforce model	Workforce model data request ✓	Analysis of FTE data for workforce model ✓	Development of workforce model ✓	▪ Strategic workforce model

During Phase 1, data from a variety of sources were analyzed to complete the baseline and gap assessment

Sources	Details
Data collection	▪ Data were collected from NWS' Office of the CIO and NOAA's Department of Workforce management on: – Historical and current vacancies and positions breakdown – Retirement eligibility and tenure – Hours (regular and overtime) worked ▪ Additional data collected on office characteristics (e.g., area of responsibility, terminal aerodrome forecast (TAF) responsibilities, warning, watches and advisories (WWA) and weather event data by office)
Surveys	▪ Two surveys were conducted: – Voluntary Organizational Health Index (OHI) survey sent to all NWS staff (~50% response) – IDSS survey sent through Warning Coordination Meteorologists (WCMs) to external stakeholders (>700 responses)
Site visits	▪ Completed site visit to 42 offices (~20% of all offices) including a diverse set of office types (e.g., Weather Forecast Offices (WFOs), River Forecast Centers (RFCs) ▪ Offices were located in 20 locations, including at least one in each of 6 regions
Interviews and focus groups	▪ Conducted >560 interviews with ~360 internal staff and ~200 external stakeholders during 1:1 interviews and focus group discussions

Phase 1 site visits included a representative sample of ~42 offices in 20 locations, totaling ~20% of all NWS offices

Selection approach

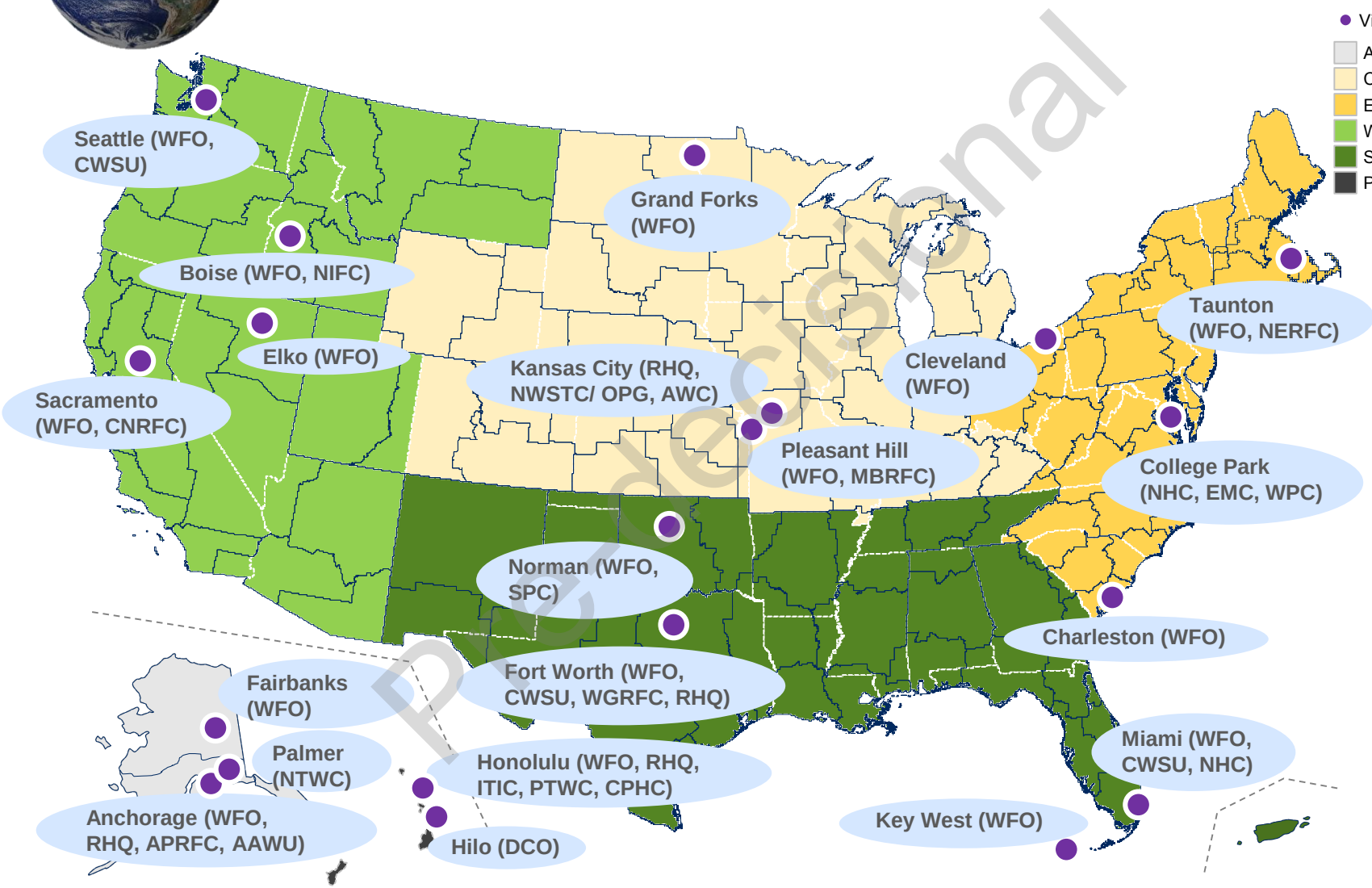
- First, a list of all NWS locations was generated including data on the following criteria:
  - Office type (WFOs, RFCs, Regional HQs, CWSUs, TWCs)
  - Marine vs. land-based coverage
  - Population density
- Second, locations were randomized to be representative across the above criteria to ensure:
  - At least 2 visits per region in continental US
  - 1 visit per region in Pacific/Alaska
- Then, a national perspective was taken to consider:
  - NCEP locations
  - Other factors (e.g., type of weather events like fire weather, IDSS needs)

Site visit list

- Eastern
  - Taunton, MA (WFO, NERFC)
  - Cleveland, OH (WFO)
  - Charleston, SC (WFO)
- Southern
  - Ft Worth, TX (WFO, CWSU, WGRFC, RHQ)
  - Key West, FL (WFO)
  - Miami, FL (WFO, CWSU)
  - Norman, OK (WFO)
- Pacific
  - Honolulu & Hilo, HI (WFO, RHQ, ITIC, PTWC, DCO, CPHC)
- Central
  - Grand Forks, ND (WFO)
  - Kansas City & Pleasant Hill, MO (WFO, RHQ, NWSTC/ OPG, MBRFC)
- Western
  - Boise, ID (WFO, NIFC)
  - Elko, NV (WFO)
  - Sacramento, CA (WFO, CNRFC)
  - Seattle, WA (WFO, CWSU)
- Alaska
  - Anchorage & Palmer (WFO, RHQ, RFC, NTWC, AAWU)
  - Fairbanks (WFO)
- Other
  - NCEP (SPC, NHC, AWC, EMC, WPC) in College Park, MD; Miami, FL; Norman, OK; and Kansas City, MO

- **Phase 1 site visit plan** enabled ~42 site visits to distinct offices in 20 locations:
  - 16 WFOs
  - 6 RFCs
  - 5 NCEPs
  - 4 Regional HQs
  - 3 CWSUs
  - 2 TWCs
  - 1 NIFC
  - 1 CPHC
  - 1 AAWU
  - 1 DCO
  - 1 ITIC
  - 1 NWSTC/ OPG
- **During Phase 2,** additional sites will be visited

Phase 1 site visits included a representative sample of ~42 offices in 20 locations, ~20% of all NWS offices (2/2)



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Executive Summary of Phase 1 Deliverable: Current State Baseline and Gap Assessment

Overview of OWA: Purpose of the project, objectives for Phase 1 baseline and gap assessment

Methodology: Criteria and decisions to select and conduct site visits, interviews, surveys, team, SMEs

Baseline, gap analysis and insights: Against each assessment area, share fact-based findings and insights, including variation in particular roles and regions as well as themes from external stakeholders and internal staff

- **Workforce:** Controlling for differences, there is a gap in some areas between today's workforce and today's workload (e.g., due to increase in severe weather, proliferation of programs), which is expected to increase in the short-term given constraints on supply and increased demand but could be offset in the longer-term given changes to technology and operating procedures
- **Operating Model (including IDSS):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there is a lack of alignment on what IDSS means, lack of clarity on roles, and lack of consistency on process and metrics used to evaluate outcomes
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where we observed overall lower health but strengths in motivation and external orientation – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and the organization model, and continue to communicate and engage with internal and external stakeholders throughout

Currently, the number of positions at NWS is determined both by an appropriated cap of the number of employees as well as authorized positions covering responsibilities

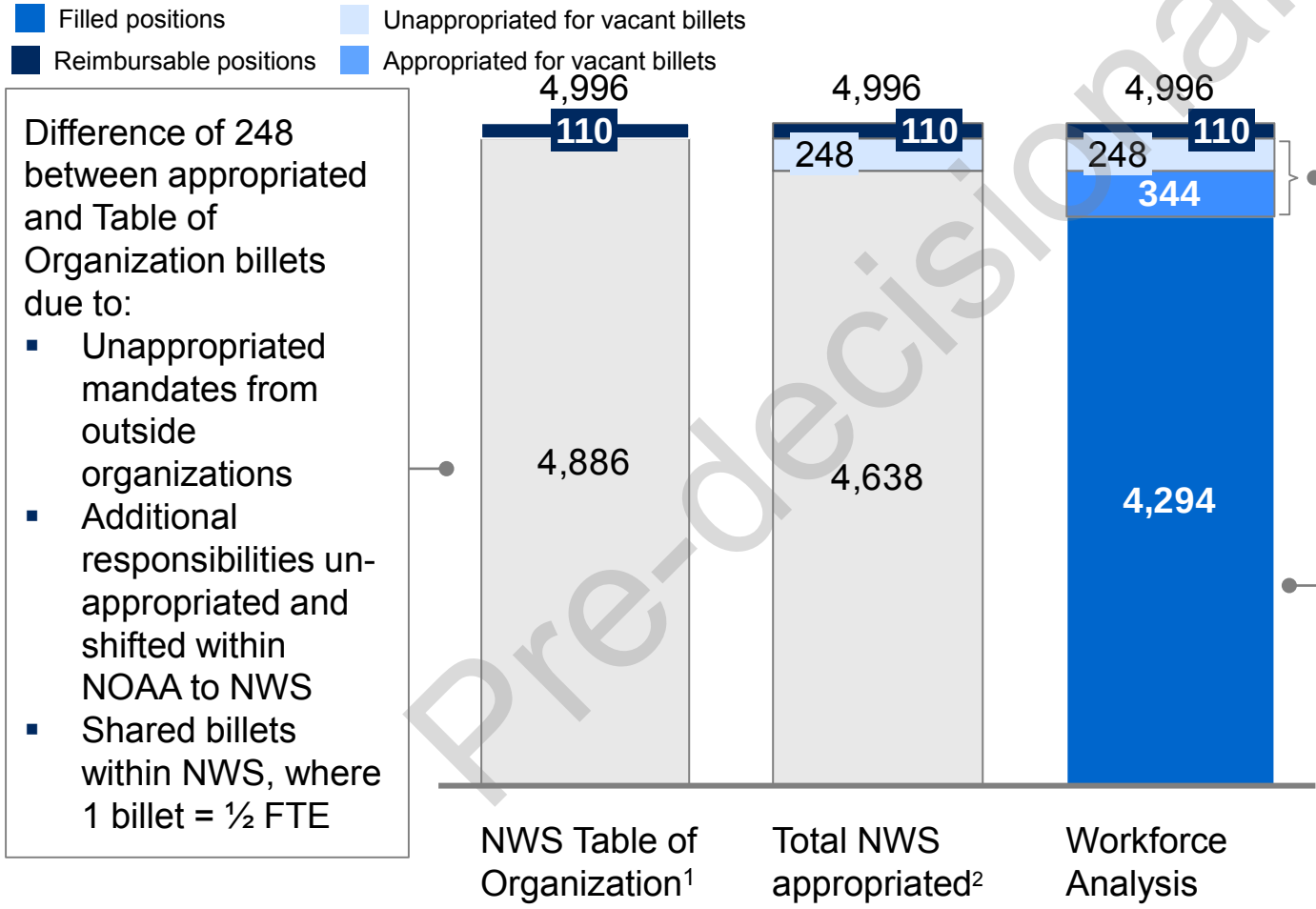
	Description
Appropriated cap for FTEs	▪ The Congressional cap placed upon the number of full-time employees that NWS can employ at any time
Filled authorized positions	▪ Authorized by position (**via billet**) and then assigned to FTEs in order to fulfill responsibilities given to the NWS; almost always one FTE to one position; counts towards the appropriated cap of FTEs
Vacant authorized positions	▪ Authorized by position (**via billet**) and by location but not currently assigned to any staff; does not count towards the appropriated cap
Temporary positions	▪ Positions created (**via temporary billet**) in order to fulfill duties in the short term or that have not been authorized; when filled, they count towards the appropriated cap; when vacant, they do not
Reimburseable positions	▪ Positions created, often by joint missions, that are not financed by NWS and do not count towards the appropriated cap
Student positions	▪ Student positions in which college students can work for the NWS; are not FTE positions and do not count towards appropriated cap

SOURCE: HQ and site interviews

The workforce analysis is based on the NWS Table of Organization; there is a difference between the appropriated positions and current Table of Organization

NWS 2015 FTE appropriated and Table of Organization

FTE 1 position = 1 FTE



Difference of 248 between appropriated and Table of Organization billets due to:

- Unappropriated mandates from outside organizations
- Additional responsibilities un-appropriated and shifted within NOAA to NWS
- Shared billets within NWS, where 1 billet = ½ FTE

Vacant billets (592) represent difference between Table of Organization positions (4,886) and filled positions (4,294); 344 vacant billets appropriated in 2015 to fill

Workforce and workload analysis model (4,404) based on Table of Organization filled positions (4,294) and reimbursable FTEs (72 filled[3])

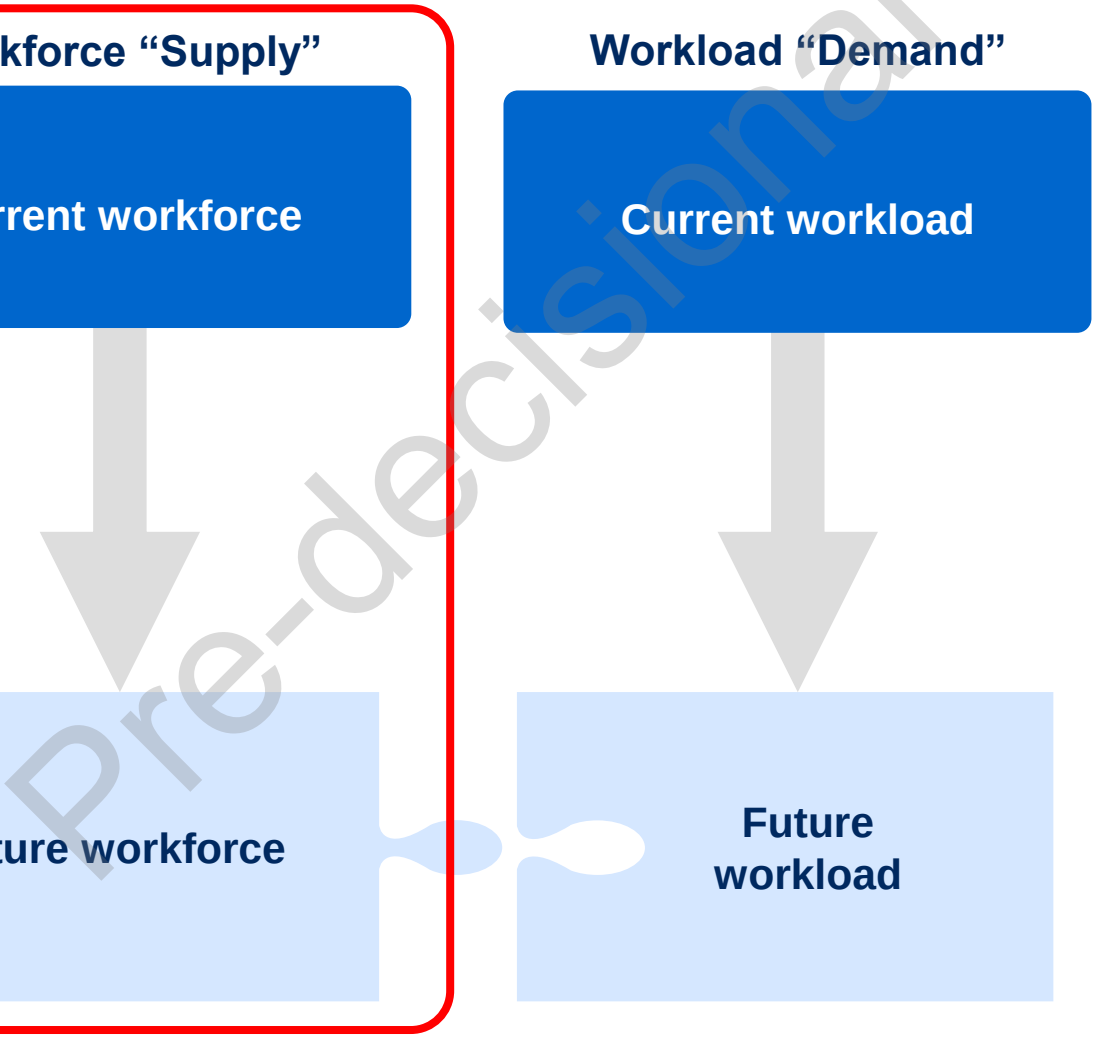
1 Data from Table of Organization for NWS; not included are the 87 pathways positions (7 filled) or unfilled temp billets
2 4,638 represents the number of billets NWS is appropriated to fill in 2015
3 72 of the 110 reimbursable positions are filled

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

NWS Workforce

1. Current and future workforce
2. Current and future workload
3. Gap between workforce and workload

1 Strategic workforce model



1 Workforce: Summary of current and future workforce section

- Majority of NWS workforce is in the field
- Vacancies exist across the organization, throughout all offices, and across all types of roles
- Hiring rates and attrition rates have both been increasing
- Even with hiring rates continuing to recover, retirements and attrition will contribute such that vacancies will not begin to decrease until 2020; if hiring rates stagnate, vacancies will continue to increase
- The structure of the career path for meteorologists, techs, and hydrologists leads to serious bottlenecks and increasingly high number of vacancies in senior positions
- Overall, workforce is also reaching higher GS-levels and becoming more expensive over time

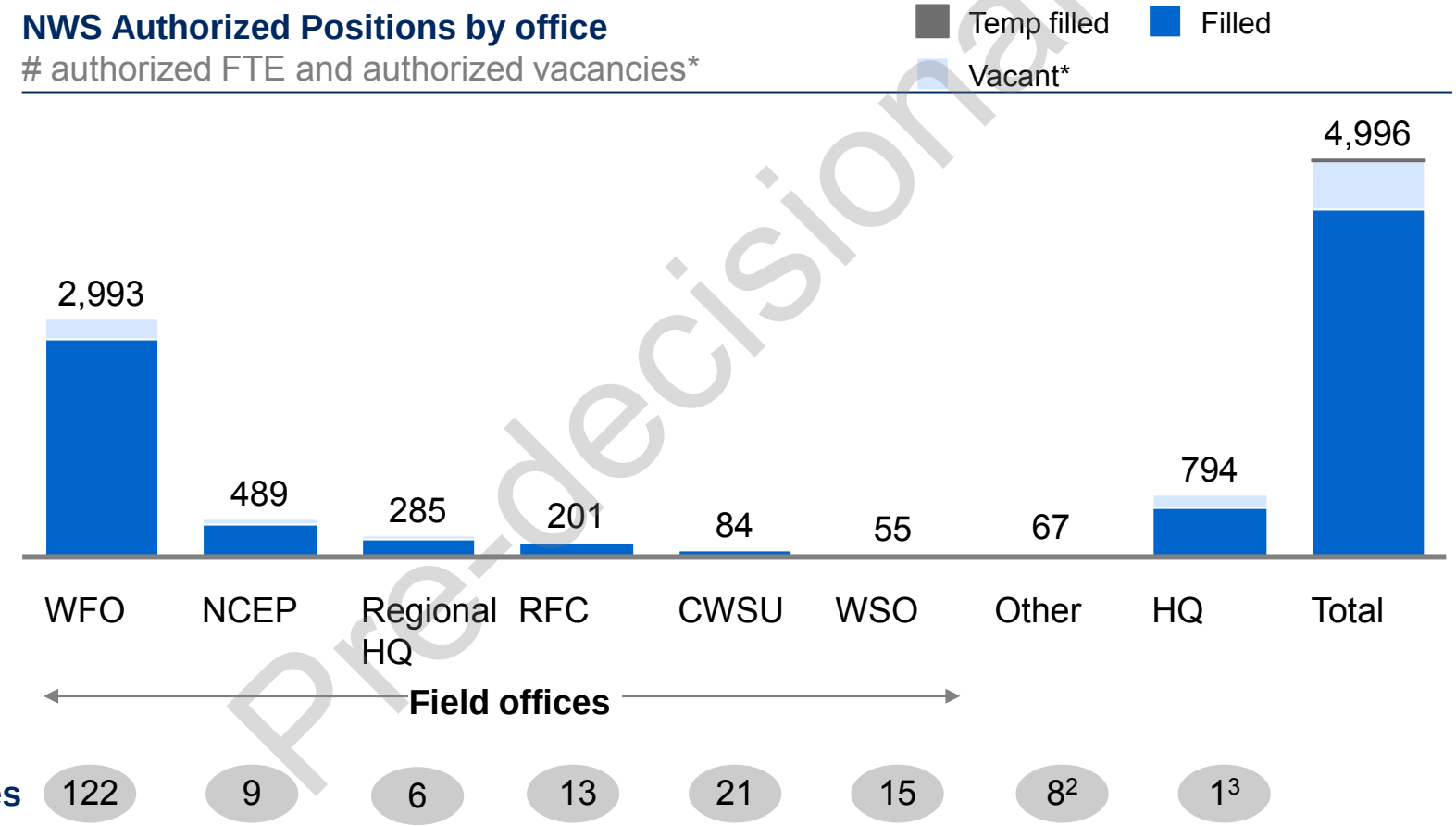
1 External hiring increases the NWS workforce, while attrition and retirement lead to workforce decreases

	Drivers of workforce	Description
Increase workforce supply	▪ External hiring	▪ Increases workforce available ▪ Measured by number of new FTEs with zero years tenure at NWS by year
Decrease workforce supply	▪ Attrition (including retirement)	▪ Reduces workforce ▪ Based on historical attrition rates
Changes workforce distribution	▪ Intern hiring/ position changes	▪ Changes location of workforce across positions ▪ Based on GS-level and hierarchy of positions (e.g., met intern => journeyman => lead forecaster)

1 The NWS workforce is highly dispersed with the majority of staff (82%) working within one of the 183[1] offices in the field

NWS Authorized Positions by office

authorized FTE and authorized vacancies*



Note: Includes filled temp billets (28) but not vacant temp billets; includes 110 reimbursable billets, 103 of which are currently filled

1 NSCs such as the Alaska Aviation Weather Unit not included as its own office; positions included in total count for requisite regional HQ or WFO

2 Other includes NWC, the Data Buoy Center, the National Training Center, DCOs, the ITIC, the two TWCs; NTC and NDBC and NTC are not located in the region

3 Headquarters is defined as one facility but includes operations facilities like National reconditioning center; some HQ staff potentially working at other offices temporarily

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

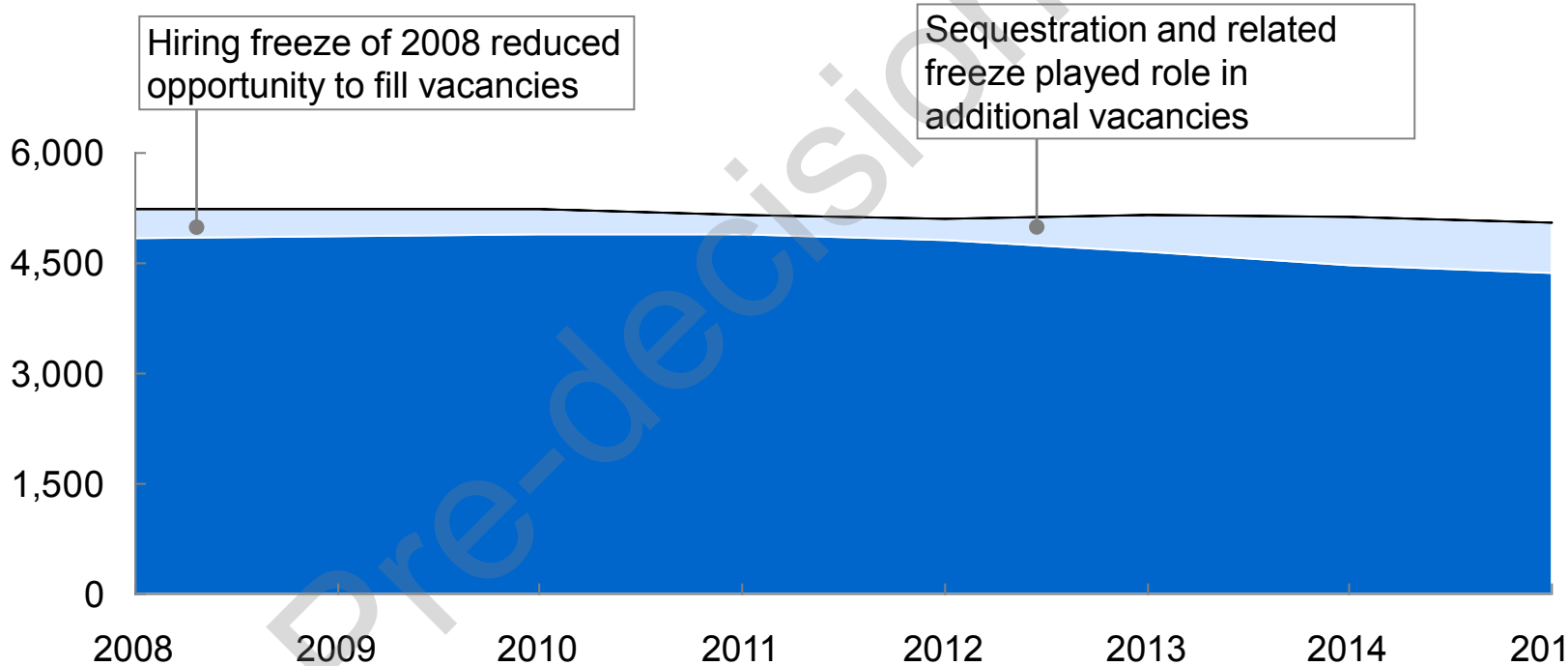
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Reduced hiring rates and increased attrition in recent years have led vacancies* to increase even as the number of appropriated FTEs has remained constant

NWS FTE positions filled and vacancies*

All FTE and unfilled positions

XX% Rate by year | Positions filled | Vacancies*



	2008	2009	2010	2011	2012	2013	2014	2015
Attrition rate[1]:	5.7	5.0	5.5	5.2	6.0	6.0	5.8	--
Vacancy rate	7	7	7	5	6	9	12	12

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

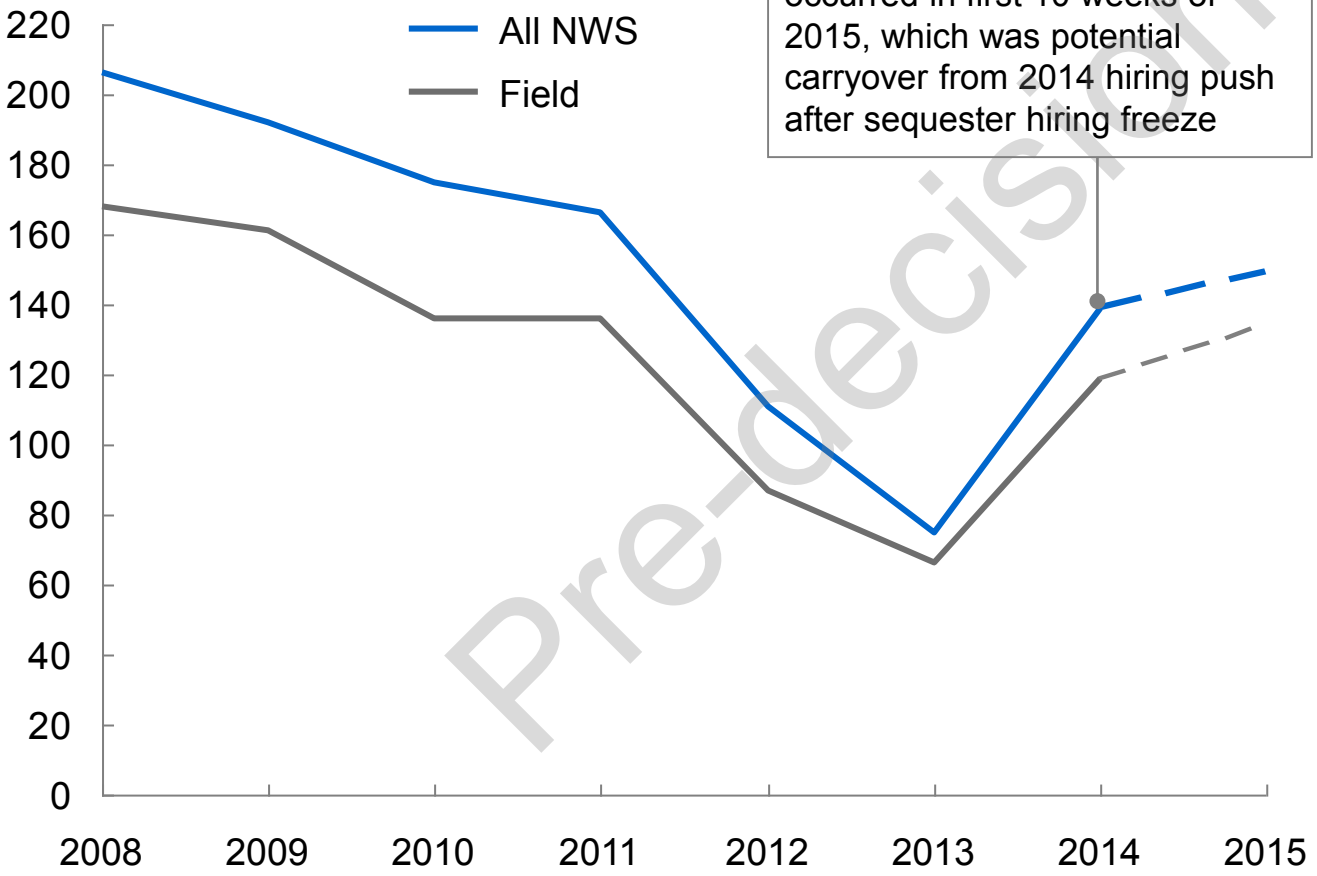
1 NWS attrition rate also referred to as separations

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Hiring rates have increased in the past two years, but there is still a significant hiring challenge

'08-'15 NWS employee hiring actions

authorized FTE



Additional increases in hiring occurred in first 10 weeks of 2015, which was potential carryover from 2014 hiring push after sequester hiring freeze

Representative quotes:

*"Currently, there is a **NOAA-wide backlog of 1000 positions due** to be filled" -NOAA*

*"There are hundreds of meteorology students who want these jobs, but **the process takes so long that applicants give up** on working for [the NWS]" -HQ*

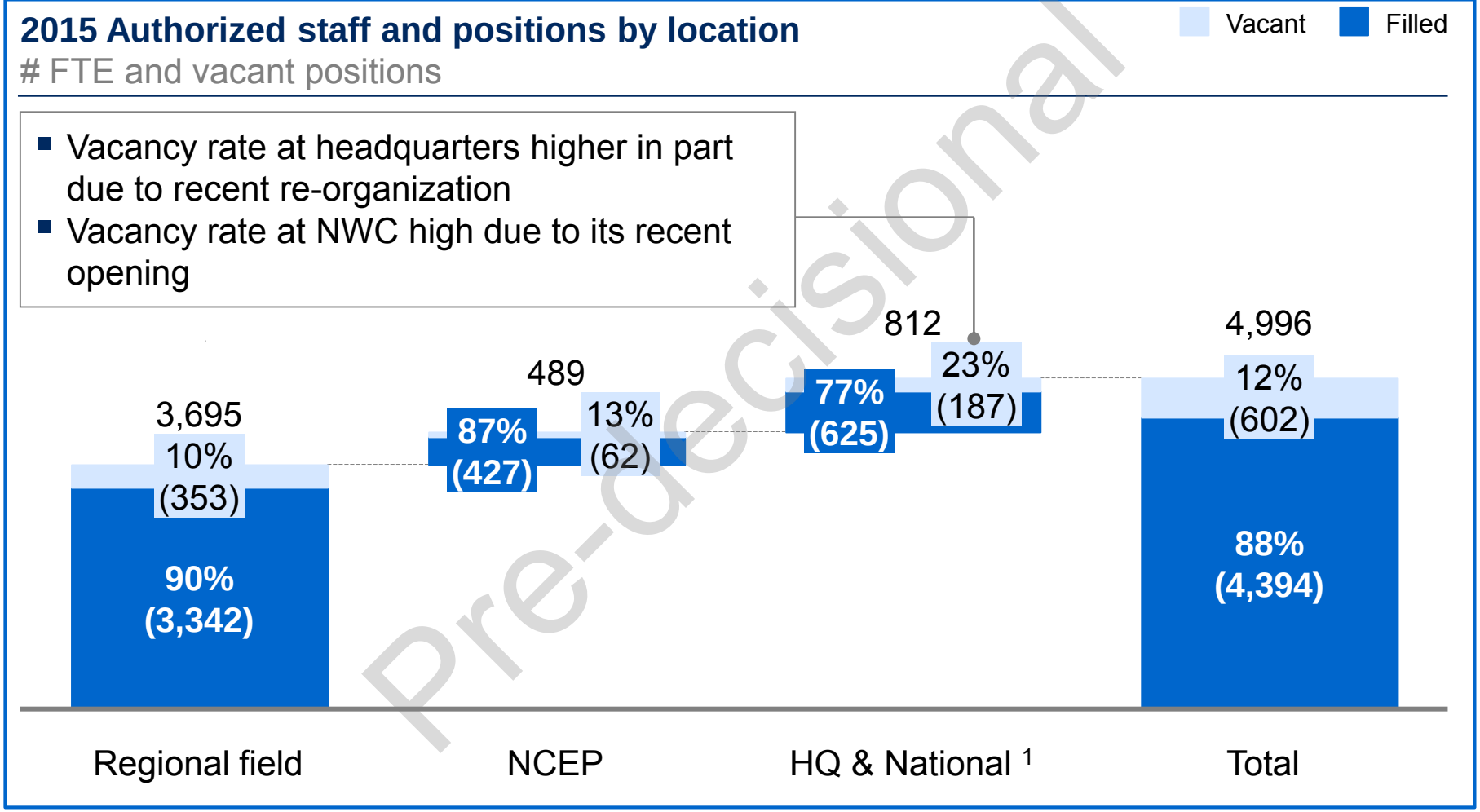
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; HQ & site interviews

1 The average vacancy* rate is 12% with the largest number of vacancies (415) in the field and highest percent in HQ

2015 Authorized staff and positions by location

FTE and vacant positions

- Vacancy rate at headquarters higher in part due to recent re-organization
- Vacancy rate at NWC high due to its recent opening



Note: vacant billets are counted as equal to 1 FTE
1 HQ & National includes all facilities affiliated with HQ FM Code, as well as National Data Buoy Center and National Water Center

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Across NWS, vacancy* rates vary by position, with relatively lower vacancy rates in meteorologist roles

= requires specialized science degree

Top 14 Positions by total number of positions, 2015[1]

Position	# Filled	# Vacant	Total	% Vacant
Meteorologist	1,913	172	2,085	8%
ET	239	38	277	14%
IT Specialist	183	41	224	18%
ASA	132	20	152	13%
Hydrologist	116	14	130	11%
MIC	116	9	125	7%
SOO	107	16	123	13%
Phyiscal Scientist	99	21	120	18%
HMT	85	22	107	21%
OPL	91	14	105	13%
Serv. Hydrologist	78	10	88	11%
Program Analyst	53	17	70	24%
Met Tech	43	13	56	23%
ESA	29	14	43	33%

1 Positions above are grouped by position title from workforce data and does not include some additional role differentiation
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

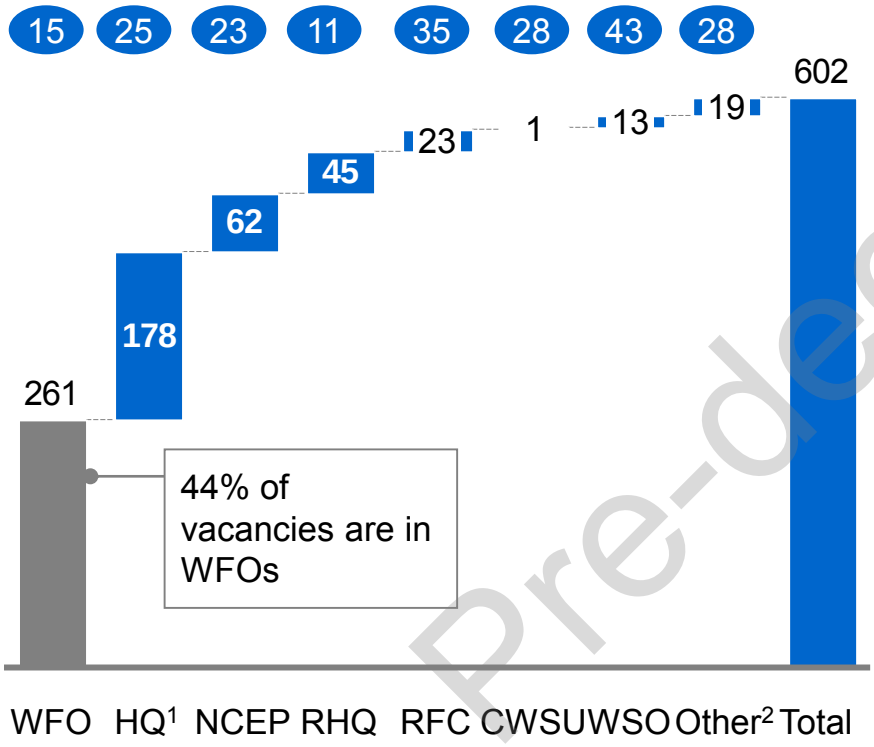
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Almost half of all total vacancies* (44%) occur in WFOs; half of these (50%) are in meteorology roles

XX = % vacant

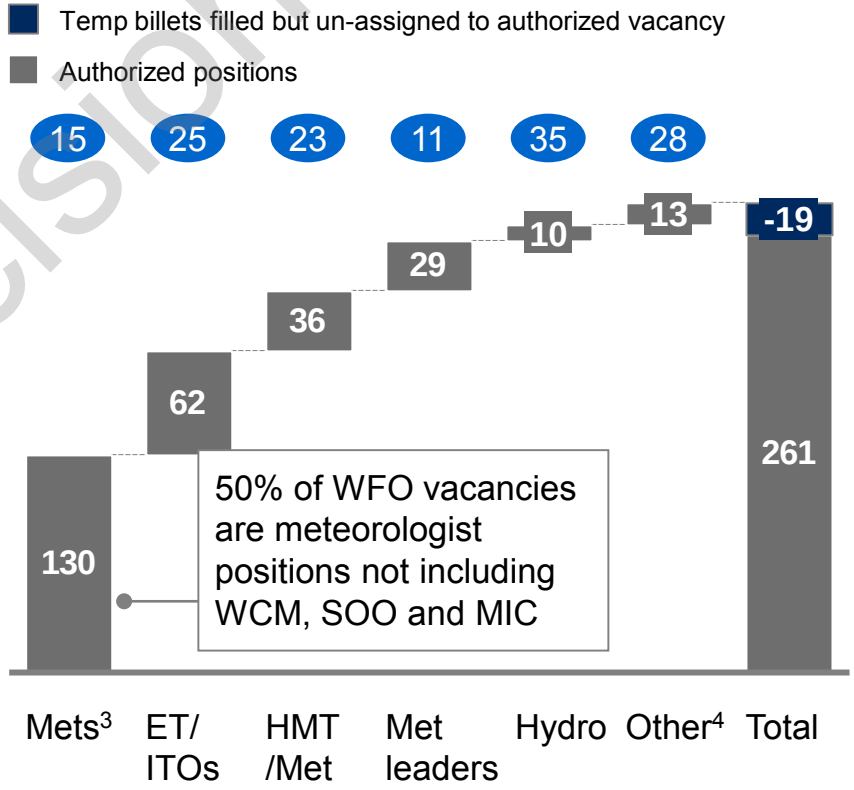
2015 Vacant positions across NWS by facility

Vacant positions



2015 Vacant positions across all WFOs

Vacant positions



1 Headquarters is defined as Silver Spring facility; some HQ staff potentially working at other offices temporarily
2 Other includes NWC, the ROC, the Data Buoy Center, the National Training Centers and ITIC, DCOs,, and other observation facilities
3 Includes all non-WCM, SOO and MIC meteorological positions
4 Other includes, Administrative support, service hydrologists, and other specialist positions

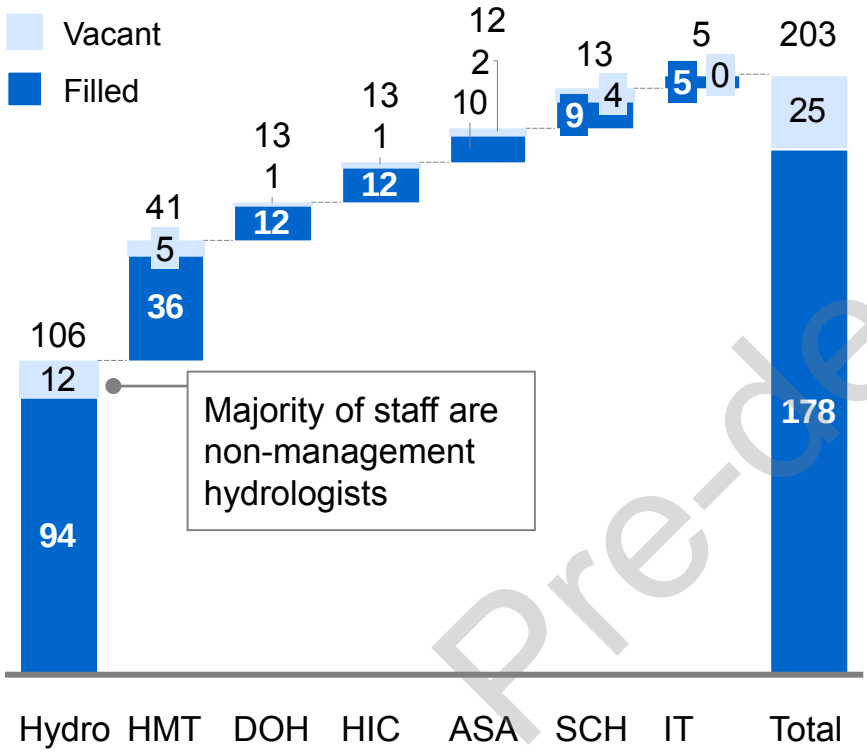
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Similarly, vacancies* in the RFCs occur in both hydrology positions as well as in support positions

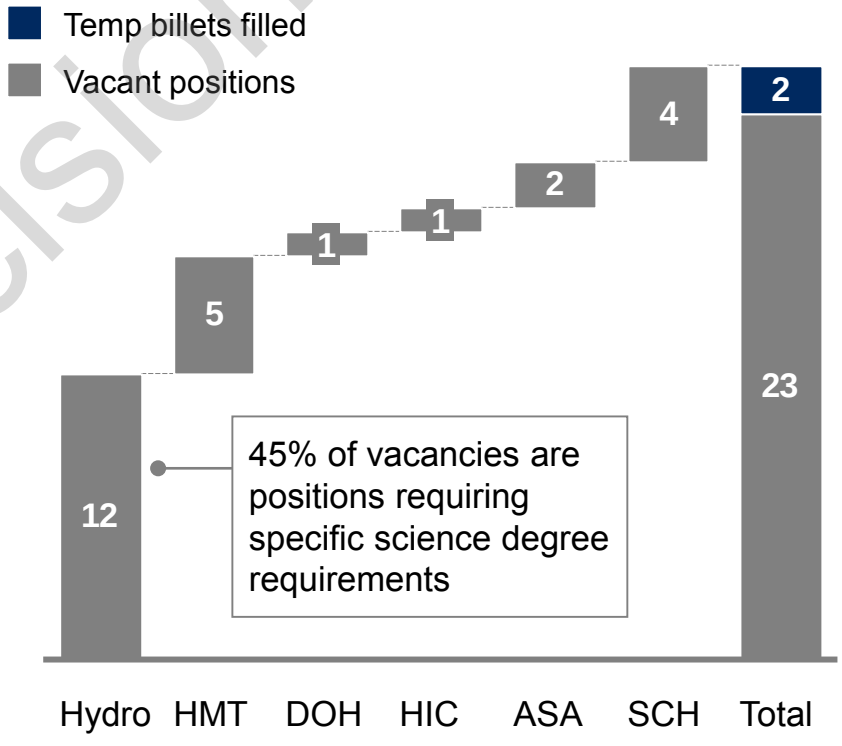
2015 Authorized positions in RFCs

FTEs and vacant positions



2015 Vacant positions across all RFCs

Vacant positions

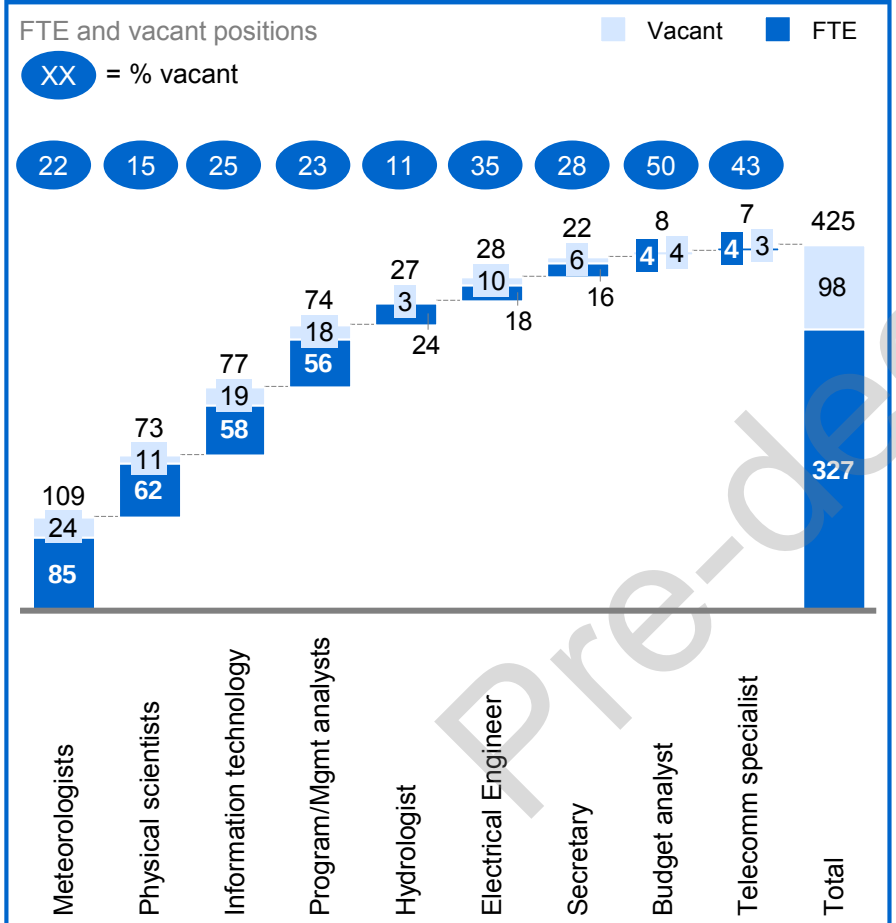


* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

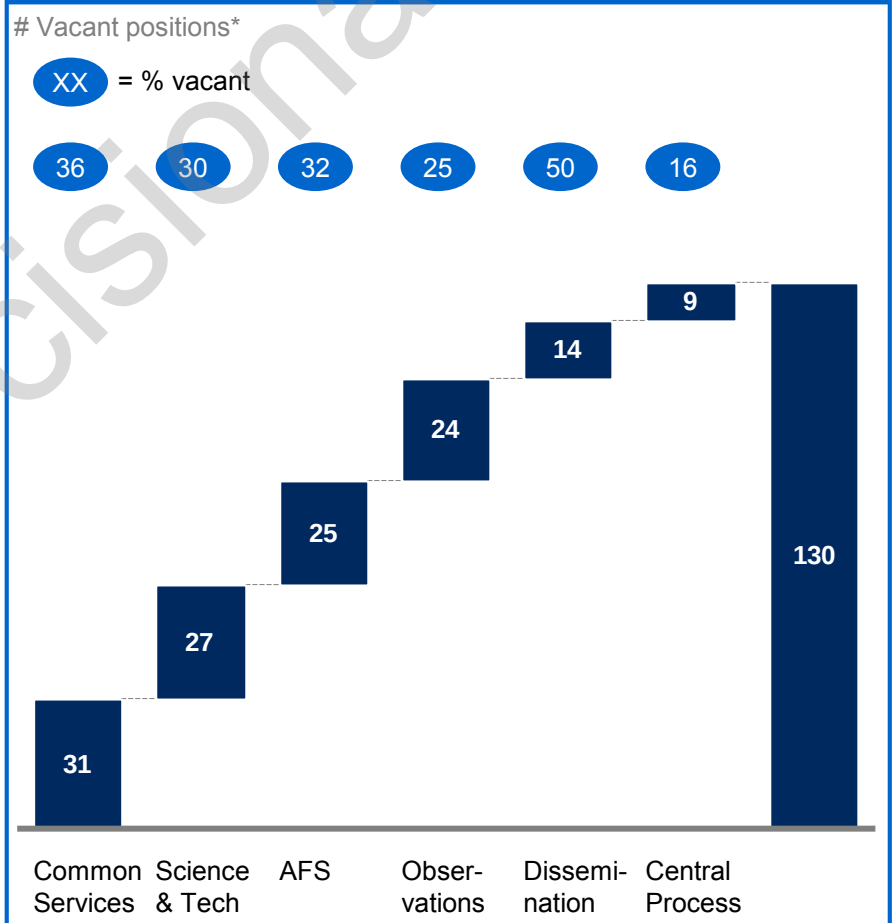
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 At headquarters, a majority of staff are scientists but many of the vacancies* are among support positions, such as in the common services portfolio

Authorized positions across headquarters



Authorized vacant positions at HQ by portfolio[1]



* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

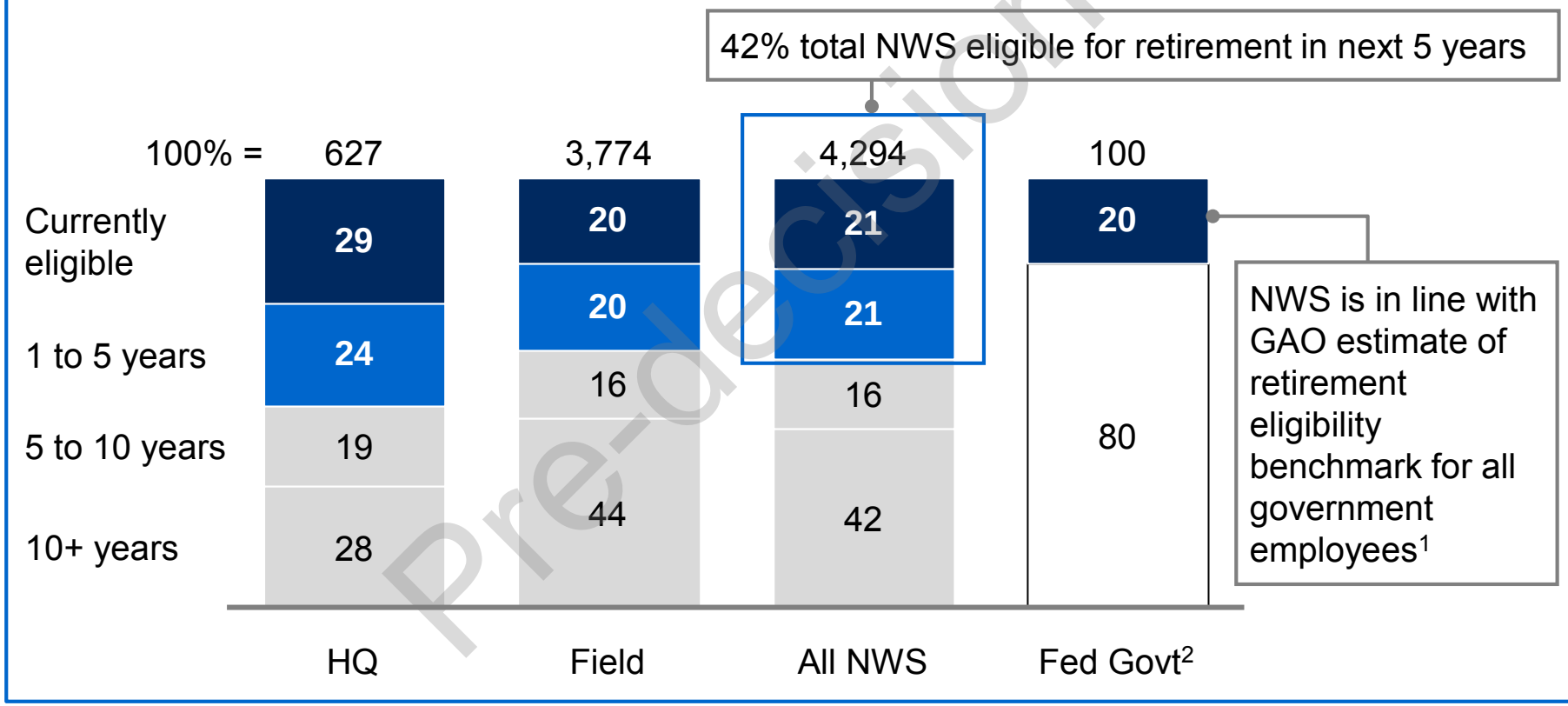
1 Headquarters includes some observations personnel who are assigned HQ FMCs in Table of Organization

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 In terms of retirement, 42% of current NWS FTEs will be eligible in the next five years

FTEs by years until eligible for retirement

% of total employees



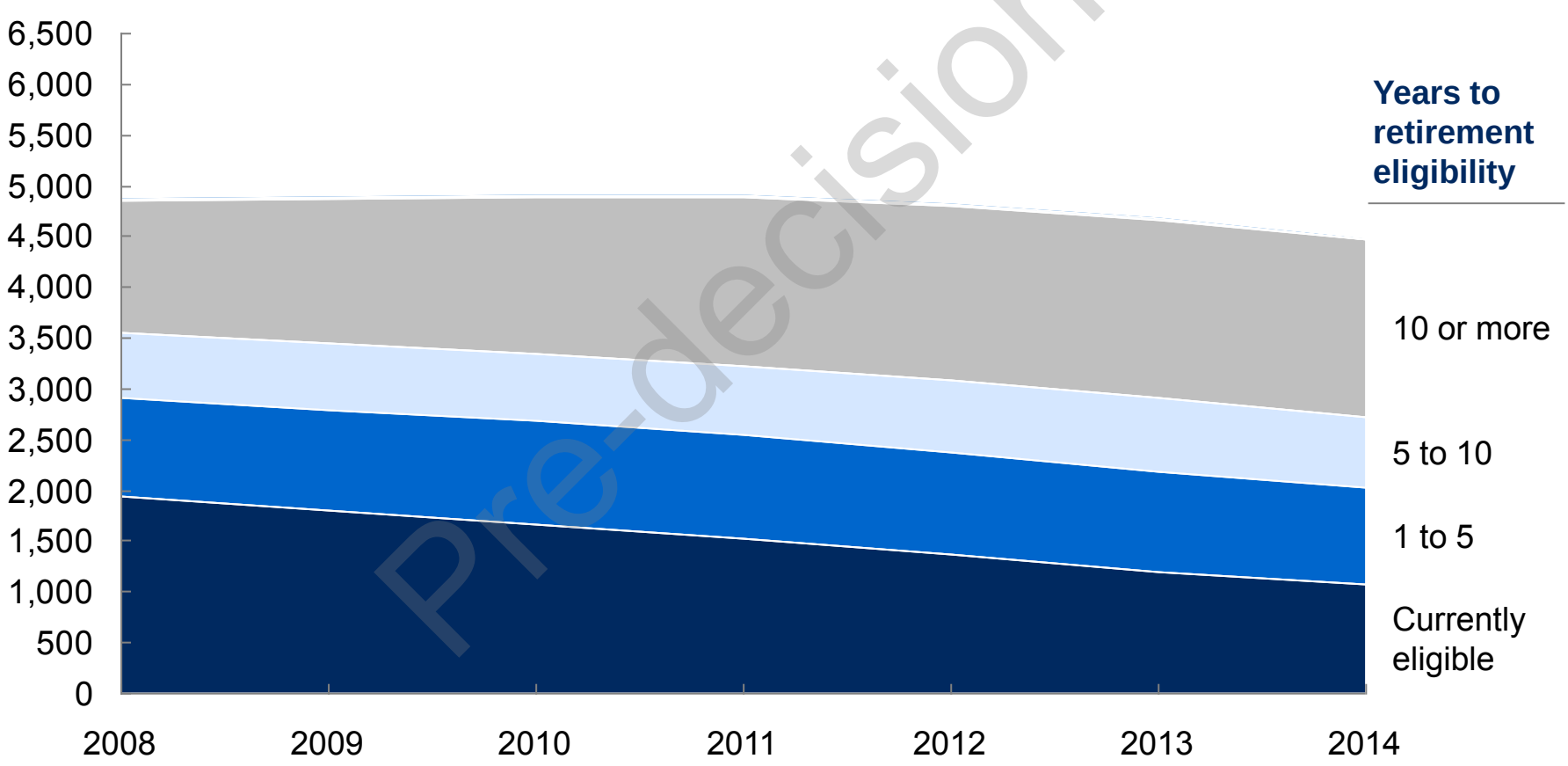
1 Retirement defined by the number of years left before a federal employee can retire from federal work; assumes that federal employees retire soon after they have achieved retirement eligibility

2 Federal government average based on GAO report projecting retirement eligibility for US government in 2012

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; GAO 2012 US government prediction of federal workers' retirement eligibility

1 While NWS retirement eligibility rates are currently high, historically they have been higher

Number of NWS FTEs by years to retirement eligibility, 2008-14

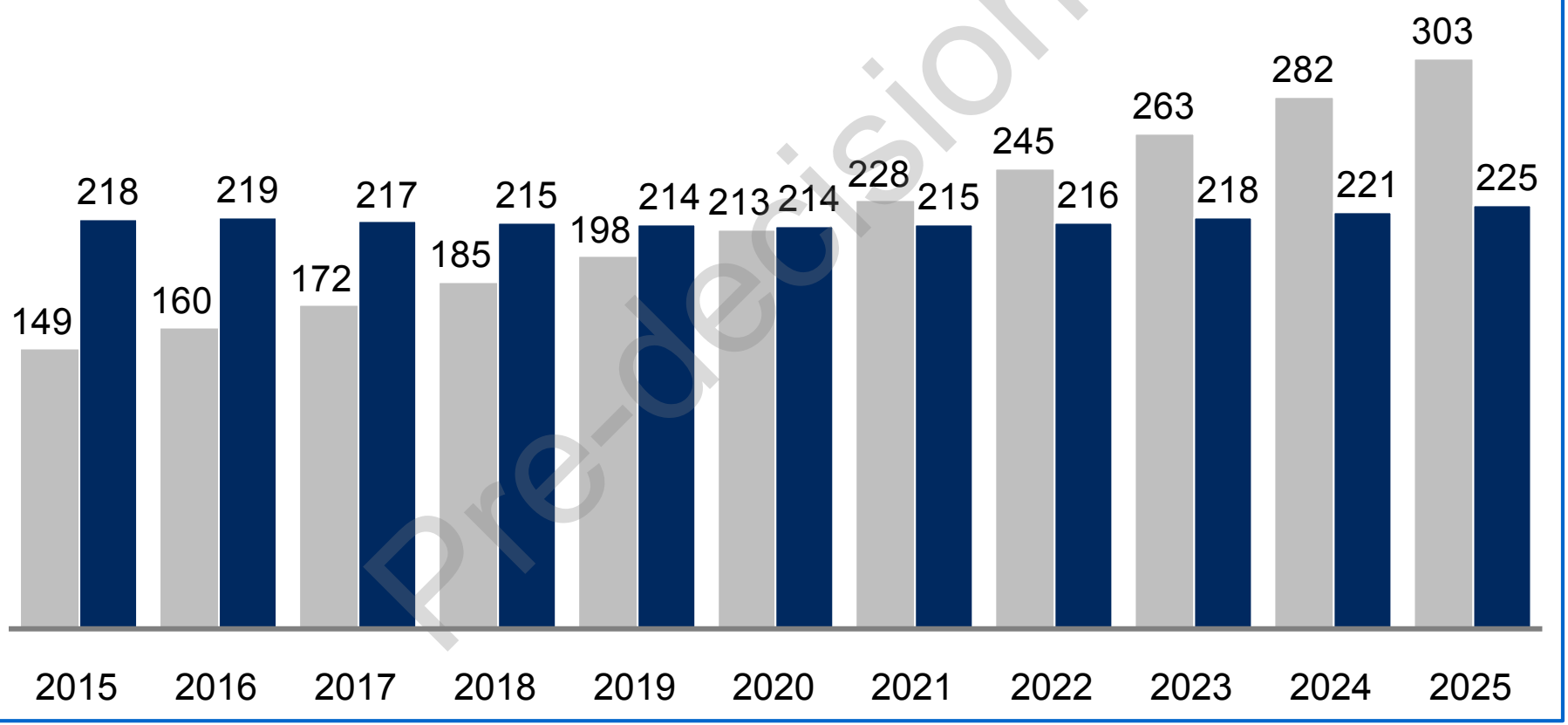


SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015

1 An improved hiring rate, following the trend of the last two years, could offset attrition losses starting in 2020

Employees future hiring and attrition[1]

Projected future hiring and attrition



1 Attrition rate based on NWS attrition rates growth from 2012 to 2015, and projected through 2025 via continued compound annual growth rate assuming an otherwise unchanging base FTE count

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015

1 Even with improved hiring rates, vacancies* will continue to persist (and potentially increase) through 2025

NOAA is in the process of addressing hiring challenges, but it will take time

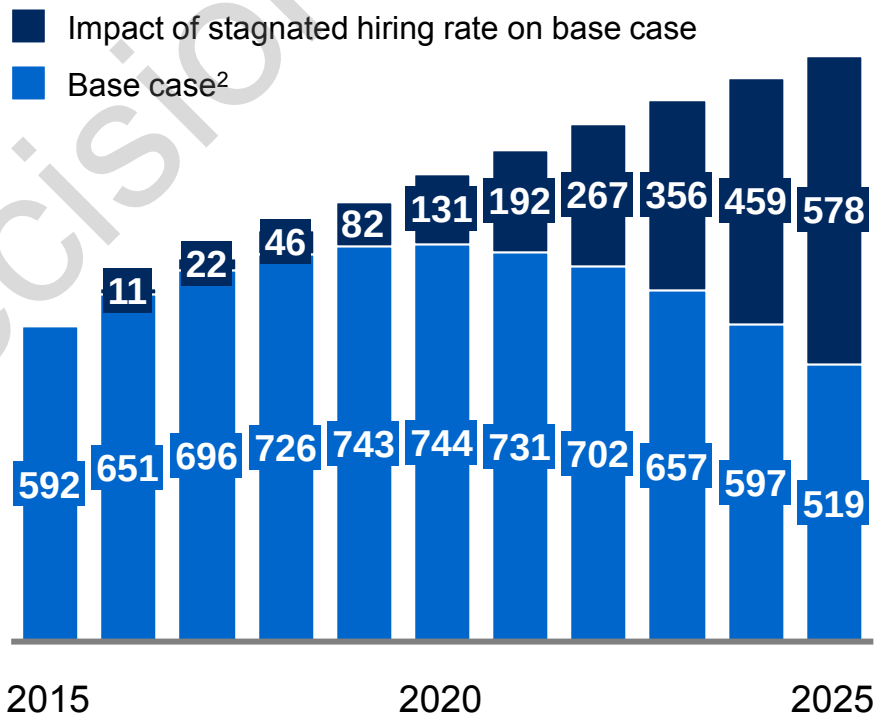
- Current 1000-position backlog in hiring across all of NOAA
- OPM has been assisting with hiring, but is having trouble meeting demand
- Same process for internal hires as for external hires

Attrition rates are also projected to increase in the next ten years

- Retirement eligibility is high – 21% of current FTEs are presently eligible for retirement
- Vacancies could persist as long as hiring rate does not outpace attrition rate

Stagnated hiring rate[1] impact on projected future vacancies, 2015-2025

Number of vacancies*

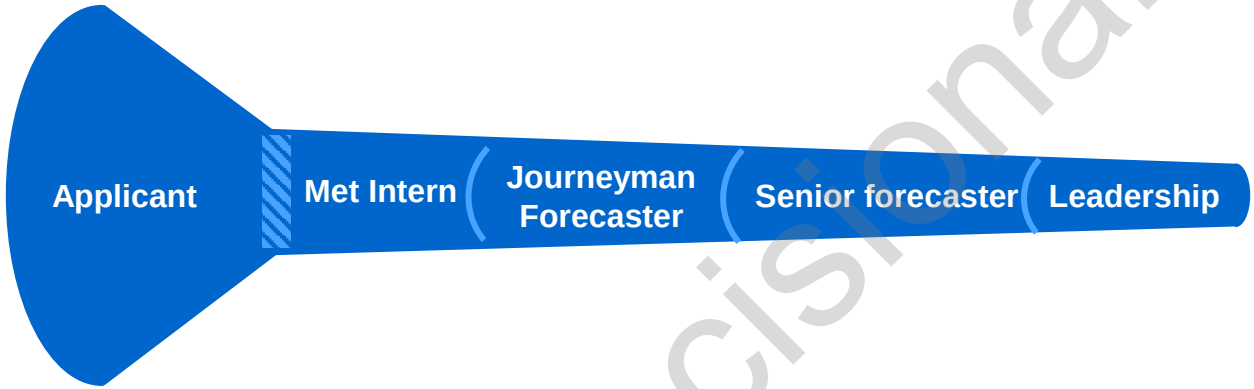


1 Stagnated hiring rate based on additional year of increases in hiring, and then cap at 160 new hires per year, or ~13 hires per month
2 To simulate attrition through retirement, increased attrition rate based on increase of compound annual growth rate by .2% above natural compound annual growth rates starting in 2015 and through 2025
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE as starting point in 2015

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; GAO 2012 US government prediction of federal workers' retirement eligibility; HQ and site interviews

1 Most meteorologists enter NWS in the intern position, which is the primary source of external hires in the meteorologist career path

Career path for applicants for meteorologist (Series 1340) positions



Position	Applicant	Met Intern	Journeyman Forecaster	Senior forecaster	Leadership
Met degree Required?		Yes			
% External hires since 2007[1]		55%	12%	6%	9%
Number of positions		324	~766[2]	898	377[3]
Vacancy* # (% total)		66 (20%)	40 (6%)	65 (7%)	38 (11%)
Years required to progress to next step		1-3	1	1-3	0-2

*"Interns are the only new way that we get forecasters; **it creates a bottleneck**; everyone applies through the intern position" – WFO*

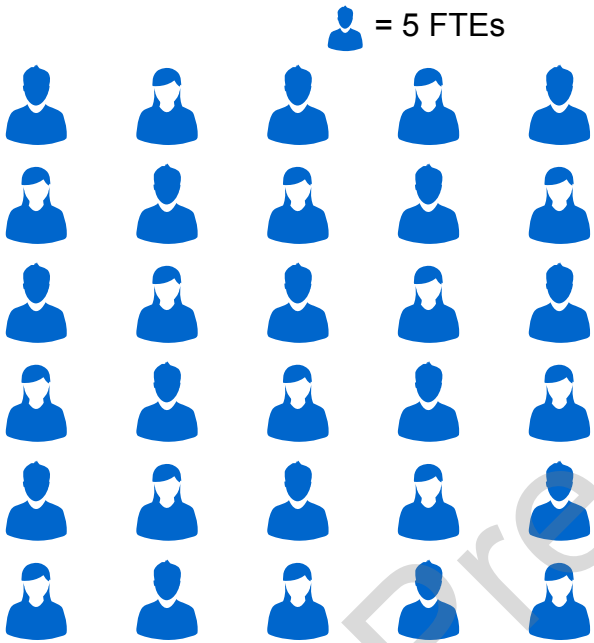
*"It usually takes much longer than the minimum number of years to move up into senior positions – **hypothetically, you could be promoted as quickly as the minimum requirements, but forecasters usually wait years longer before they can be promoted"***
- HQ

1 Data available for new hires past and new position changes past 2007
2 Based on current GS-level data; does not account for non-GS rated meteorological positions
3 Includes meteorologist management positions including MIC, WCM, SOO, and senior training staff; does not include all meteorologists leadership in regional or HQ
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; HQ and site interviews

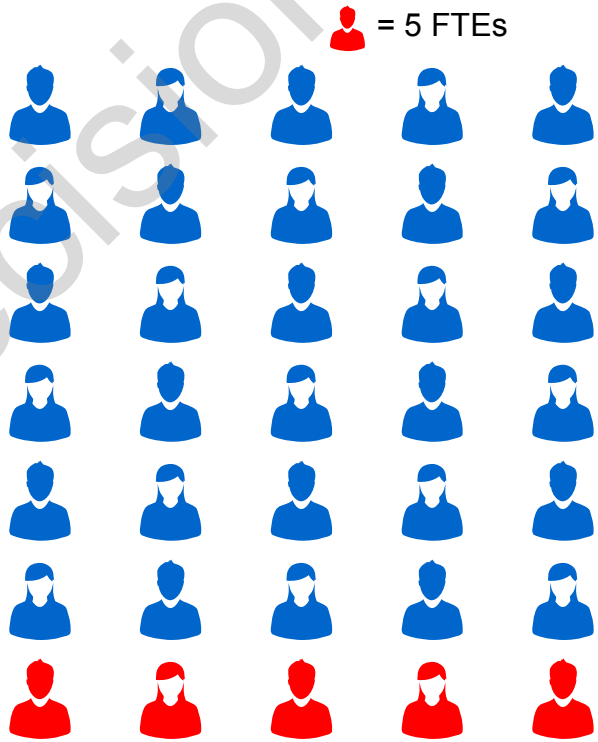
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

1 There are currently not enough interns[1] to cover vacancies* and expected attrition in journeyman forecaster[2] positions

Interns available to fill vacant positions



Vacant and expected attrition in journeyman hydro and met positions



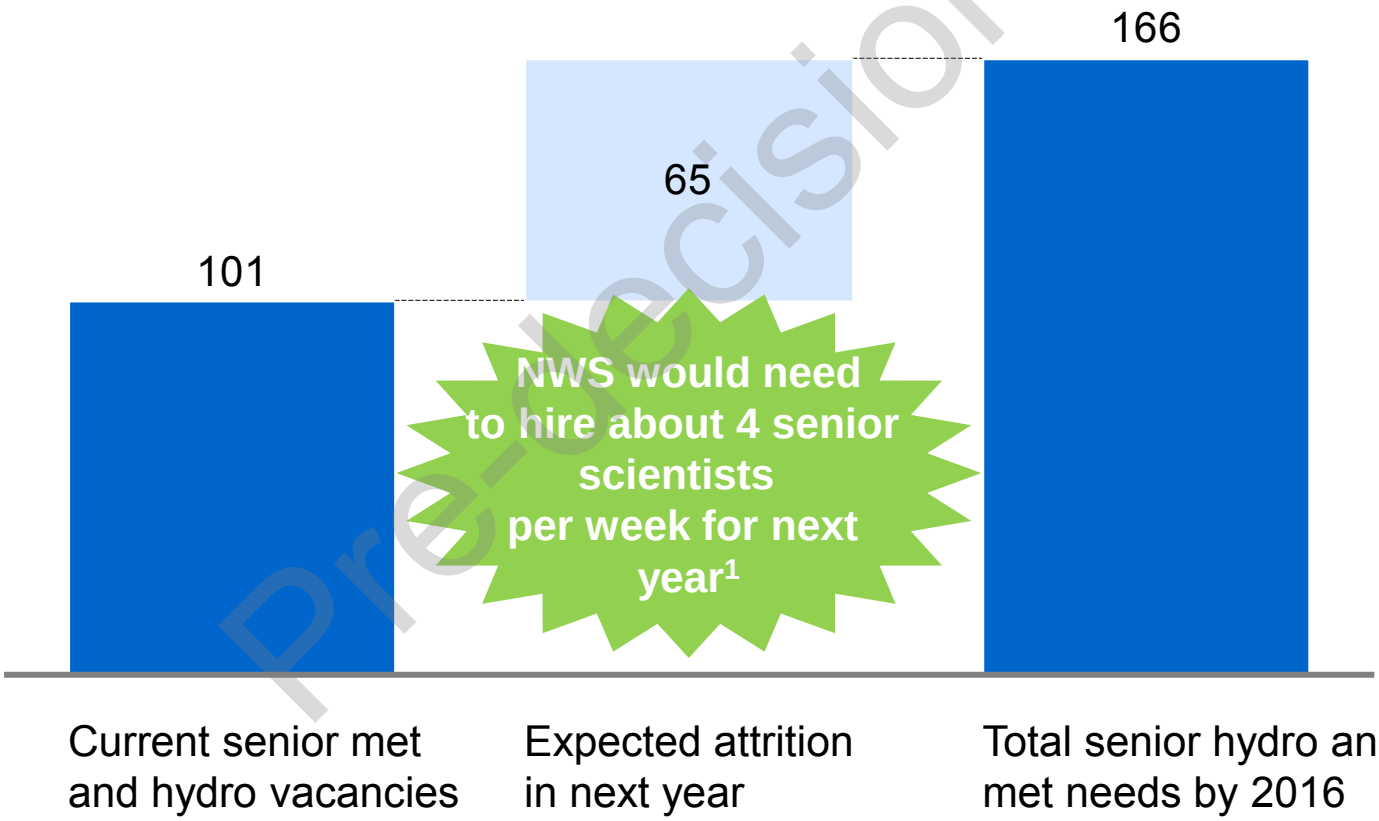
Not enough interns to cover 18% of journeyman forecaster and hydrological positions expected to be vacant by end of year

1 Defined as "up to bid" met interns at GS-level 11 or above, who can bid to become journeymen forecasters
2 Journeyman forecaster defined as series 1340 and series 1315 GS-12 and non-intern GS-11 positions
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE
SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Past hiring freezes coupled with the time required to develop senior meteorologists and hydrologists contributes to a potential leadership gap

Projected senior met and hydrologist gap* over next year

Number of GS-15+ series 1315 and 1340 positions



1 Assuming NWS assumed natural attrition rate of 5.095% and accounting only for GS-15 and above managers in 1315 and 1340 positions

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; site interviews

1 Hydrometeorological technicians and Met Techs are hired through the same funnel as interns and are often de-prioritized leading to high vacancy rates

Hiring process for open tech/intern position at forecast office[1]

Met techs/HMTs (Series 1341)

- Hired at GS-10 or GS-11
- Often no meteorological degree
- Majority have military forecasting and IDSS experience
- Met tech and HMT role does not officially perform forecasting duties – most IDSS[1]

Interns (Series 1340)

- Hired at GS-4 to GS-10
- Requires meteorological degree
- Increasing trend of graduate and doctorates in weather science
- Anecdotally, less experience with IDSS or in field when entering position
- Position fundamental to hiring new meteorologists
- Interns can provide forecasting/DSS

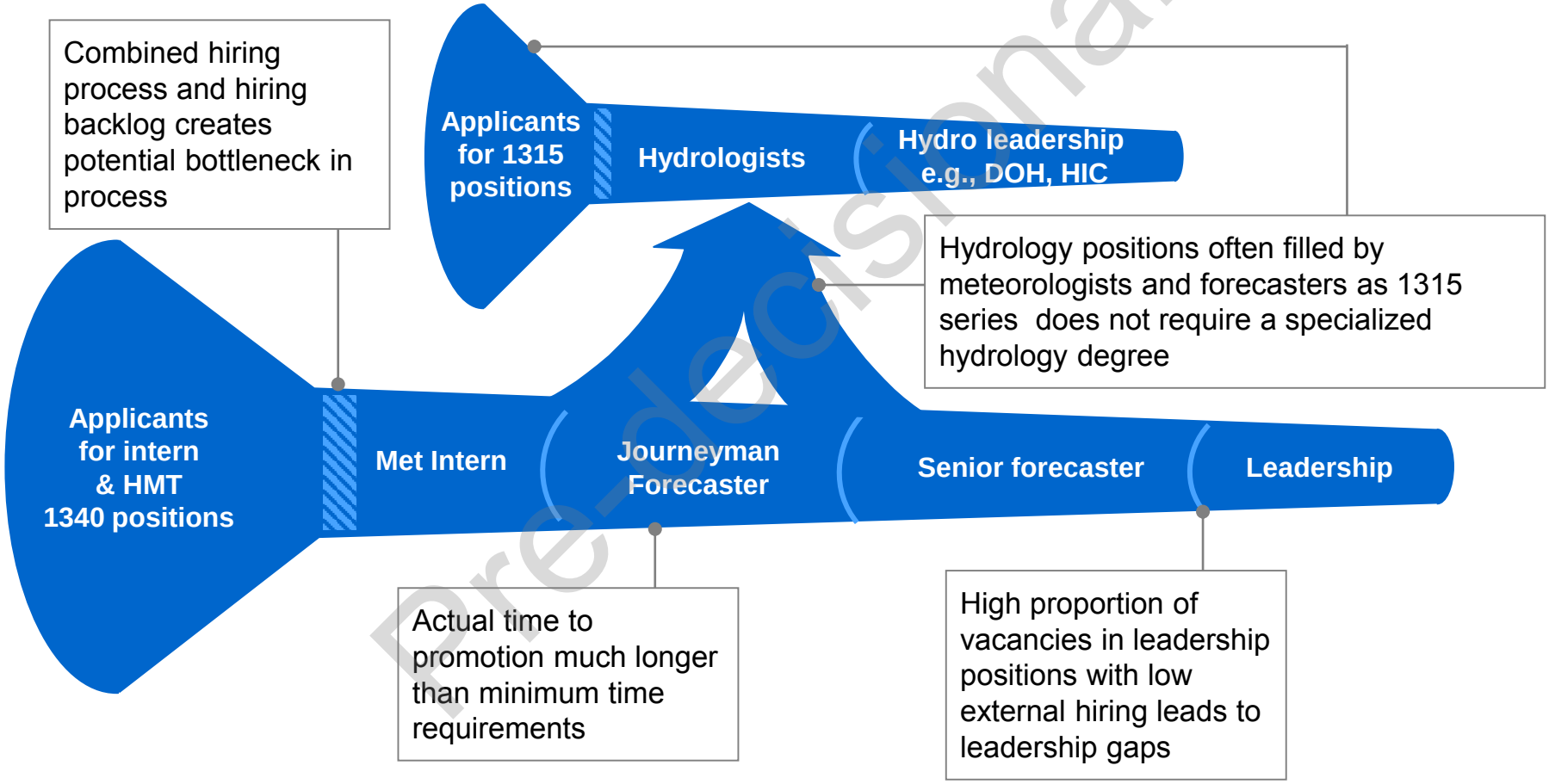
1 new position

- MIC/ region has flexibility to decide whether to hire intern vs. tech
- Often prioritize meteorologists over techs
- Hiring process doubly complex as it must screen all candidates for both positions

1 Interviews during site visits illustrated that many HMTs and Met Techs are flexing beyond their official responsibilities to help provide IDSS
SOURCE: 2015 NWS workforce data on June 8, 2015; OPM requirements for hiring series 1340 and 1341 positions; HQ and site interviews

1 There are a number of challenges in career paths for hydrologists and meteorologists

Career path for applicants for meteorologist (Series 1340) and hydrologist (Series 1315) positions

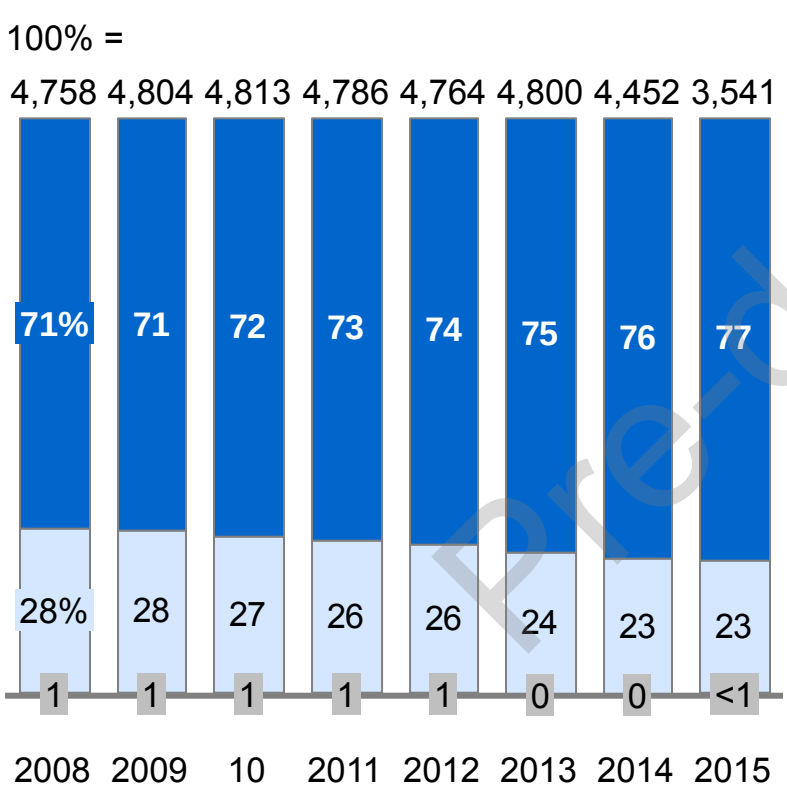


SOURCE: 2015 NWS workforce data on June 8, 2015; HQ and site interviews

1 Additionally, average cost of NWS FTE increased from 2008-15 by $21k as average GS-level of workforce has increased

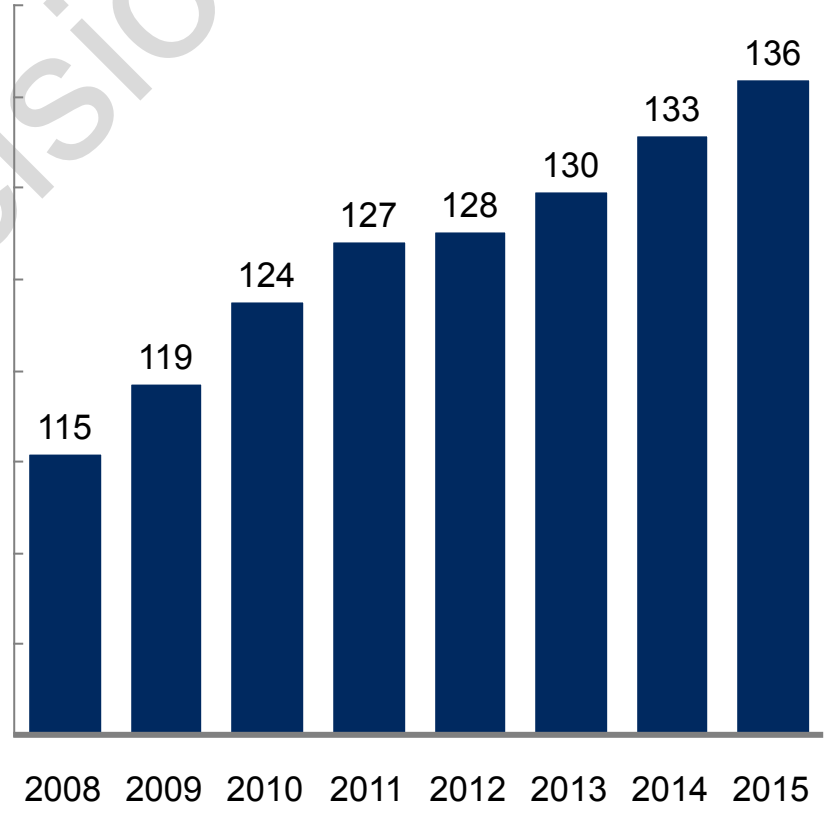
GS level breakdown of FTE, 2008-15[1]

% FTE by GS level (of Total)



Fully loaded cost average across NWS, 2008-15

$ thousand



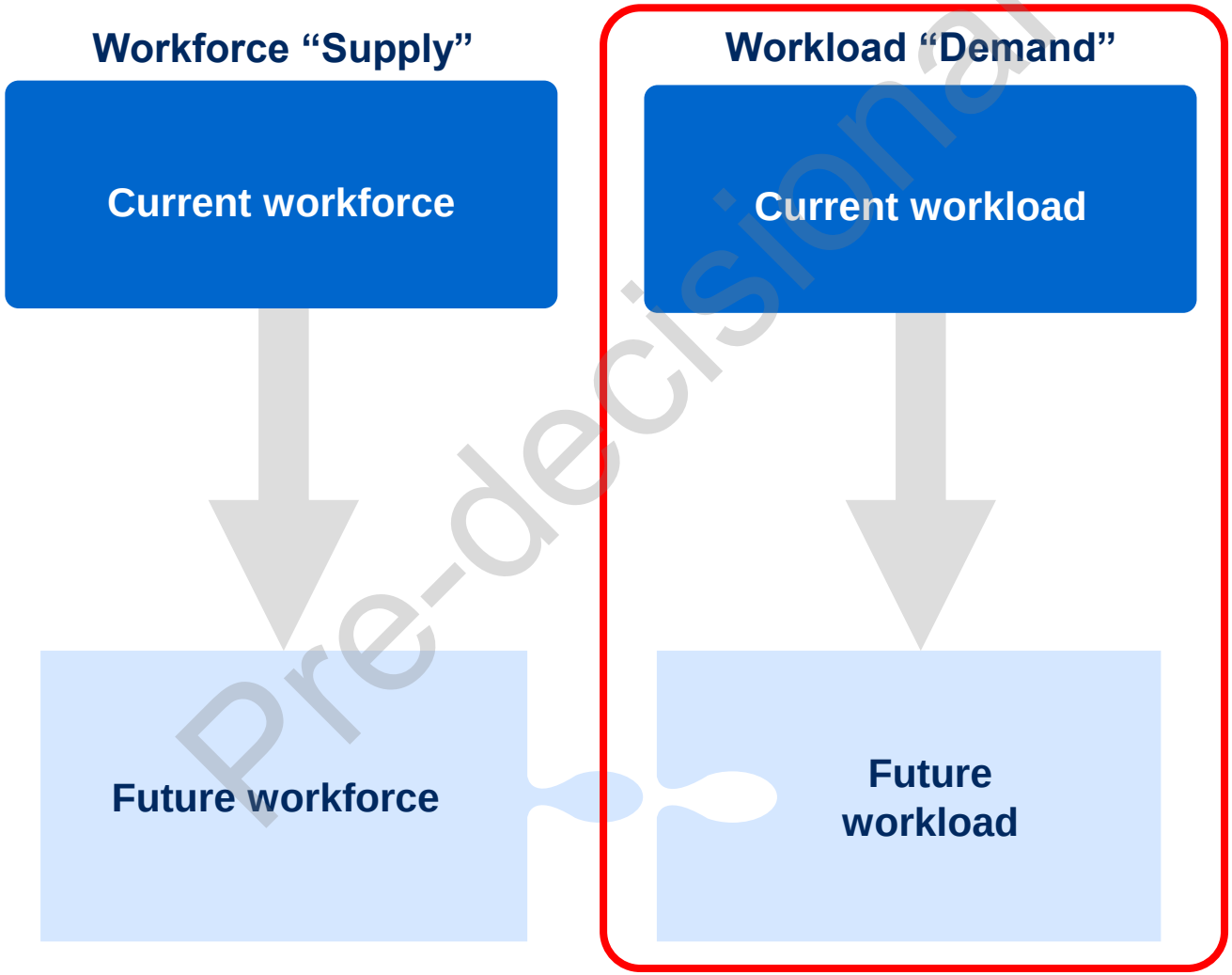
1 Based on GS-level fully loaded costs per FTE; does not include reimbursable or vacant positions; by fiscal year

SOURCE: NWS Table of organization 2015 data; historical FTE cost and FTE count data

NWS Workforce

1. Current and future workforce
2. Current and future workload
3. Gap between workforce and workload

2 Strategic workforce model



2 Workforce: Summary of current and future workload section

- WFO workload drivers are not independently correlated to workload in offices
- Workload drivers have varied between 2008-2014, with no overall significant patterns in that time period
- There is a varying level of overtime by year; while WFOs have the highest number of overtime by hours, WSOs and CWSUs have high levels of overtime per FTE
- Overtime and overall workload varies across office types, with offices with smaller structures (e.g., CWSUs) seeing less overall variance

2 Workload model includes a broad set of drivers

Drivers of workload	Description	Status
Population	▪ Size of population in area of responsibility	▪ Included in current model
Population density	▪ Population density in area of responsibility	▪ Included in current model
Programs managed within office[1]	▪ Number and type of programs offices manage (e.g., tropical, water, climate)	▪ Programs proxied by type of weather events covered within office
Land area of responsibility	▪ Land square footage WFO is responsible for	▪ Included in current model
Marine area of responsibility	▪ Marine square footage WFO is responsible for	▪ Included in current model
Aviation responsibilities	▪ Number of airports in WFO's area of responsibility	▪ Included in current model
Technological innovations/ operational changes	▪ Change in workload caused by future technology or operational changes	▪ Included as proxy with assumed increase in future projections
Number of media markets	▪ Number of separate communities (proxied here with media markets) in area of responsibility	▪ Data request to field out; to be included in further refinements of model
Weather type/frequency	▪ Types of weather the office must be responsible for ▪ Frequency of each type of weather event	▪ Included in current model as WWAs; # of weather events; types of weather events
Weather severity	▪ Severity proxied by the estimated cost of weather events	▪ Included in current model as average cost of all weather events for WFO
Leadership culture	▪ Expectations for normal workload and responsibilities covered by leadership	▪ Proxy for differences in regional culture included in model
IDSS responsibilities	▪ Number and variety of IDSS stakeholders	▪ Data request out to field; to be included in further refinements of model

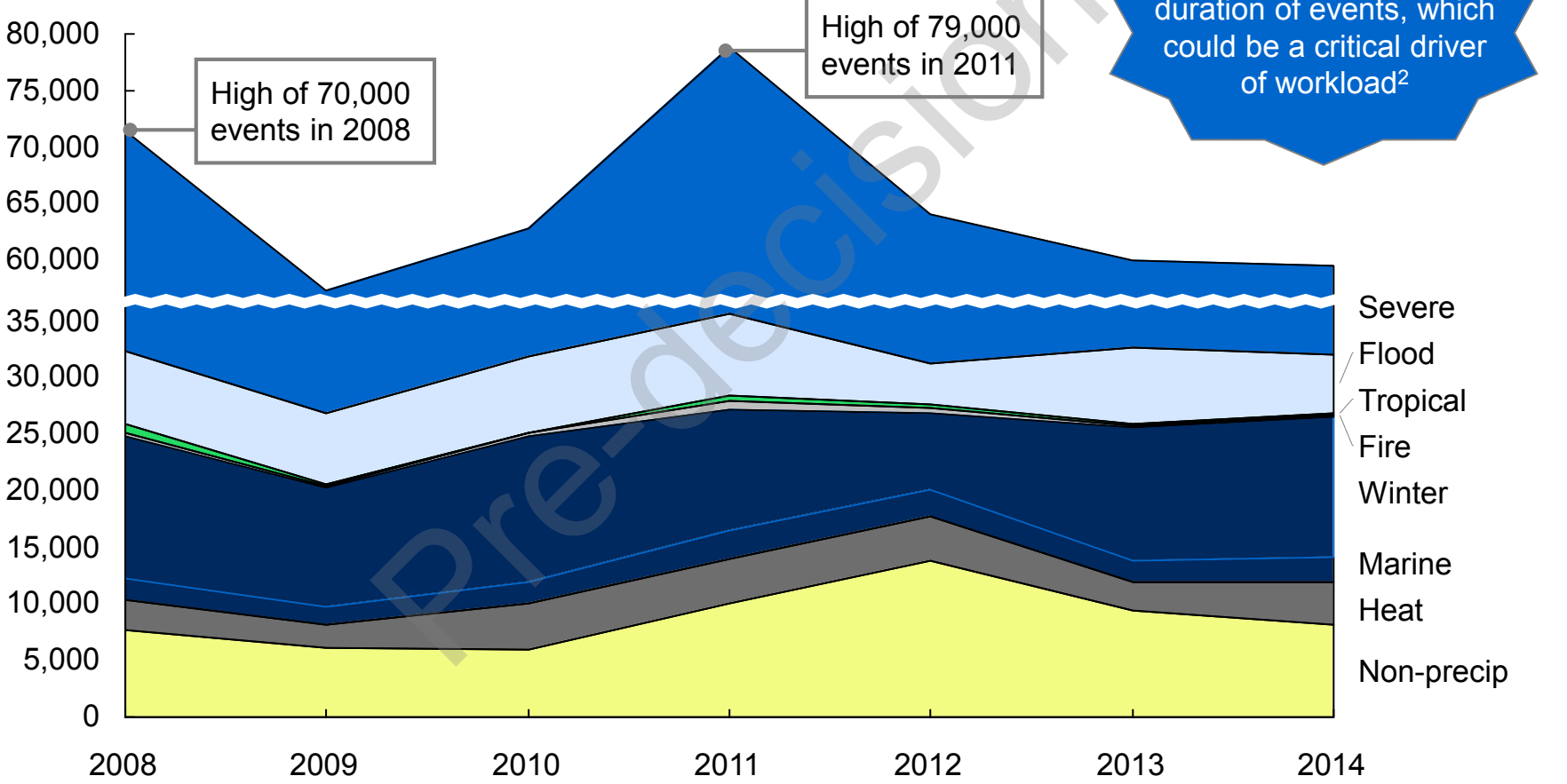
1 Programs included impacting the model are aviation, fire weather, climate services, hydrology, marine, public forecast, tropical weather, tsunami, winter weather, space weather, and severe weather

SOURCE: HQ and site interviews

2 The total number of weather events has varied between 2008 – 2014, but there has not been a net increase during that timeframe

Total number of weather events[1] by type of event

Number of events



1 As reported by National Climate assessment US Global Change research Program, severe weather events have been increasing over the last 100 years; this data shows only 08-14, where that pattern is not evident

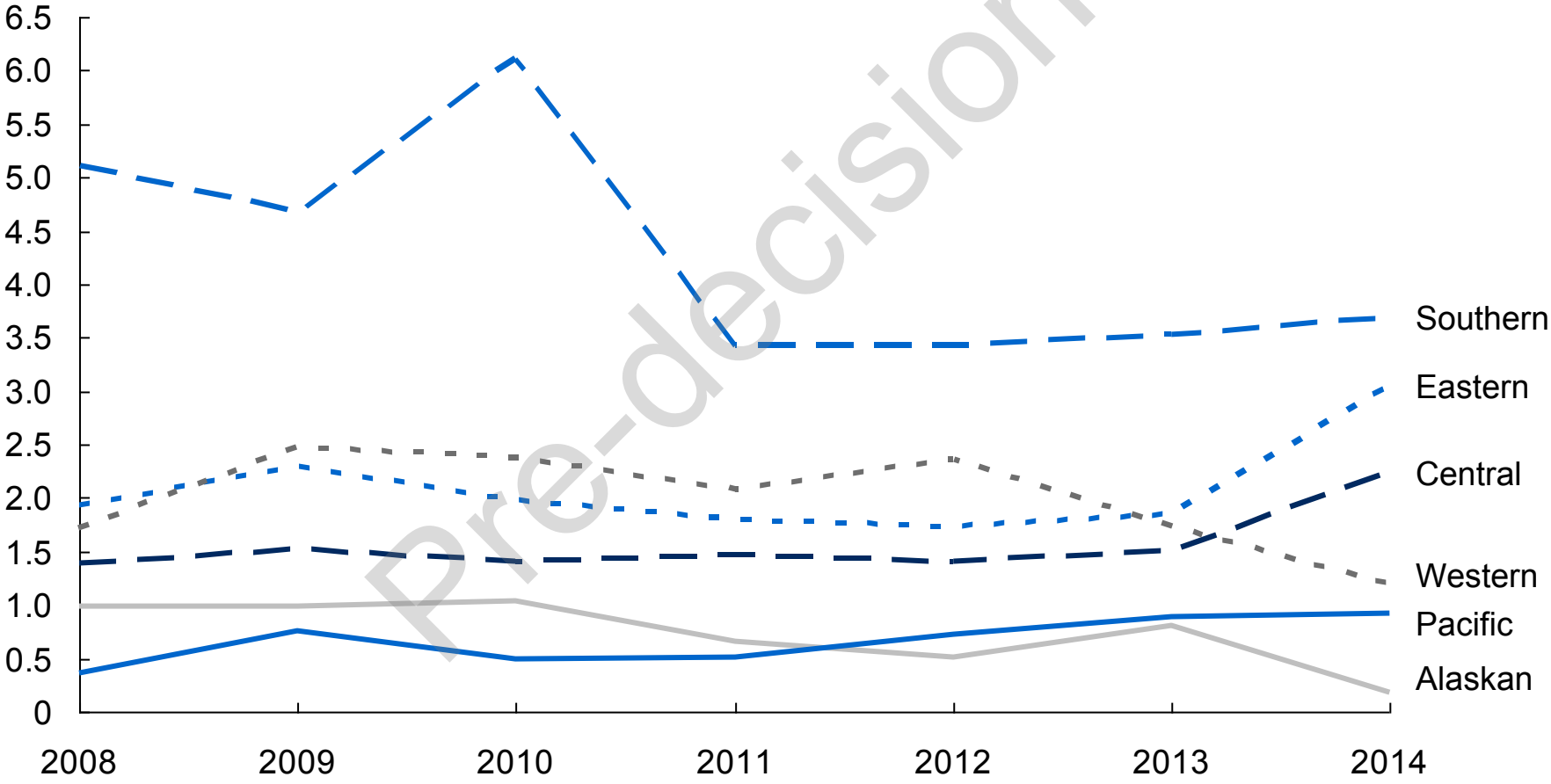
2 If possible, the duration of events would be assessed

SOURCE: 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 Watches, warnings and advisories have been slightly increasing in most regions since 2011

Watches warnings and advisories[1] by event by region

WWAs divided by number of events by region

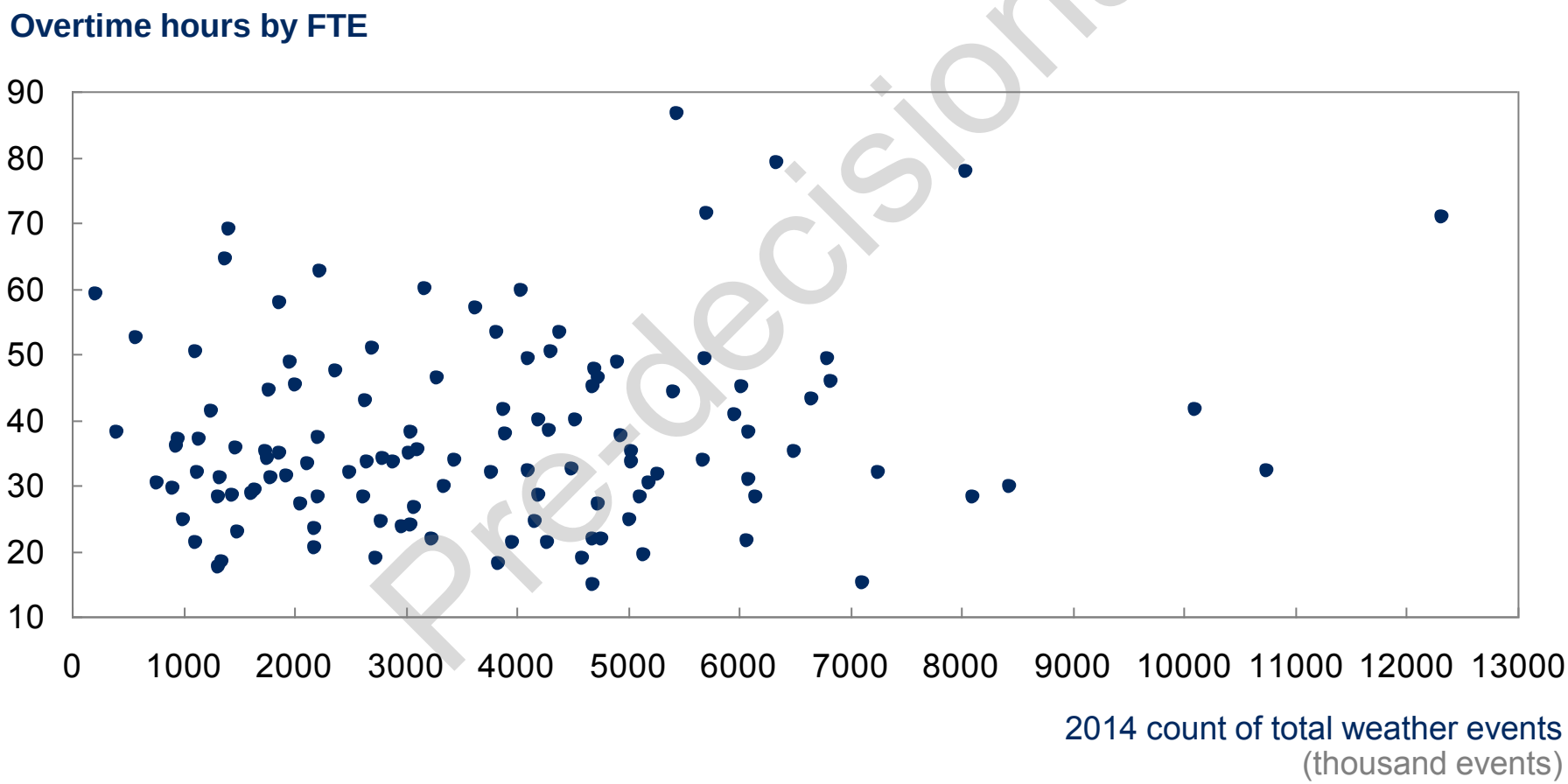


1 Includes total number of watches, warnings, advisories, outlooks, or other severe weather messaging disseminated by any office considered within region

SOURCE: NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 Severe weather events alone do not directly correlate with a WFO's workload, even when accounting for office size

2014 WFO overtime per FTE by frequency of severe weather event

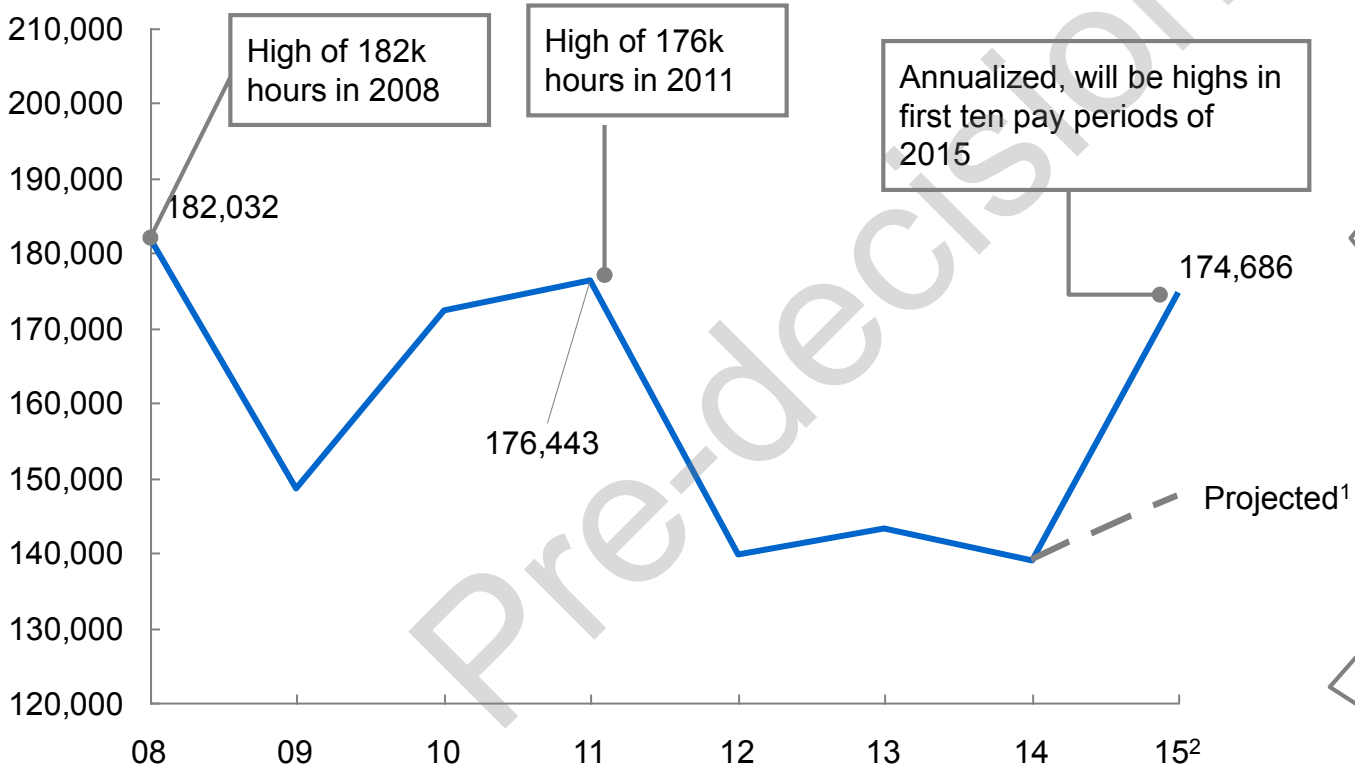


SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 200-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 Since 2008, overtime has varied between 150k and 190k hours annually; the first 10 pay periods in 2015 have reported higher than average overtime

NWS Overtime and overtime regression historical projection

Overtime hours by year



Representative quotes:

"I've been personally working over 110 hours per pay period for the past year *because we are short staffed and have to spend time training up new staff"* *–WFO*

"[My team] misses funerals, they miss birthdays – and they are fully committed and loyal to this place . . . ***If the vacancies were just filled, we'd be fine"*** *- WFO*

1 Historical projection based on time lapse regression of historical overtime data from 2003-May 2015, holding all else constant

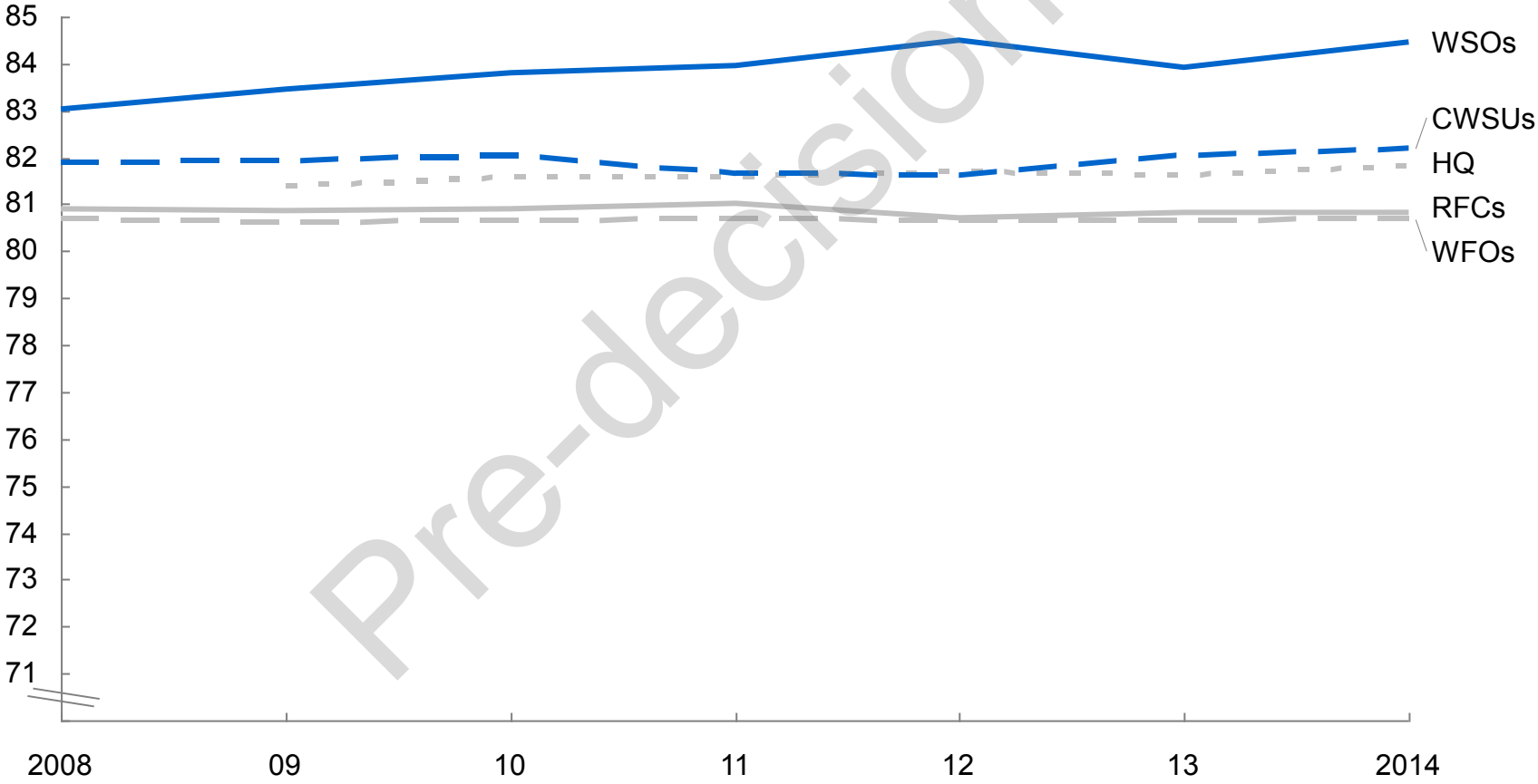
2 2015 annualized based on 2015 hours from first 10 bi-weekly pay periods, which were compared to proportional amount of hours in first 10 bi-weekly pay periods of FY2014 and then averaged to smooth out differences across pay periods

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; site interviews

2 On average, there is not a wide variation between offices in total hours worked per FTE and this has remained relatively constant over time

Total workload for average facility by FTE, 2008-2014

FTE hours and overtime hours per FTE

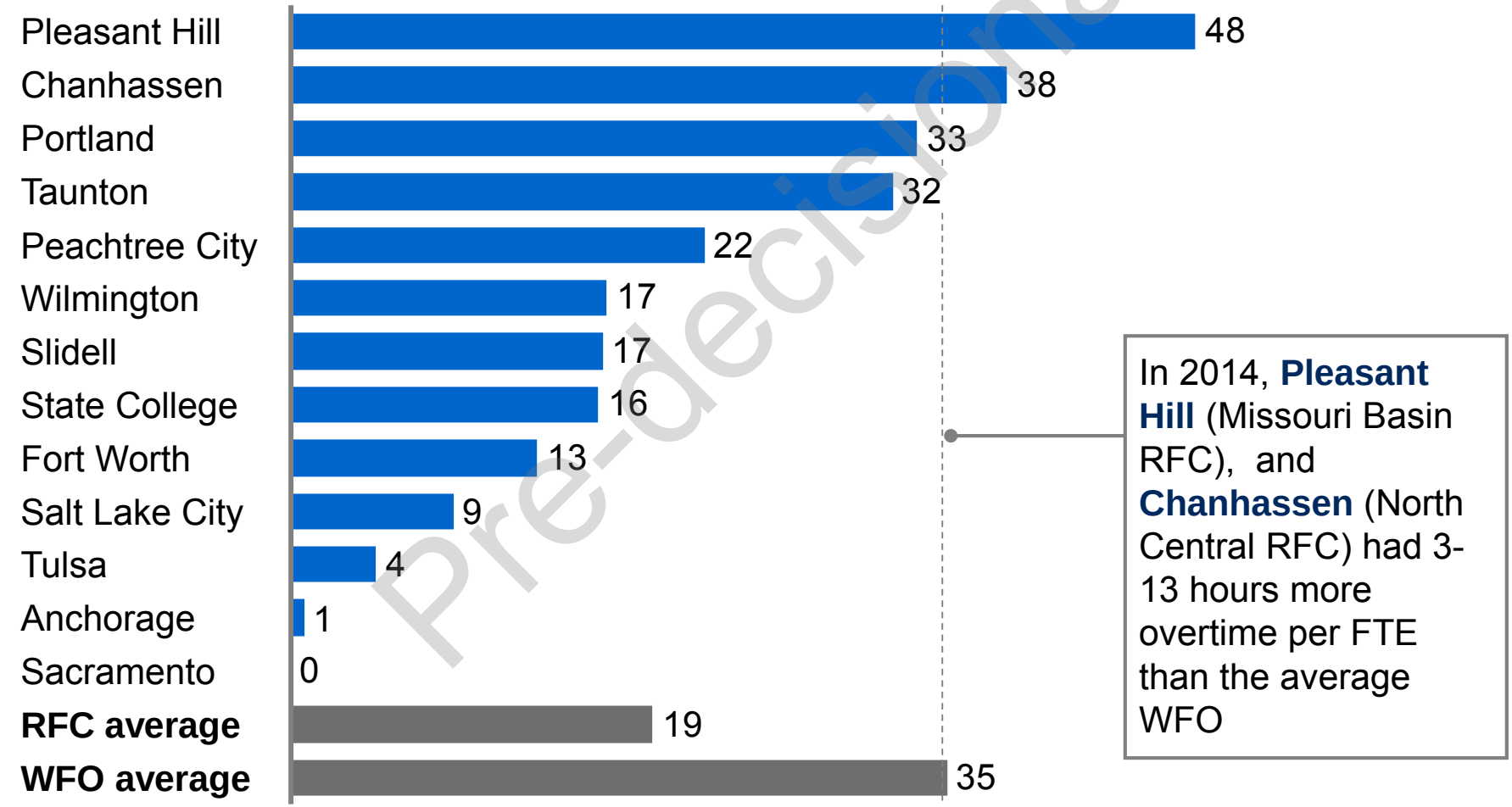


SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 200-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 RFCs vary in terms of overtime per FTE; however, average is lower than WFO average overtime per FTE

Total 2014 overtime by River Forecast Center by FTE

Overtime hours per FTE



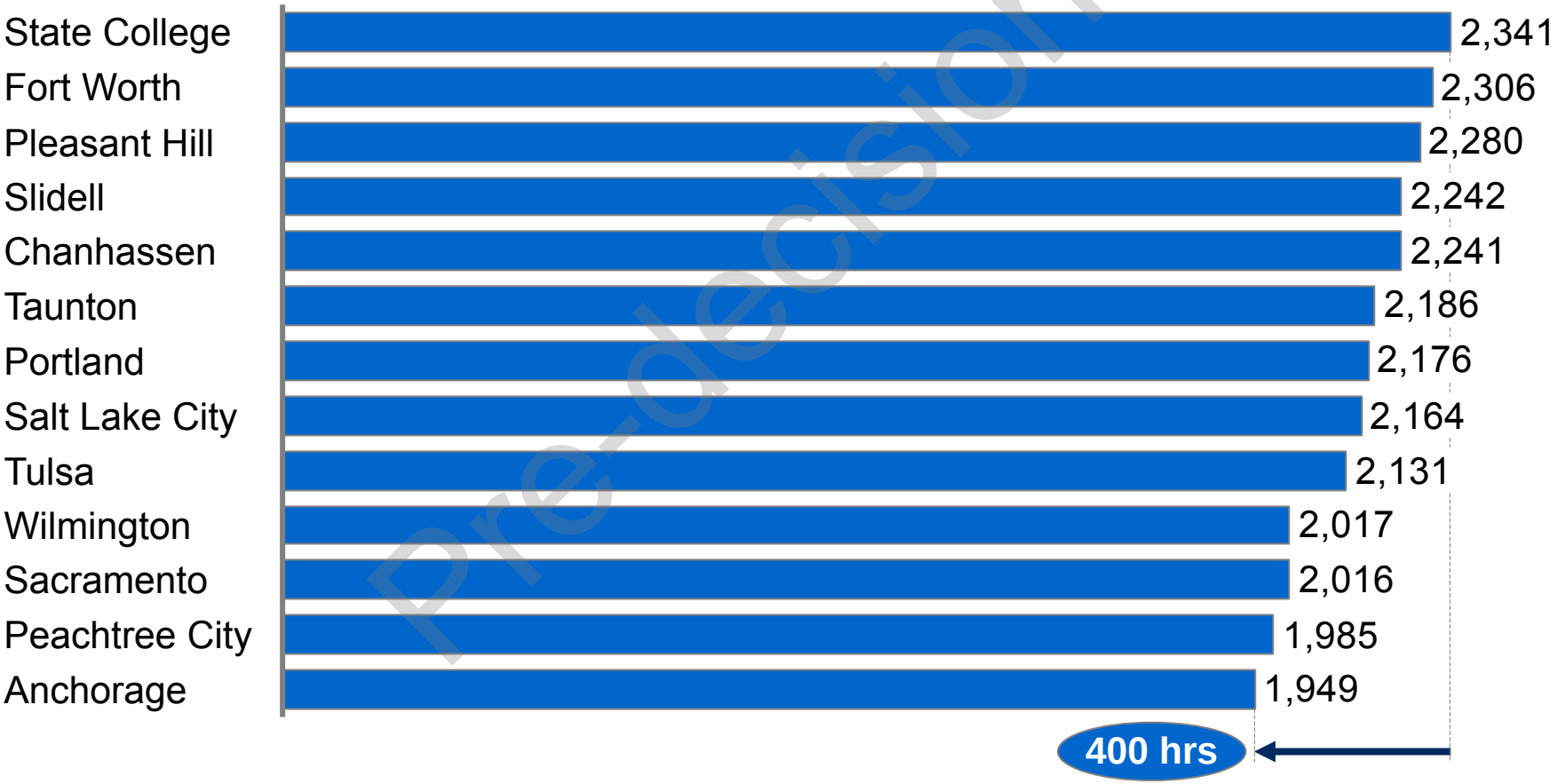
In 2014, **Pleasant Hill** (Missouri Basin RFC), and **Chanhassen** (North Central RFC) had 3-13 hours more overtime per FTE than the average WFO

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 RFC total workload per FTE does not vary significantly across offices (variation in 2014 of <400 hours)

Workload per FTE by RFC, 2014

FTE hours and overtime hours per FTE by RFC

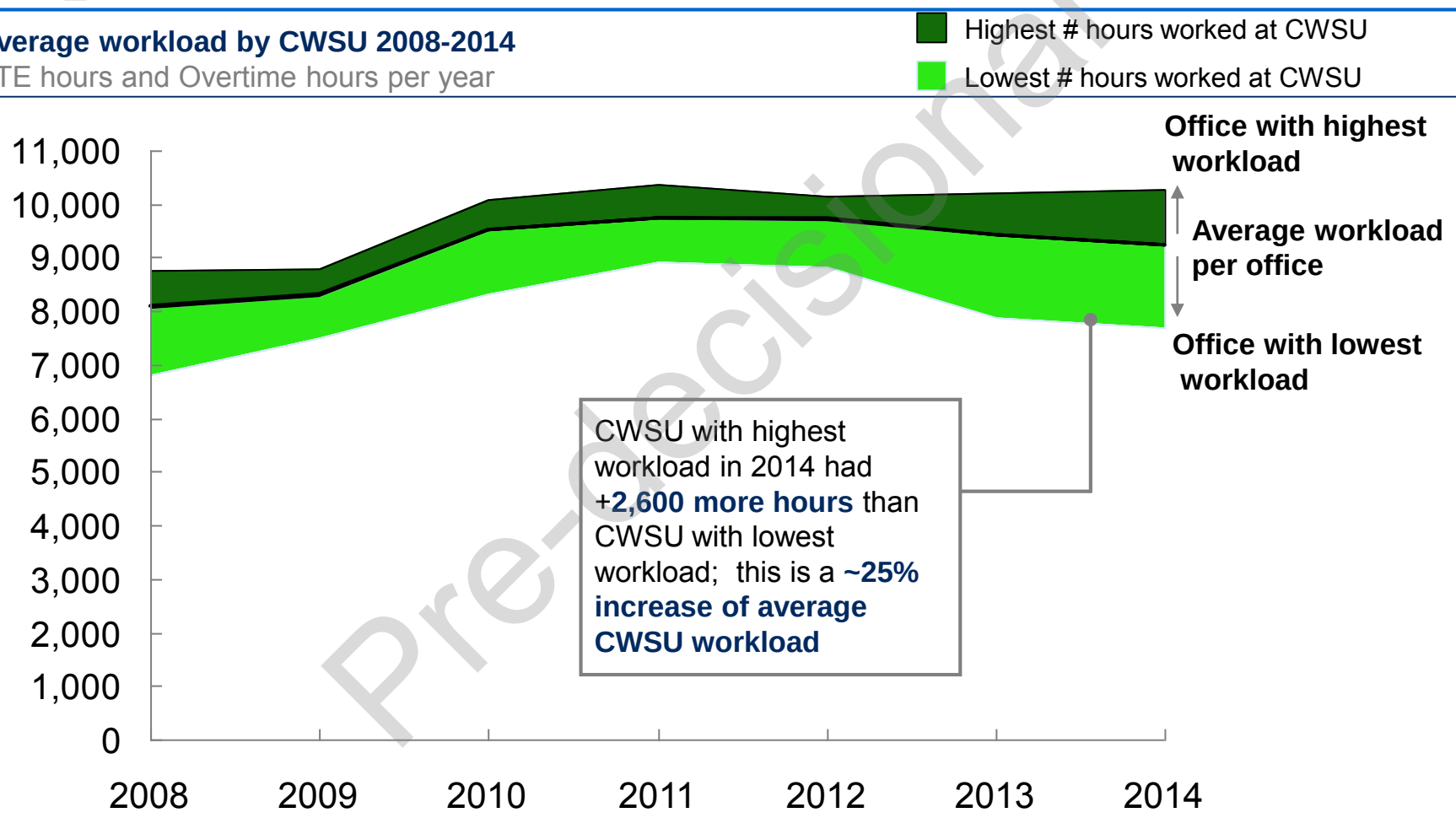


SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 CWSU average workload varies office to office and has increased slightly since 2008

Average workload by CWSU 2008-2014

FTE hours and Overtime hours per year

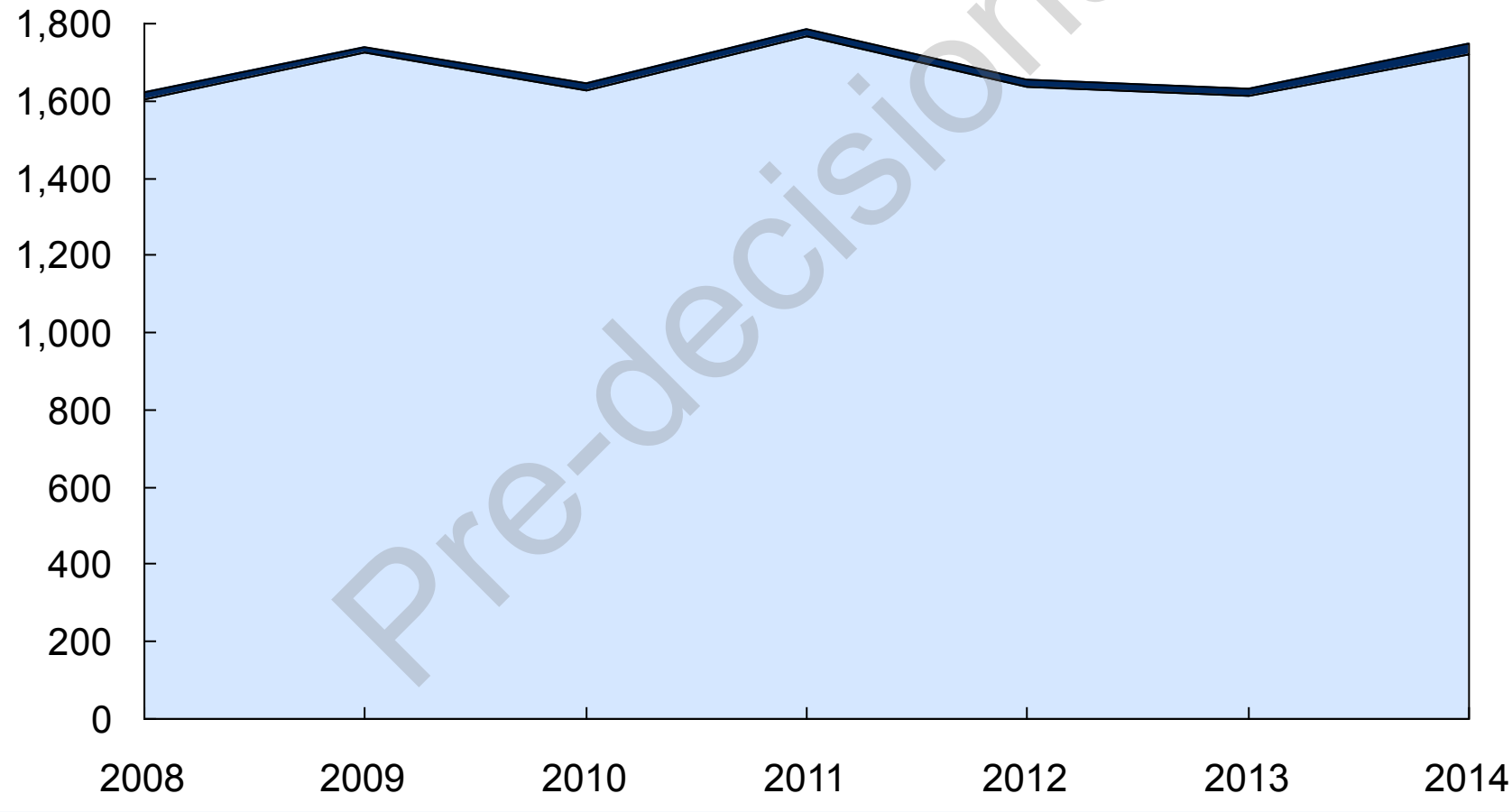


SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

2 NCEP total workload includes relatively low overtime and has not varied over time

NCEP total hours per FTE by year, 2008-2014

FTE hours and overtime hours for NCEP by year



SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

NWS Workforce

1. Current and future workforce
2. Current and future workload
3. Gap between workforce and workload

3 Strategic Workforce model

Workforce "Supply"

Current workforce

Workload "Demand"

Current workload

Future workforce

Future workload

3 Workforce: Summary of gap between workforce and workload section

- Regression analysis provides a relative comparison of hours worked across WFOs, controlling for variance in the drivers of WFO workload
- A gap exists between today's expected workload and today's workforce when not accounting for vacancies; severe weather and additional IDSS would exacerbate this gap
- Relative to each other, gap varies between offices
- While the gap in forecasting workload is estimated to increase over time, automation would close this gap, based on other industry benchmarks
- During interviews, supervisors indicated additional skills gaps in written and oral communications skills in order to complete IDSS

3 Analysis projects the difference between the actual workload and, based on the drivers of workload, the expected workload for WFOs from 2008-2014

- **Model is a multivariate regression with statistically significant results[1] across:**
  - All 122 WFOs[2]
  - From 2008-2014
- **Dependent variable**: Workload is equated to total #FTE hours including overtime by office
- **Independent variable**: Drivers of differences in workload between WFOs (statistical significance of each driver specified *on next page*)
- The model uses these variables to project an "expected" workload for each unique WFO
- Analysis then compares "expected" workload to the actual workload for each WFO to analyze the **relative difference** across all NWS WFOs
- **This model can:**
  - help in identifying patterns in workload across NWS
  - bring to light offices that could be relatively overburdened within NWS
  - identify whether there is an overall gap between workload and workforce across all WFOs
  - provide a jumping off point in which to discuss next steps to overcoming workload challenges
- **This model does not:**
  - match exact workload hours to drivers of workload (e.g., tropical storms cause x hours of workload)
  - provide an absolute understanding of whether WFOs do or do not have the "correct" workload
  - account for vacancies within offices, as vacant positions do not count positively or negatively towards workload
  - provide a recommended "list" of offices in which to make changes

1 Statistical significant variables all significant to 95th percentile for 2008-2014, treating each year and WFO as an independent observation; F-statistic-44.68 with a confidence interval of >99%; all included variables statistically significant in the 95th percentile; r-squared for regression = .5321

2 Offices included in analysis currently only constitute WFOs; other types of offices (RFCs, CWSUs, WSOs) not included in sample because they would not provide a homogenous sample in order to compare office to office; RFC statistical analysis currently performed has not yielded statistically significant results

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 Regression analysis including a set of statistically significant workload drivers indicated there is a difference between expected and actual hours worked in most WFOs

	Workload driver	Impact
Statistically significant[1] **(N=770)**	▪ Population ▪ Population density	▪ Larger population leads to increased potential for lives lost and to larger number of IDSS stakeholders
	▪ Marine area of responsibility	▪ Larger marine area of responsibility increases expected workload
	▪ Land area of responsibility	▪ Larger the area of responsibility, higher the expected workload
	▪ Number of watches, warnings, advisories	▪ The higher the number of WWAs, the higher expected workload in office[2]
	▪ Aviation responsibilities (e.g., number of forecast airports)	▪ The higher the number of airports covered by WFOs, the higher the expected workload
	▪ Regional location in Western of Pacific regions	▪ Regional differences lead to additional variation in expected workload
	▪ Severe weather events and cost	▪ Number of severe events increase workload and average cost for severe weather event
	▪ Non-precipitation event	▪ Number of non-precipitation events (e.g., tornados)
Not currently significant	▪ Other weather events	▪ Count of events not individually significant: fire, tropical, winter, marine, heat, and flood
	▪ Cost of other weather events	▪ Average costs of events not categorized as “severe”

1 Statistical significant variables all significant to 95th percentile for 2008-2014, treating each year and WFO as an independent observation; F-statistic 32.02 with a confidence interval of >99%; all included variables statistically significant in the 95th percentile; r-squared for regression = .5392

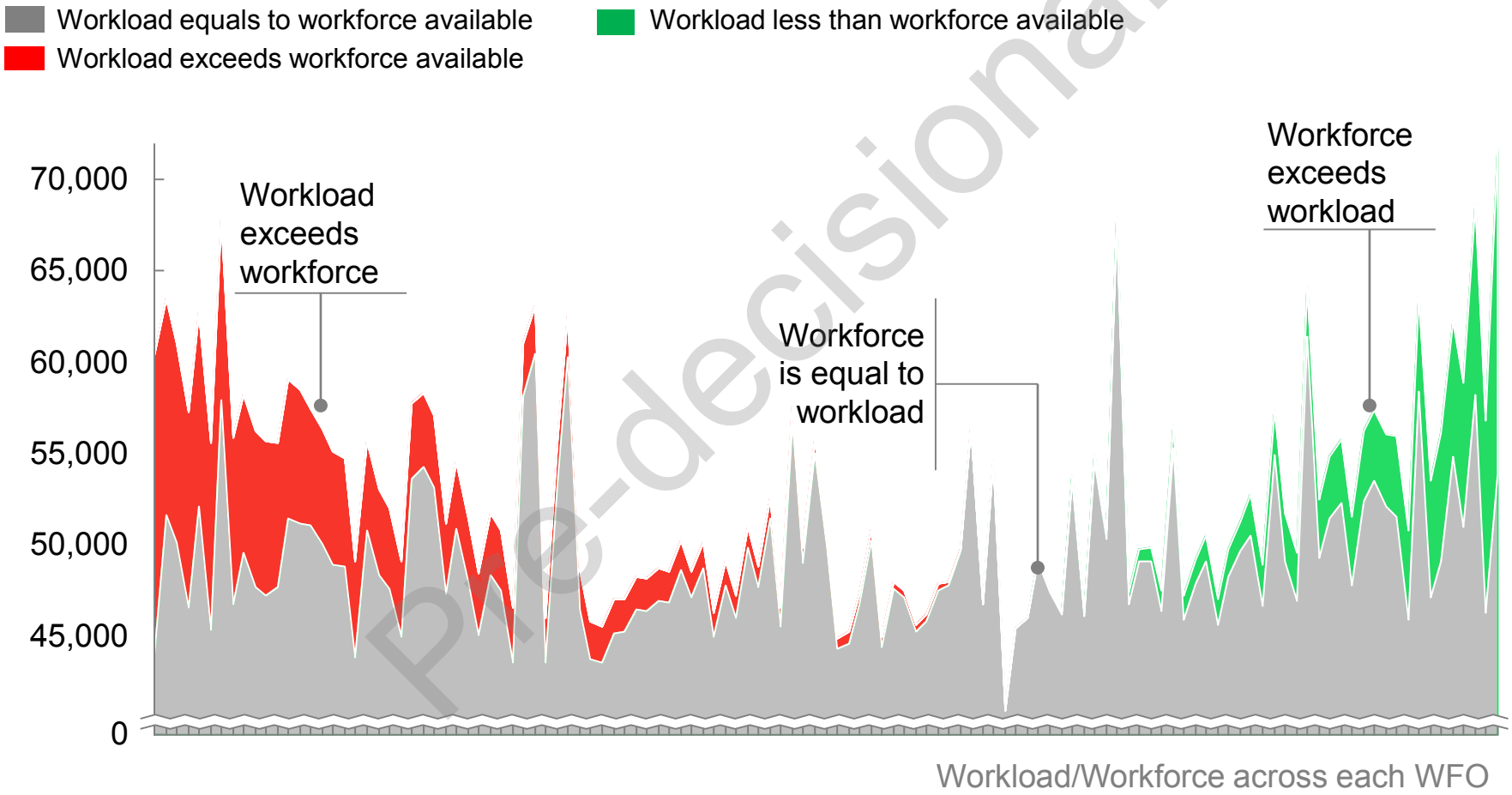
2 Offices included in analysis currently only constitute WFOs; other types of offices (RFCs, CWSUs, WSOs) not included in sample because they would not provide a homogenous sample in order to compare office to office; RFC statistical analysis currently performed has not yielded statistically significant results

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO’s FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 Workforce[1] and workload[2] varies across WFOs; a gap currently exists NWS-wide with expected workload exceeding workforce, with some offices over and others under supplied

WFO Workforce available compared against expected workload based on workload drivers, 2014

Hrs work by WFO

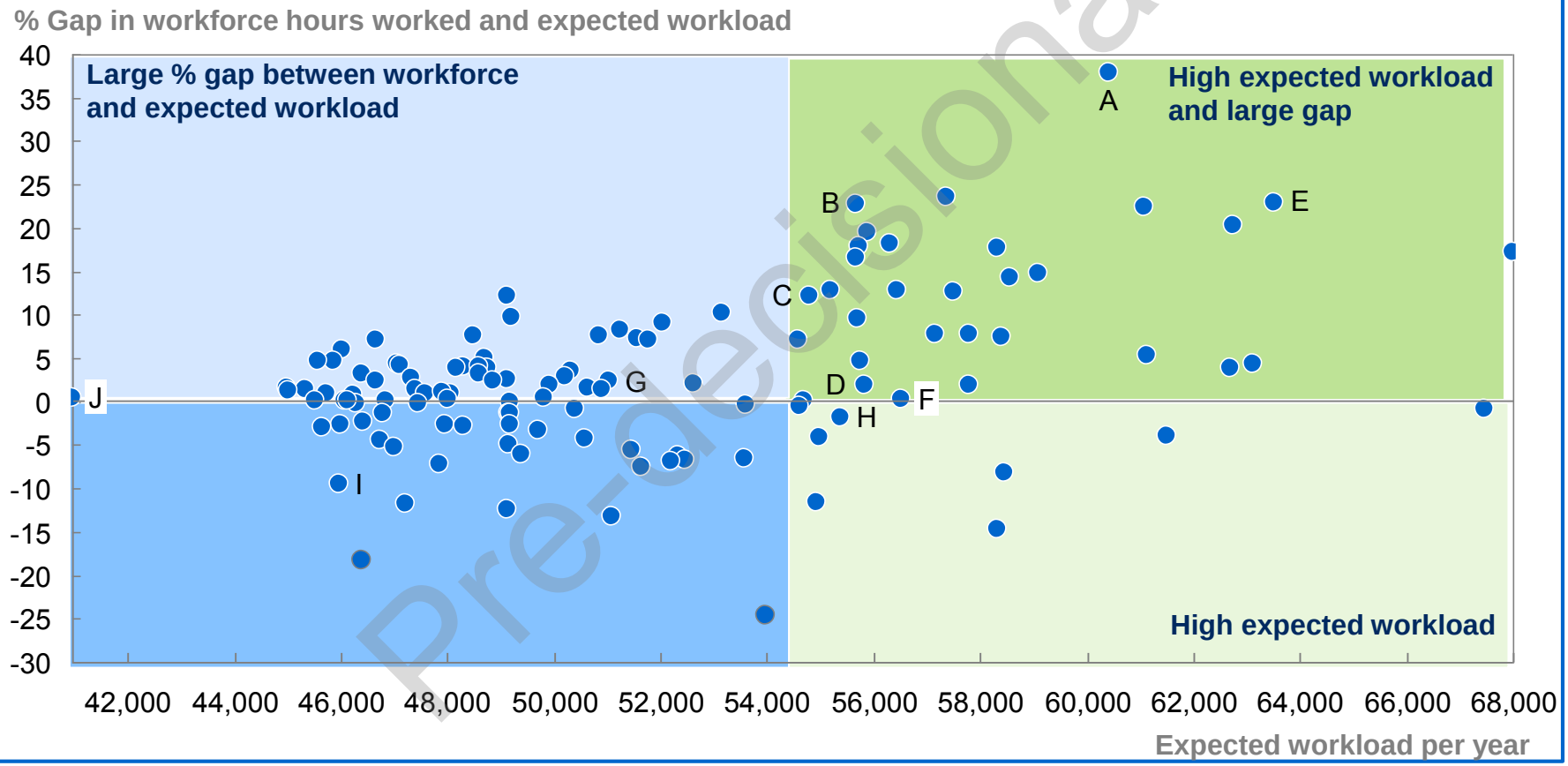


1 Workforce defined as current available FTE hours (including overtime) worked across WFOs
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 The regression model shows that relative to peers, some WFOs have large gaps between workforce[1] and workload[2] coupled with high expected workload

Comparison of workforce and workload



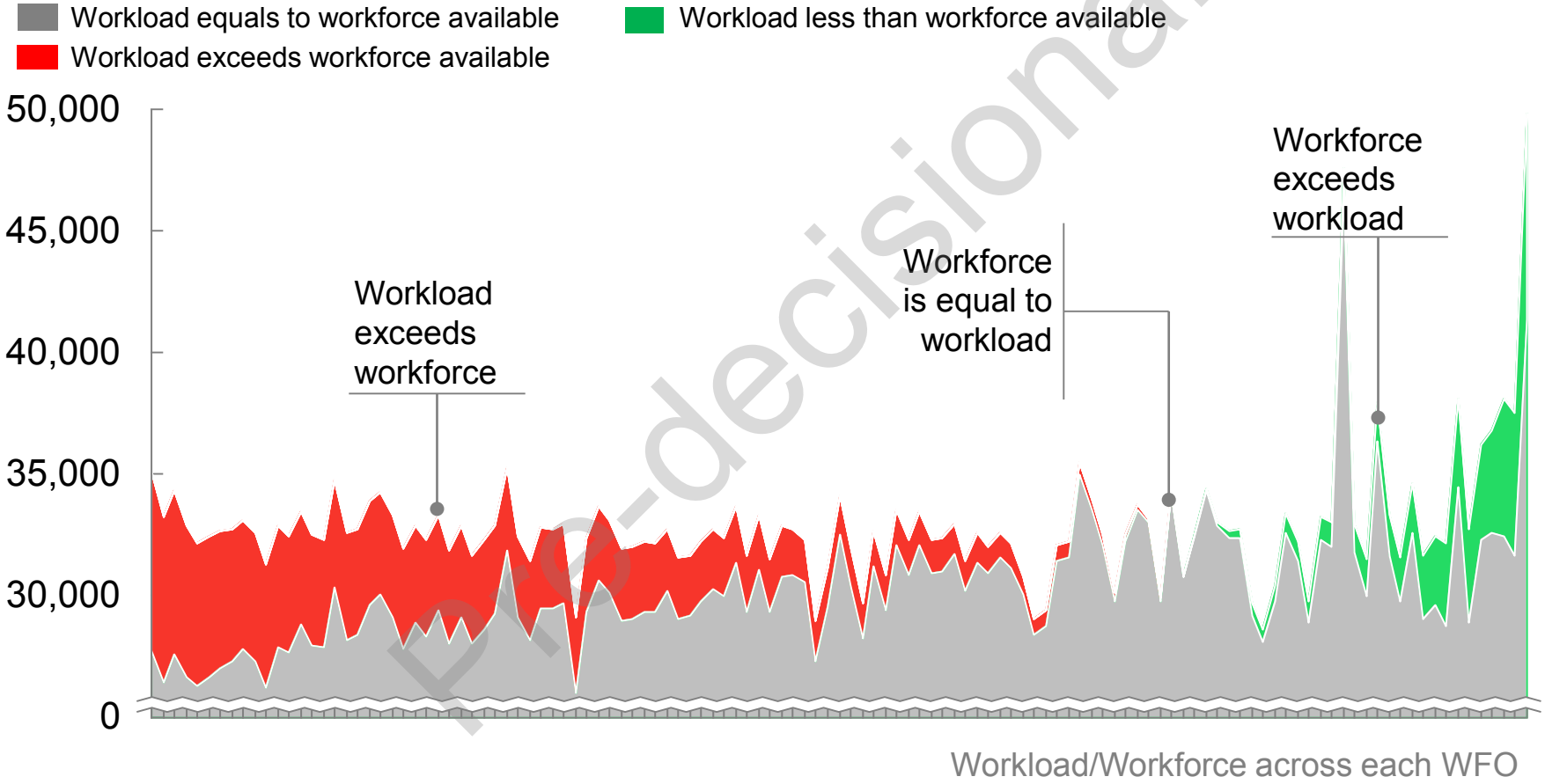
1 Workforce defined as current available FTE hours (including overtime) worked across WFOs
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers;

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

3 Considering only workload[1] of series 1340 meteorologists in WFOs, a more consistent gap exists across WFOs between workload and workforce[2]

WFO Workforce available compared against expected workload based on workload drivers, 2014

Hrs work by WFO



1 Regression analysis returned statistically significant results with p-value of 0.00 and overall lower r-squared of .2444; variables that were not statistically significant in this regression but were significant in the full regression were population, pop. density, land area of responsibility, advisories, and the Western and pacific region dummy variables; variables that became statistically significant were the number of fire, tropical and marine events; and the eastern and Alaskan region dummy variables

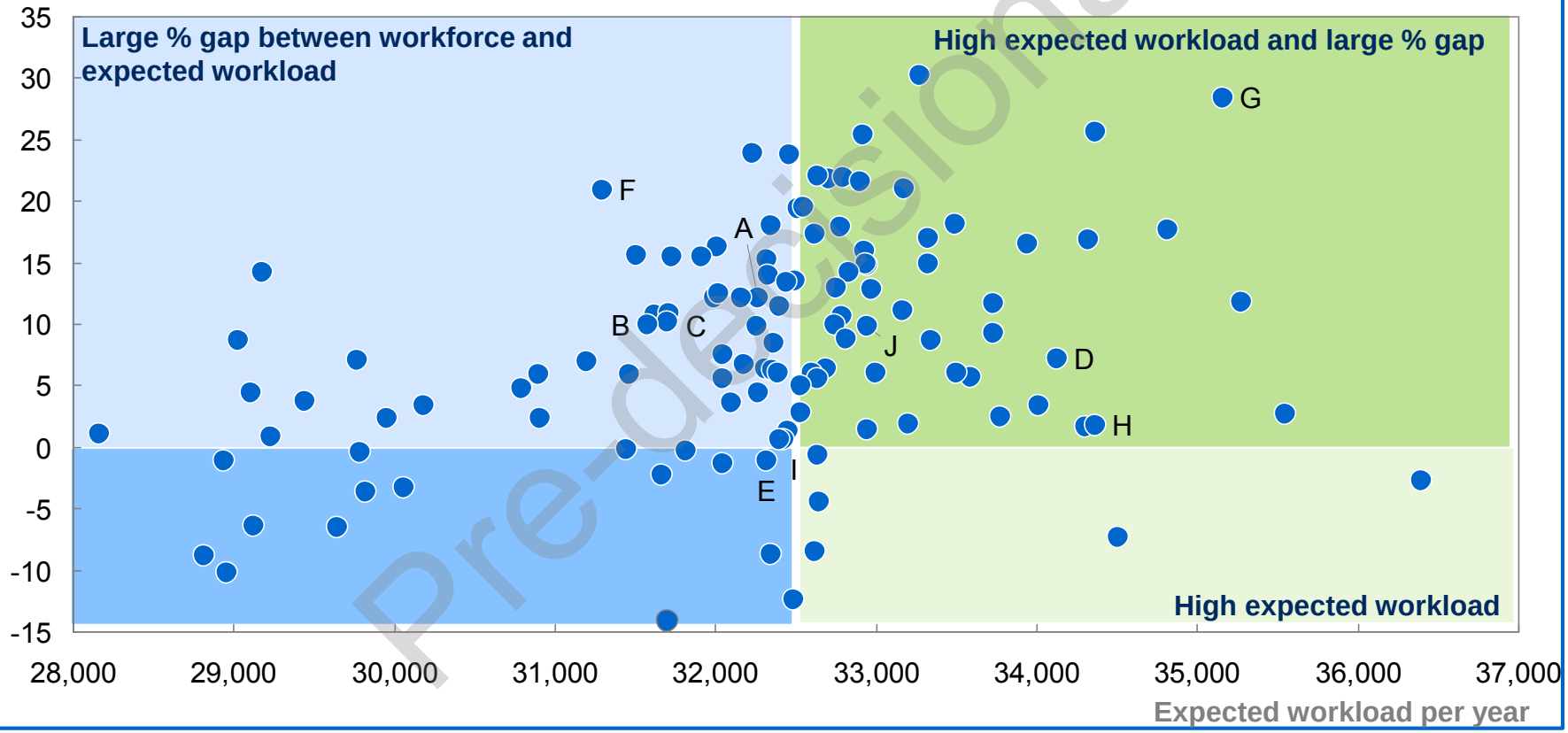
2 Workforce defined as all FTE and overtime hours worked by series 1340 FTEs, which would include and supervisory positions in series 1304

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 Based on a model that exclusively considers series 1340-reported hours[1], a different set of offices have high forecaster workload[2] and gap relative to their peers

Comparison of workforce and workload, series 1340 hours

% Gap in workforce hours worked and expected workload, series 1340 only hours



1 Workforce defined as current available FTE hours (including overtime) worked across WFOs by 1340 series only, including 1340 series supervisors
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers;

SOURCE: NWS Overtime data by biweekly pay period, 2002-'15; NWS CFO's FTE data by year, 2008-'14; NWS WWA data, 2008-'14, 2008-'14 NWS Severe weather event data, Storms events database, Ntl. Climate Data Ctr.

3 In scenario of lower number of weather events, more offices show oversupply with workload[2] less than workforce[1] available

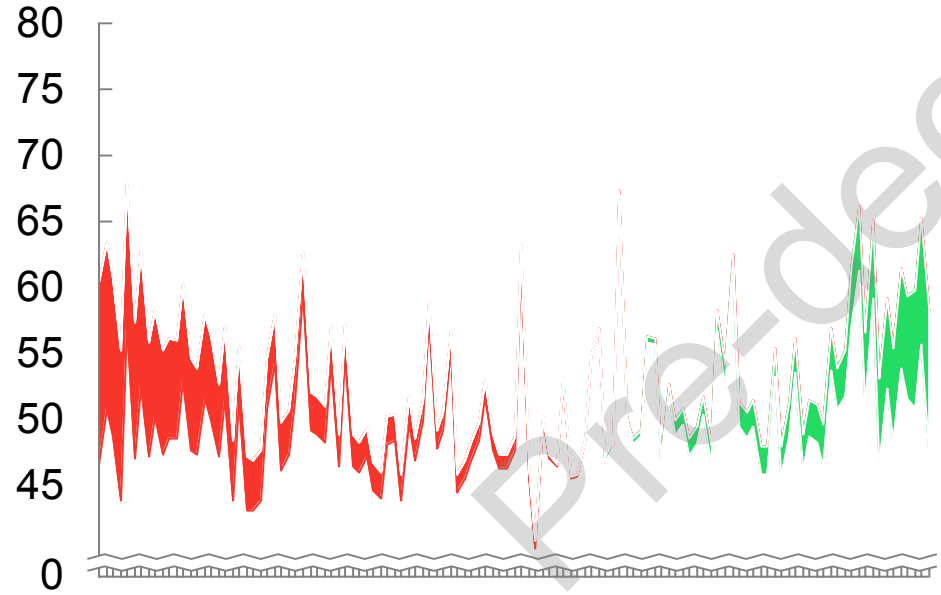
WFO Workforce available compared against expected workload based on workload drivers,

Thousand hrs work by WFO

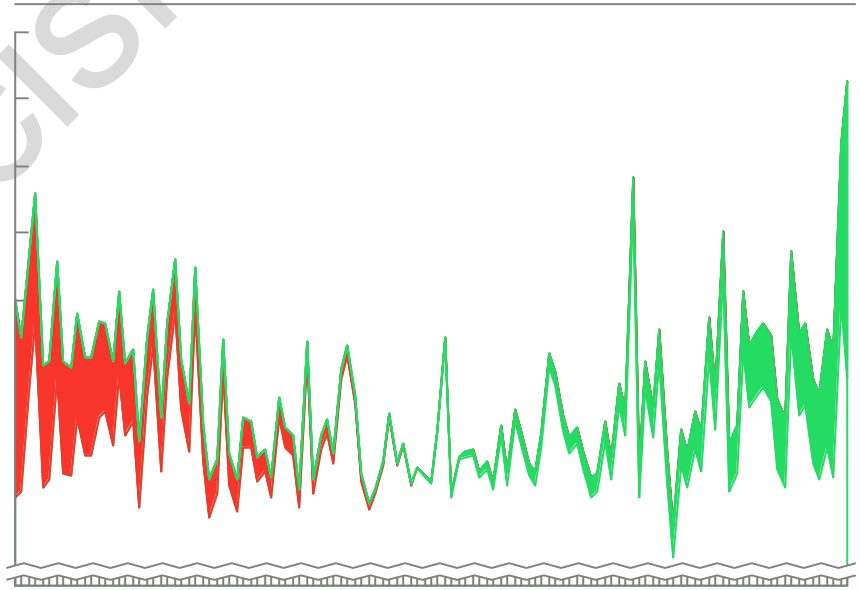
Workload exceeds workforce available

Workload less than workforce available

High frequency of weather events[3] impact on workforce and expected workload



Low frequency weather events[3] impact on workforce and expected workload



Workload/Workforce across each WFO

1 Workforce defined as current available FTE hours (including overtime) worked across WFOs
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers
3 High frequency of weather proxied by using data for 2011, year with overall high number of weather events, to model workload; low frequency weather events used data from 2009 as a proxy to model workload

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

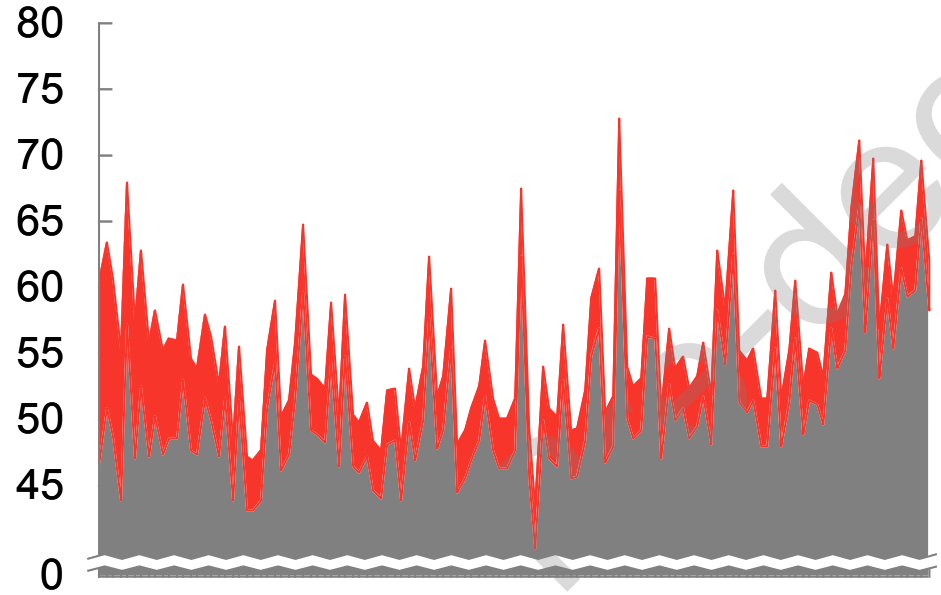
3 In scenario where WFOs model heavy IDSS workload, gap across NWS increases

WFO Workforce[1] available compared against expected workload[2] based on workload drivers, 2014

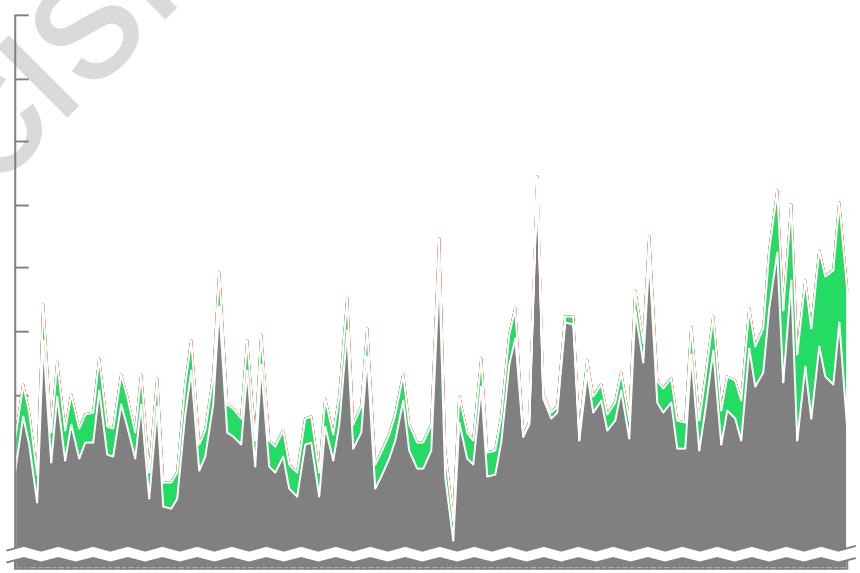
Hrs work by WFO

- Workload equals to workforce available
- Workload less than workforce available
- Workload exceeds workforce available

Heavy IDSS focus in WFO - impact on expected workload



Light or no IDSS focus in WFO - impact on expected workload



Workload/Workforce across each WFO

1 Workforce defined as current available FTE hours (including overtime) worked across WFOs
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 Looking comprehensively at NWS, there are three major types of work

Type	Definition	Examples	Portfolios included	Questions about workload
Mission delivery	▪ Mission delivery activities and direct support	▪ Forecasting ▪ IDSS delivery ▪ Observations and obs direct support ▪ Hydro and met techs	▪ AFS ▪ Dissemination ▪ Observations	▪ Do similar drivers exist across all mission delivery positions? ▪ Will workload at HQ scale with workload in the mission delivery positions in the field?
Admin and Support[1]	▪ Centralized support and leadership to guide organization	▪ Headquarters staff ▪ ASAs ▪ ITOs and IT support staff ▪ Facilities staff	▪ Common services ▪ Central processing	▪ How will the ratio of admin and support staff scale with changes to workload in mission delivery and R&D?
Research and Development	▪ Research or related or development of new science and tech. abilities	▪ NCEP research into new technology, models, or weather-related science	▪ Science and Technology Integration	▪ When comparing to other organizations with R&D investments, what is the appropriate level of staff?

1 Count of admin and support staff includes staff at headquarters, ASA's, facilities staff not currently in common services and central processing portfolio, and the common services and central processing portfolios

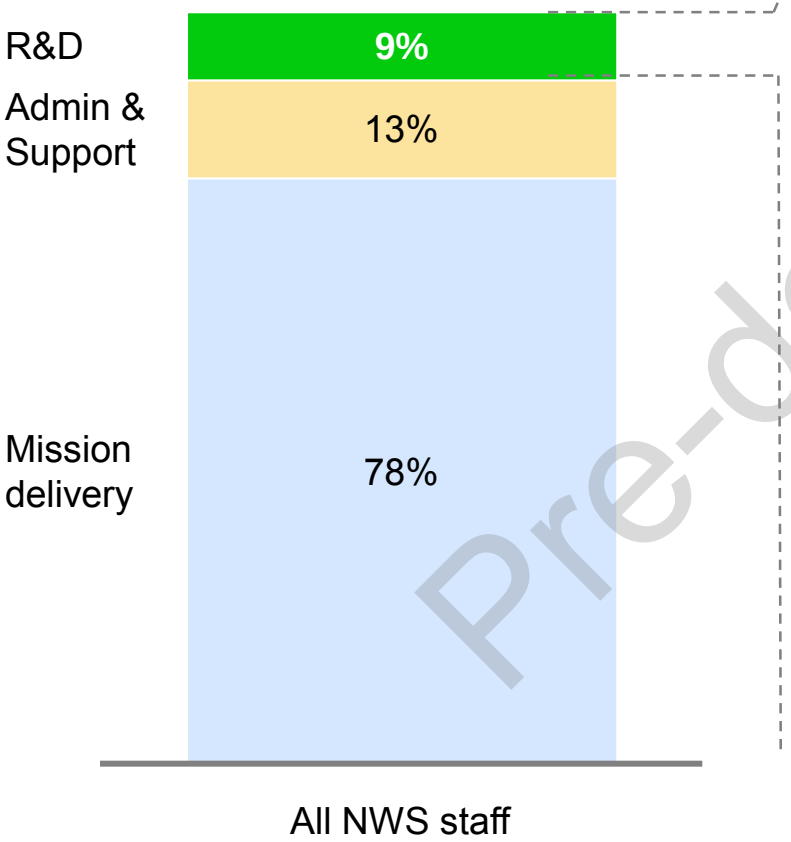
SOURCE: Industry benchmarks, HQ and site interviews

3 For example, current NWS ratio of support staff (13%) and R&D (9%) could change in future to align with other industry benchmarks

PRELIMINARY

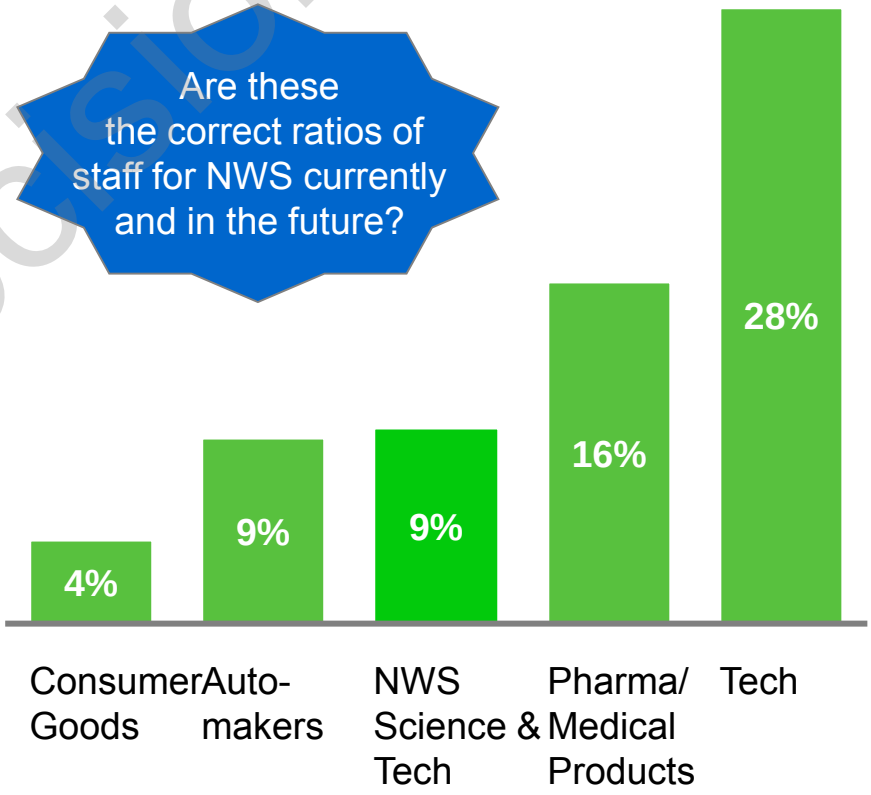
Proportion of staff in Admin & Support[1] and R&D roles

Proportion current NWS FTE (%)



Industry benchmarks of proportion of R&D staff of total staff

R&D FTEs/Total FTEs



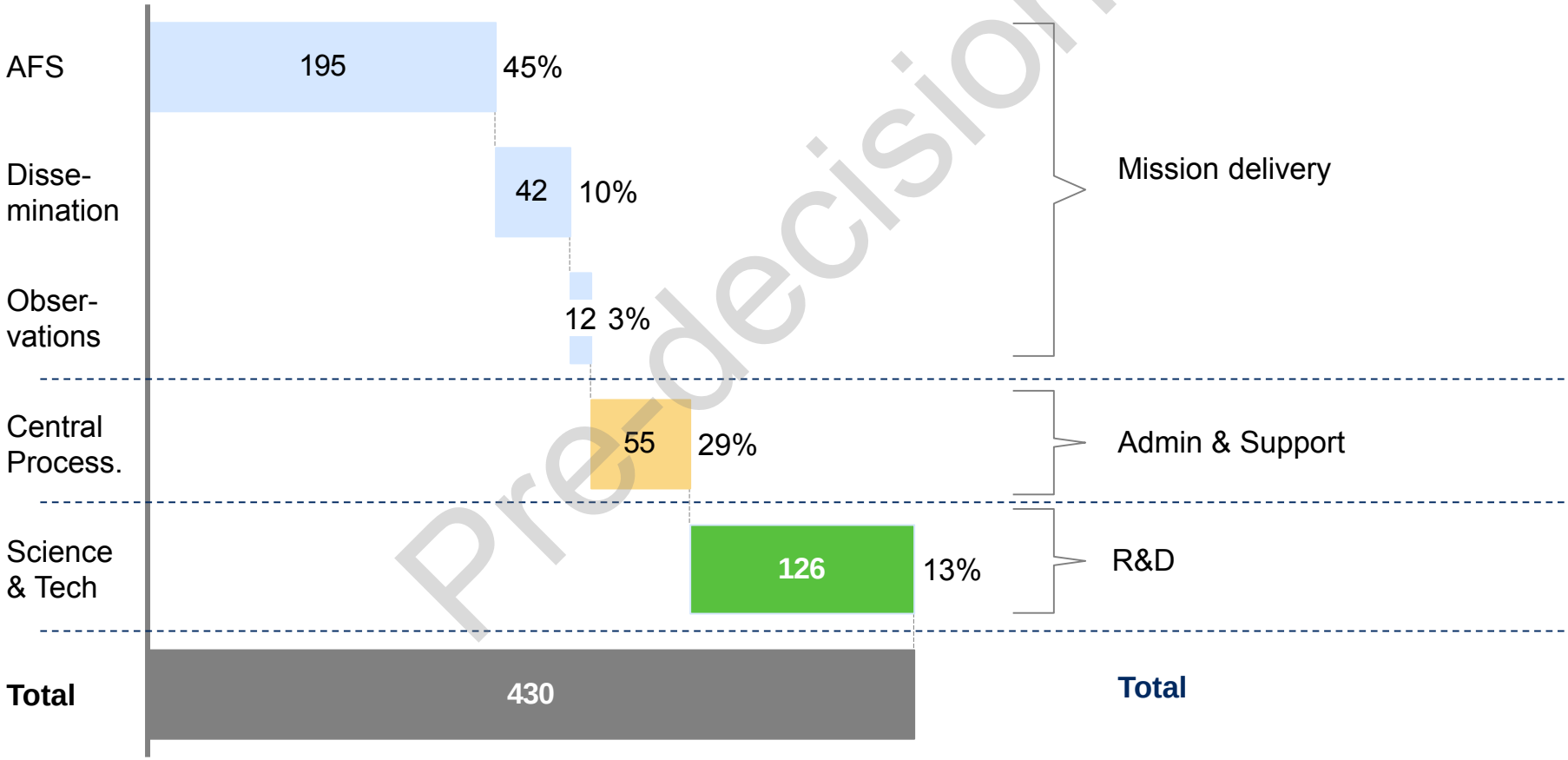
1 Count of Admin & Support staff includes staff at headquarters, ASA's, facilities staff not currently in common services and central processing portfolio, and the common services and central processing portfolios

SOURCE: Industry knowledge and benchmarks; 2014 NWS Workforce data as of June 8, 2015

3 NCEP's current structure includes multiple types of workload (e.g., mission-delivery, R&D, and support)

NCEP FTE by Portfolio

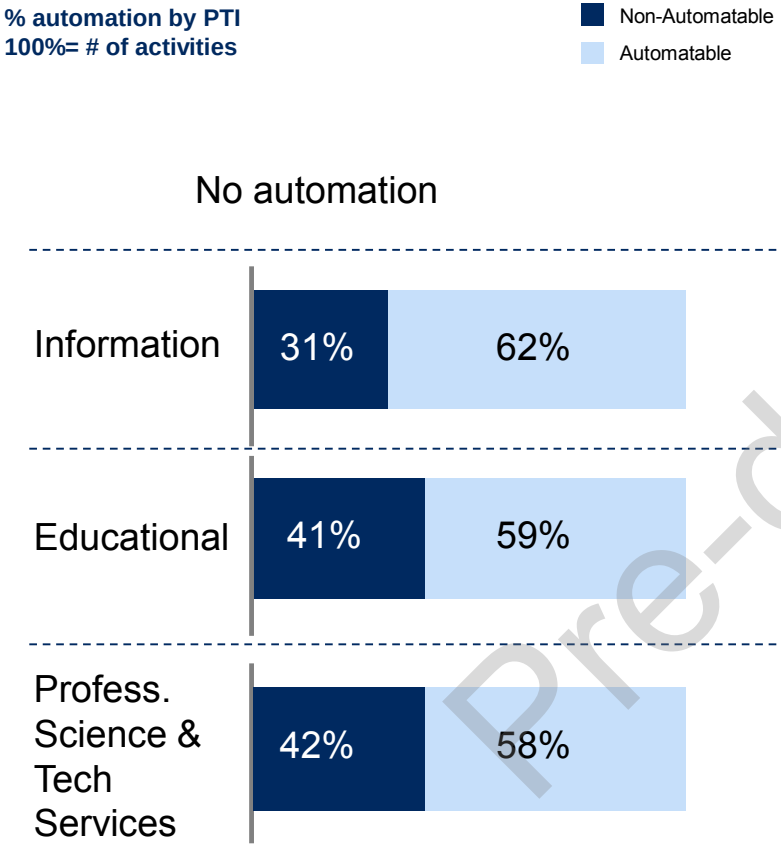
FTE 2015 (not including vacant billets)



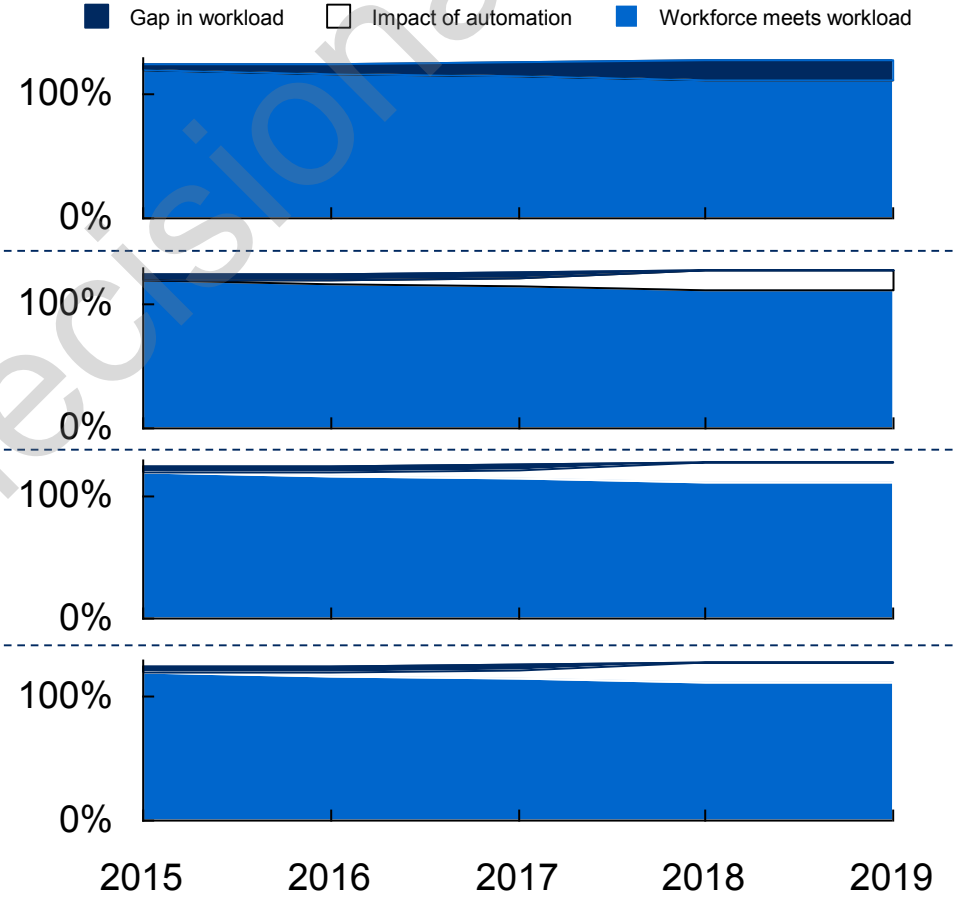
SOURCE: Industry knowledge and benchmarks; 2014 NWS Workforce data on June 8, 2015

3 Based on benchmarks from different sectors, partial automation scenarios could alleviate future workload gap

Benchmarks for level of automation[1] by normal type of work within sector, % workload



Projection of gap between workforce[2] available and workload[3], with automation increases, % workload



1 Assumes automation directly related to shift work performed in WFO offices; assumes 2-shift per hour mandatory forecasting grids work can be automated at above levels; assumes a relatively linear integration of automation up until gap in workload and workforce is closed at 13% automation level

2 Workforce defined as current available FTE hours (including overtime) worked across WFOs

3 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers;

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 200-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

3 Skill assessment revealed gaps in skills especially for those identified as important to IDSS and for the intern position

Top quartile
Second Quartile
Third Quartile
Bottom Quartile

Outcome scores based on average of gap between desired and current responses

Top 3 skills

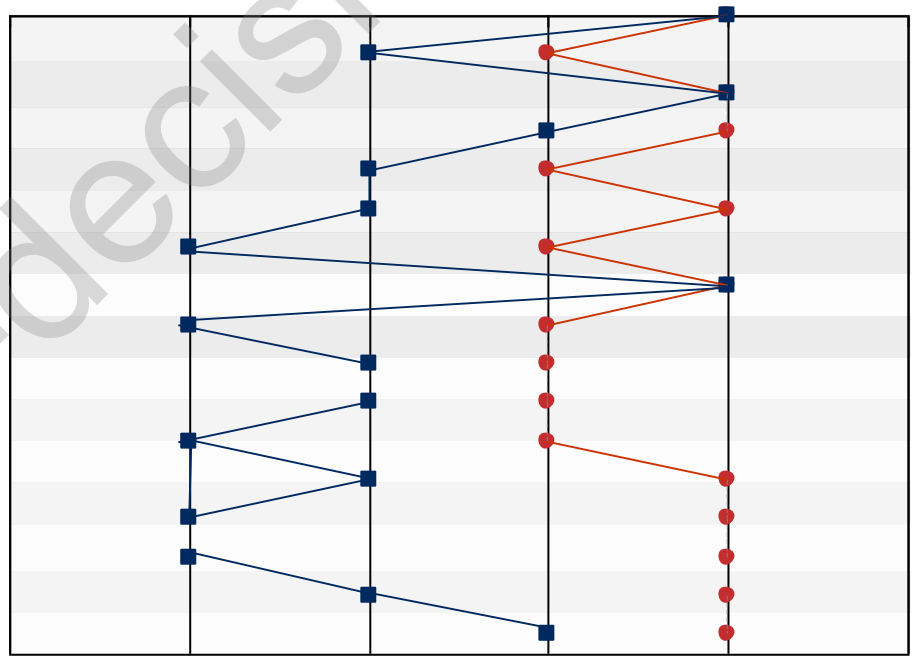
Skills	Importance to IDSS[1]	Gap between current and desired scores, rounded			
		Forecaster	WCM	Intern	HMT
Problem solving	4.4	0	1	2	1
Applying weather science	4.4	1	0	2	1
Data collection	4.2	0	-1	2	0
Analytics and stats	4.4	1	0	2	1
Computer and IT tech	4.8	1	0	2	0.5
Customer service	3.6	2	1	3	0.5
Leveraging diversity	3.8	2	1	1	0
Quality focus	4.2	0	0	2	1
Teamwork	3.6	2	2	2	1
Creative thinking	4.4	1	2	2	0
Judgment/decision-making	4	1	1	2	0.5
Leadership	4.4	2	2	1	1.5
Partnering	4.4	2	0	2	1
Written communications	4.6	3	1	2	1
Oral communications	4.6	3	2	1	1
Coordination	4.2	2	0	2	1
Information gathering	3.8	1	-1	1	1

1 Based on a scale of not important (0) to critical to IDSS (5)
SOURCE: NWS Skills assessment; partial sample of NWS WFOs, CWSUs, and RFCs

3 In some WFOs, there are current soft skills gaps for forecasters, particularly in team work and communications

Skills	Gap
Problem solving	0
Applying weather science	1
Data collection	0
Analytics and stats	1
Computer and IT tech	1
Customer service	2
Leveraging diversity	2
Quality focus	0
Teamwork	2
Creative thinking	1
Judgment/decision-making	1
Leadership	2
Partnering	2
Written communications	3
Oral communications	3
Coordination	2
Information gathering	1

Current vs. desired competency level for forecasters, average score, rounded



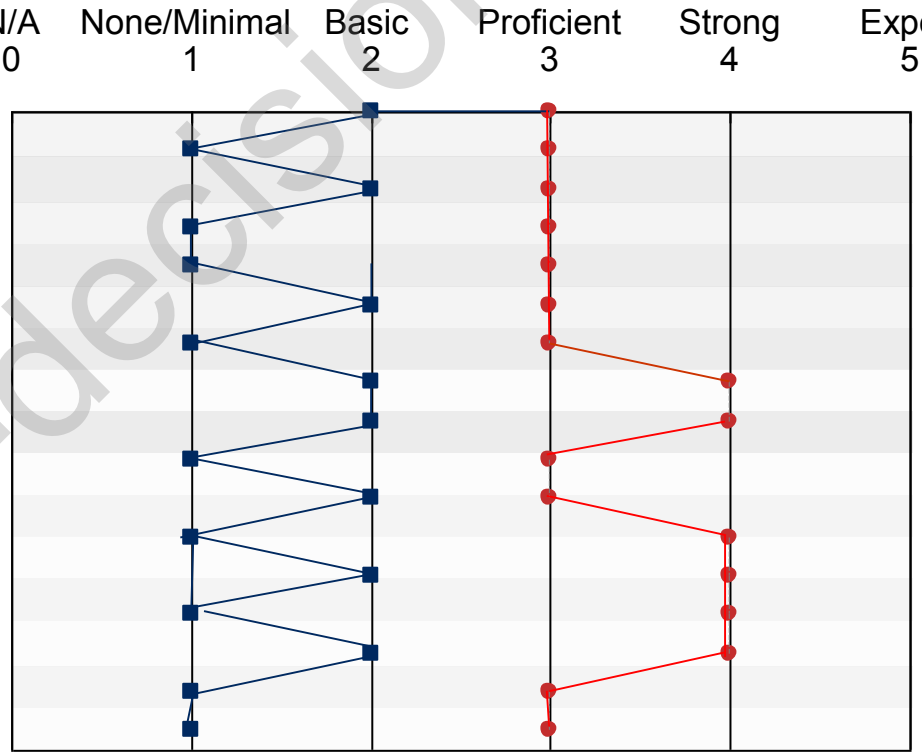
1 Skills in blue are those with largest difference between current and desired competency levels in skill
SOURCE: NWS Skills assessment; partial sample of NWS field offices in 2015 site visits

3 Interns are not expected to be as proficient as forecasters, but there still exists a significant skills gap

Desired level
Largest gap[1]
Current level

Skills	Gap
Problem solving	1
Applying weather science	2
Data collection	1
Analytics and stats	2
Computer and IT tech	2
Customer service	1
Leveraging diversity	2
Quality focus	2
Teamwork	2
Creative thinking	2
Judgment/decision-making	1
Leadership	3
Partnering	2
Written communications	3
Oral communications	2
Coordination	2
Information gathering	2

Current vs. desired competency level for interns, average score, rounded



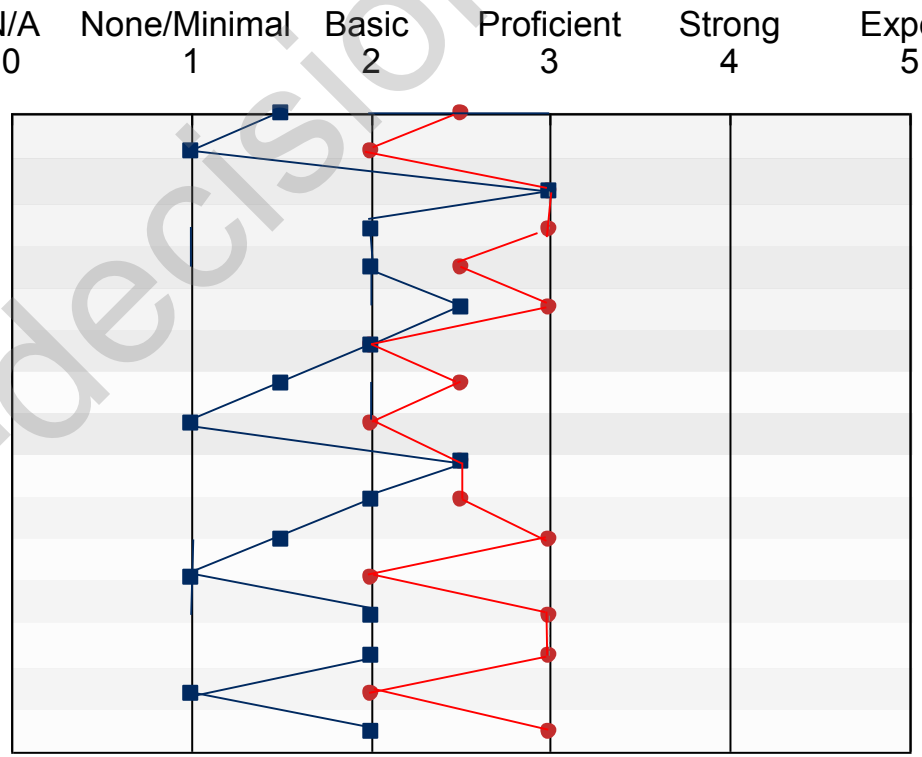
1 Skills in blue are those with largest difference between current and desired competency levels in skill
SOURCE: NWS Skills assessment; partial sample of NWS field offices in 2015 site visits

3 HMTs and Met techs are often meeting the expectations of their role; in many cases, expectations are lower than forecasting roles

Desired level
Largest gap[1] Current level

Skills	Gap
Problem solving	1
Applying weather science	1
Data collection	0
Analytics and stats	1
Computer and IT tech	0.5
Customer service	0.5
Leveraging diversity	0
Quality focus	1
Teamwork	1
Creative thinking	0
Judgment/decision-making	0.5
Leadership	**1.5**
Partnering	1
Written communications	1
Oral communications	1
Coordination	1
Information gathering	1

Current vs. desired competency level for hydromet techs and met techs, average score, rounded



1 Skills in blue are those with largest difference between current and desired competency levels in skill
SOURCE: NWS Skills assessment; partial sample of NWS field offices in 2015 site visits

3 The talent wheel informs the Talent System Assessment Tool (TSAT) to take a 'whole system' approach to managing talent and gauging the strengths and gaps today

The talent wheel and 7-part Talent System Assessment Tool (TSAT)

1. Linking talent strategy to business needs
Changes in environment, budget and demographics can be anticipated and addressed

2. Recruiting and on-boarding
The best processes innovate on sourcing and optimize the candidate experience

3. Recognizing and rewarding performance
Motivation is sensitive to the integrity and consistency of the link between performance, ratings, and consequences

4. Growing leaders
Leadership development can be accelerated with a cross-agency view of leader/opportunity matching and movement

5. Learning and organizational development
The most effective programs are a part of a larger journey and are coupled with experiential learning components and innovations in job design

6. Engaging and connecting
Strong and cohesive social and knowledge networks can dissolve structural barriers and silos

7. Creating a talent culture
Talent cultures require foundational mindset and behaviors among executives and staff alike

3 TSAT assessment highlights strengths in capabilities and talent pools for key roles, but opportunities in workforce planning, hiring, performance management and training

Talent diagnostic self-assessment — Leading edge | Superior | Common | Undeveloped

1
- **Workforce planning system** provides a forward looking perspective on talent needs given the organization's strategy
- **Optimal resource allocation** of today's capabilities

2
- **Employee value proposition (EVP)** tailored to what key populations want
- **Effective messaging** to deliver and communicate the EVP
- **Sourcing** from high quality talent pools
- **Selecting** the right mix of skills, attitudes and behaviors
- Effective and efficient **hiring process** that delivers a good **candidate experience**
- Quick and effective **onboarding** of new employees

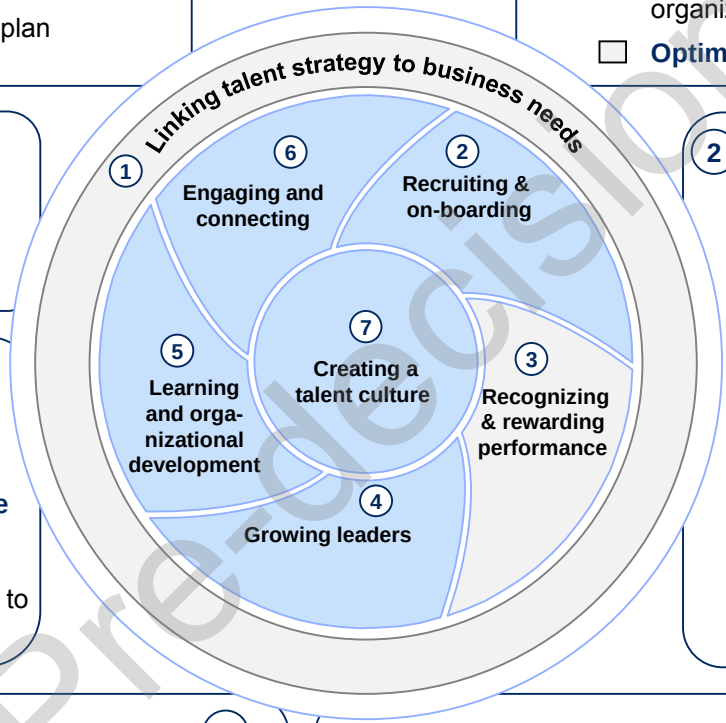
3
- **Performance measures** that are linked to value creation
- **Targets** that are tuned to motivate higher levels of performance
- **Differentiated ratings, rewards, and consequences**
- **Evaluation process** that maintains integrity and fosters healthy performance dialog

4
- **Identification of leaders**
- **Deployment of leaders** in the interest of organization needs and individual growth
- **Formal programs and mentoring** to guide and develop leaders

5
- Understanding **job capability requirements**
- Training mechanisms that **provide skills and knowledge in a timely manner**
- **Roles and job design** aligned to meet business objectives

6
- **Retention** of key populations
- Building **social connections** across the organization

7
- **Leader and manager involvement** in talent development
- **Individual initiative taking** to plan and grow



SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Select implications of NWS TSAT: talent management and human capital priorities

- On the strengths side, for key roles NWS has clear capability requirements and taps high quality talent pools
- However, NWS could prioritize challenges in workforce, talent management and human capital for the future including:
  - More robust systems and workforce planning to facilitate strategic resource allocation
  - Attention to the hiring process to address backlog and process delays
  - Performance management could be enhanced beyond pass / fail to differentiate and motivate top performers
  - Training could be enhanced, particularly for key skills and roles in management and communications
  - Greater involvement from supervisors to communicate the direction of the organization and skills needed to achieve it to inspire commitment
  - Adherence to fairness and transparency in opportunities to motivate staff and create a culture of trust
- Additional details follow…

3 Linking talent strategy to business needs: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Push for hiring:** there is strong awareness of the missing staff roles and skills in each office and a strong desire to get the gaps closed as soon as possible; some offices are particularly aware of the managerial skills gaps	*"I know the office is trying to fill the vacancies – raising the issue to regional leaders and **trying to find ways around** the frustrating backlog."*
Gaps	▪ **Large backlog of unfilled roles and lack of priorities:** for reasons including challenges in the NOAA WFMO office there is a systematic backlog and a perception that it is difficult to prioritize or know what the most urgent and important drivers are to address ▪ **Sub-optimal resource allocation:** there is a commonly held perspective that the "one size fits all" WFO staffing model does not reflect the varying needs in each offices and that it would be beneficial to have customization – Many staff mentioned preferring IDSS or forecasts but are constrained from specializing or focusing	*"Hiring has gotten worse. Offices should not **suffer multiple vacancies** for months and years. Management should make it a much higher priority."* *"Covering open shifts for prolonged periods **wears down a staff physically and emotionally**."* *"There's a **major lack of succession planning**: a departing employee cannot cross-train their replacement because the employee has to vacate their billet. There's no practice around passing down knowledge that way."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Recruiting and onboarding: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Strong ties to universities:** the relationships with universities and the meteorological community helps generate and sustain the recruitment pipeline for qualified candidates	*"Our university and AMS collaborations helps ensure that new graduates think of NWS as the **employer of choice**."*
Gaps	▪ **Going beyond the usual suspects:** beyond core meteorology programs (e.g., military and other agency meteorologists), outsiders and "diversity" candidates are often overlooked even though many have strong talents for missing leadership and communication skills	*"The NWS needs to provide a clearer vision of its "weather-ready nation". It cannot achieve this goal if it continues to remain **behind in recruiting scientific and technological skills and knowledge and managers."***
	▪ **Key capabilities are missing – and not being prioritized**: there are big gaps in managerial, leadership and communication skilled the hiring process does not seek these skills out	*"**Poor management skills at every level** contribute to the perceived lack of leadership and mismanagement pervasive in the organization."*
	▪ **Huge backlog:** 12 month+ waiting processes to notify interested candidates dissuades many from applying or taking the job	
	▪ **Basic onboarding is lacking:** newer hires experienced inconsistent onboarding on "how NWS works"	*"Management's **inability to harness the abilities and skills** of employees is the least inspiring part of the job."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Recognizing and rewarding performance: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Pockets of best practice** are emerging where the informal evaluation process recognizes innovation and collaboration and where leaders highlight the public impact of the work; these are seen as inspiring places to work	*"The most rewarding part of my job is when we receive **thanks from the public or our partners** letting us know how our forecasts and products led them to take action that made a difference.."*
Gaps	▪ **Performance measures are not fully linked** to value creation; people described they can be promoted is by leading individual/non-team based science projects and that there are few formal incentives for great IDSS or leadership – Organizationally the GPRA measures are associated with forecast accuracy not IDSS excellence – Relevance of ratings for each WFO may diminish as the blended model takes over	*"We need to improve the promotion process to **select the best-qualified** candidates, and give real incentives to those who innovate."*
		*"There is **too much fear** of consequences by local managers. Poor performers need to be held accountable."*
	▪ **Ratings and rewards are not motivating**, they are perceived to not be meaningfully connected to actions in a consistent way, in particular that poor performers are tolerated	*"I feel **little trust in management**… There's such inconsistent treatment and opportunities."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Growing leaders: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **People can move around the country** in the interest of the organization's needs and individual growth; this deployment of leaders is reflected in the number of offices people have been a part of in their NWS career	*"The **option to live someplace great that I want to live** and to have the opportunity for promotions speaks not only to me, but many in my generation."*
Gaps	▪ **The identification of leaders needs to match the future job, not the former one:** the primary focus on scientific and forecasting skills rather than the qualities that make for great managers and leaders generates a dearth of more senior roles with the needed skills	*"Teach and train us to respect each other and listen and collaborate. Many **people here lack some basic social skills and yet have been elevated** to managers."*
	▪ **Lack of formal programs and mentoring:** training is insufficient in terms of the range of courses, and there is a disconnect between the roles that are needed in management and the preparation and mentoring so that people are ready to fill them and be strong leaders	*"We need to **improve mentoring** programs for operational staff leaders to bring the next generation up to speed more quickly."*
		*"Providing coaching/mentoring could help all **become top performers** and empower all to improve the agency."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Learning and organizational development: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Understanding job capability requirements:** particularly for forecasting and technology there are clear capabilities tied to academic training and performance metrics	*The passionate workforce is driven by a love of the weather and wants to do a great job. The severe weather and operational radar **expertise is by far the best in the world**.*
Gaps	▪ **Too few trainings – or time to take them:** there is a significant lag (both perceived and real) about many of the training programs particularly in forecasting and in supervisory roles and a lack of time to be able to dedicate to training is not compensated by online classes; there is insufficient time to take them or ways to practice on the job ▪ **Lack of clarity in role and job design:** the NCEP integration and new NWC role in relation to WFOs and RFCs is not clear leading to a gap in the way; IDSS expectations vary between offices and are often unclear within an office and managerial and leadership expectations are not defined	*"We need **more resources and time for training…** 5 minutes here, 5 there on a web training is not focused time to learn."* *"The worst part of the job is my **supervisor's lack of commitment to my development**. I haven't had training in 3 years – unheard of in the IT field. They need to develop employees."* *"The vast majority are here because they want to be. Yet, **training on day-to-day operational forecasting is shamefully lacking."***

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Engaging and connecting: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Career retention:** workforce data shows most people stay at NWS for the majority of their career; it is perceived as among the best jobs in meteorology ▪ **National footprint of connections:** as people move offices they stay in touch and form new ties	*"The greatest motivation is when I get to **work with people, be a mentor,** and someone I supervise get promoted/acknowledged for good work."*
Gaps	▪ **There could be a broader reach and range of social connections:** most of these connections are fostered in the science and technology space not in the "softer sciences" of communications and management which are increasingly needed; there is also a sense that diversity could be strengthened through affinity groups or greater inclusion activities and innovation ▪ **"Field/region/HQ divide:"** many people expressed frustration and disappointment about the lack of understanding or connection and that change happens top down with seemingly little consideration or notice	*"Dealing with thoughtless management decisions such as **cancelling travel due to lack of reasonable budget planning** when this is a critical way to connect."* *"People in regional and national headquarters seem **out of touch with the field offices**, so some of their directives/procedures result in a degradation of our products rather than an improvement."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

3 Creating a talent culture: insights and quotes about the strengths and gaps

	High level insights	Select quotes
Strengths	▪ **Pockets of proactive leadership:** Some supervisors identify trainings and opportunities for people to grow ▪ **Individual initiative taking:** many staff are interested to continue growing their career	*"I've had 6 MICs in my career – 1 was **truly a manager and leader**. However the other 5 lacked critical skills including communication in the office. MICs should get training or have required capabilities."*
Gaps	▪ **Predominate frustration with lack of training and development:** There is an to inconsistency in opportunities ▪ **Lack of clarify about the future** which leads to a sense that employees do not matter; supervisors treat communication as a "nice to have" not a must have ▪ **Innovation is held down/discouraged** in terms of what people do, how they do it and where they work; many people are afraid to rock the boat or have gotten used to supervisors saying no	*"The lack of employee motivation is driven by **constantly changing priorities** with no guidance or direction from leadership."* *"We don't know what the future of the organization holds. **Be more open** about what is going on. No more surprise Friday afternoon e-mails detailing changes."* *"NWS is **seriously slow to implement innovative changes** and improve customer support. It worsened over the past years."* *"**Flexible work** schedules and teleworking could make the job more sustainable."*

SOURCE: OHI Survey responses (July 2015, 49% of organization completed), interviews and site visit (42 sites in 20 locations), analysis of workforce data

Executive Summary of Phase 1 Deliverable: Current State Baseline and Gap Assessment

Overview of OWA: Purpose of the project, objectives for Phase 1 baseline and gap assessment

Methodology: Criteria and decisions to select and conduct site visits, interviews, surveys, team, SMEs

Baseline, gap analysis and insights: Against each assessment area, share fact-based findings and insights, including variation in particular roles and regions as well as themes from external stakeholders and internal staff

- **Workforce:** Controlling for differences, there is a gap in some areas between today's workforce and today's workload (e.g., due to increase in severe weather, proliferation of programs), which is expected to increase in the short-term given constraints on supply and increased demand but could be offset in the longer-term given changes to technology and operating procedures
- **Operating Model (including IDSS):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there is a lack of alignment on what IDSS means, lack of clarity on roles, and lack of consistency on process and metrics used to evaluate outcomes
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where we observed overall lower health but strengths in motivation and external orientation – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and the organization model, and continue to communicate and engage with internal and external stakeholders throughout

Operating model (including IDSS)

1. **Stakeholder impressions**
2. **IDSS interpretations**
3. **Outcomes and impact**

Operating model (including IDSS): Summary of stakeholder impressions

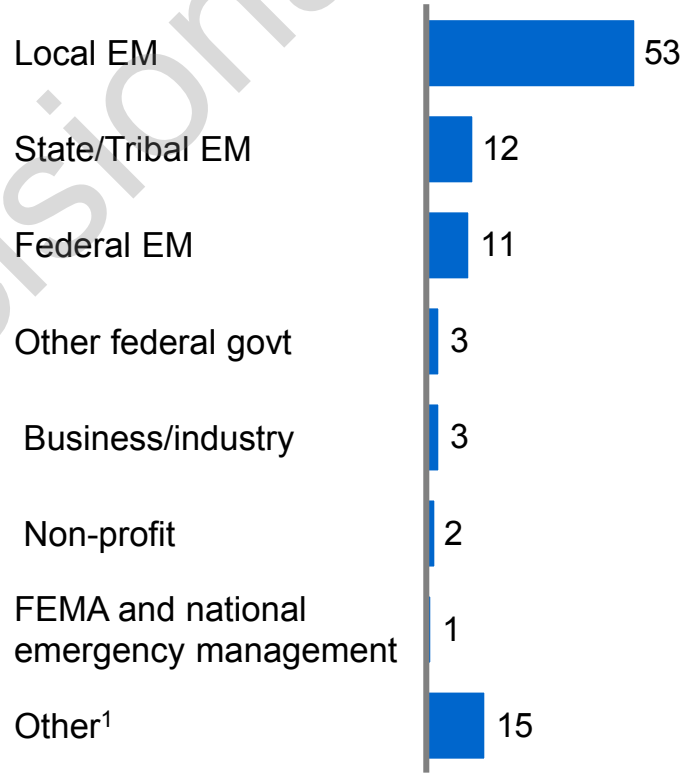
- External stakeholders with whom NWS interacts regularly report high levels of satisfaction with IDSS, especially on accessibility of information, accuracy of products, and relevance of information
- There is also some confusion for external stakeholders around the scope of IDSS and services provided
- External stakeholders also identified some opportunities for improving IDSS, including on clarifying the proper role of NWS and increasing precision of products and communication

1 Sources of insight and IDSS survey methodology and respondents

Sources of insight and IDSS survey overview

- **Approach to analysis**:
  - Focus groups/ interviews at site visits
  - Interviews with national partners and other key stakeholders
  - IDSS survey: WCMs reached out to stakeholders with whom NWS has an existing relationship
- **Survey purpose**: capture stakeholder opinions of the effectiveness of NWS products and communication channels
- **Survey open:** from July 14-27
- **Survey content**: ten questions covering product and channel effectiveness and the frequency with which respondents interact with the NWS (ording of questions was limited to high-level questions of satisfaction per OMB guidelines
- **Survey results**: 712 responses (respondents were sent an anonymous link, so overall response rate of those invited is unknown)

Percentage breakdown of respondents (%)

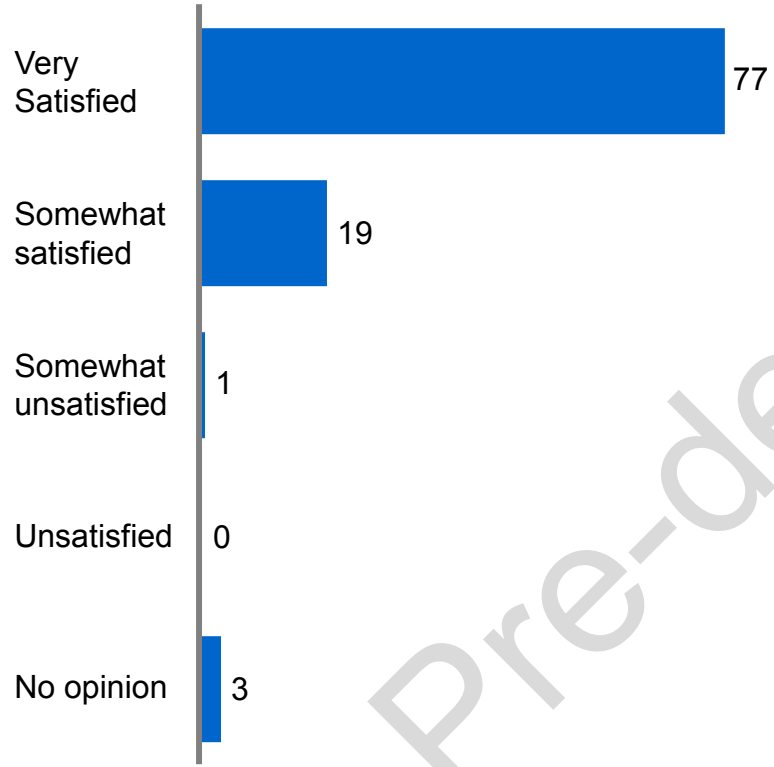


1 Most common responses included state government, educational institutions, hospitals, county government

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27

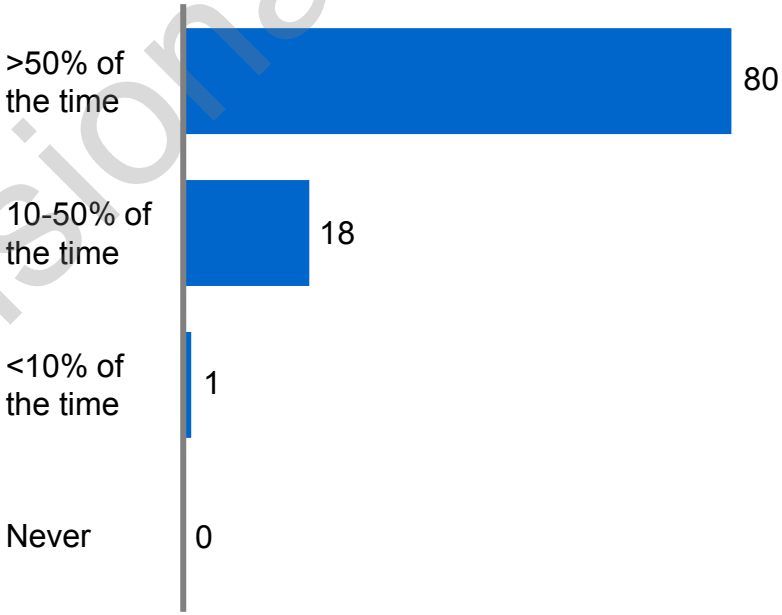
External stakeholders report high overall satisfaction with impact-based decision support services (IDSS) and frequently use NWS information to make decisions

Overall satisfaction with the IDSS received from NWS (%)



"I feel our relationship with the NWS team is way above outstanding, they are always available to me, my agency and my boss. They are the very best there is."

How often NWS information affects stakeholder decision-making (%)



"NWS is a critical member of our emergency management community and we depend greatly on them for decision support."

"I am very satisfied with my NWS partners, they are easy to work with and provide extremely important information to aid in our decision making locally."

1 Stakeholders identified by local NWS WCMs as critical partners with whom they work

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27

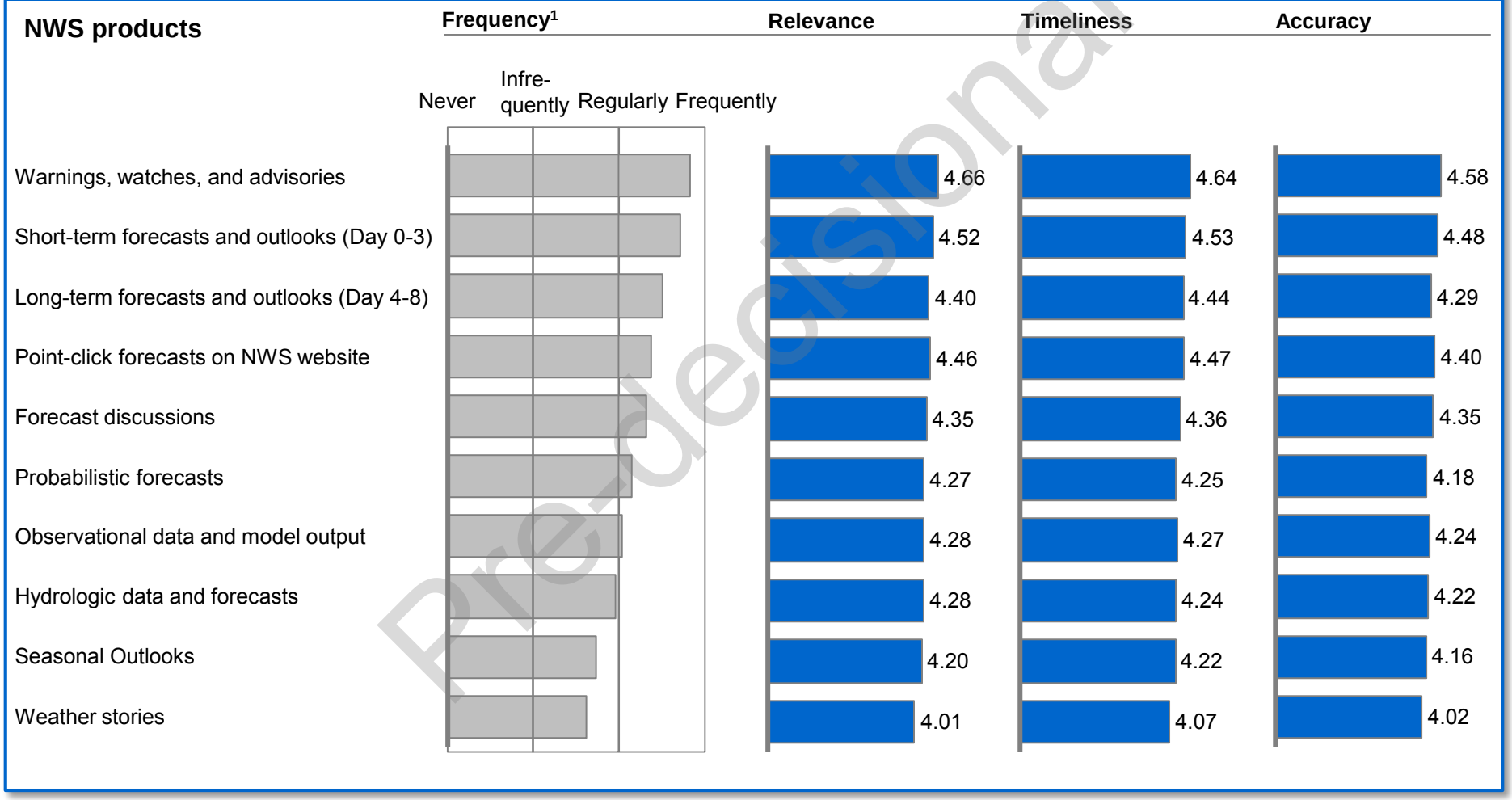
1 Numerous stakeholders praised the IDSS they receive from NWS for accessibility, accuracy, and relevance, but many are confused about the scope of IDSS

Dimension	What we have heard
Accessibility of information	*"They're on Twitter, they're on social media, and they're in my email every morning; **I always know what I'm up against** when I start my day "*
	*"I have never worked with an agency that is **so accessible**. They are remarkably proactive and in multiple ways – email, phone, social media."*
Accuracy of products	*"It's not like the other weather brands. **I go by what the Weather Service tells me; not by anyone else"***
	***"The technology has improved so tremendously**; we can't see private companies keeping up with the products the Weather Service has now"*
Relevance of information	*"It's our livelihood; **we're a weather-dependent economy** on our the best days."*
	*"During a severe weather event, the Weather Service helps us ensure **there's not going to be a large loss of life."***
Confusion about scope of IDSS	***"It's challenging for the private sector to know where they should play a role**, how they can play a role when what the NWS does varies from event to event"*
	*"We have to know what the NWS can do for us, but **we also have to know what they can't do, or we'll ask them to do everything**, and, god help them, they'll try and give it to us"*

SOURCE: Site interviews

1 High stakeholder satisfaction exists across all major NWS product offerings

Frequency of use and satisfaction along key dimensions of effectiveness (ranked on a scale of 1-5; 3 = neutral / no opinion)

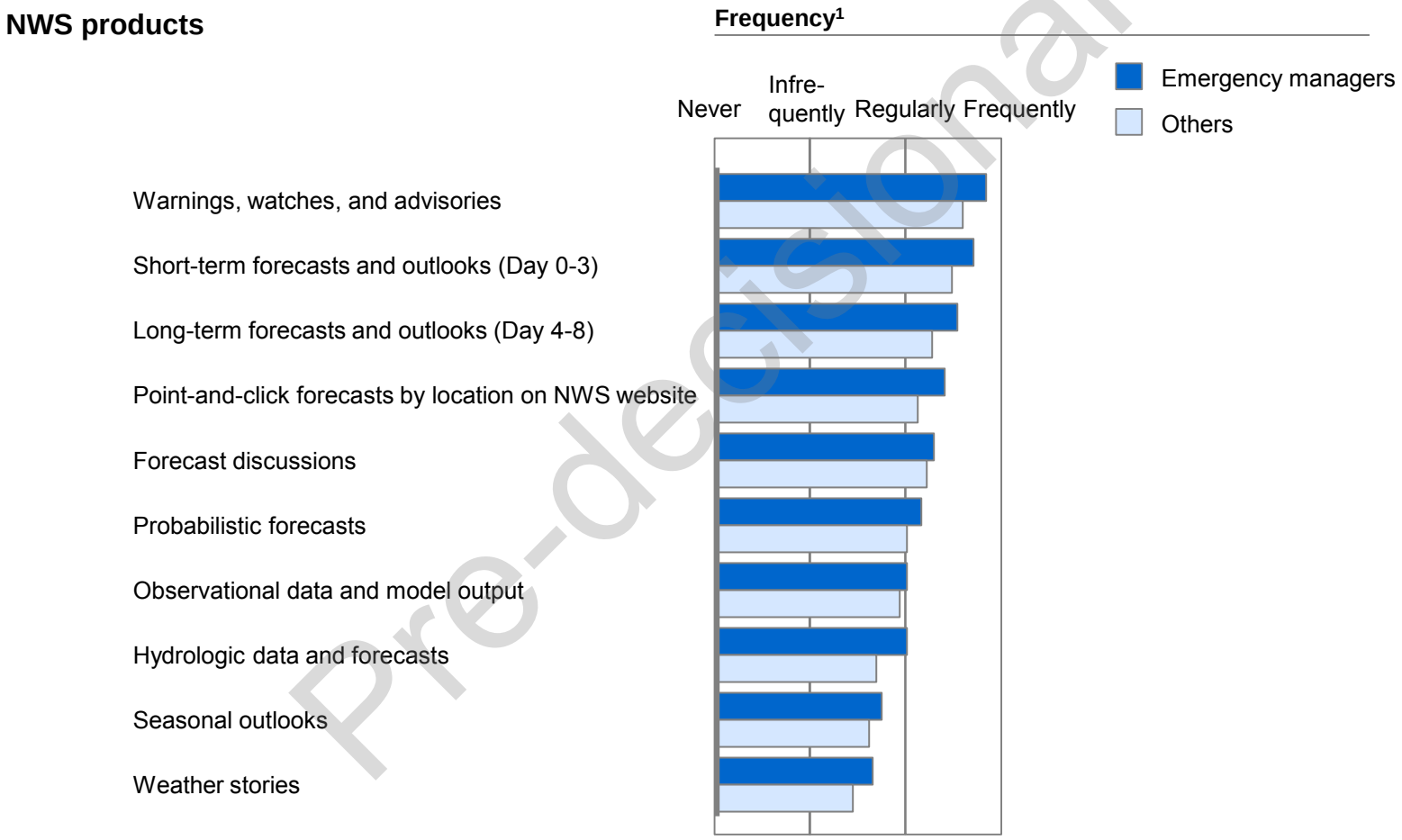


1 Frequent communications identified as greater than two or more times per month, regular communication identified as approximately one time per month

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27

1 Emergency Managers report receiving NWS information slightly more often than other stakeholders

Frequency of receiving NWS communication: Emergency managers and others

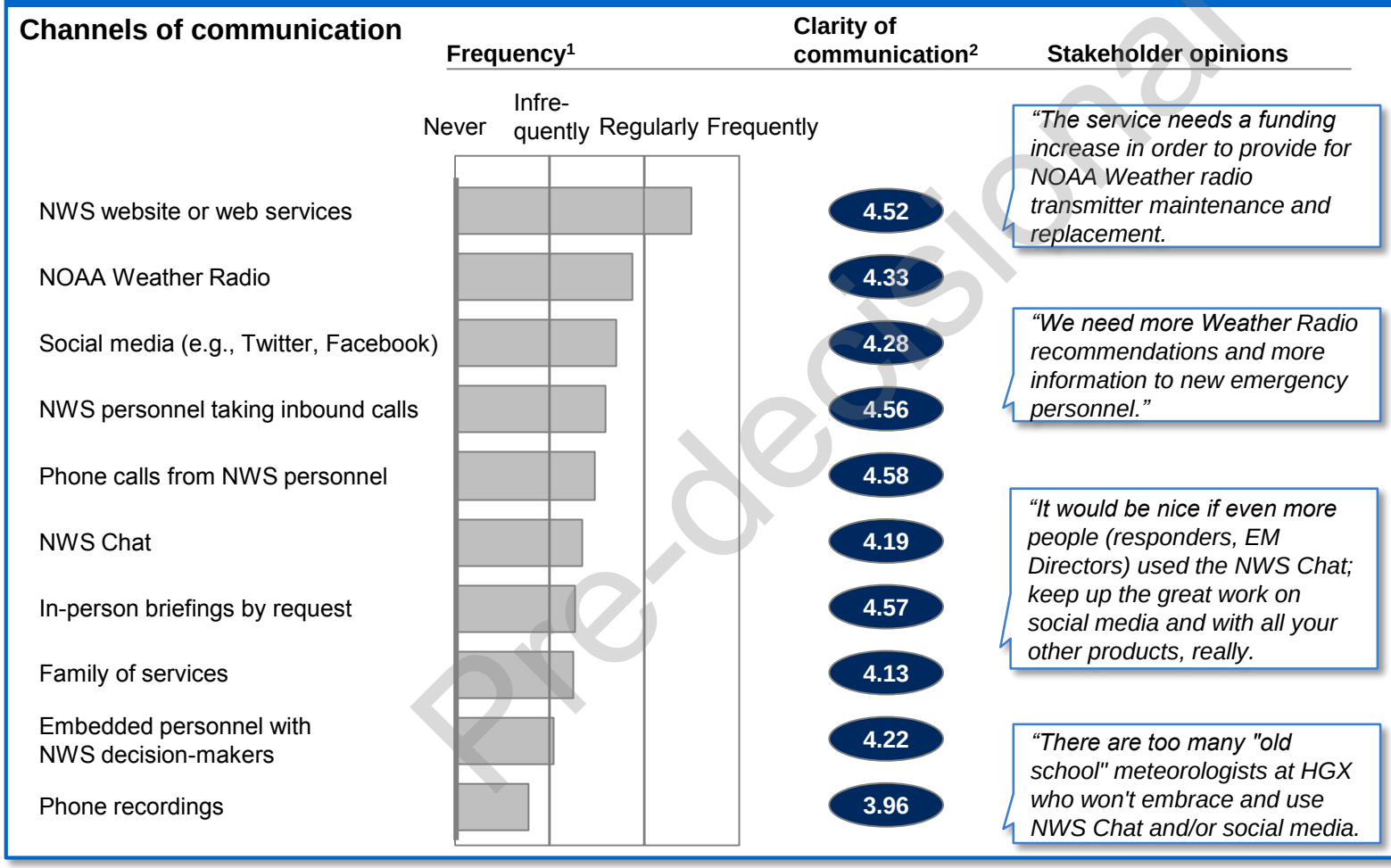


1 Frequent communications identified as greater than two or more times per month, regular communication identified as approximately one time per month

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27

Beyond the NWS website, stakeholders receive information most frequently through NOAA weather radio and social media

Question: How frequently do you receive NWS information through the following communications channels?



- **Stakeholders still use NOAA Weather Radio and depend on its service**
- **Social media is a relatively frequent source of information for stakeholders**

1 Frequent communications identified as greater than two or more times per month, regular communication identified as approximately one time per month
2 Clarity of communication measured based on the questions, "How satisfied are you with the clarity of information received through these channels? (1-5 scale, with 3 = No opinion and 4 = "satisfied")

SOURCE: IDSS stakeholder survey, based on 712 survey responses conducted July 14-27

1 To build on high satisfaction, opportunities were identified around realigning products, tailoring communication, and further improving precision

Key themes	What we heard	
Realigning products	*"Too many products means that people need to go to multiple places for relevant products--needs a reorg around key customers"*	*"Need more help with damage assessments after the events—we cannot always count on this at all or in a timely way"*
	"Timing of products to link up with customer needs (particularly broadcast media); otherwise they lose dissemination value"	*"NWS should really push for an end to end view multi-party view especially on water -- can we share more data?*
	"Apps, social media and texts need to be built quickly--websites are becoming obsolete"	
Tailoring communi-cation	*"Communication within products needs to be concise and consistent"*	*"The feedback loop could be better—there is not as much after action sharing about learning"*
	"More capacity overall but especially with our end users (business other government agencies and consumers) for IDSS -- "we need more on-site capacity pre and during events"	*"Could have more information in other languages -- at least Spanish"*
Improving precision	*"EAS notices are not targeted enough for locations because they're based on census areas"*	*"We would love to see more finer lines of accuracy—and greater degrees or at least transparency on the degree of certainty and confidence in the forecasts"*
	"We could use more training—for example with storm spotting"	

SOURCE: Site interviews

1 National core partners highlighted the importance of information accessibility and accuracy

Key themes	What we heard
Continue focusing on information accessibility	*"Keep the online presence and value added forecasts up front. Don't go to the Eastern Region website model that looks like they are closed for business. Put critical forecasts and information one click away if not right up front" –National Emergency Management*
	"Support and communications in all modes during high impact events is critical for decision makers and by making them work to find critical information will cause them to move to more accessible means and less reliable sources." –National Emergency Management
	"My only suggestion is that they continue to modernize their website, that said, it is far better than many of the other WFO's websites." –National Emergency Management
Continue prioritizing accuracy	*"We rely on the NWS to be gospel when making our response and recovery decisions, so anything that undermines that credibility would greatly hurt our ability to do our jobs in recovery" –National Emergency Management*
	"Right now, I work with both local WFOs and the Region because I cover several states. I can trust the information that I get from both areas. I sometimes need someone to point me in the right direction, but I'm comfortable with the information that I get even if it is coming from different areas within the Weather Service." –National Emergency Management

SOURCE: IDSS Stakeholder Survey, Site interviews

Operating model

1. Stakeholder impressions
2. IDSS interpretations
3. Outcomes and impact

Operating model (including IDSS): Summary of IDSS interpretations

Variation was observed in interpretations of IDSS, including:

- **What** - NWS issues a wide range of products, but these products can be issued by different parts of the organization and can be localized in different ways
- **How** - The way in which NWS communicates with external stakeholders varies by weather event as well as the internal structure of the WFO
- **Who** - While defined officially, the interpretation of core partners and the appropriate levels of service varies in practice; stakeholders interact with NWS at different points and leading to a risk of inefficient communication
- **When** - Offices interpret IDSS differently and engage with stakeholders at different times and levels

2 There is a lack of alignment on what IDSS is, as well as how, to whom and when it is delivered

Official IDSS definition: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

		Less expansive		More expansive	
What	**"…provision of relevant information…"**	Communicating by **standard products** that address stakeholder needs	*"We focus on ensuring our website has all of our products."*	Creating **customized information** for specific stakeholders	*"After issuing products, we will follow up to key stakeholders with more specific information."*
How	**"…interpretive services…"**	Providing a **narrow set of services** to events (e.g., only conference calls)	*"We don't do IDSS because we don't have the resources to dedicate to it."*	Providing a **broad range of services** (e.g., deploying to sporting event)	*"We would like to deploy meteorologists to graduation ceremonies."*
Who	**"…core partners…"**	**Defining core partners** defined as emergency managers, govt. officials, and media	*"We focus on government entities from the top-down because they can deploy resources."*	**Including other partners** like schools, events, the public, and others	*"Our schools are signed up for NWS Chat to discuss the weather overnight in winter."*
When	**"…direct impact…"**	Performing **episodic IDSS** in response to severe weather occurrences (e.g., storm briefings)	*"We have developed a model that enables flex to provide IDSS during severe events."*	Performing **recur-ring IDSS** (e.g. during fair weather) so that stake-holders can make effective decisions	*"We help our partners make decisions every single day."*

SOURCE: HQ and site interviews

WHAT

2

WFOs vary in the level of customization of product content and communication method

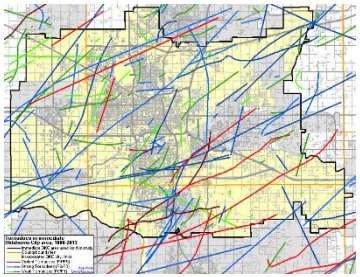
	WFO #1: Provides standard products to core partners	WFO #2: Focuses on customizing information for core partners
Content	▪ Provides **existing standard products** from library (i.e., focuses on improving forecast accuracy through local expertise)	▪ Provides **customized information** earlier in the process to core partners (i.e., provides less certain information early with partners following up with further questions)
Commun-ication method	▪ Provides almost exclusively **outbound-only information** (e.g., email, fax, products on the website)	▪ Provides **information upon inbound request** to meet stakeholder needs (e.g., preliminary notices via NWS chat to core partners prior to a warning issuance, YouTube channel, webinar discussions)

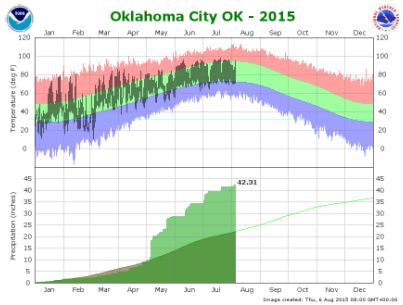
SOURCE: Site interviews

WHAT

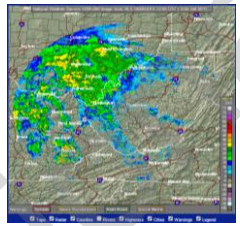
2 NWS regularly issues products on a wide variety of time scales and levels of specificity

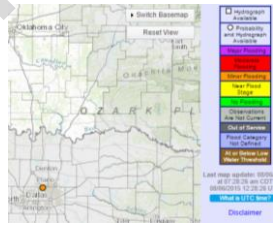
Historical data and analysis

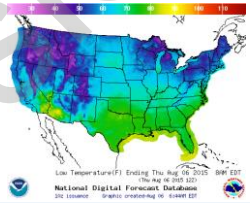




Current observational data





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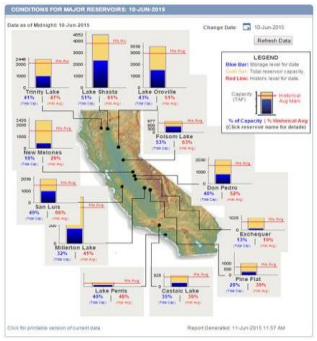
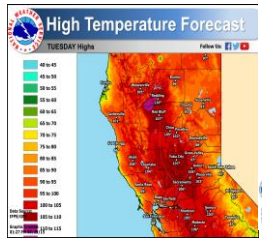
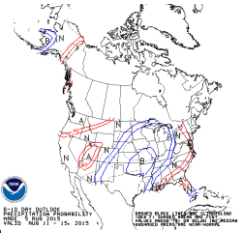
Tailored, specific forecasting



Future forecasts (incl. WWAs and long-term forecasts)





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SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE SACRAMENTO CA
711 AM PDT SUN JUL 5 2015

CAZ013-014-053515-
BURNEY BASIN / EASTERN SHASTA COUNTY CA-
SHASTA LAKE AREA / NORTHERN SHASTA COUNTY CA-
711 AM PDT SUN JUL 5 2015

...SIGNIFICANT WEATHER ADVISORY FOR CENTRAL SHASTA COUNTY...

AT 700 AM PDT...DOPPLER RADAR WAS TRACKING A STRONG THUNDERSTORM OVER
CLARK CREEK...OR NEAR DANA...MOVING EAST AT 15 MPH.

HALF INCH HAIL AND WINDS IN EXCESS OF 30 MPH WILL BE POSSIBLE WITH
THIS STORM.

LOCATIONS IMPACTED INCLUDE...
CLARK CREEK.
BIG BEND.
```


SOURCE: Site interviews, noaa.gov.

WHAT 2

Similar products are disseminated by different parts of NWS depending on the weather event

Organizational authority for issuing standard products by weather event

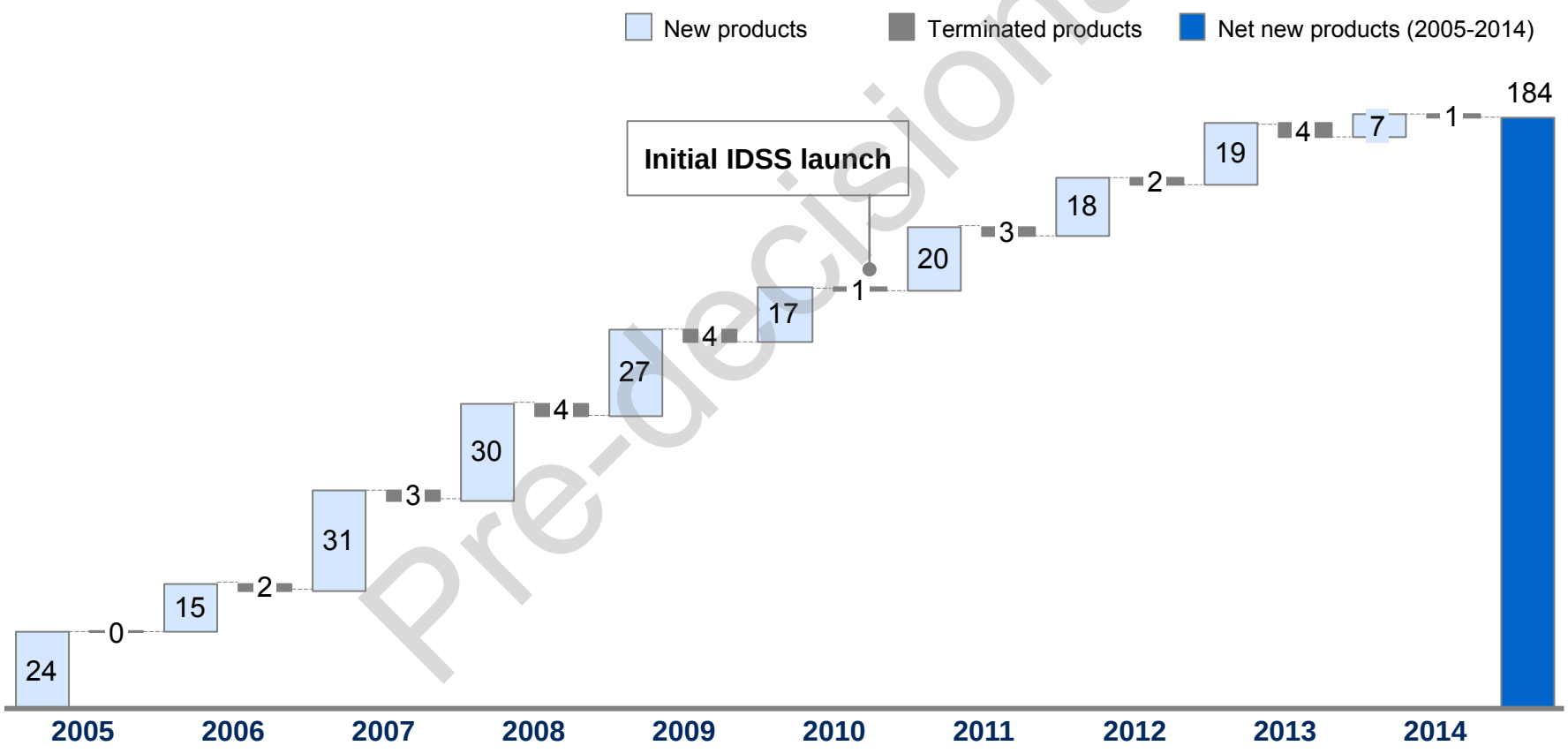
	Outlook	Watch	Warning
Severe thunderstorms / tornado	SPC	SPC	WFO
Winter storm	WPC	WFO	WFO
Hurricane / tropical storm	CPC: hurricane seasonal outlook	NHC: coastline	NHC
	NHC: Weekly	WFO: water going out 20 mi.; inland OPC: >60 miles	WFO
Flood	WPC: excessive rainfall	WFO/RFC	WFO/RFC

SOURCE: National Weather Service briefings, Site interviews

WHAT

2 Total number of NWS products has grown over the past ten years with no substantive change in growth post-IDSS

New products introduced and terminated[1], CY 2005-2014



1 Includes all products reported to Headquarters for approval during the 2005-2014

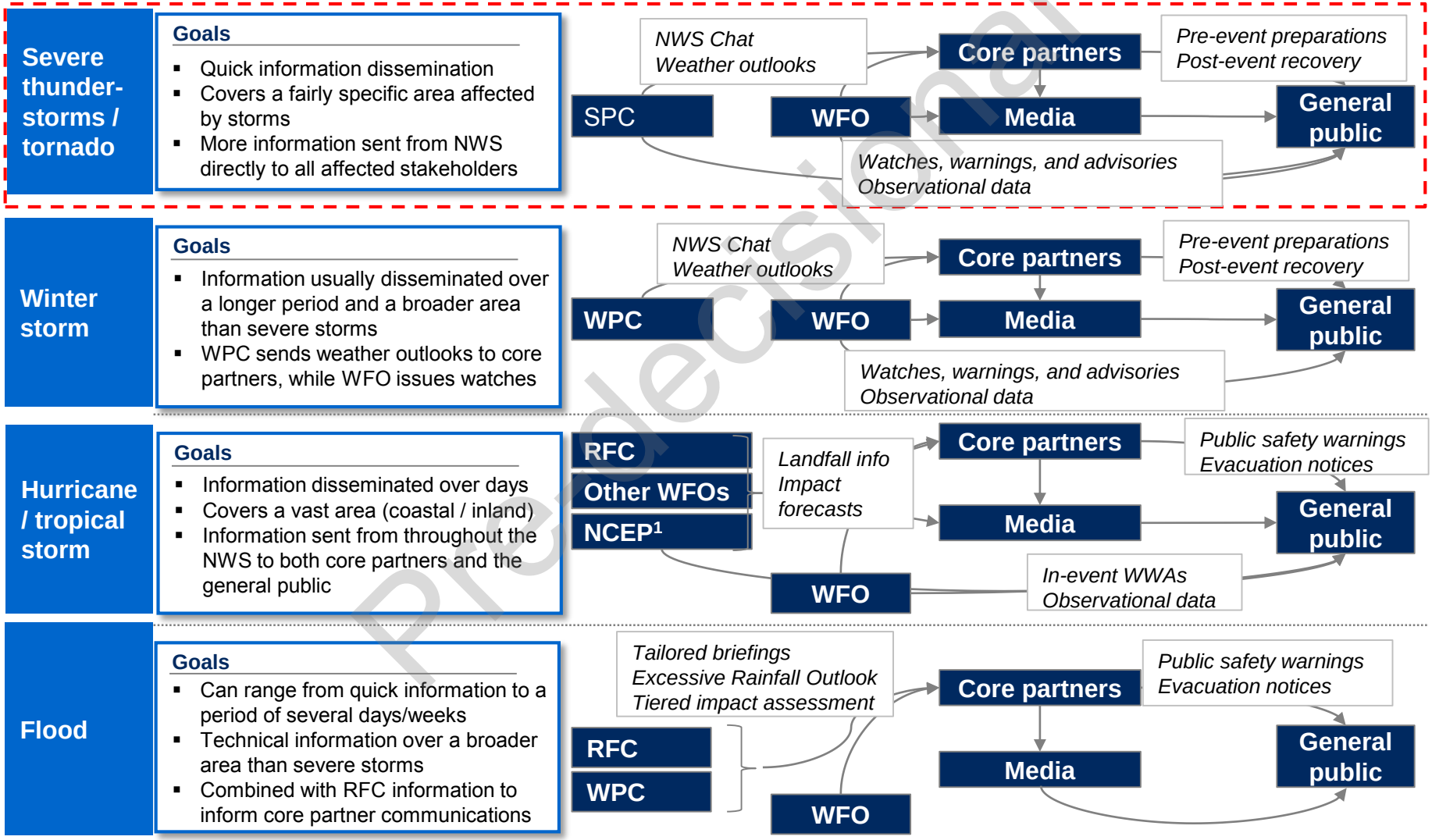
SOURCE: Site interviews, noaa.gov

HOW 2

"How" IDSS is provided differs based on the type of event…

Example IDSS between WFOs and stakeholders

Details follow
Flow of information



1 Includes NHC, CPC, and OPC (NHC provides hurricane watches to the general public)
SOURCE: Site interviews

HOW 2

…and varies from WFO to WFO even for the same type of weather event (e.g., severe storms)

Point of variation

	Initial forecasting	Pre-event planning	Support during an event	Post-event support
Timeline	*Up to one week*	*0-3 days*	*0-2 days*	*Starting 0-3 days post-event*
WFO #1	Take observations and develop forecast → Compare forecast with other shifts internally → Communicate forecast to core partners	Issue products	Gather observational data → Refining forecasts to send out	Develop forecasts for response requirements
Core partners		Develop plan of action for affected population → Communicate to media	Develop plan design for response	
Media		Develop and communicate message	Disseminate forecast to public → Disseminate response plan to public	
Public		Take action		Take action
WFO #2	Take observations and develop forecast → Communicate forecast to core partners	Issue products	Gather observational data → Revise forecasts to send out → Decision forum for clarity of forecasts	Refine forecasts for response
Core partners		Q&A session to dimensionalize forecast → Develop plan of action for stakeholders → Communicate to media	Design response plan	
Media	WFO #2 communicates forecasts to partners even amidst uncertainty	Develop and communicate message	WFO #2 discusses forecasts in real-time with partners → Disseminate response plan to public	
Public		Take action	Collect observational data and send to NWS	Take action

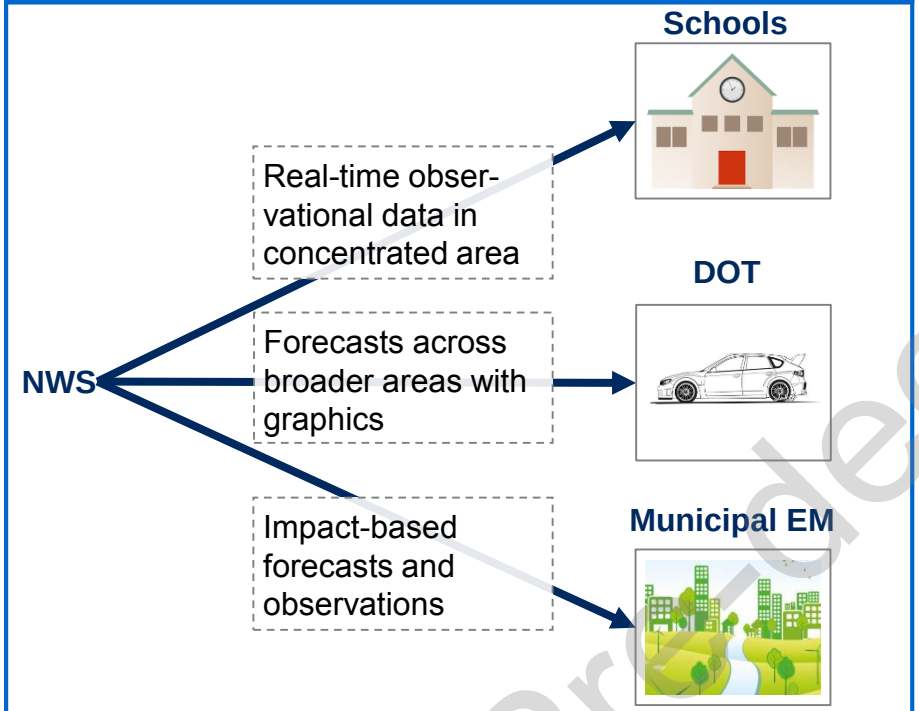
SOURCE: Site interviews

HOW 2

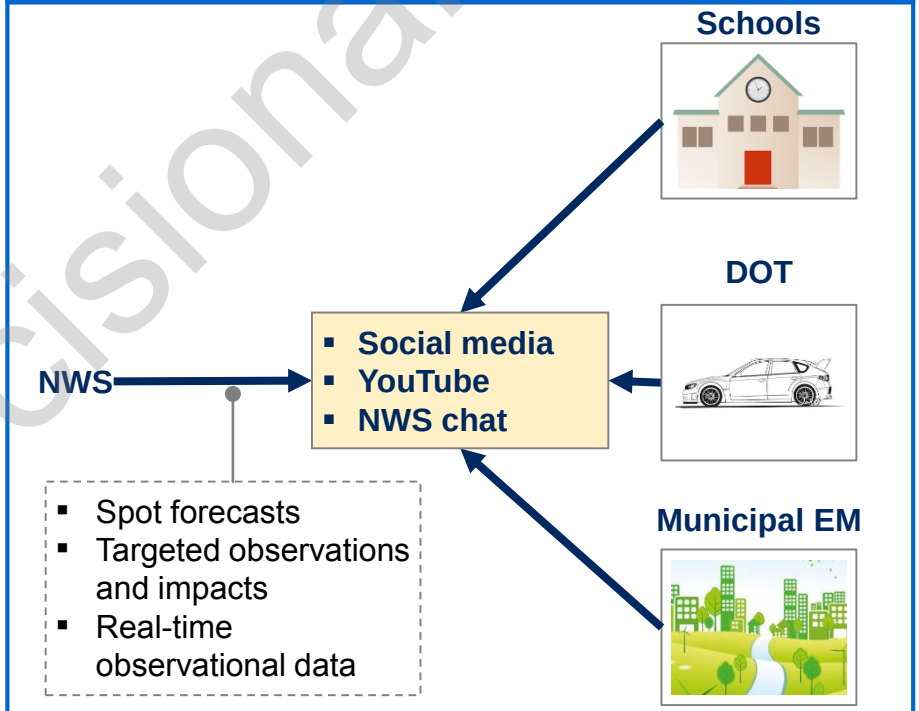
In addition, WFOs communicate information about severe weather differently to core partners

Example products and information provided by NWS

WFO #1: "Push" approach to communicating information



WFO #2: "Pull" approach to communicating information



Benefits of "push approach"

- Broader product library
- Comprehensive products can anticipate stakeholder questions before they arise

Benefits of "pull approach"

- Tailored information toward stakeholder decisions
- Real-time feedback on information and communication

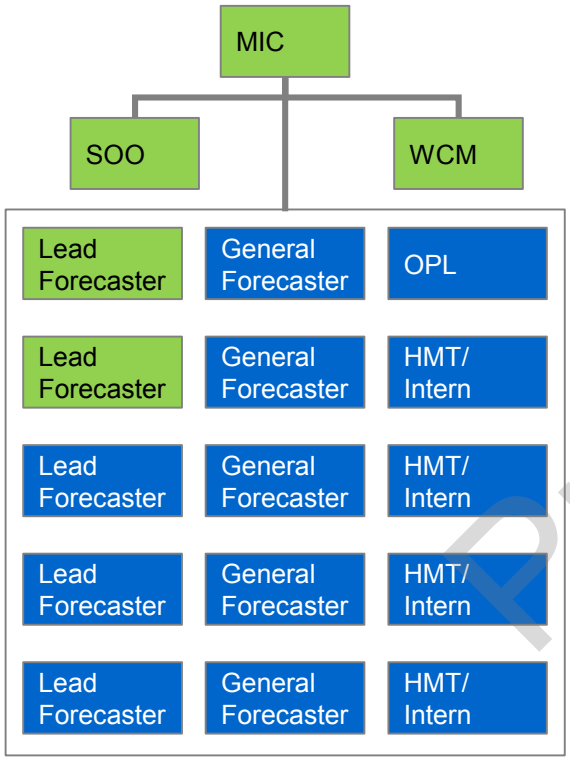
SOURCE: Site interviews

HOW 2

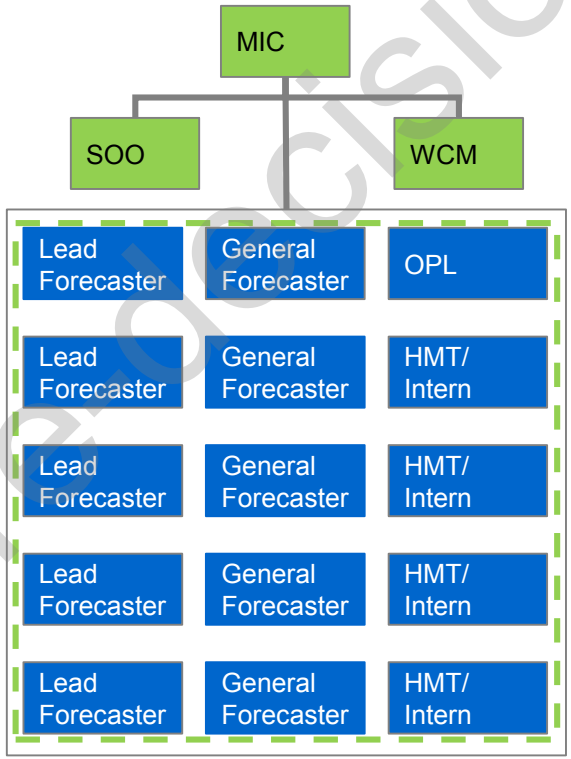
Among field offices, there are three archetypes for staffing to perform IDSS

Staff dedicated to IDSS — IDSS shift

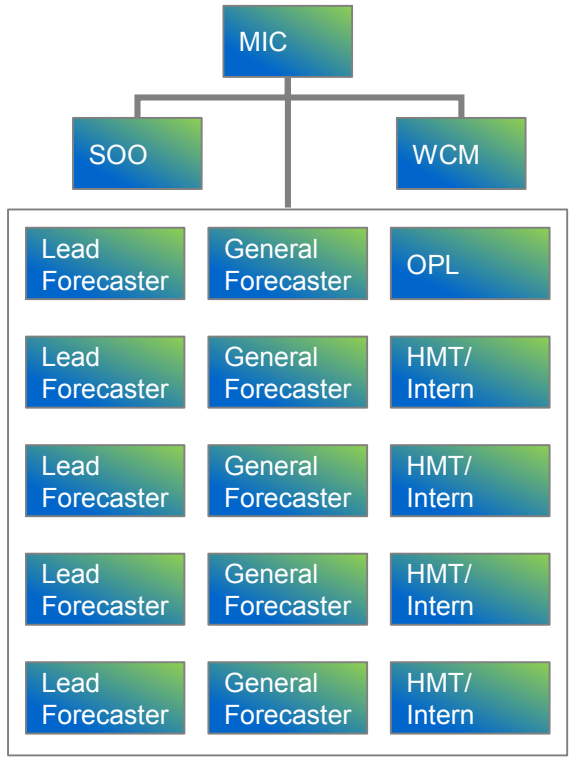
Type 1: Only select staff manage external relationships on behalf of the office



Type 2: Operational staff rotate through dedicated IDSS, media, or public desk shifts



Type 3: All staff provide IDSS support and during severe weather events flex to provide support

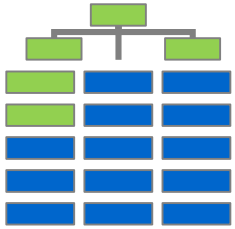
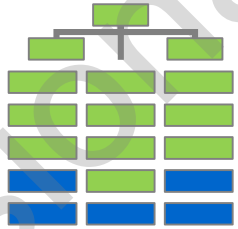
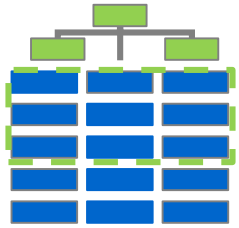
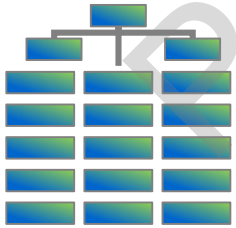


SOURCE: Site interviews

HOW 2

Offices with variations of each IDSS archetype identified tradeoffs for each

Staff dedicated to IDSS — IDSS shift

	Variation	Observations	Variation	Observations
Type 1: Only select staff manage external relationships on behalf of the office		▪ Relationships are limited to specific office personnel (long-term risk) ▪ Certain office personnel say "I don't do IDSS" ▪ Difficult to surge IDSS capabilities during severe weather		▪ Often personnel-based decision on who has the skills to perform IDSS ▪ Best implemented when employees "opt-in" ▪ Can pose challenges for workload management if all employees work shifts but some have IDSS responsibilities
Type 2: Operational staff rotate through dedicated IDSS, media, or public desk shifts		▪ Relationships managed systemically rather than personally ▪ Allows for personal preference, but can reinforce skill gaps ▪ Can pose staffing challenges when distributing IDSS shifts		▪ Relationships managed systemically rather than personally ▪ Risk of varying degrees of IDSS quality delivered ▪ Workload and shifts are easier to manage
Type 3: All staff provide IDSS and during severe weather events flex to provide support		▪ Maximizes flexibility in staffing and surge capacity ▪ Requires proactive buy-in from staff with the requisite skills to execute successfully ▪ Any skill gaps among employees would make the customer experience confusing		

SOURCE: Site interviews

HOW

2 Customized deployment is used to meet partners' needs

	IMETs	CWSUs	FEMA	ERSs
				
Deployment model	▪ On-call to be able to respond to any fire within 24 hours	▪ Embedded full time to provide real-time IDSS related to airport operations	▪ FEMA embedding with NWS	▪ Allow individual offices to perform a greater scope of IDSS locally
Staffing	▪ 79 certified, 10 trainees ▪ ~140 missions/year	▪ 4 embedded FTEs per units ▪ 21 units nationwide	▪ 3 reverse-embedded ▪ 1 at SPC, NHC, Honolulu WFO	▪ 15 FTE term positions, 12 at WFOs, 3 at Southern Region
Location	▪ Deployed on-site from a nationwide staffing pool	▪ FAA command center	▪ Select NWS centers (e.g., National Hurricane Center)	▪ Charleston, New Orleans, Sterling, Tampa WFOs, Southern Region HQ
Funding	▪ Paid as overtime by core partner if deployed in an event	▪ Paid as salaried employee by FAA; paid annual leave/training/travel/ supplies by NWS	▪ Paid as salaried employee by FEMA	▪ Paid as salaried employee by NWS

SOURCE: HQ and site interviews

WHO

2

The overall "weather enterprise" consists of external stakeholders, of which 'core partners' are a subset

ILLUSTRATIVE -- NOT COMPREHENSIVE

Stakeholders in the overall "weather enterprise"

NWS generates information … | and communicates via … | to protect life and property of …

SOURCE: Site interviews

WHO

2 However, there is a lack of clarity on the definition of an IDSS "core partner"

Official definition of "core partner" via NWS directives

"Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the National Weather Service."

- Core partners clarified to include:
  - Member of the emergency management community
  - Government partners
  - Members of the electronic media

OPPSD clarification of NWS Directive describing core partners and WFO employee quotes regarding the definition of IDSS stakeholders

- State emergency manager ✓
- Fire Department ✓
- Local TV station ✓
- Hospital X
- School principal X
- NWS spotter X
- Public utility X
- Storm chaser X

"Of course hospitals make decisions on whether to evacuate large numbers of people; they also control the lives of large numbers of people."

"What about public schools? Not all public schools have emergency managers who relay information to them like the large cities do."

"We have private industry (a nuclear power plant) running critical infrastructure; why aren't they a core partner?"

"Utilities have to know days in advance of a weather system—that doesn't affect property?"

SOURCE: NWSI 01-103, Appendix A; "Public-Private Partnership" presentation, May 29, 2014; "Proposed Enhanced Impact-Based Decision Support Services" Service Description Document, May 2014

WHO

2 When WFOs were asked to define their three core partners, a range of core partners were identified

Question: Who are your three priority core partners?

	Federal government	State government	Local government	Media	Public
Norman		▪ Oklahoma government	▪ Local first responders ▪ County emergency managers		
Fort Worth	▪ FEMA		▪ Emergency managers	▪ Broadcast media	
Sacramento		▪ California Dept of Emergency Services ▪ California DOT ▪ California Forest and Fire Service			
Elko		▪ Nevada DOT ▪ Fire Weather interagency group	▪ County emergency managers		
Miami			▪ County emergency managers	▪ Broadcast media	▪ General public
Boise			▪ County emergency managers	▪ Broadcast media	▪ General public
Seattle		▪ Washington DOT	▪ Municipal emergency managers		▪ General public
Fairbanks		▪ Alaska EOC ▪ Alaska Fire Center		▪ Broadcast media	

SOURCE: Employee focus groups at site interviews (not including WCMs)

WHO 2

NWS has proposed appropriate levels of support to government partners—a segment of its defined core partners

Examples of core partners and other stakeholders[1]

Government core partners	▪ Emergency managers ▪ Federal, state, local governments ▪ Relevant first responders
Non-governmental core partners	▪ Broadcast media with dissemination capabilities ▪ Private sector entities providing communication infrastructure (e.g., wireless and telephone providers)
Other stakeholders	▪ Non-profit organization ▪ Private sector entities ▪ Business/industry ▪ Affected constituencies without decision-making responsibilities for life and property of others

Proposed service levels for government core partners

Tier one	▪ Direct, interactive support for members of the EM community consistent with the NIMS structure and provided upon request ▪ Examples: in person-briefings, interagency coordination, embedding during a weather event
Tier two[2]	▪ Coordination support that enhances the partners' situational awareness of weather impacts associated with significant events ▪ Examples: briefings or webinars provided to multiple partners at once
Tier three	▪ Routine provision of NWS data/products including alerts of hazardous weather conditions that are provided uniformly to everyone ▪ Examples: watches and warnings, forecast discussions

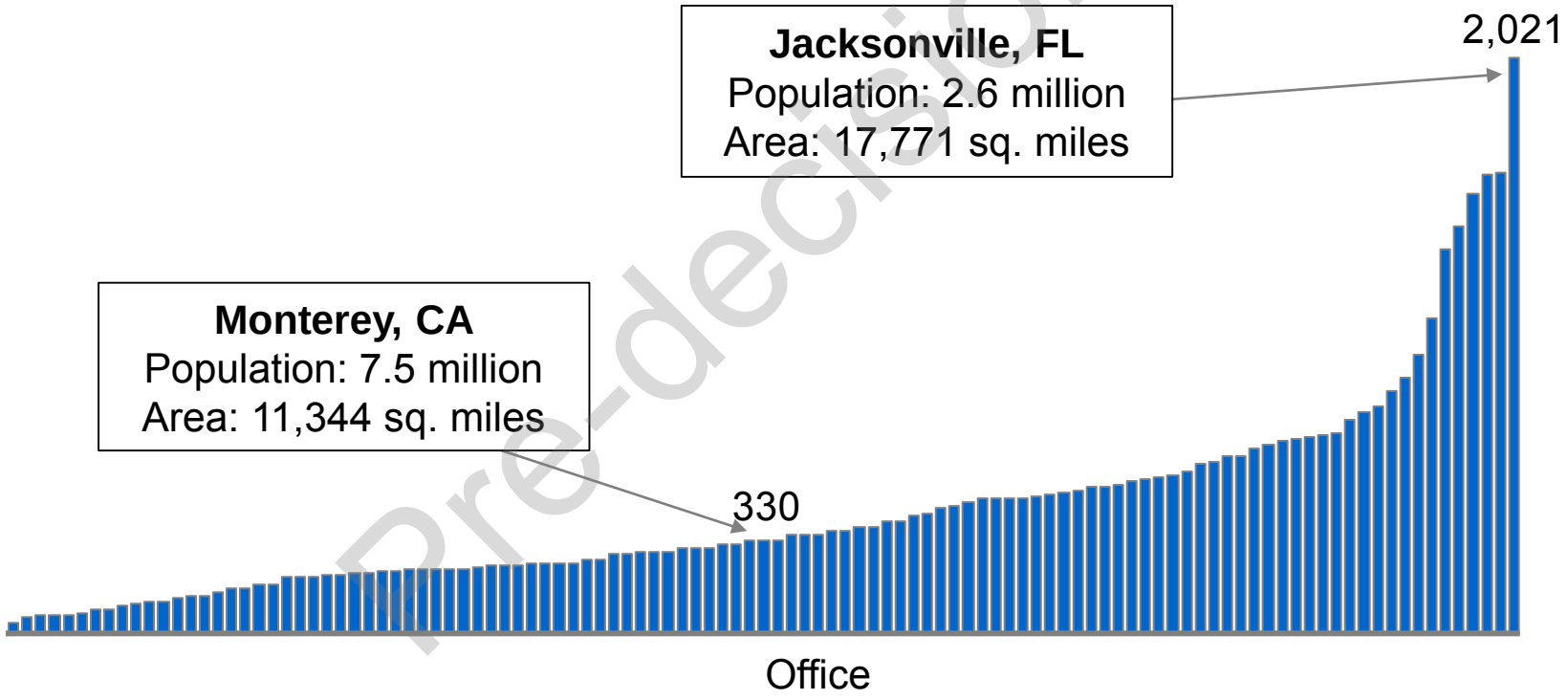
The tiering of stakeholder services is not linked to the overall definition of "core stakeholders"

1 Meant to be representative, certain groups will change based on weather threat
2 This level of support may be expanded to include critical facilities not listed under "government core partners"

SOURCE: NWSI 01-103, Appendix A; "Public-Private Partnership" presentation, May 29, 2014; "Proposed Enhanced Impact-Based Decision Support Services" Service Description Document, May 2014

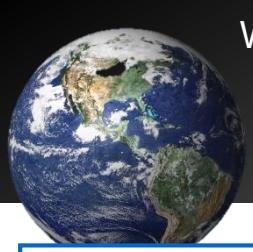
2 Beyond core partners, WFOs with similar profiles report a wide variation in the number of external contacts

Current number of external contacts[1] by WFO



1 External contacts defined as the number of first-order contacts when the office conducts a general briefing or webinar. This may include group email addresses that understates the true number of stakeholders in certain instances

SOURCE: Data request completed 17 July, 2015 based on 111 responses from WFOs nationwide



WHO

2 Differences between NWS and its stakeholders can lead to challenges in core partner engagement, particularly in multi-jurisdiction areas

Source of structural variation between stakeholders and NWS

Organization	Levels where organization interacts externally: National	Regional	State	Local
National Weather Service	✓	✓		✓
FAA	✓	✓		✓
FEMA	✓	✓		✓
US Army Corps of Engineers	✓	✓		
Congress	✓		✓	✓
USGS	✓	✓	✓	
Department of Transportation	✓		✓	
State Emergency Management			✓	✓
American Red Cross		✓		✓
Large cities				✓
Universities			✓	✓
Schools				✓
Hospital				✓
Broadcast media	✓			✓
Wireless carriers	✓	✓		

Having the same stakeholders work with NWS at different levels risks redundancy of effort and inconsistent service delivery

SOURCE: Site interviews

WHO

2 Furthermore, ROCs themselves own different stakeholder relationships, contributing to interoffice variability

	Alaska Region[1]	Southern Region	Eastern Region
Region / ROC	▪ Manages **all state and federal stakeholder relationships** to mirror "one state, one region" mindset ▪ Regional products (e.g., sea ice forecasts) in development ▪ Long-term embedding for disasters	▪ Manages stakeholder relationships at state level, but **in practice core partners are Texas-focused**: FEMA, Army Corps, DoT, TSA, TX state agencies ▪ Provides media support for WFOs during a weather event	▪ **Limited interaction** beyond ensuring alignment between NCEP and WFO responses during large events ▪ Region has more often sent personnel from other WFOs to embed with FEMA rather than deploying from ROC
WFO	▪ **Manages local relationships** ▪ Stakeholders would include local DOT, schools, media	▪ Manages local relationships ▪ Non-Texas offices report **extensive state-level interaction** ▪ Stakeholders include emergency managers, state agencies (e.g., DOT)	▪ **Most federal and state-level interactions** managed by the WFO ▪ Example: FEMA Region I (MA) relationship owned at the WFO level
Representative quotes	*"Forecast offices need to be in the 'today' mode"*	*"Our primary function is to support the field like a neural network. We are a one-stop shop for operations, infrastructure, and technology"*	*"Sometimes during a large storm, the Region will compile information from multiple WFOs to provide to FEMA"*

1 Alaska Region's consolidation of state-level contacts is in progress; shown is the end-state vision for stakeholder relationships

SOURCE: Site interviews

WHO 2

National stakeholders communicate with NWS at different levels of the organization

National stakeholder observations on interacting with NWS

Inconsistent support for external stakeholders

"It's a tradeoff; we don't have the local on-the-ground presence that NWS provides. However, we also need the broader view that we get from the Regional level during a large event. It's usually best just to get everyone down here when we need them." –National core partner

"We love having NWS embedded with us; it's essential to our operations. I do rely on them to get other forecast data for in-flight operations for inbound aircraft; it's something that they get from other parts of NWS." –National core partner

"I have four WFOs that cover my state, but the Region covers way too many states. As a result, I have to combine the information from local WFOs to get the information I need with the precision I need." –National core partner

Differing points of contact within NWS for core partners

"Because we're located in the capital city, we're going to work with the state DOT, and we'll refer them to other WFOs on an as-needed basis." -WFO

"In my region, I interact with the NWS Region for the state of Alaska, but in the lower 48, my teams work with the local WFOs." –National core partner

SOURCE: Site interviews

WHEN

2

Offices vary in "when" they perform IDSS, some episodic around adverse weather and others also providing recurring IDSS

	Description	Examples
Episodic IDSS	▪ Using observational data and forecasting to predict the location and impact of known weather events	▪ **Observational data** reporting ▪ Short-term, long-term, and spot **forecasting** ▪ **Response activities**
Recurring IDSS	▪ Ongoing support to understand what the impact of various weather events could be (beyond an existing weather event) ▪ Ongoing support for continuing operations	▪ **Understanding impacts**: threshold identification, vulnerability identification, response preparation ▪ **Continuing operations**: aviation support for in-flight routes (e.g. upper air and anticipated turbulence) and support for critical infrastructure (e.g., ports)

SOURCE: Site interviews, noaa.gov

WHEN

2 WFOs vary in terms of how they provide episodic or recurring IDSS

Two WFOs' interpretations of when IDSS occurs

	WFO #1: Primarily episodic	WFO #2: Robust recurring IDSS structure
Hiring and staffing	▪ Hiring focuses on eliminating vacancy rates in order to ensure that the appropriate shifts are covered for the necessary	▪ Focus on hiring meteorologists who are more likely to have credibility with local stakeholders
Operating model	▪ Shift work guides the activities of the office ▪ Overtime used during incidents ▪ Surge personnel engage in IDSS	▪ De-emphasis on long-term forecasting to reallocate resources to IDSS activities ▪ Surge personnel from Region complete forecasts
External stakeholders	▪ Long list of stakeholders with a focus on government stakeholders ▪ Relationships concentrated (not purposefully) behind a few people	▪ Frequent embedding with numerous jurisdictions during scenario planning designed to protect critical infrastructure (nuclear facilities, oil platforms, etc.) ▪ Emphasis on IDSS leaders to the WFO supporting events that other offices would not (sporting events, etc.)
New initiatives	▪ Focus on ways to increase precision in existing model	▪ Active in content development of Impacts Catalog trial by identifying thresholds with known stakeholders

SOURCE: Site interviews

WHEN 2

Some employees are interested in expanding IDSS beyond weather incidents; others question the value of additional recurring IDSS

Key themes about engaging in "recurring IDSS" at WFOs

Building relationships during fair weather to support operations during an incident	*"We work with the airport tower to understand what are the specific weather conditions that will cause them to shift the direction of takeoffs and landings." -WFO*	*"We focus on getting information out quickly to our stakeholders. I would rather give them 50% of the picture than wait to give them 100% of the picture." -WFO*	*"We'd love to engage with stakeholders and develop our network—we just don't have the travel budget or the resources to do so." -WFO*
Discussion about embedding in fair weather, practice exercises with emergency managers	*"There is so much critical infrastructure in our area; we need to understand how the weather could threaten these areas." -WFO*	*"When Deepwater Horizon happened, we embedded with the EOC, but they would only deal with the NWS people who they trusted; otherwise they would be thrown out of the room." -WFO*	*"We are embedded with the State EOC in their table top exercises for a Cascadia-type earthquake and tsunami event." -WFO*
Disagreement of several offices over the validity of recurring IDSS	*"As soon as we start offering even more IDSS support, they (partners) will expect even more, and it can never go away." -WFO*	*"We need to focus on improving the precision in our forecasts so that our partners can make better decisions by themselves." -WFO*	*"We focus primarily on the heads of our government core partners because they are the decision-makers when we need them." -WFO*

SOURCE: Site interviews

Operating model

1 **Stakeholder impressions**

2 **IDSS interpretations**

3 **Outcomes and impact**

Operating model (including IDSS): Summary of outcomes and impact

- Current metrics for IDSS are either qualitative measures tied to outcomes or quantitative measure tied to NWS activities
- Two somewhat similar flood events resulted in differing impacts to life and property

3 Existing IDSS evaluation metrics are not directly tied to outcomes

Existing metrics

Metric	Description	Effectiveness at evaluating outcomes
Service Assessments	▪ Qualitative after action report for large weather events ▪ Usually submitted in narrative form ▪ Helpful in memorializing key learnings	▪ **Comprehensive** in scope; able to bring anecdotes that help describe impact ▪ **Resource-intensive** to complete; limited to large events ▪ **Does not contain specific metrics** tied to IDSS
GPRA data	▪ Measured on specific sub-elements of the overall forecast ▪ Based on the assumptions that accurate forecasts protect life and property	▪ **Metrics** can be compared across offices and programs ▪ Focused on the accuracy of the forecast; **not tied to life or property protection**
Stakeholder feedback	▪ Most often qualitative feedback from stakeholders ▪ Lack of stakeholder comments are sometimes interpreted as "everything must be fine" in the WFO	▪ Can show specific **anecdotes about how information drives decision-making**, which is closer to impact ▪ Feedback is **not systematic**; makes creating a comprehensive view difficult ▪ **Does not include specific metrics** tied to outcomes

SOURCE: Site interviews, noaa.gov

3 Historically, metrics have been either qualitative appraisals tied to outcomes or quantitative metrics tied to NWS activities

	Effectiveness concerns	Efficiency concerns
Concern with CONOPS	▪ No defined metrics to ensure CONOPS would not result in degradation of service	▪ Failure to substantiate cost savings
Metrics cited	▪ **Forecast accuracy** as it relates to specific locations and knowledge ▪ **Forecast utility** as it relates to timelines	▪ Similar work levels will **necessitate equal staffing** pre and post – consolidation ▪ **Relocation costs** would be high ▪ **Increased facility costs** when combining offices

SOURCE: Washington Post, internal interviews, GAO-06-792. (July 2006)
Roebber, P.J. "Locality and Forecast Skill – Heavy Precipitation and Severe Weather" (2006)

3 Two instances of similar weather events (flood, tornado, and hurricane) and their respective response efforts were evaluated

	Event	Lead time	NWS response/ support
Flood	Nashville floods, 2010 (26 fatalities, $3B damages)	▪ Short: 1 day	▪ Limited in breadth and depth (e.g., no people deployed, no social media)
	Great Mississippi River flood, 2011 (1 fatality, $2 billion in damages)	▪ Long: 2-3 days initially then 1+ week down river	▪ Extensive with broad inter-office coordination
Tornado	Millbury tornado, 2010 (7 fatalities)	▪ Short: 30 minutes	▪ Products disseminated in a timely manner ▪ Pre-event phone calls to relevant EM
	Cordova tornado, 2011 (4 fatalities)	▪ Short: 60 minutes	▪ Products disseminated in a timely manner ▪ Excellent WFO and SPC response cited
Hurric-ane	Hurricane Arthur (North Carolina), 2014 (1 indirect fatality, <$25M damages)	▪ Long: 1 week	▪ Increased staffing ▪ New products rolled out
	Hurricane Humberto (Texas), 2007 (1 direct fatality, $50M damages)	▪ Long: 2-3 days	▪ Increased staffing ▪ Relatively short lead time

SOURCE: Noaa.gov, Site interviews, Mississippi River Flood Service Assessment, Vanderbilt University, Toledo Blade, Service Assessment-2013 Southern tornadoes

3 IDSS example: flooding

	Nashville Floods, 2010	Great Mississippi River Flood, 2011
Flooding scope	▪ Cumberland River crested at 13 feet above flood stage, but not at record breaking levels ▪ Flooding in Tennessee and Kentucky ▪ Nashville recorded its first and third-rainiest days in history ▪ Event covered 4 days	▪ Mississippi River crested at 14 feet above flood stage ▪ Major flooding from Missouri/Illinois south to Louisiana ▪ Volume of water exceed that of 1937, 1973, and 2008 floods ▪ Many areas received more than 20 inches of rain over a two week period
Overall response	**NWS issued several warning products** ▪ WFO cites: "HWOs, ESFs, FFA, SVRs, TORs, FFWs, FLWs, FFSs, FLSs and SVSs ▪ Issued several briefings, one webinar, and conference call between OHRFC, Army COE, OHX, and City of Nashville **No on-site IDSS was provided, and additional resources focused on overtime** ▪ No on-site IDSS was requested and travel was hazardous ▪ Lots of overtime was issued during the rain event to cover the required products and in the immediate aftermath ▪ No staffing changes to support IDSS	 **NWS surged IDSS activities** ▪ Central Region embedded with the southern IL Command Center ▪ Lake Charles WFO presented at Army COE town hall meetings and on-site meetings with Parish EOCs ▪ WFO and RFC daily in-person briefings to the Governor **Staffing was quickly modified to support sustained IDSS** ▪ Several offices dedicated the MIC, SOO, SSH, and WCM to IDSS full time will other forecasters ▪ In areas where response activities were concentrated, leadership deployed full-time on-site with stakeholders ▪ Desks shifted from programs to general forecasting for in-office personnel and river forecasting for Interns and RFC
		
Impact to life and property	▪ 26 fatalities ▪ $3 billion in damages	▪ One direct fatality ▪ $2 billion in damages

This comparison is not meant to imply that the NWS actions directly led to a reduced loss of life and property in this specific example

SOURCE: Noaa.gov, Site interviews, Mississippi River Flood Service Assessment, Vanderbilt University

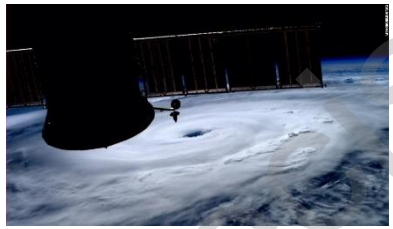
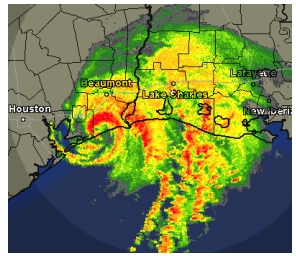
3 IDSS example: tornadoes

	Millbury (Ohio) tornado, 2010	Cordova (Alabama) tornado, 2011
Tornado scope	▪ EF4 tornado, winds of 170-175 MPH ▪ Lake Township population (2010): 10,972 ▪ Lake Township pop density: 320/square mile ▪ Tornado path of 8 miles ▪ Tornado occurred on Saturday night at 11:00 PM (more dangerous impact period)	▪ EF3/4 tornado, maximum winds of 170 MPH ▪ Cordova municipal population (2010): 2,095 ▪ Cordova pop density: 404/square mile ▪ Tornado path of 128 miles ▪ Tornado occurred at 4:00 PM ▪ Part of a multi-state tornado outbreak over several days
Overall response	**NWS did perform limited pre-event outreach given the hazardous weather outlooks** ▪ Phone calls and emails sent ahead of time to EMA Directors ▪ Wood County (Ohio) EM: "I refused to order an alcoholic beverage with his dinner because of the severe weather potential…" ▪ Quick Response Team deployed 36 hrs. post-impact	**NWS issued several severe weather warnings simultaneously** ▪ Hazardous weather outlooks communicated prior to severe weather outbreaks ▪ Severe weather products issued on time, but in high volumes over several counties ▪ Longer lead time: the tornado was on the ground for two hours in total and for 45 miles prior to hitting Cordova ▪ NWS cited the "excellent performance of the SPC and WFO staff"
	 **Notification procedures were effective** ▪ Sirens were functioning ~30 minutes before impact ▪ Tornado watches and warnings were timely ▪ Some residents reported receiving social media alerts from friends	 **Public notification procedures were enhanced** ▪ Wall-to-wall coverage on local television of the larger tornado outbreak
Impact to life and property	▪ Seven fatalities ▪ Destroyed 50 homes	▪ Four fatalities in town of Cordova[1]

1 13 fatalities along the entirety of tornado's path, fatalities reported as of May 27, 2011

SOURCE: Noaa.gov, Site interviews, Toledo Blade, Service Assessment-2013 Southern tornadoes, http://www.oanow.com/news/article_209db60e-4cc5-538d-816c-7330034081a9.html

3 IDSS example: hurricanes

	Hurricane Arthur (North Carolina), 2014	Hurricane Humberto (Texas), 2007
Hurricane scope	▪ Category 2 hurricane; sustained winds of 100 MPH ▪ Approximately 300 miles of coastline affected ▪ 2.6 million people affected ▪ 5.2 foot storm surge at coast	▪ Category 1 hurricane; sustained winds of 90 MPH ▪ Approximately 230 miles of coastline affected ▪ 1.6 million people affected ▪ 4.8 foot storm surge at coast
WFO response[1]	**WFO increased staffing for support, but not allocated to specific stakeholders** ▪ 1-2 FTE were dedicated full time to the weather reporting and forecasting ▪ 13 other IDSS briefings provided by staff ▪ Additional full-time media desk staffed for WFO responses during the storm  **WFO developed new products that were implemented for the Hurricane** ▪ Collaboration between CSTAR and NWS produced better wind grids ▪ Positive response to the new tropical briefing web page that was used for continuous stakeholder updates ▪ Office software testing was delayed	**Staffing increased to support IDSS during the storm, but IDSS to key stakeholders was limited to management** ▪ Two employees were dedicated to supporting storm reporting on a full-time basis ▪ Usually IDSS activities were limited to management and lead forecasters; all government and EM interaction was concentrated with management ▪ Coordinators ran point on marine briefings and liaison with the US Coast Guard related to the port ▪ Too many conference calls were a problem  **Rapid offshore development led to challenging preparations** ▪ Damage reports were submitted to emergency managers during the storm, but not to NWS ▪ One of the first times that graphicasts were used successfully
Impact to life and property	▪ One indirect fatality ▪ Less than $25 million in property damage	▪ One direct fatality ▪ $50 million in property damage

1 Response activities do not include support offered by NCEPs, including the National Hurricane Center; for purposes of comparison it was assumed that NHC support was similar across both events

SOURCE: Noaa.gov, Site interviews

Executive Summary of Phase 1 Deliverable: Current State Baseline and Gap Assessment

Overview of OWA: Purpose of the project, objectives for Phase 1 baseline and gap assessment

Methodology: Criteria and decisions to select and conduct site visits, interviews, surveys, team, SMEs

Baseline, gap analysis and insights: Against each assessment area, share fact-based findings and insights, including variation in particular roles and regions as well as themes from external stakeholders and internal staff

- **Workforce:** Controlling for differences, there is a gap in some areas between today's workforce and today's workload (e.g., due to increase in severe weather, proliferation of programs), which is expected to increase in the short-term given constraints on supply and increased demand but could be offset in the longer-term given changes to technology and operating procedures
- **Operating Model (including IDSS):** Multiple examples of IDSS were observed as well as generally high customer satisfaction, however there is a lack of alignment on what IDSS means, lack of clarity on roles, and lack of consistency on process and metrics used to evaluate outcomes
- **Organization Structure:** Examination of the current organizational model reveals potential opportunities for improvement both in terms of health – where we observed overall lower health but strengths in motivation and external orientation – and structure – where HQ has reorganized but the field remained constant and roles between national, regional and local offices are less well defined

Moving forward: The Phase 2 objective is to develop alternatives to address gaps in workforce, IDSS operating model and the organization model, and continue to communicate and engage with internal and external stakeholders throughout

Organization structure

1. Organizational Health Index
2. Organization structure
3. Implications of organization structure on operating model

Organization structure: Summary of Organizational Health Index

- NWS had a strong participation rate (~50%) to the Organizational Health Index (OHI) survey with an overall health score of 53, a lower overall health score
- At the outcome level, six of the nine scores are relatively low; Motivation, External Orientation, and Capabilities outcomes are relatively healthier, particularly compared to public sector benchmarks
- At the practice level, 34 of the 37 practices are in the bottom quartile, and several themes emerge when looking at the patterns of practice-level results

1 OHI survey achieved an overall response rate of 49% with strong representation across key demographics

By Organization and Geography

	% of Total Workforce	% of Final Results
National HQ	5%	8%
NCEPs	12%	11%
Regions		
Alaska	4%	3%
Central	21%	22%
Eastern	14%	13%
Pacific	2%	1%
Southern	19%	17%
Western	15%	16%
Other	8%	8%

By Tenure

	% of Total Workforce		% of Final Results
<1 year	1%	<1 year	1%
1 - <3 years	7%	1 - <3 years	3%
3 - <6 years	8%	3 - <6 years	11%
6 - < 8 years	9%[1]	6 - <11 years	18%
>8 years	74%[1]	11 - <21 years	29%
		>21 years	39%

Overall response rate of 49%

SOURCE: OHI survey data, National Weather Service data.

1. Approximate response rate data provided on the basis of available NWS tenure demographics. Assumes that 40% of those surveyed who responded "6-<11 years" are "6-<8 years."

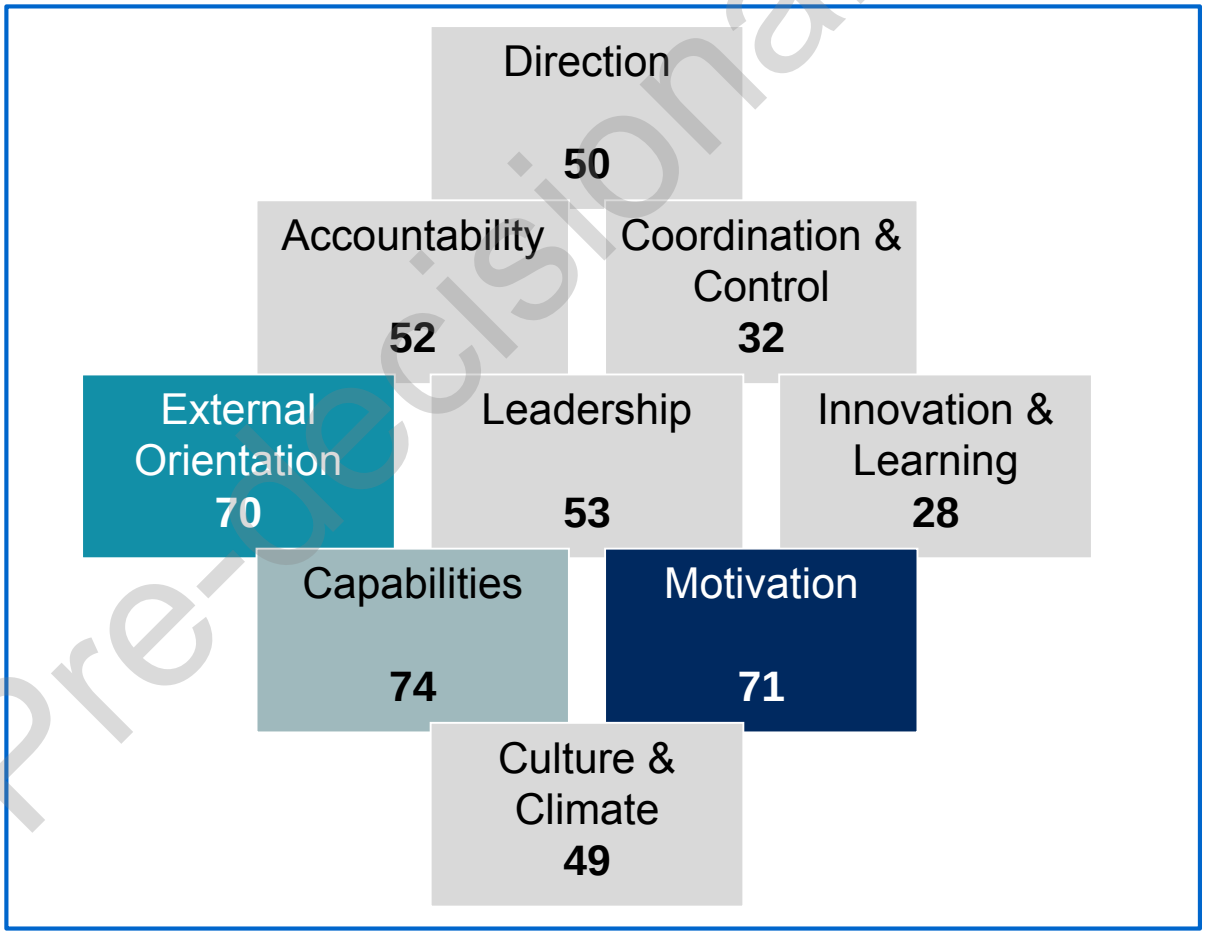
1 NWS has an overall health score in the bottom quartile, but has clear strengths in Motivation and External Orientation outcomes

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Overall Health score

53

Percentage agreement on outcome effectiveness

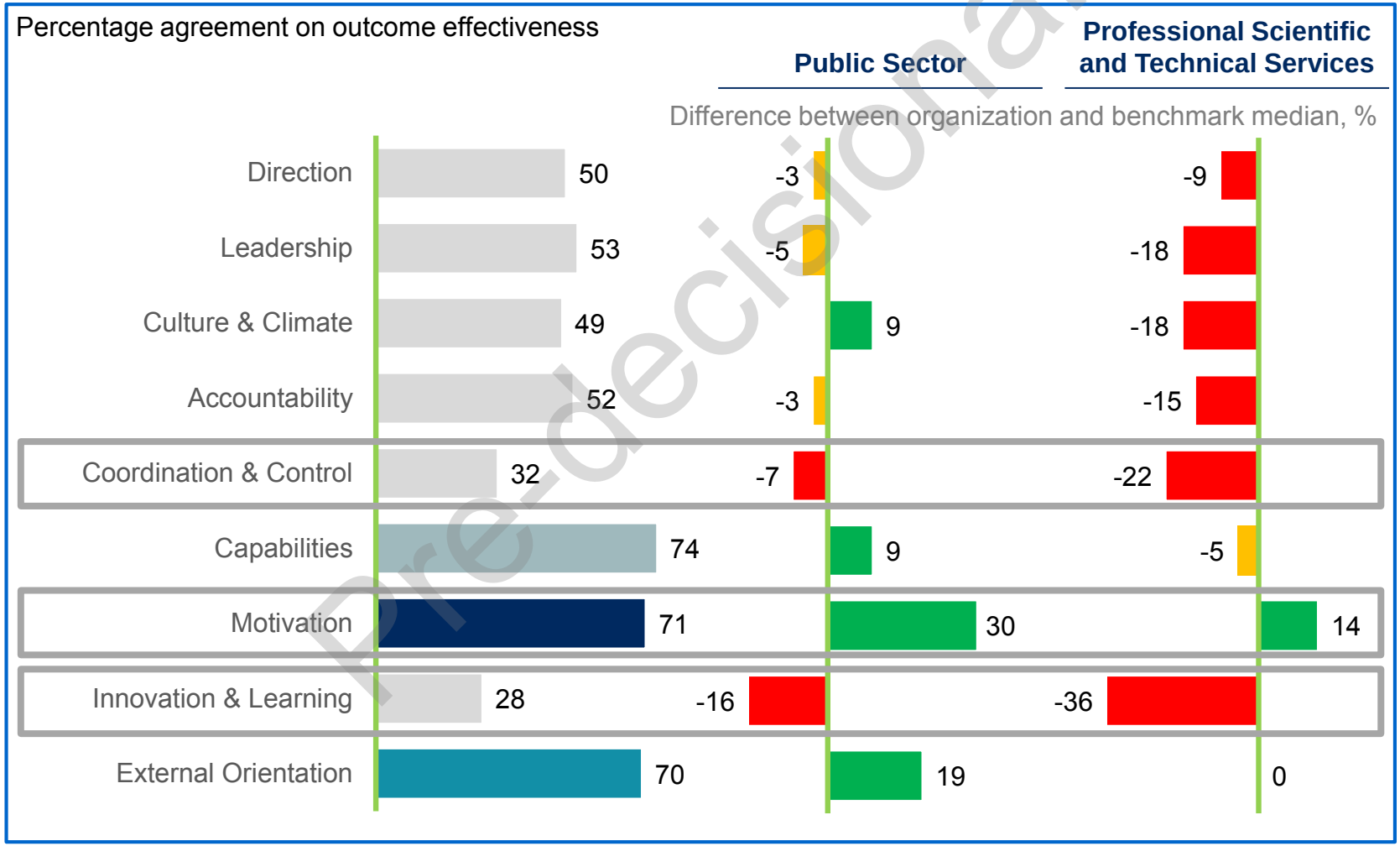


SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Comparison to benchmarks reflects strength in Motivation and External Orientation and relative weakness in Innovation & Learning and Coordination

Global Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Comparison to Benchmark
- Stronger (> +5)
- Weaker (< -5)
- Comparable



SOURCE: Source: OHI3_NWS (n=2,162); Public Sector (n=47,159, no. surveys=27), Professional Scientific and Technical Services (n=17,849, no. surveys=27)

1 Senior level managers perceive significantly higher overall heath with the greatest differences in Direction, Leadership, and Culture & Climate

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Statistically significant at the 95% Confidence level

Percentage agreement on outcome effectiveness

	n	Overall	Direction	Leadership	Culture & Climate	Accountab-ility	Coordinat-ion & Control	Capabilit-ies	Motivation	Innovation & Learning	External Orientation
Individual Contributors: I do not directly supervise other employees	1680	51	48	49	45	50	30	73	69	27	68
Middle Management: I directly supervise other front-line employees	376	58	53	58	58	58	35	75	76	31	74
Senior Leadership: I directly supervise other managers	106	70	74	86	76	68	43	78	85	35	81
Difference between Senior Leaders and Individual Contributors		+19	+26	+37	+31	+18	+13	+5	+16	+8	+13

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

1 NWS has 34 of 37 practices in the bottom quartile, including the 5 practices that tend to correlate most with overall health

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

Power practices are practices correlated most with overall health

Direction
- 44 Shared vision
- 39 Strategic clarity
- 22 Employee involvement

Accountability
- 34 Role clarity
- 39 Performance contracts
- 18 Consequence mgmt.
- 40 Personal ownership

Coordination and Control
- 33 People perform. review
- 35 Operational mgmt.
- 22 Financial mgmt.
- 73 Professional standards
- 32 Risk mgmt.

External Orientation
- 52 Customer focus
- 35 Competitive Insights
- 76 Business partnerships
- 63 Gov. & community relations

Leadership
- 44 Authoritative leadership
- 43 Consultative leadership
- 49 Supportive leadership
- 37 Challenging leadership

Innovation and Learning
- 17 Top-down innovation
- 24 Bottom-up innovation
- 25 Knowledge sharing
- 13 Capturing external ideas

Capabilities
- 24 Talent acquisition
- 37 Talent development
- 32 Process based capabilities
- 20 Outsourced expertise

Culture and Climate
- 45 Open & trusting
- 18 Internally competitive
- 47 Operationally disciplined
- 32 Creative & entrepreneurial

Motivation
- 26 Meaningful values
- 33 Inspirational leaders
- 31 Career opportunities
- 15 Financial incentives
- 23 Rewards & recognition

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

1 NWS employees are highly motivated despite low scores at the practice level on Motivation; a great platform on which to build

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

- 66% of NWS staff are highly motivated
- 75% of NWS staff are generally enthusiastic about their jobs

"The National Weather Service is one of the greatest places to work. I enjoy making my hobby my job."

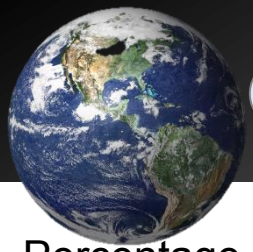
"We also hold the NWS mission at our core, so none of us want anybody to ever get hurt by the weather, and having all of the relationships that we do have, it becomes a personal mission for each of us to keep our 'friends' safe."

[M]any leaders in the organization wonder if anyone higher in the food chain really cares or notices the service-above-self mindset that many in the field carry to make a positive difference - despite the lack of tangible recognition provided from above.

Motivation

26	33	31	15	23
Meaningful values	Inspirational leaders	Career opportunities	Financial incentives	Rewards & recognition

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)



1 Employees lack clarity and buy-in around the vision and strategy of NWS, and feel they are not involved enough in the direction setting process

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

Direction

44	39	22
Shared vision	Strategic clarity	Employee involvement

Accountability

34	39	18	40
Role clarity	Performance contracts	Consequence mgmt.	Personal ownership

Coordination and Control

33	35	22	73	32
People perform.	Operational mgmt.	Financial mgmt.	Professional standards	Risk mgmt.

External Orientation

52			
Customer focus			

Leadership

44	43		
Authoritative leadership	Consultative leaders	Supportive	Challenging

Knowledge

Top-down	Bottom-up	Knowledge sharing	Capturing

Culture

45	18		
Open & trusting	Internal competition		

Capabilities

Talent acquisition	Talent development	Process based capabilities	Outsourced expertise

<50% of all employees say their day-to-day behaviors are guided by the NWS's vision and strategy

"It seems like there has been little information provided from leadership to the line offices on how to implement a plan to achieve a Weather Ready Nation."

"Too many people in higher up position making decisions for the field sites that have never been in the field and are clueless of how their decision will affect the field offices."

"The NWS has lost its ability to communicate within the organization. It appears the field is being told only what someone above feels appropriate. Consequently, the field is left in the dark on many issues."

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

1 NWS is relatively externally oriented but does not capture these ideas and quickly translate them into new innovation

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

- 26% of staff agree that NWS effectively adapts to changes in its external environment
- 11% of staff believe the NWS is able to adjust rapidly to new ways of doing things

External Orientation

52	35	76	63
Customer focus	Competitive Insights	Business partnerships	Gov. & community relations

Innovation and Learning

17	24	25	13
Top-down innovation	Bottom-up innovation	Knowledge sharing	Capturing external ideas

[There is a] lack of encouragement to new ideas and innovation sticking to useless products methods and lack of initiative to improve them

Least Rewarding: "The increasing bureaucracy and inability to innovate due to focus on "consistency." If we don't start somewhere, we will never move forward! Innovation should continue to come bottom-up but with support and early buy-in from the top for resources."

"Knowledge should flow upward as well as downward; NWS needs to be quicker to adopt trending technologies; …; More empowerment - managers must allow decisions to be made at the lowest possible level"

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

1

Employees do not see their leaders in action enough, especially when it comes to driving change from the top

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

50% of NWS employees say they seldom or almost never see senior leaders drive innovation in the organization

Accountability

34	39	18	4
Role clarity	Performance contracts	Consequence mgmt.	Pers ownership

Coordination and Control

35	22	73	32
Operational mgmt.	Financial mgmt.	Professional standards	Risk mgmt.

External Orientation

52	35	76	63
Customer focus	Competitive Insights	Business partnerships	Gov. & community relations

Leadership

44	43	49	37
Authoritative leadership	Consultative leadership	Supportive leadership	Challenging leadership

Innovation and Learning

17	24	25	13
Top-down innovation	Bottom-up innovation	Knowledge sharing	Capturing external ideas

Capabilities

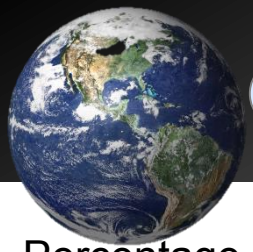
Motivation

32
Creative & entrepreneu

"I happen to work in a local office where the management cares about creating a team atmosphere and good working environment. As a result most in our office are very dedicated to doing the best job they can do. Meanwhile, I am often left disappointed with the lack of leadership, engagement, clarity, and vision from the senior level managers."

"Our senior leaders lead from a position of fear and rarely inspire those beneath them."

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)



1 Performance measures are unclear and do not tie to individual level performance, making it difficult to assess, reward, or provide accurate feedback

Benchmark
- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

Percentage agreement on practice frequency

Accountability

34	39	18	40
Role clarity	Performance contracts	Consequence mgmt.	Personal ownership

Coordination and Control

33	35	22	73	32
People perform. review	Operational mgmt.	Financial mgmt.	Professional standards	Risk mgmt.

31% of NWS employees agree that reviews of organizational performance lead to corrective follow up action

"Accountability is sorely lacking in the NWS WFO structure. The carrots are respectable, but the stick is often either unused or used at incorrect times"

"All activities, including forecast and warning operations, should have well-defined and measured metrics, be tracked and analyzed, then followed up with appropriate recognition, process-improvement, training, or disciplinary action."

"Some of the challenges our organization faces at all levels result from having the wrong person with the wrong skill set and attitude for the mission, their responsibilities, and duties."

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

1 Staff view differences between current and desired values

Value detractors – values with negative correlation to overall health

Value enhancers – values with strongest positive correlation to overall health

Top 15 current and desired values

CURRENT VALUES *Where we are today...*	CURRENT & DESIRED VALUES *What we'd like to continue...*	DESIRED VALUES *Where we'd like to be...*
Having a noble purpose	Being of service to others	Continuous improvement
Bureaucracy	**Customer focus**	**Accountability**
Being passionate	Contributing to the greater good	**Well organized**
Slow-moving	Fulfilling work	**Professional growth**
Internal politics	Making a difference	Innovation
Hierarchical	Being collaborative	**Efficiency**
Sense of community	**Excellence**	Employee focus
Values-driven		**Visionary**

OHI question: Please select a minimum of 5 and a maximum of 10 statements from the list of values that best describe NWS currently. Please also choose a minimum of 5 and a maximum of 10 statements that least describe NWS currently. Please select a minimum of 5 and a maximum of 10 statements from this list of values that best describe your views regarding what NWS's culture should be like in the future. Please also choose a minimum of 5 and a maximum of 10 statements that least describe your views regarding what NWS's culture should be like in the future.

SOURCE: National Weather Service, June 2015 (n=2,162)

1 OHI was supplemented with questions for free text response

- Describe NWS in three words
- What part of your job is most rewarding?
- What part of your job is least rewarding?
- Please take a few moments to add any additional thoughts or suggestions
- What strengths should NWS build upon in the future?
- What weaknesses should NWS improve in the future?

1 Describe the NWS in three words

SOURCE: National Weather Service OHI; Top 60 most frequently used words

1 What part of your job is most rewarding? (1/2)

SOURCE: Organizational Health Index Survey Results, 2015.

1 What part of your job is most rewarding? (2/2)

1 Protecting lives and property

*"Carrying out **the original NWS Mission**: Protecting Lives and Property."*

*"**Issuing warnings and communicating other critical information** that contribute to the protection of life and property."*

*"**Helping people make decisions** that will save their life and property from extreme weather."*

*"**Working with emergency managers** - both formal and informal (e.g., school principals, nursing home administrators, etc.) toward the shared mission of protecting lives and property."*

2 Making a difference

*"Knowing that I'm **making a difference in people's lives... even to the extent of saving them**."*

*"That I am making a difference in the lives of those who make a difference (i.e. responders)... **I am not a hero, but I help to protect and make more knowledgeable and efficient heroes**."`*

*"**Making a difference for our partners and customers**, resolving issues and problems, and working with people so they may grow professionally."*

3 Providing forecasts with impact

*"**Providing accurate and timely forecast and warning information** to our partners and customers during high-impact events in order to save lives."*

*"Providing our customers with **critical weather information** that either saves their lives or **enhances their ability to make critical weather dependent decisions**."*

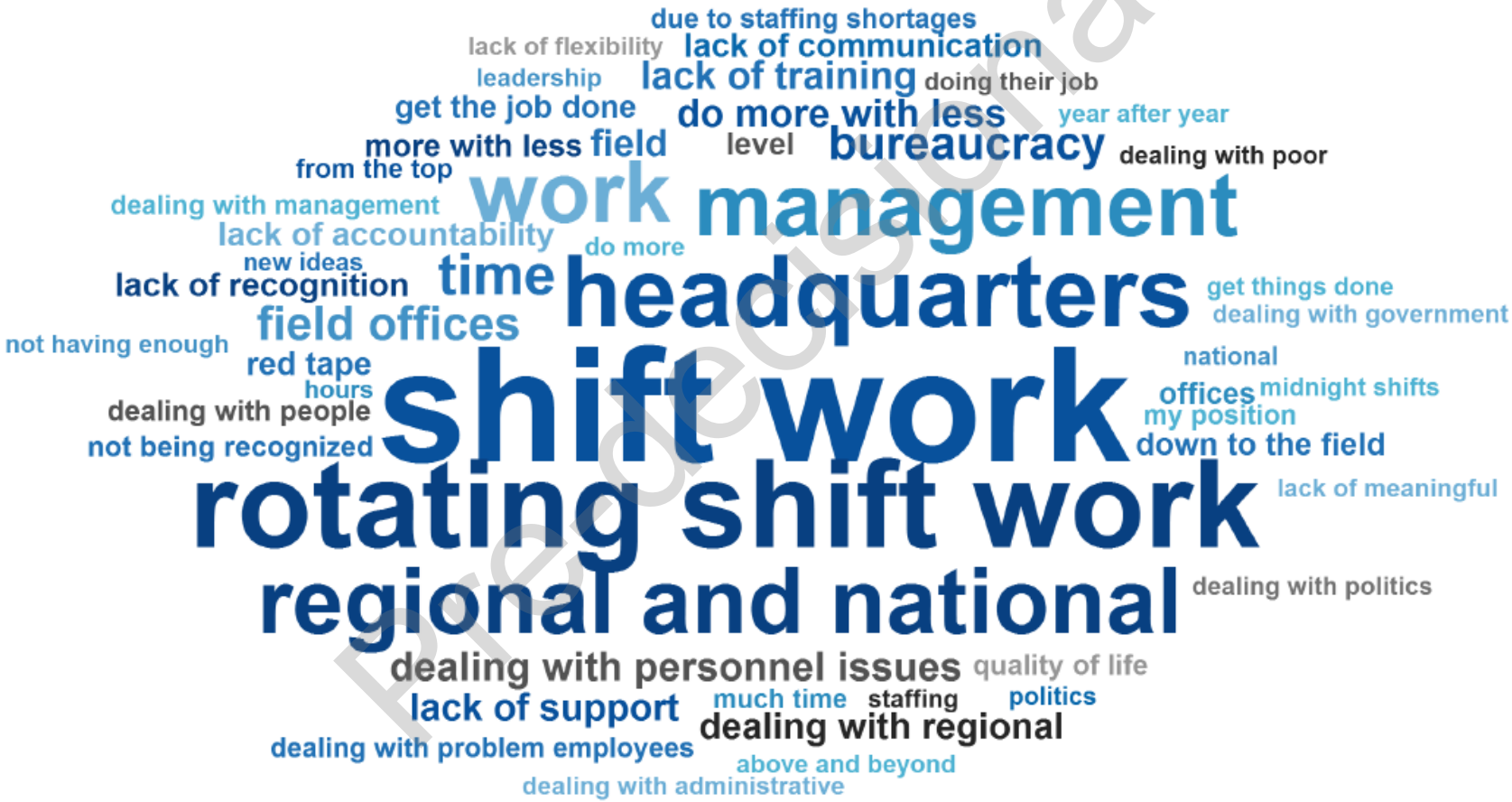
*"**Delivering a top notch service** and working with partners, stakeholders and communities."*

*"Serving the public and media with good **forecasts, advisories, warnings and information to support their decision making**."*

*"Working with partners to ensure that preparedness and weather warning messages **reach as much of the public as possible**."*

SOURCE: Organizational Health Index Survey Results, 2015.

1 What part of your job is least rewarding? (1/3)



SOURCE: Organizational Health Index Survey Results, 2015.

1 What part of your job is least rewarding? (2/3)

1 Shift Work

*"The constant rotating shift work with **few opportunities to escape it through promotion** is stifling."*

*"Missing out on family/friend get-togethers due to having to working weekends or holiday. The **shift work is tough on the body**, but necessary."*

*"The shift work **takes a toll on quality of life**."*

*"Shift work. Lots of nights / evenings / weekends away from family. **It's not just a job, it's a lifestyle**."*

2 Head-quarters

*"Frustration due to not being a part of decision making that affect the field offices at the regional and head-quarters level. **Communication to and from field and HQ is quite cumbersome**, especially when it must go through the intermediate step of including the regional office"*

*"I feel disconnected from headquarters; like it sometimes **doesn't matter what we do at the regional level**"*

***"I feel like NWS Headquarters always has an agenda they won't share**. We are always fearful of what is coming down the pipe next. Our local managers are so respectful and show genuine concern for the work that we do."*

*"Dealing with constant understaffing, and the **lack of meaningful, truthful communication from leadership**"*

3 Bureau-cracy

*"**Having to deal with layers of bureaucracy** instead of having enough technical and scientific support to help with problems and new ideas"*

*"Dealing with the inevitable slowness of bureaucracy, especially in the context of how difficult it can be to navigate needed changes in culture, organizational structure, and service provision; unfortunately **one of the chief obstacles to achieving positive change has been the adversarial relationship with NWSEO**"*

*"Dealing with bureaucracy and the **lack of communication and transparency from management**, especially high level"*

SOURCE: Organizational Health Index Survey Results, 2015.

1 What part of your job is least rewarding? Themes on innovation (3/3)

Theme	Employee statements
Policy constraints that hinder innovation	*"Way too many policy makers that disrupt innovation and improved services"*
	"We should start using, supporting, and developing innovation, not preventing and punishing it."
	"Restrictive policies that do not allow for innovation or customization for local user needs is one of the least rewarding aspects of the job"
Inadequate support limiting innovation	*"Unfortunately for the field, innovations invariably lose what made them distinctive and special once Headquarters takes ownership of them."*
	"Engaging the wealth of employee expertise in the field to drive innovation and change is one of NWS' biggest weaknesses"
	"HQ needs to realize that the best ideas come from the field, not the top."
Legacy technology	*"AWIPS 2 has strangled the software innovation in this agency for far too long."*

SOURCE: Organizational Health Index Survey Results, 2015.

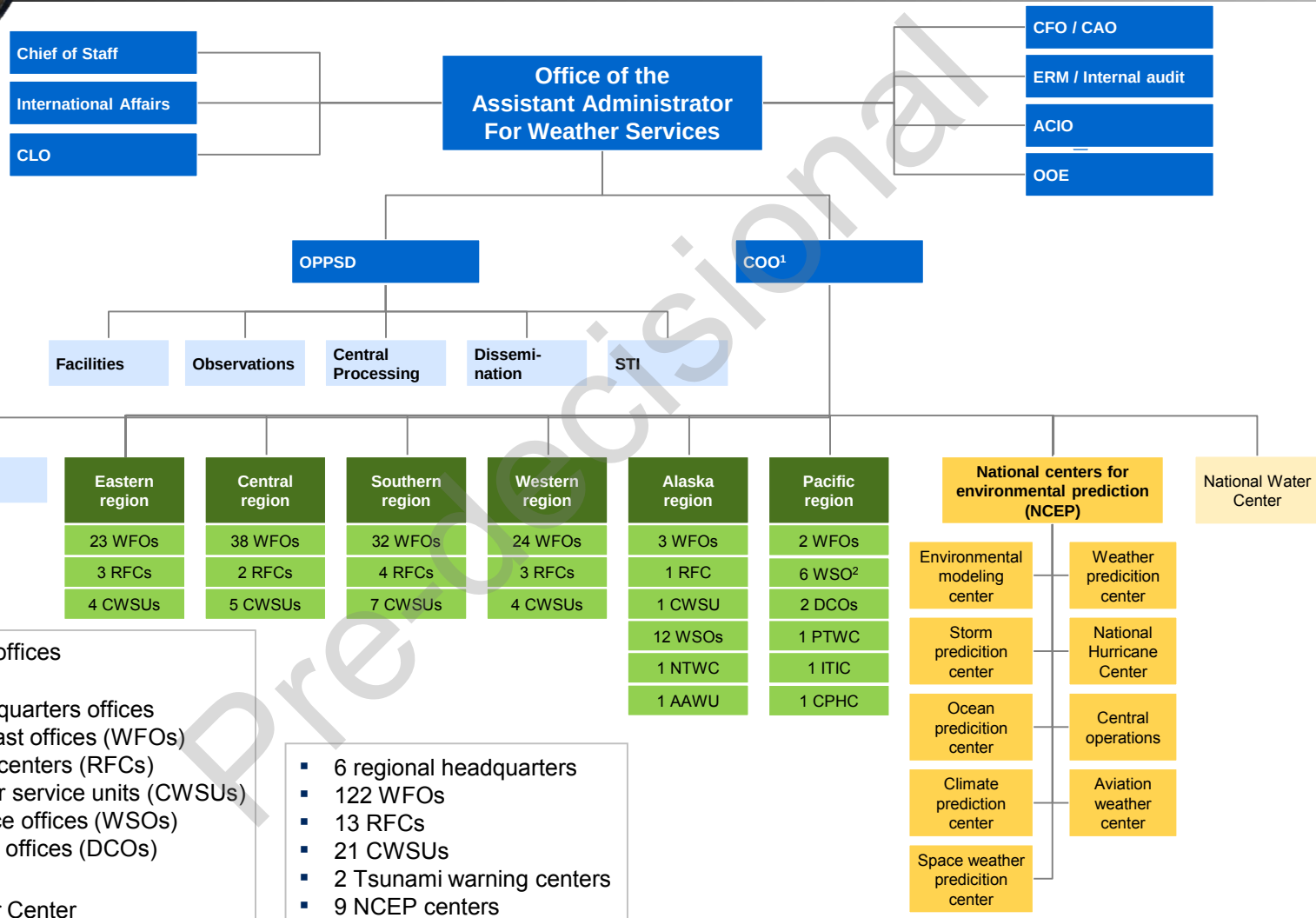
Organization structure

1. Organizational Health Index
2. Organization structure
3. Implications of organization structure on operating model

Organization structure: Summary of organization structure

- NWS has a dispersed field footprint with WFO locations based on radar positioning, RFCs based on river basins, CWSUs located near major airports, and NCEPs and the National Water Center located based on weather events and other factors
- The number of layers between the NWS Director and a frontline forecaster is relatively low, but the spans of control within the field are high
- Standardized staffing model is applied uniformly at WFOs, RFCs, and CWSUs with regional variation in constituent office composition

2 The current NWS Organizational structure reflects the recent reorganization of the national headquarters

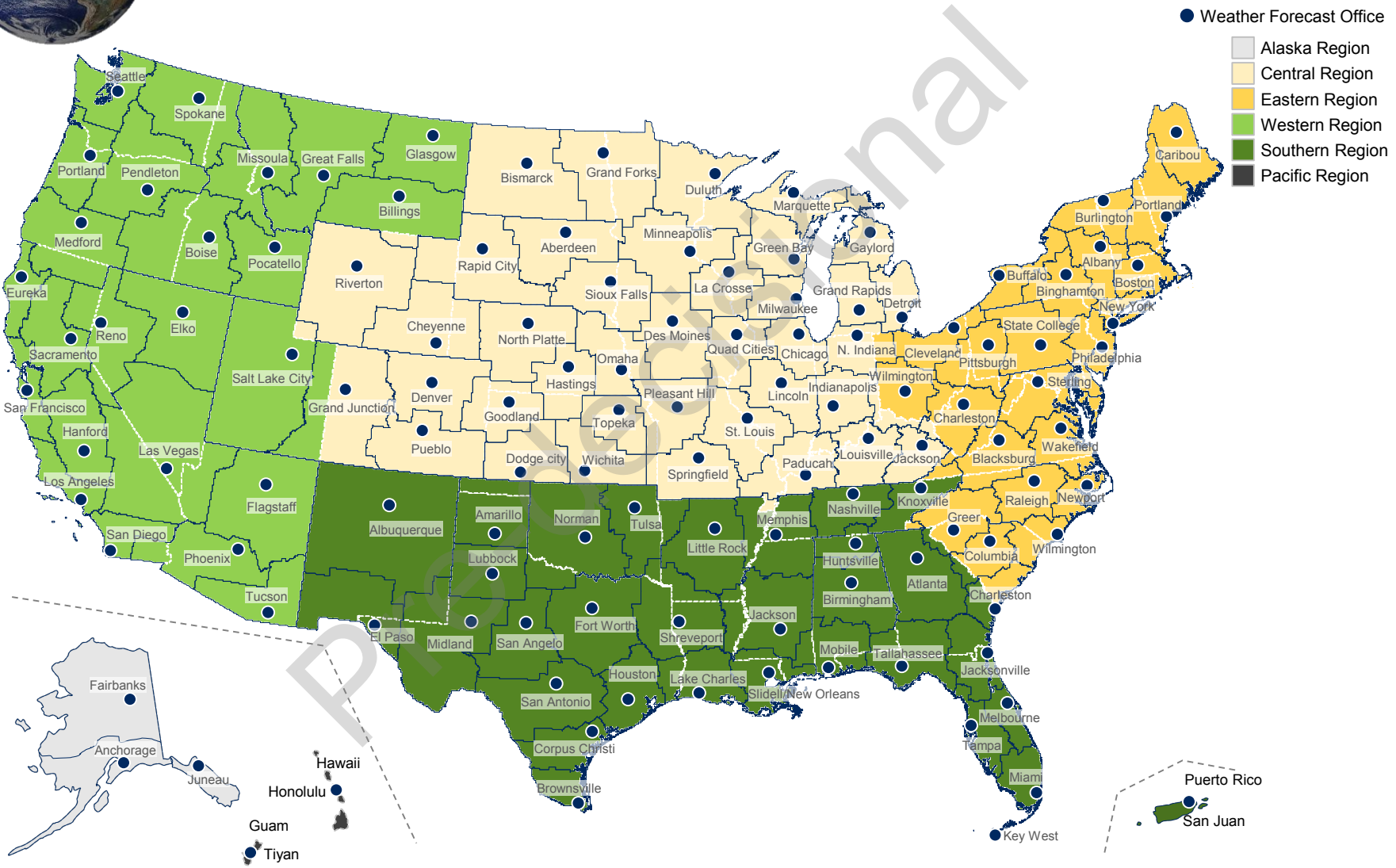


- Headquarters offices
- Portfolios
- Regional headquarters offices
- Weather forecast offices (WFOs)
- River forecast centers (RFCs)
- Center weather service units (CWSUs)
- Weather service offices (WSOs)
- Data collection offices (DCOs)
- NCEP offices
- National Water Center

- 6 regional headquarters
- 122 WFOs
- 13 RFCs
- 21 CWSUs
- 2 Tsunami warning centers
- 9 NCEP centers

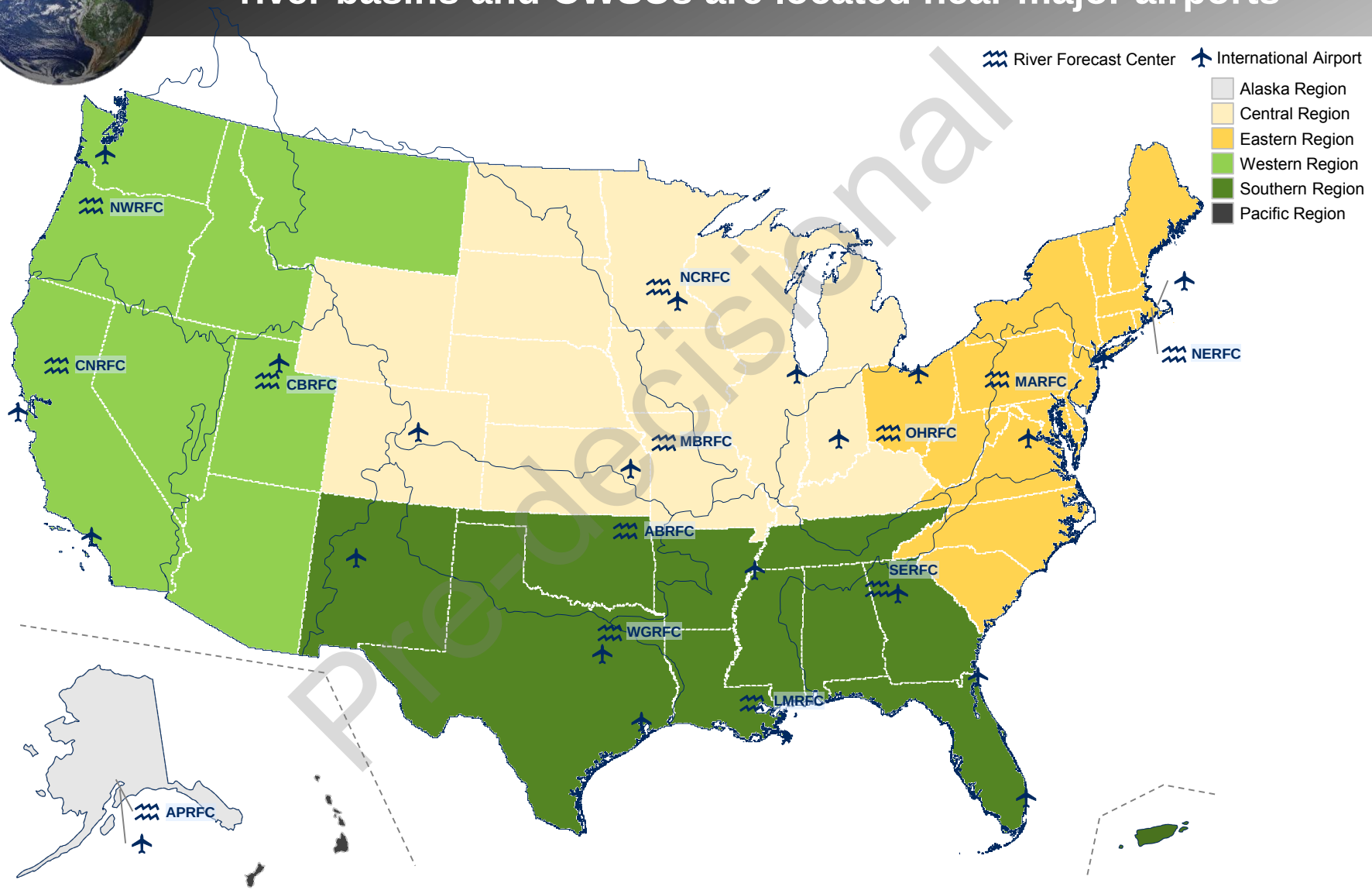
1 Offices listed under regional structure do not include test beds, ROCs, or observational facilities
2 In the Pacific Region, some WSOs are funded through the compact of free association and operated by other countries
SOURCE: HQ and Site interviews

2 WFO locations map onto radar positioning and remain unchanged from the MAR…



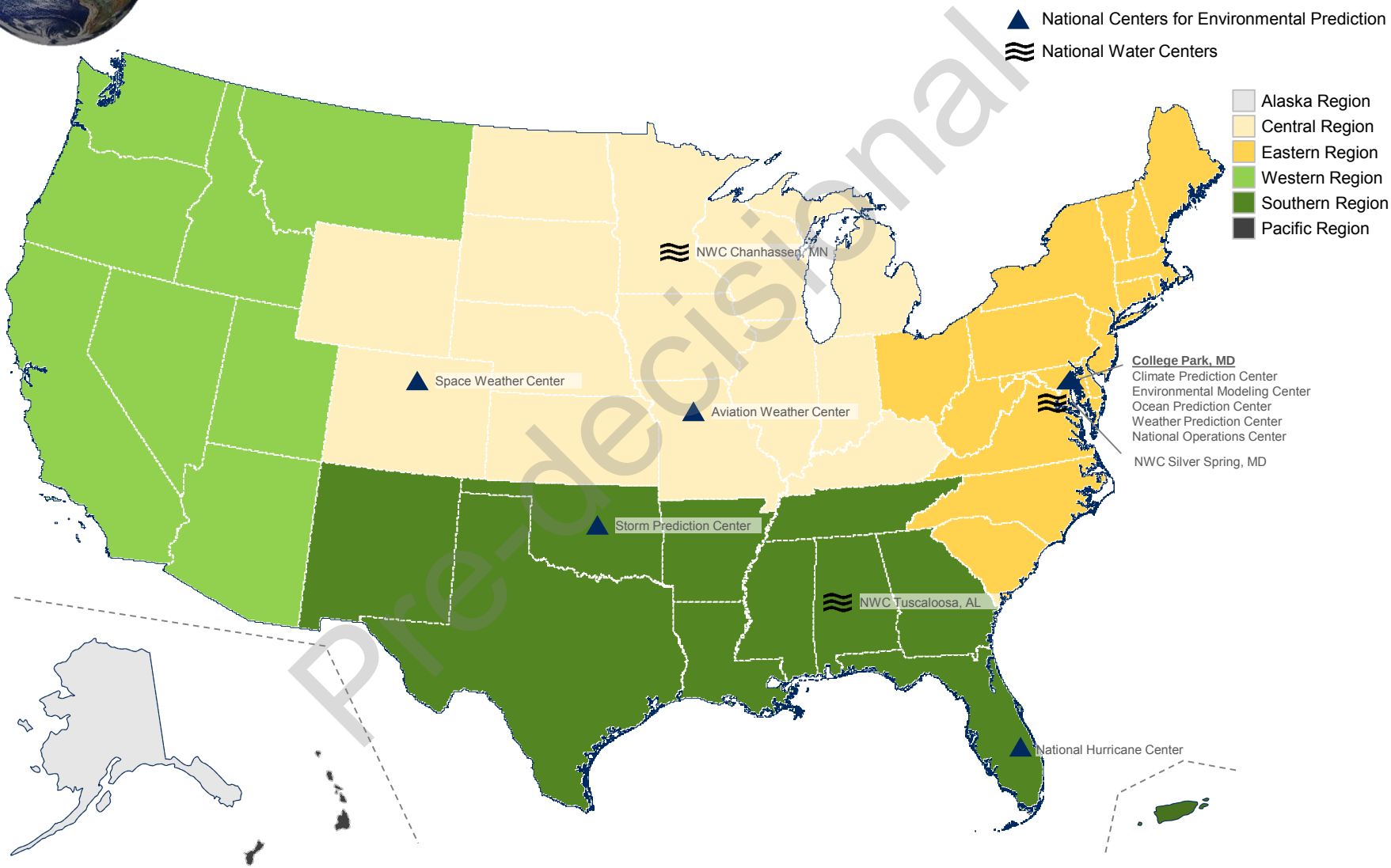
SOURCE: National Weather Service

2 …while RFCs are based on physical geography around river basins and CWSUs are located near major airports



SOURCE: National Weather Service

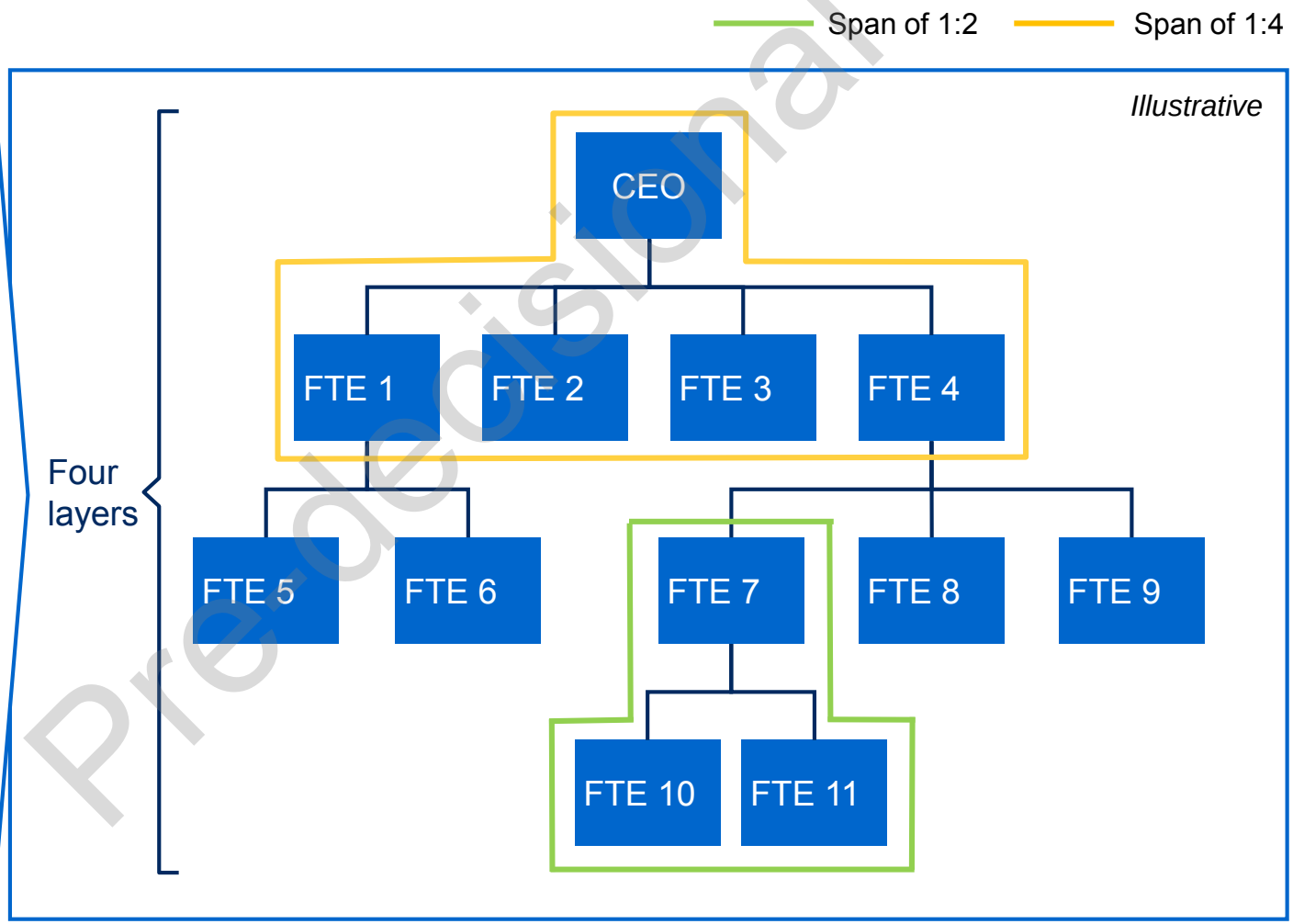
2 Most NCEPs are based in College Park, while others are located where their weather event commonly occurs



SOURCE: National Weather Service

2 Spans and layers are a useful measure of management structure and hierarchy across headquarters and field

- Span of control is the ratio of the number of direct reports to the number of managers (e.g., FTE 7 has two direct reports)
- Layers refer to the number of levels within the organization (e.g., four layers between CEO, and FTE 10 and FTE 11)



2 Managerial role archetypes are helpful in determining the ideal spans of control for managers across the organization

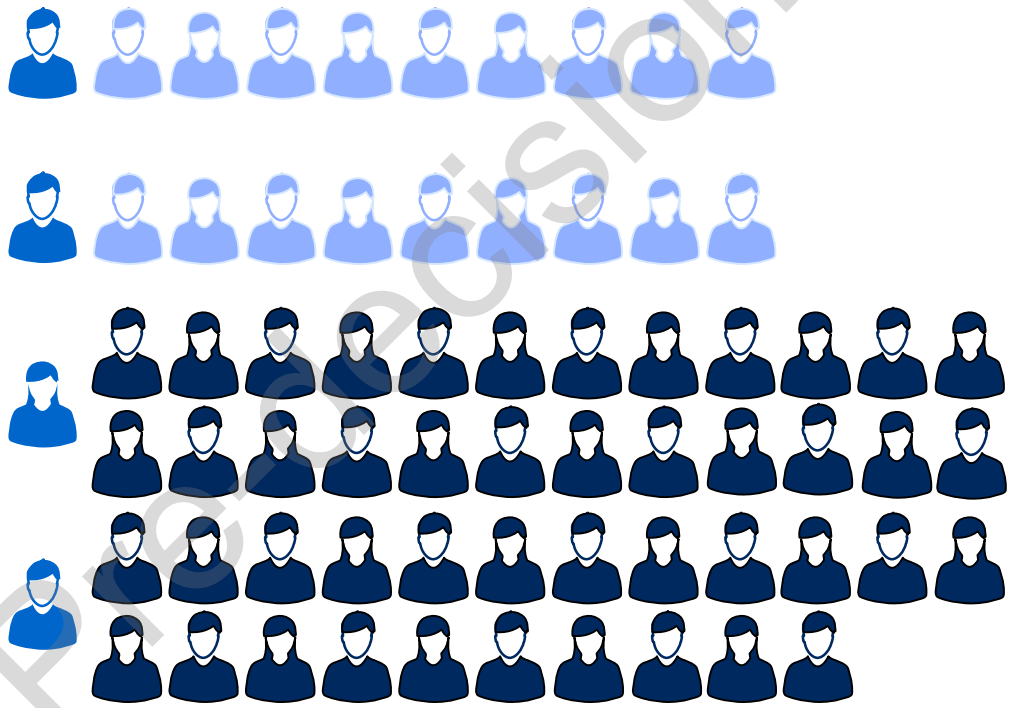
Drivers of managerial work	Managerial role archetypes[1]				
	Player / Coach	**Coach**	**Supervisor**	**Facilitator**	**Coordinator[2]**
Maturity of process	• No standard work process exists and tasks require conceptual problem solving with manager interaction	• Some work process guidelines have been developed but tasks often require manager intervention and interaction	• A standard work process exists and subordinates perform tasks that require limited interaction	• Work is performed on the basis of mostly standard processes OR sub-ordinates are largely self-managed with very limited manager interaction and intervention	• Work is completely standardized or automated, OR subordinates are self-managed. Interactive intervention is required only for exceptions
Time spent "managing" vs. "doing"	• Manager spends relevant time on own work or client-facing activities	• Manager may spend time on own work, often side-by-side to apprentice others	• Manager spends little time on own work or client-facing activities	• Manager spends most of the time "managing" OR work is mostly managed indirectly via metrics	• Manager spends nearly all the time "managing," OR nearly all work is managed indirectly via metrics, reviewing decisions, and handling exceptions
Task repeat-ability	• Every subordinate performs unique tasks that are different at every iteration	• Many subordinates perform varying tasks that, while repeated, often require some level of tailoring	• Most subordinates perform tasks that are similar and that repeat over time	• Most subordinates perform nearly identical tasks that are repeated at nearly every iteration	• All subordinates perform the same essential tasks independently OR are self-managed enough to handle non-standard tasks without intervention
Subordinate skills required	• Tasks require specific skills that take several years of experience and extensive apprenticeship	• Tasks require specific skills that take much experience and coaching. Skills acquisition can take up to a year	• Tasks require specific skills that take some experience, but limited apprentice-ship. Skill can take up to a month to build	• Tasks require general skills; job-specific knowledge can be learned very quickly, mainly via training and self-study. Skills can be taught within ~2 weeks	• Skills can be taught within a week because tasks require few specific skills and can be learned nearly entirely via self-study OR subordinates have total mastery of skills required before being in the job
Average span of control	**3-5[3]**	**6-7**	**8-10**	**11-15**	**>15**

SOURCE: Expert interviews; OrgLab Team. 1. Beyond managerial role archetypes, specific activities might require to be performed by experts in team with 1/2 subordinates. 2. Highly entrepreneurial tasks (e.g., sales forces) allow high span of control even when process is not standardized and skills required are fairly specific.

2 While there are few layers between the NWS Director and front line forecasters, there are high spans of control at the regional and field office levels

Manager HQ reports Field reports

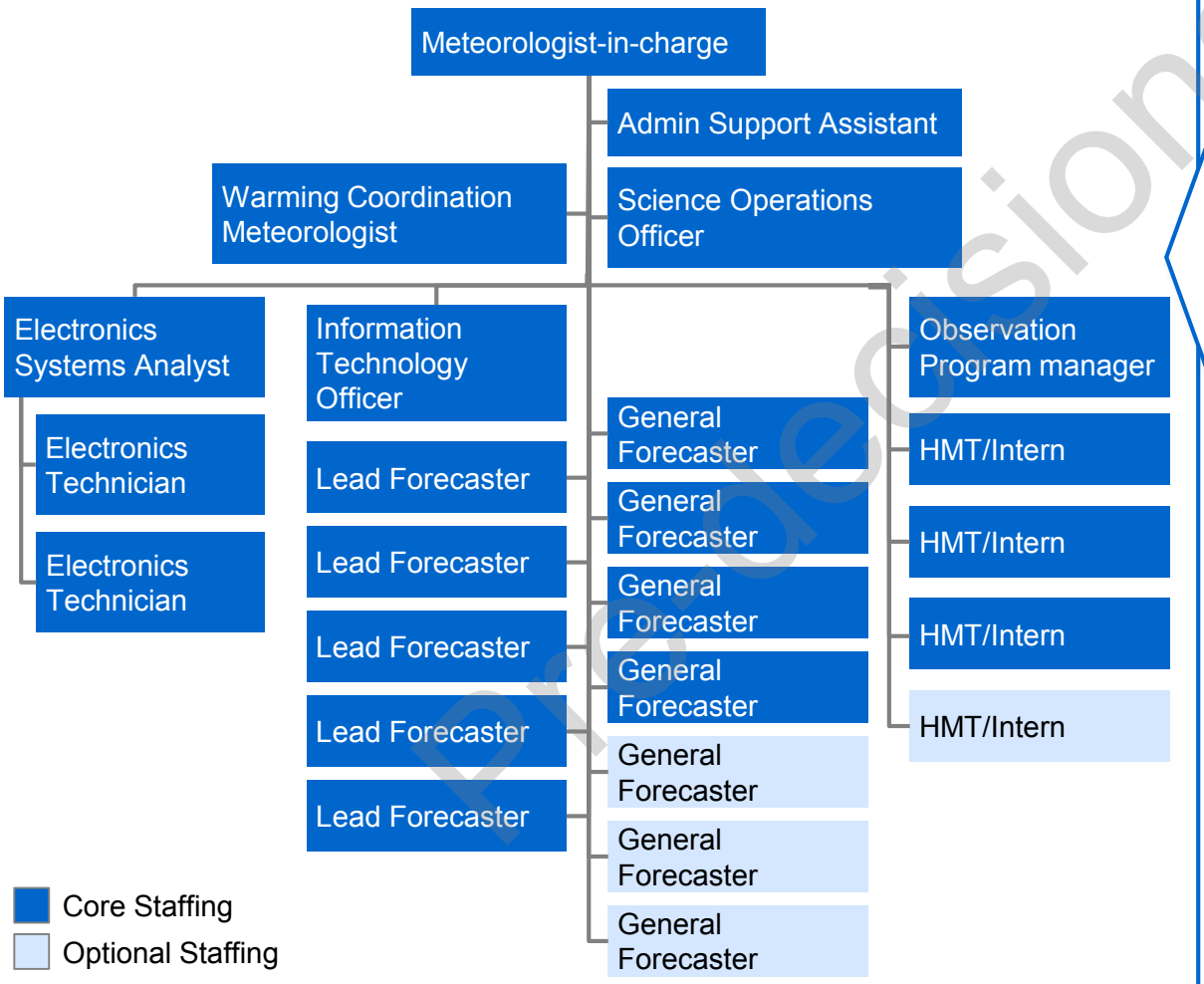
Reporting Line	Median Span of Control	Range in Span of Control
NWS Director[1]	1:9	
Chief Operations Officer	1:9	
Regional Director[2]	1:24	1:13 – 1:45
Meteorologist-in-charge[3]	1:22	1:18 – 1:29
Forecaster		



SOURCE: NWS Workforce Data on June 8, 2015 1. Shares some management responsibilities with Deputy Director and Chief of Staff. 2. Shares some management responsibilities with Deputy Director. Does not include direct reports at Regional HQ office. 3. Shares some management responsibilities with WCM and SOO.

2 Standardized staffing model is applied uniformly across WFOs in the field

WFO Staffing Structure



One-size-fits-all staffing model does not account for key drivers of workload, including:

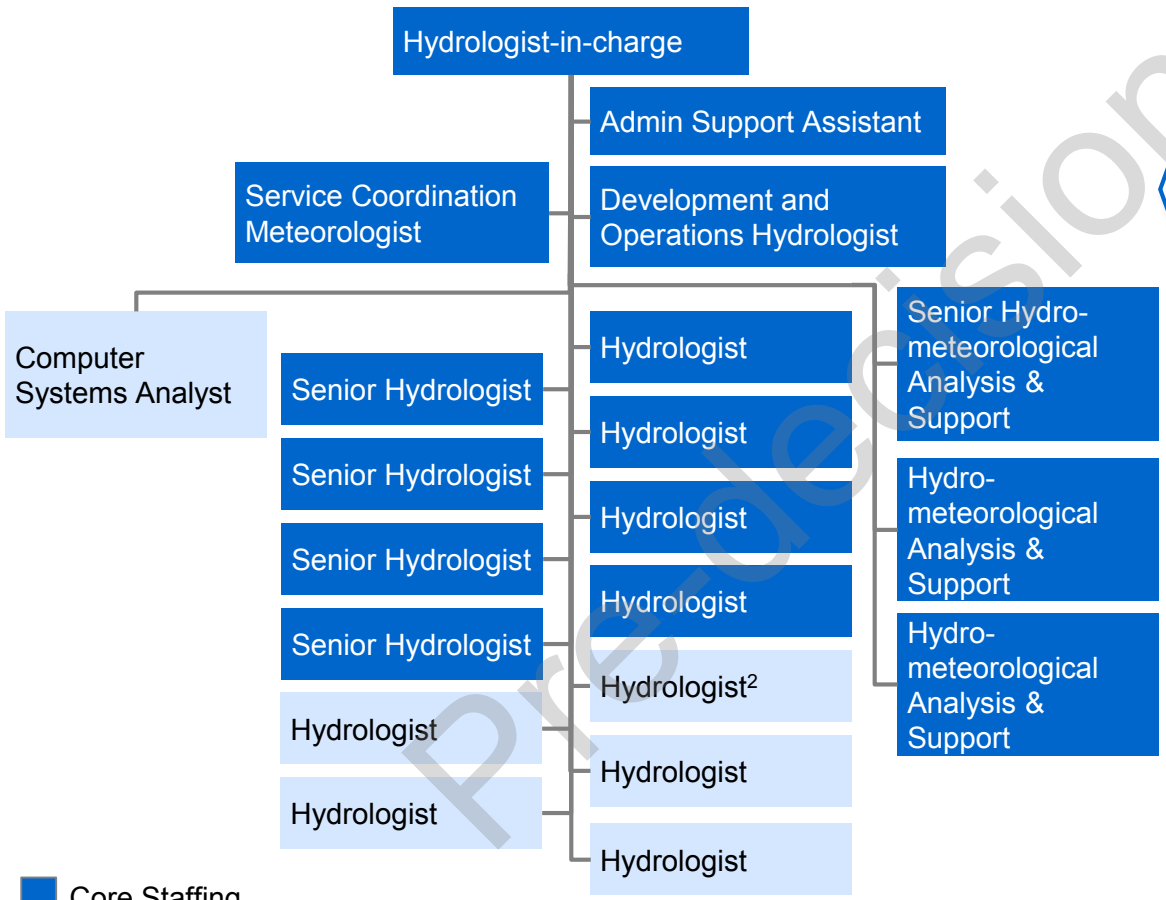
- Population
- Population Density
- Marine area of responsibilities
- Land area of responsibility
- Frequency of watches, warnings and advisories issued
- Aviation responsibilities
- Regional location
- Types and number of severe weather events

1:22 span of control is high relative to best practice

SOURCE: National Weather Service

2 Standardized staffing model is applied uniformly across RFCs in the field

RFC Staffing Structure



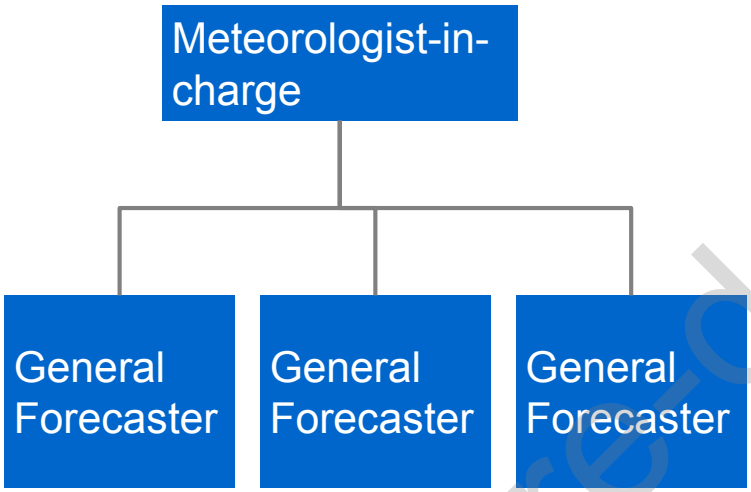
- RFC staffing level varies between 11 and 20[1]
- RFC staffing is similar to the WFO model, less some support positions
- All RFCs are collocated with WFOs, enabling them to share support services as well as infrastructure

1:20 span of control is high relative to best practice

SOURCE: National Weather Service 1. Based on RFC staffing structure in "Hydrometerological Service Operations for the 1990s" (1996) and the addition of SCM. 2. Optional hydrologist positions can be filled by interns.

2 Standardized staffing model is applied uniformly across CWSUs in the field

CWSU Staffing Structure

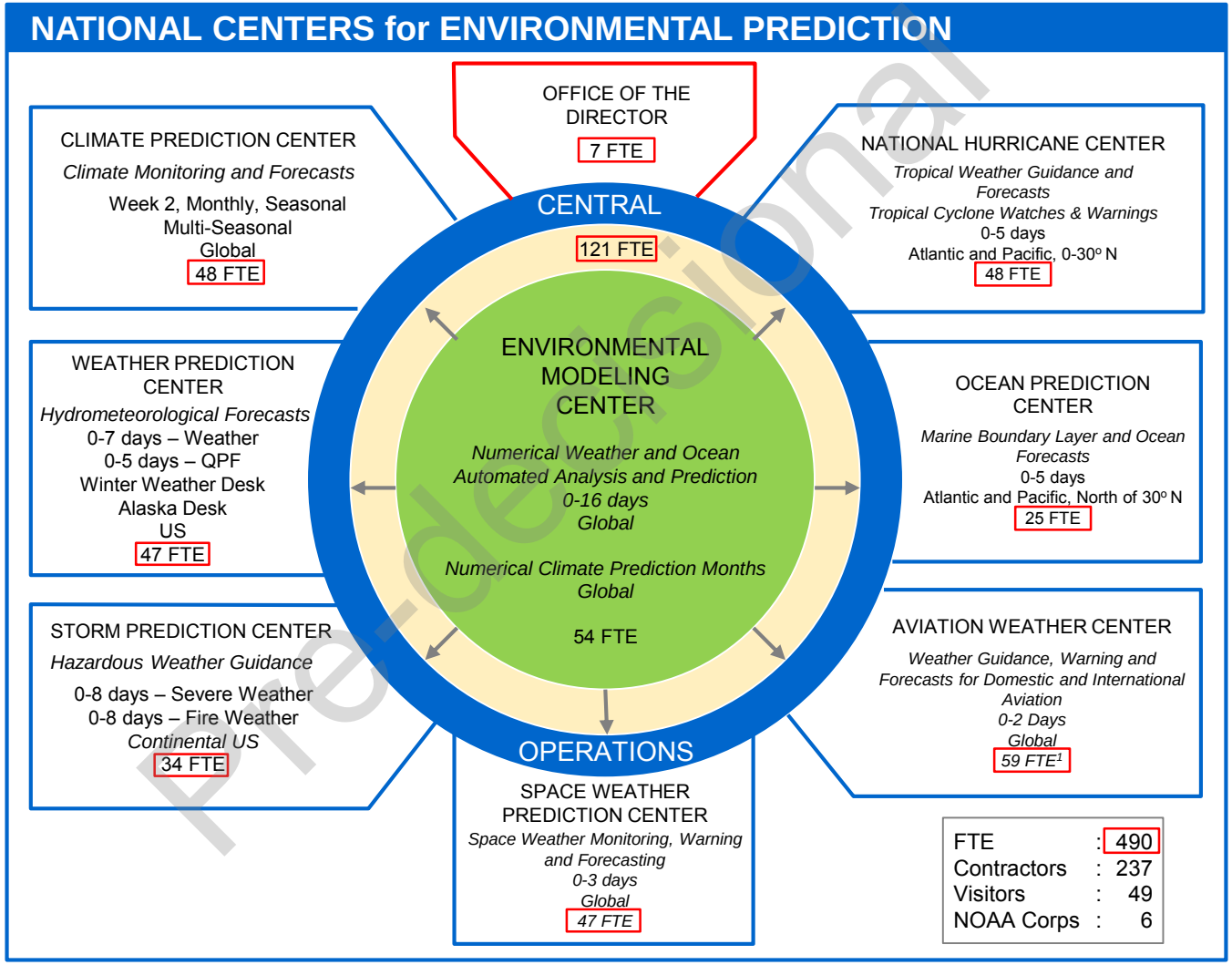


- CWSU structure is smaller, reflecting a leaner staffing model and the fact that the full team is embedded at an ARTCC

1:3 span of control

SOURCE: National Weather Service

2 Staffing model varies across NCEPs by number and placement of FTEs

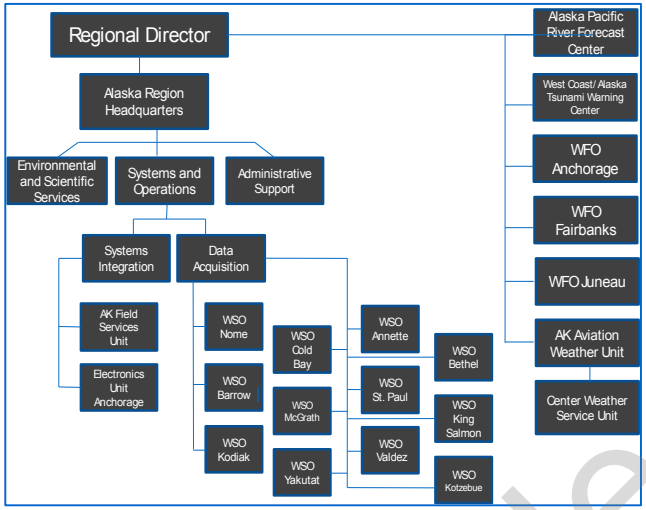


1 Includes 4 positions funded by FAA

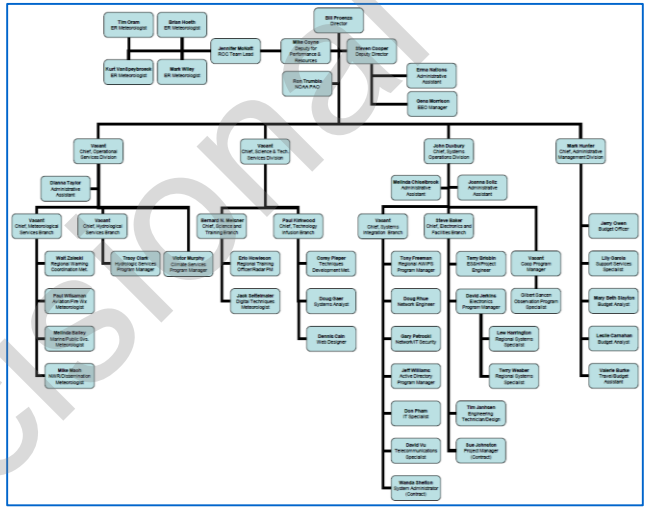
SOURCE: NWS Workforce Data on June 8, 2015

2 Organizational structure varies from region to region…

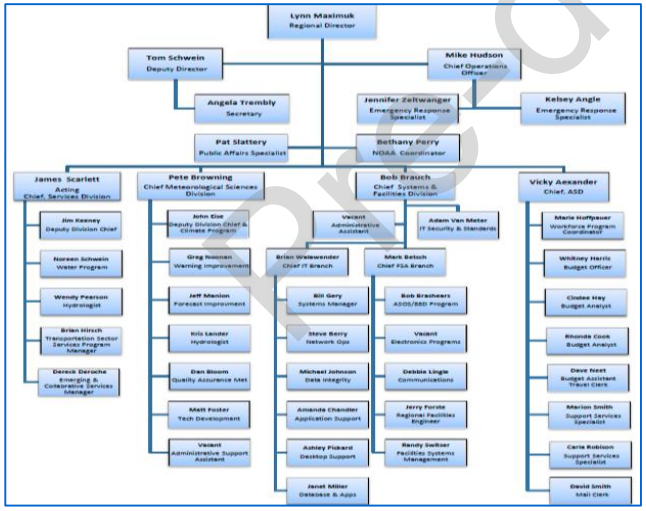
Region 1



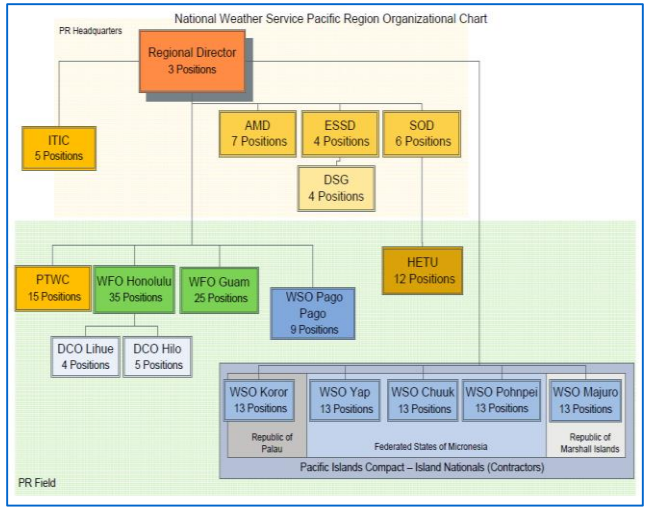
Region 2



Region 3

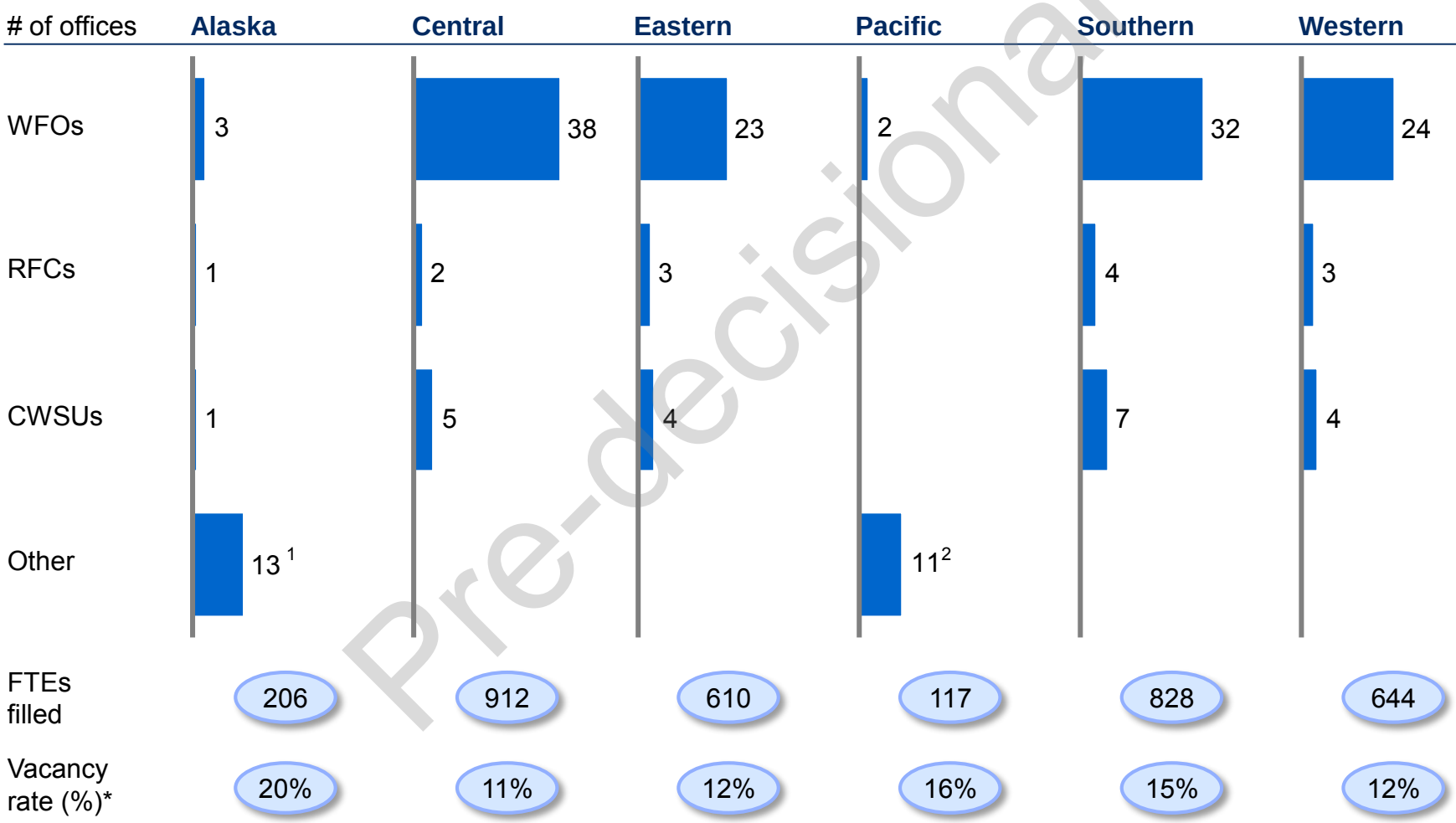


Region 4



SOURCE: National Weather Service

2 …constituent offices differ within each region leading to the potential for different workloads and variation in processes



* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: NWS Workforce Data on June 8, 2015 1. Includes 12 WSOs and Aviation Center. 2. Includes 6 WSOs, 2 DCOs, ITC, NTWC, and CPHC.

Organization structure

1. Organizational Health Index
2. Organization structure
3. Implications of organization structure on operating model

Organization structure: Summary of implications of organization structure on operating model

- Headquarters, regional, and field offices fulfill separate functions within the organizational structure with perceptions of self (e.g., offices) differing from the perceptions of others
- Regional headquarters vary in structure and operations and have several different archetypes for their functional role; in addition there are varying levels of autonomy between regional HQs and national HQ as well as the field
- The organization structure leads to lack of role clarity between National Service Programs and NCEP and RFCs and NWC and lack of consistency on tsunami warnings and information
- For WFOs, the cookie cutter organization structure does not reflect variance among workload drivers and leads to WFOs unofficially adopting different operating models

3 Headquarters, regional and field offices fulfill separate functions within the organizational structure

National Headquarters	▪ The NWS national headquarters are responsible for supporting the mission of NWS through planning/budgeting functions and through operations/execution in the field ▪ The national headquarters engages in portfolio management, corporate decision making, strategic management, annual planning, budget formulation, budget and program execution and evaluation, and enterprise risk management for the entire organization.
Regional Headquarters	▪ The NWS regional headquarters are responsible for management and operational support of NWS field offices across large, multi-state areas. ▪ Regional headquarters establish policies to guide the unique service delivery activities of the region and ensure that national policies and plans are implemented at the field office level.
NCEP	▪ The National Centers for Environmental Prediction (NCEP) deliver national and global operational weather, water and climate products and services essential to protecting life, property and economic well-being. ▪ The NCEP consist of nine major components which provide national-level meteorological forecasts and guidance, near-real-time climatic analysis, model and procedure development, and centralized computer support for the NWS. The operations of these components are diverse and include applied research as well as operational products for the NWS field offices. ▪ Engage with international partners as required to support ensemble forecasts

WFOs, RFCs, and CWSUs	▪ The NWS field offices (WFOs, RFCs, CWSUs) are the primary service delivery component of the NWS and conduct operations in accordance with regional and national policies.
	  ▪ 122 WFOs provide forecast guidance within an area of responsibility (AOR), including but not limited to: gathering weather observations; maintenance, adjustment and analysis of forecast grids; local public, marine, aviation, fire, and hydrology forecasts; issuance of warnings/watches/advisories for severe weather events.
	  ▪ 13 RFCs provide forecast guidance regarding rivers and precipitation, including but not limited to: flash flood guidance, river forecast guidance, quantitative precipitation forecasts, water supply forecasts.
	  ▪ 21 CWSUs co-located with Air Route Traffic Control Centers (ARTCCs) are responsible for delivering consistent, timely and accurate weather information for the world airspace system to the FAA. Provides forecast and weather support for aircraft after departure and prior to landing

SOURCE: HQ and site interviews

3 Organizational disconnect has been described between field offices and regional/national headquarters

	Perception of Self	Perception by Others
National Headquarters	*"If it's **public safety and economic resilience**, it's in our lane." - HQ*	*"**It's like our voices are not being heard at all.** There's lack of morale, mistrust in management." – WFO*
	*"We take a **collaborative approach** to decision-making." - HQ*	*"National and regional headquarters don't support us, **we support them**."" – WFO*
Regional Headquarters/ Operations Center	*"We use WFOs' local expertise to **put the big picture together**." - ROC*	*"**We don't need them**. They're an additional layer that blocks communication." – WFO*
	*"The ROC was one of the **first attempts at structuring DSS**." - Region*	*"**I talk about regional and national senior leadership the same** – maybe they're different, I don't know." – WFO*
NCEPs	*"Our relationship with the field is **so organic**." - NCEP*	*"**They embargo information. It's a joke.** If they release something to the AP, I come in and partners want to know about it and I'm caught off guard." – WFO*
Other Field Offices	*"**National experts in hydrology** from the summit to the sea." - RFC*	*"It's **culturally very different** state to state."" – Regional HQ*
	*"I believe our forecasters are **best at forecasting in this area**." - WFO*	*"There's a **kneejerk reaction to embed WFO people without training** and say 'we're doing DSS."" – NCEP*

SOURCE: Site interviews

3 Regional headquarters vary in structure and operations

	Roles / Structure			Operations		Drivers of Variation
	Deputy Director	COO	Portfolio Structure	ROC	Regional Ownership of IDSS Relationships	
Alaska	✓			✓	✓	▪ Pulling IDSS from WFOs and consolidating relationships at regional level to balance workload ▪ Adding desks on sea ice and TV at regional level ▪ Managing multiple WSOs for additional observations
Central	✓	✓	✓	✓	✓	▪ Restructuring region to reflect national HQ re-organization ▪ Focus on becoming more operational in order to ensure consistency at field level
Eastern	✓			✓		▪ IDSS relationships are all owned at the field office level ▪ ROC is more policy-focused
Pacific	✓					▪ Providing products, technical support, and training to international partners (e.g. Marshall Islands, Federated States of Micronesia, and Majuro)
Southern	✓			✓	✓	▪ One of the oldest regions; established the ROC ▪ Owns some relationships at the regional level (e.g. FEMA Region VI, State of Texas) but not others (e.g. FEMA Region IV, State of Florida, State of Oklahoma)
Western	✓			✓		▪ Focused on coordination among field offices

SOURCE: HQ and site interviews

3 Regional headquarters' functional roles can vary across several archetypes

A Spanbreaker

What it means:
- "Breaks" the span of control between a strong national headquarters and a dispersed frontline in the field

What it looks like:
- Regional headquarters implementing and enforcing national headquarters policies/directives in the field

B Strong Directive Leadership

What it means:
- Strong regional headquarters

What it looks like:
- Regional headquarters set their own policies/directives for the field offices within their jurisdiction

C Support for Strong Frontline

What it means:
- Strong frontline in the field (i.e. WFOs, RFCs, and CWSUs)

What it looks like:
- Regional headquarters coordinating requests and communicating needs from the field up to national headquarters

D Administrative and IT Support

What it means:
- Consolidation of administrative and IT related functions at the regional level

What it looks like:
- An administrative buffer between national headquarters and the field, particularly in severe weather events
- Administrative and media-related inquiries coming to the region rather than the field

E Operational Collaborator

What it means:
- Engaging in forecast and IDSS operations alongside the field

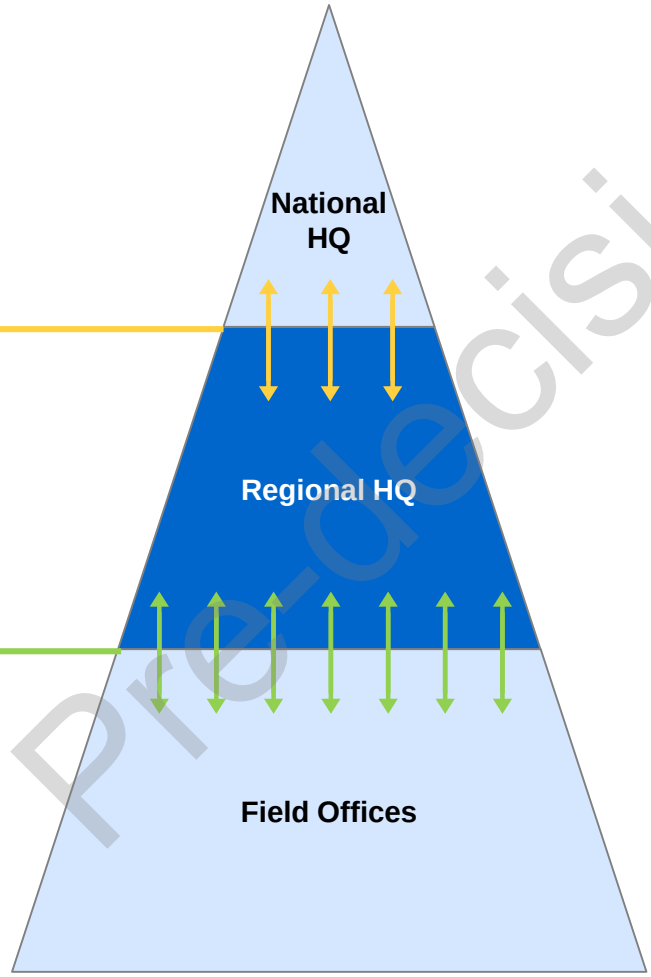
What it looks like:
- Performing forecast analysis and/or owning IDSS relationships at the regional level
- Surging regional personnel to the field when required in a severe weather event

SOURCE: Site interviews

3 Ability to create more consistency in the field varies based on regional autonomy

Autonomy of Region from HQ reflects the connection, and communication between national headquarters and the regional headquarters.

Autonomy of Field from Region reflects the authority, connection, and communication between regional headquarters and the field offices (WFOs, RFCS, CWSUs, etc.) within that region



	Autonomy of Region from National HQ	Autonomy of Field from Region
Alaska	High	Low
Central	Medium	Medium
Eastern	Medium	Medium
Pacific	High	Low
Southern	Medium	High
Western	High	High

SOURCE: Site interviews

3 NSPs and NCEPs are primarily distinguished based on their planning role at the national level

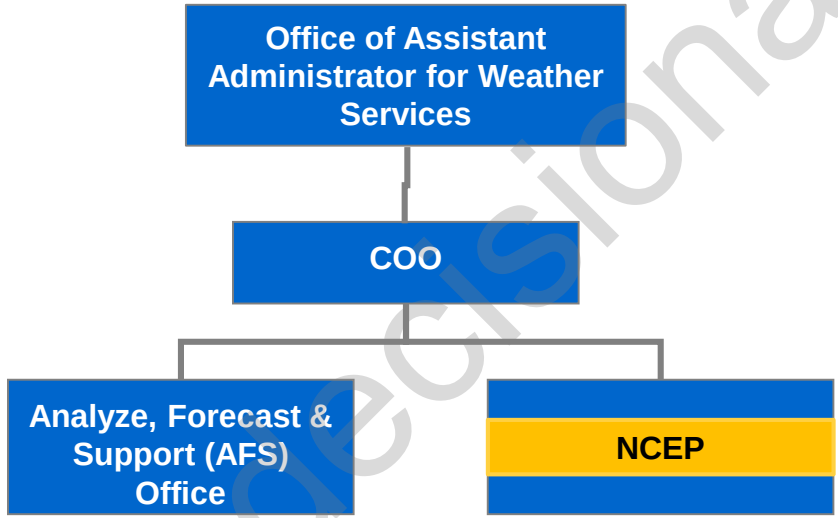
Representative quotes

*"We work with more than one NCEP, and **since the re-org, there has been some dissonance and discomfort** between my program and what they feel like they should be doing" - HQ*

*"**No one understands the differences in the roles in HQ versus the role of the NCEP**, especially with the constant changes in name and what exactly their mission is" - HQ*

*"Right now, **it feels as if the NCEP should be responsible for what the national programs usually do**; they want to be involved in aspects of the programs we have always run" - HQ*

Organization structure



AFS Portfolio Office

- Annual Operating Planning
- Budget Planning & Execution
- **National Service Programs**
- Coordinates Field Requirements
- Develops directives/policy

Field Offices

- Mission Execution
- Identification of needs and requirements
- Source of innovation

Representative quotes

"There is a lot of overlap between NCEP and us. HQ programs are setting policies nationally, while NCEP separately sets operational requirements—sometimes with HQ collaboration" -HQ

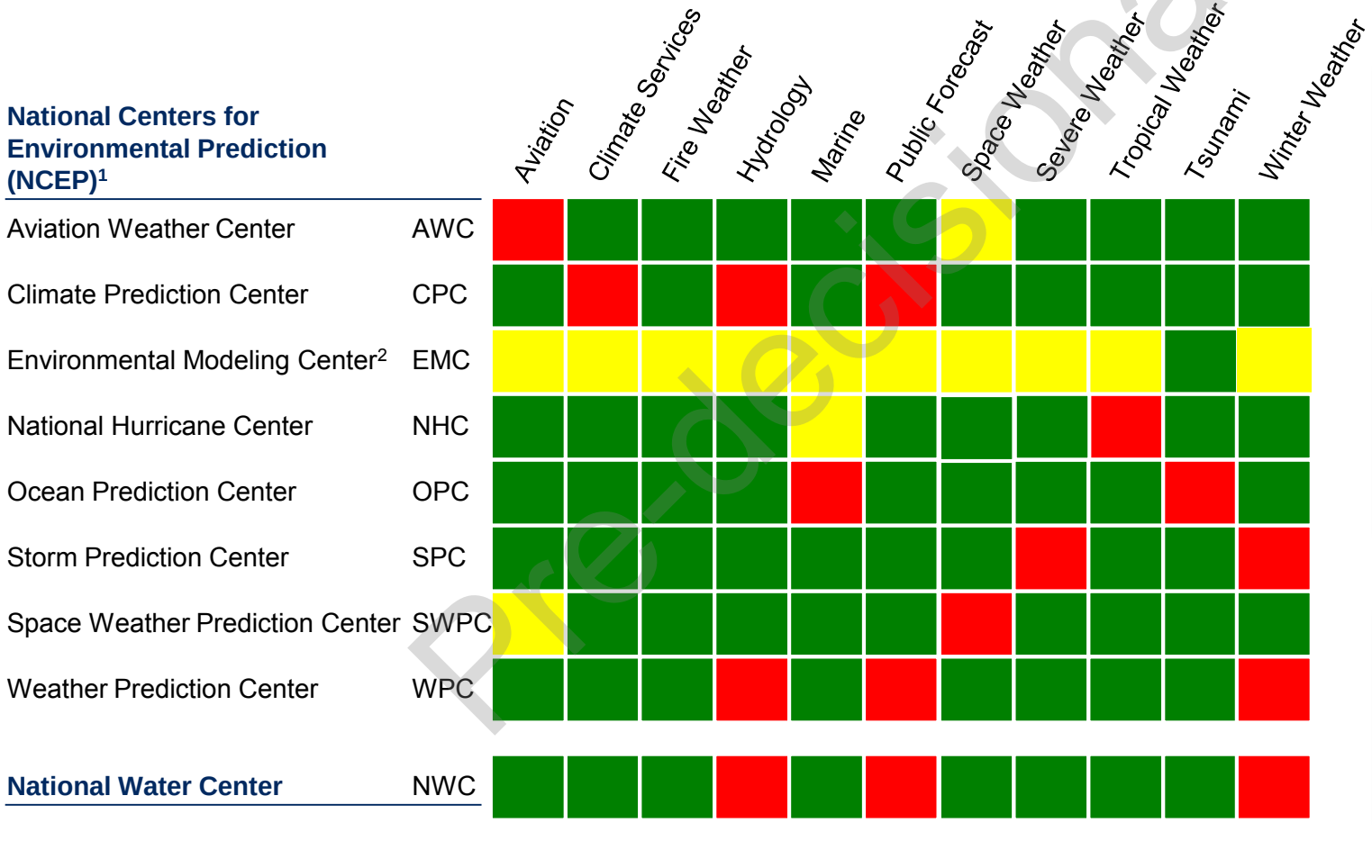
"HQ is really a policy-making entity, but responsibilities aren't always clear." -NCEP

"The re-org gave us a chance to work through some of the challenges between NCEP and NSP, but roles still aren't completely clear." - NCEP

SOURCE: HQ and site interviews

3 Lack of role clarity on execution between NSPs and NCEP has led to perceptions of competition in the field

Minimal/no overlap in operations | Some overlap in operations | Direct overlap in operations



"[Our center] has its own mission statement." - NCEP

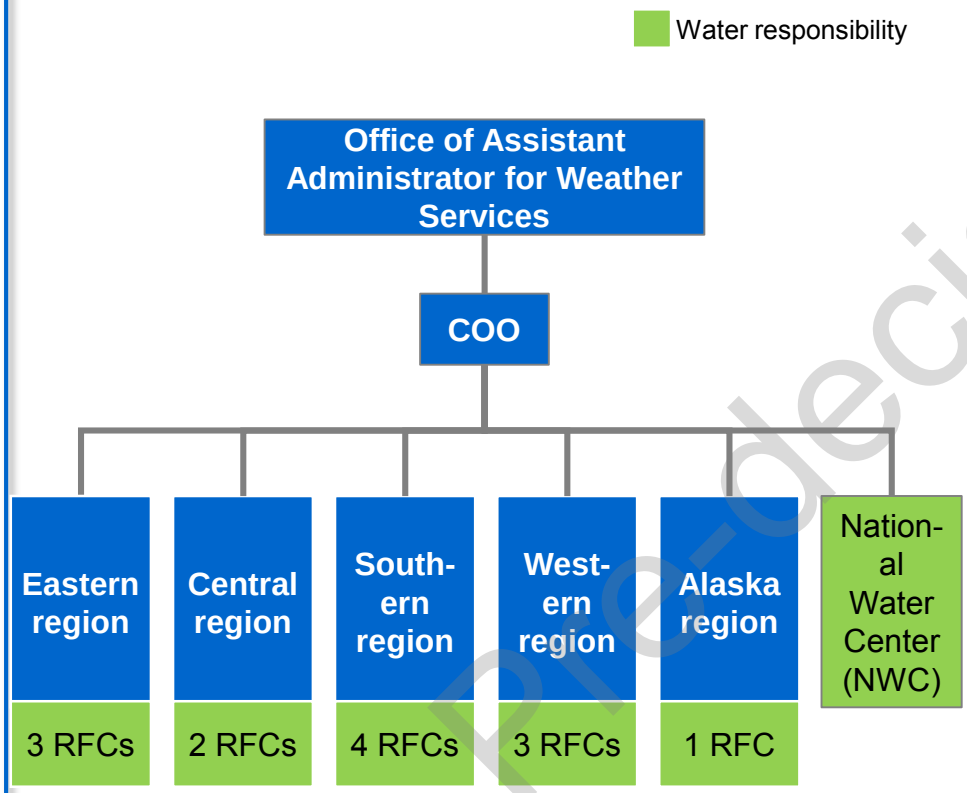
*"Taking forecasting away and putting it toward a national center – **it's too many cooks in the kitchen**."* - WFO

"We have no information on the role of the NWC *and what their tasks will be."* - RFC

SOURCE: National Weather Service NCEP briefings, field interviews. 1. National Central Operations (not pictured) provides foundational IT support to all NCEPs. 2. EMC oversight includes national blended model.

3 Responsibilities for water are spread across multiple entities within NWS with no clear reporting lines between NWC and RFCs

Organization structure



Representative quotes

"The Office of Hydrological Development provided support to RFCs, but now that is all gone. The question remains -- who does this kind of support for RFCs? ***NWC mission includes that, but it does not explicitly support RFCs****." - HQ*

"Every RFC does its own development of graphics. ***There is a tremendous amount of inconsistency between offices because these graphics are maintained at a local level****." - RFC*

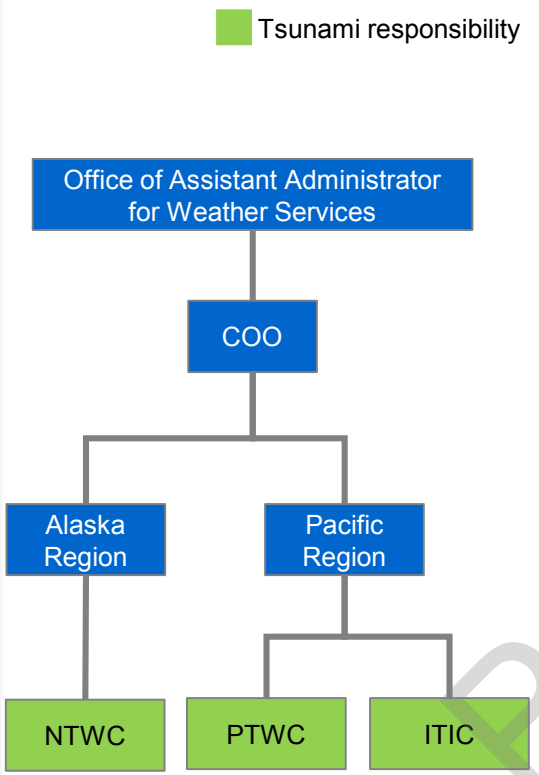
"What is the relationship between the NWC and RFCs? *The NWC is still a work in progress, but it would be helpful to know what they are taking." - RFC*

"We need to choose a philosophy. Should the RFCs report to NWC*? This could help improve management, such as retirement of products, but there are also downsides." - HQ*

SOURCE: HQ and site interviews

3 Responsibility for tsunami warnings and information is embedded in regional structures limiting coordination and consistency of operations

Organization structure

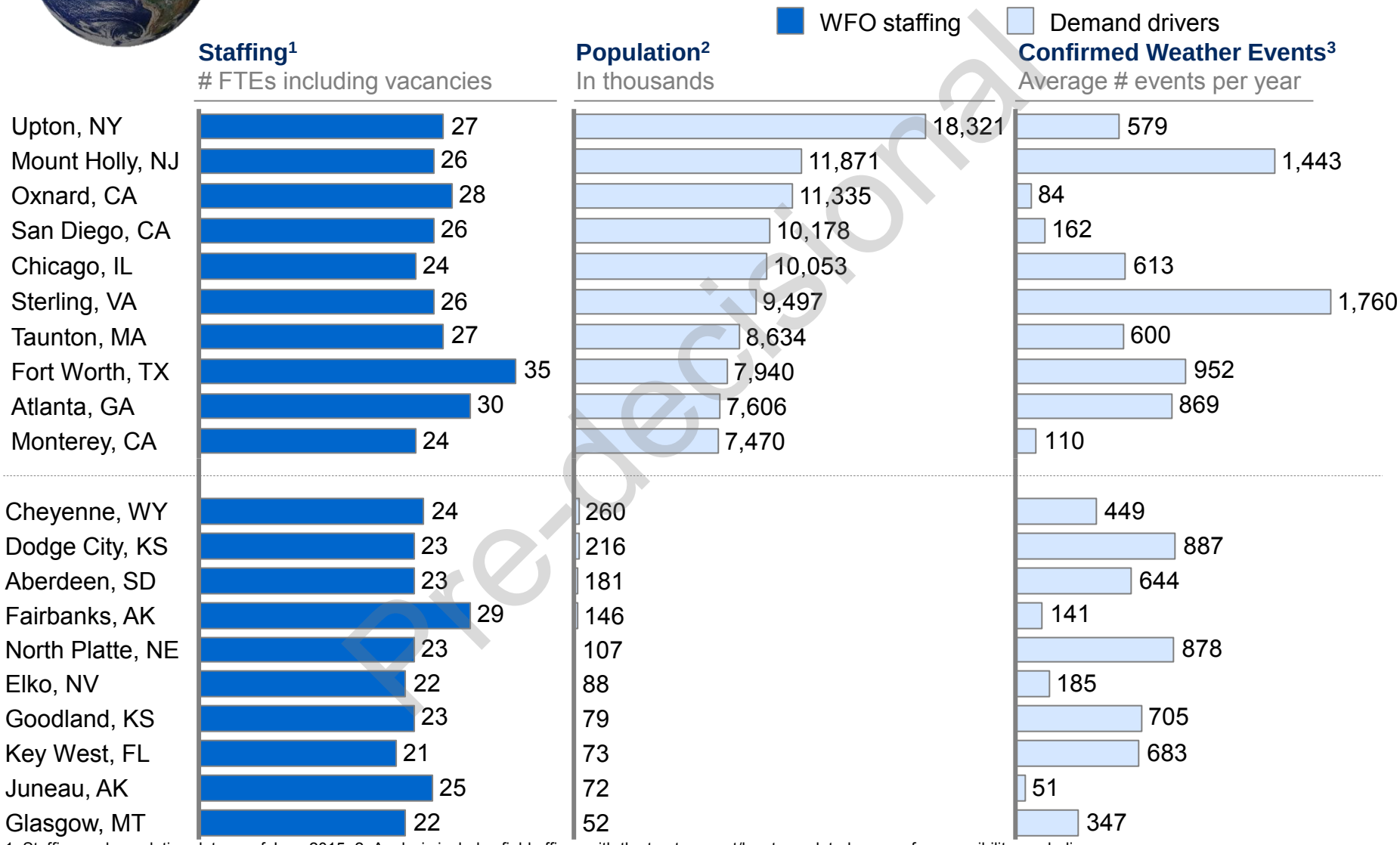


Differences in operations between NTWC and PTWC

	NTWC	PTWC
Outbound products	• Products for the public on the NTWC website • EM-specific messaging through WFOs, AWIPS	• International advisories for tsunamis via foreign governments
Operating system	• Windows-based	• Linux-based
Staffing	• Full staffing: 12, current staffing: 7 • Lost 19 employees since 2006	• Nearly fully staffed • Very little turnover
Funding	• Provided through Alaska Region	• Provided through Pacific Region
Shift schedule	• 5/4/9 schedules • Currently has two people working each shift • ~6 OT shifts per pay period	• One person working a "flex shift" with one person staffed and working at all times
Customers	• Domestic • Canada (Pacific and Atlantic)	• International governments and tsunami warning centers

SOURCE: Site interviews

3 Current one-size-fits-all WFO field staffing model does not reflect variance among a subset of the workload drivers

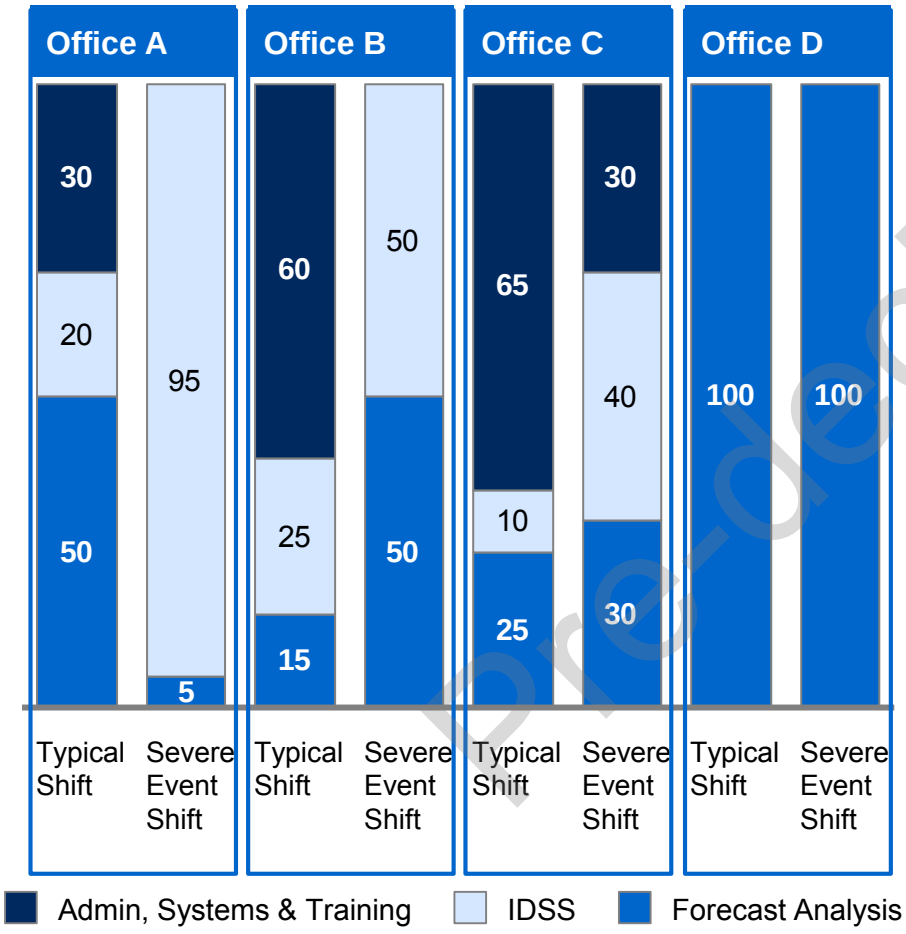


1. Staffing and population data as of June 2015. 2. Analysis includes field offices with the top ten most/least populated areas of responsibility, excluding Anchorage and Honolulu which have atypical staffing structures as WFO/NSCs. 3. Average number of confirmed events 2008-2014

SOURCE: NWS; 2015 NWS Workforce Data on June 8, 2015; 2008-2014 NWS Severe weather event data, Storms events database, National Climatic Data Center; NWS WFO characteristics data, 2015

3 To cope with standardized staffing structure, WFO field offices have unofficially adopted different operating models

Selected adaptations in time management[1]



Selected adaptations in workforce structure

Work Overtime	*"Our overtime is the equivalent of having **an extra 2 to 3 people on around the clock**."*
Eliminate leave	*"**People still get sick, have deaths in the family, take vacation**. One of those is easier to put off."*
Have Managers Work Shifts	*"A lot of the time **managers will work shifts** or people will give up training."*
Drop Shift to Create Training or IDSS Shift	*"Region told us '**you must have all of management working, mandate OT, and eliminate leave before you can drop a shift**.' Well guess what, that's happening all the time."*

1. All shifts last 8 hours unless otherwise indicated
SOURCE: Site interviews

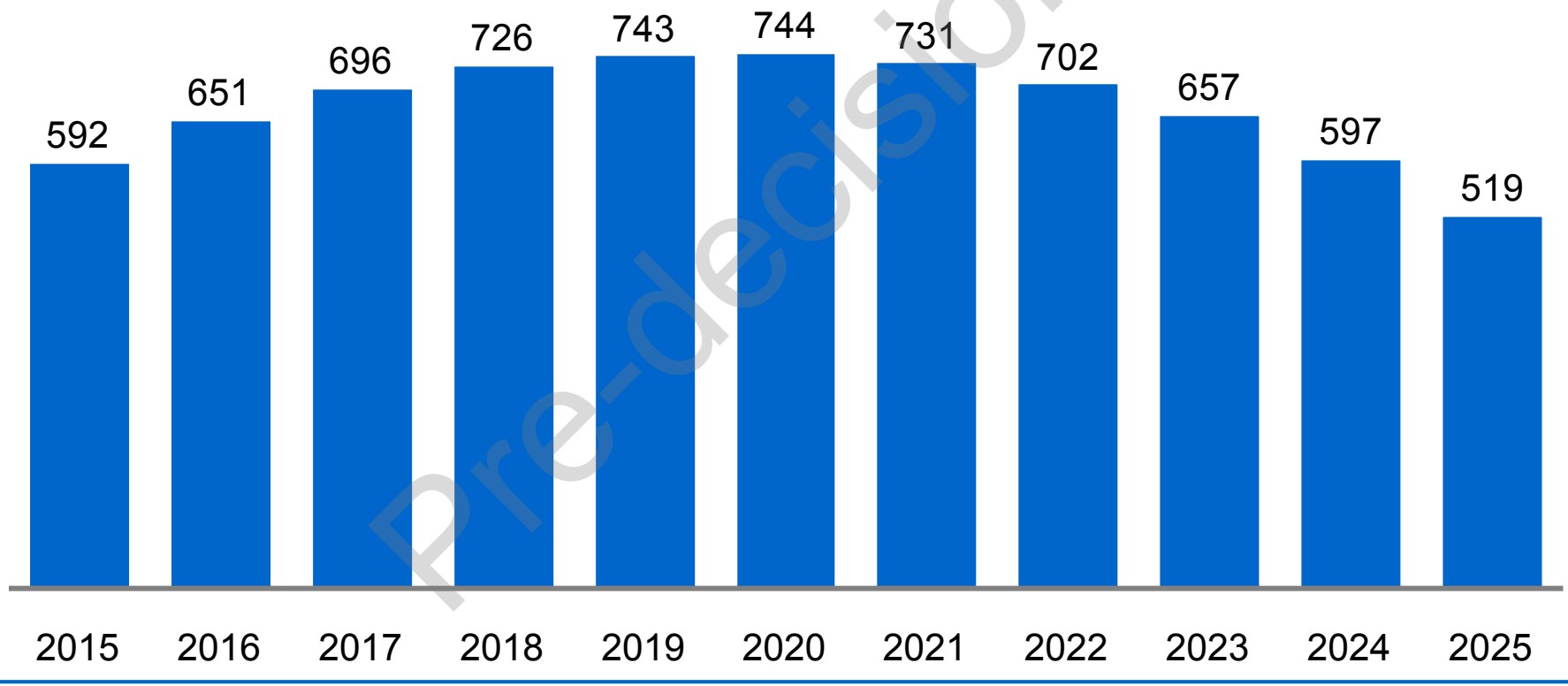
Appendix

- **Workforce**
- Operating model (including IDSS)
- Organization structure

By 2020, vacancies* will have increased to over 744 authorized positions, or 15% of total authorized workforce; they will decrease to around 10% by 2025

Projected authorized positions vacant by year[1], 2015-2025

Number of vacancies*



1 Vacancies projected based on attrition rate and hiring rate calculated using historical data and compound annual growth rates; deviations from projected rates will significantly change above projections of vacancies; assumes an unchanging base of # of authorized positions

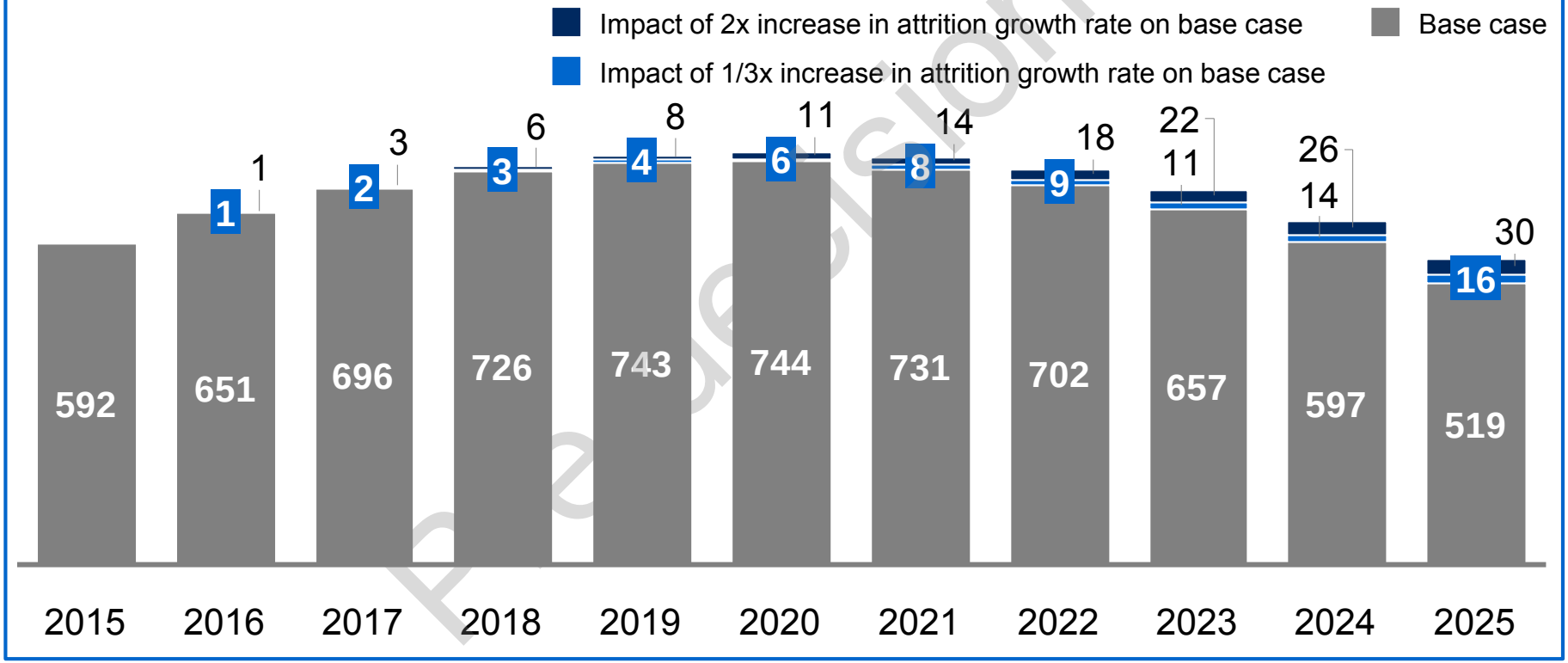
* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; interviews

Sensitivity analysis[1] shows an increase in attrition could occur as more workers retire, but without a large wave of retirement, would not significantly increase future vacancies

Increased attrition growth rate[2] impact on projected vacant authorized positions, '15-25

Number of vacancies*



1 To simulate additional hiring challenges, stagnated hiring rate based on additional year of increases in hiring, and then cap at 160 new hires per year, or ~13 hires per month

2 To simulate additional attrition through retirement, Increased attrition rate based on increase of compound annual growth rate by .2% above natural CAGR starting in 2015 and through 2025

* Includes 248 un-appropriated vacant billets and 344 appropriated for vacant billets, where 1 billet = 1 FTE

SOURCE: 2008-2015 Vacancies and Retirement Data, NWS; 2015 NWS Workforce Data on June 8, 2015; GAO 2012 US government prediction of federal workers' retirement eligibility

Appendix

- Workforce
- **Operating model (including IDSS)**
- Organization structure

IDSS Stakeholder Survey: Introduction

OMB Control Number: 0648-0342
Estimated time to complete: 30 minutes

1. Background

What is your affiliation?
(choose one)

- ☐ Local emergency management
- ☐ State/Tribal emergency management
- ☐ Federal emergency management
- ☐ Other Federal government
- ☐ Business/ industry
- ☐ Non-profit
- ☐ News media
- ☐ Other

From which NWS field office do you normally receive products?

IDSS Stakeholder Survey: Frequency of products

2. Overview of Impact-based Decision Support Services

The NWS is currently evaluating Impact-based Decision Support Services (also known as IDSS) as a key element of its vision for a Weather-Ready Nation.

IDSS refers to the NWS activities that inform weather decisions for events that threaten lives and livelihoods.

What is your overall level of satisfaction with the IDSS you receive from the NWS?

- ☐ Very satisfied
- ☐ Somewhat satisfied
- ☐ Somewhat unsatisfied
- ☐ Unsatisfied
- ☐ No opinion

How often do you receive information from the NWS? *(choose one)*

- ☐ Frequently (>2 times per month)
- ☐ Regularly (~1 time per month)
- ☐ Infrequently (a few times per year)
- ☐ Never (I don't receive products from the NWS)

How often does the information you receive from the NWS affect your decision-making? *(choose one)*

- ☐ Most of the time (>50% of the time)
- ☐ Some of the time (~1 time per month)
- ☐ Rarely (<10% of the time)
- ☐ Never

IDSS Stakeholder Survey: NWS satisfaction (1/3)

3. Products to support IDSS

How frequently do you receive the following NWS products in support of your decisions?	Never (I don't receive products from the NWS)	Infrequently (a few times per year)	Regularly (~1 time per month)	Frequently (>2 times per month)
PowerPoint briefings of forecasts				
Point-and-click forecasts by location on NWS website				
Short-term forecasts and outlooks (Day 0-3)				
Long-term forecasts and outlooks (Day 4-7)				
Forecast discussions				
Weather stories				
Probabilistic forecasts				
Seasonal outlooks				
Hydrologic data and forecasts				
Observational data and model output				

How satisfied are you with the accuracy of the following NWS products in support of your decisions?	1 Not at all satisfied	2 Not satisfied	3 No opinion	4 Satisfied	5 Extremely satisfied	N/A: I do not receive these products
PowerPoint briefings of forecasts						
Point-and-click forecasts by location on NWS website						
Short-term forecasts and outlooks (Day 0-3)						
Long-term forecasts and outlooks (Day 4-7)						
Forecast discussions						
Weather stories						
Probabilistic forecasts						
Seasonal outlooks						
Hydrologic data and forecasts						
Observational data and model output						

IDSS Stakeholder Survey: NWS satisfaction (2/3)

How satisfied are you with the timeliness of the following NWS products related to the decisions you make?	1 Not at all satisfied	2 Not satisfied	3 No opinion	4 Satisfied	5 Extremely satisfied	N/A: I do not receive these products
PowerPoint briefings of forecasts						
Point-and-click forecasts by location on NWS website						
Short-term forecasts and outlooks (Day 0-3)						
Long-term forecasts and outlooks (Day 4-7)						
Forecast discussions						
Weather stories						
Probabilistic forecasts						
Seasonal outlooks						
Hydrologic data and forecasts						
Observational data and model output						

How satisfied are you with the relevance of the following NWS products to the decisions you make?	1 Not at all satisfied	2 Not satisfied	3 No opinion	4 Satisfied	5 Extremely satisfied	N/A: I do not receive these products
PowerPoint briefings of forecasts						
Point-and-click forecasts by location on NWS website						
Short-term forecasts and outlooks (Day 0-3)						
Long-term forecasts and outlooks (Day 4-7)						
Forecast discussions						
Weather stories						
Probabilistic forecasts						
Seasonal outlooks						
Hydrologic data and forecasts						
Observational data and model output						

IDSS Stakeholder Survey: NWS satisfaction (3/3)

4. Channels to support IDSS

How frequently do you receive NWS information through the following communications channels?	Never (I don't receive products from the NWS)	Infrequently (a few times per year)	Regularly (~1 time per month)	Frequently (>2 times per month)
In-person briefings by request				
Phone calls from NWS personnel				
NWS personnel taking inbound calls and providing information				
Phone recordings				
NWS chat				
Social media (e.g., Twitter, Facebook)				
Embedded NWS personnel with decision-makers				
NWS website or web services				
NOAA Weather Radio				

How satisfied are you with the clarity of NWS information communicated through the following channels?	1 Not at all satisfied	2 Not satisfied	3 No opinion	4 Satisfied	5 Extremely satisfied	N/A: I do not information through these methods
In-person briefings by request						
Phone calls from NWS personnel						
NWS personnel taking inbound calls and providing information						
Phone recordings						
NWS chat						
Social media (e.g., Twitter, Facebook)						
Embedded NWS personnel with decision-makers						
NWS website or web services						
NOAA Weather Radio						

IDSS Stakeholder Survey: Conclusion

5. Conclusion

Do you have suggestions as to how (sponsoring office) can improve its products or services?

Paperwork Reduction Act Information: In accordance with Executive Order 12862, the National Performance Review, and good management practices, NOAA offices seek to determine whether their customers are satisfied with the services and/or products they are receiving and whether they have suggestions as to how the services/products may be improved or made more useful. The information will be used to improve NOAA's products and services. Responses to this survey are completely voluntary. No confidentiality can be provided for responses, but you need not supply your name or address. Public reporting burden for this collection of information is estimated to average 20-30 minutes per response. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Sarah Brabson, CIO-PPA1, Station 9826, 1315 East-West Highway, Silver Spring, MD 20910. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

Appendix

- Workforce
- Operating model (including IDSS)
- **Organization structure**

Outcomes by Job Grade (1/2)

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
SES	20	75	83	92	78	65	59	73	90	53	82
Other	13	44	58	43	27	44	25	77	48	15	56
GS-1	1	-	-	-	-	-	-	-	-	-	-
GS-4	1	-	-	-	-	-	-	-	-	-	-
GS-5	2	-	-	-	-	-	-	-	-	-	-
GS-6	4	-	-	-	-	-	-	-	-	-	-
GS-7	15	53	59	59	49	46	41	80	38	41	67
GS-8	50	64	61	68	62	61	48	84	62	54	74

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Job Grade (2/2)

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
GS-9	41	60	54	68	50	65	46	83	67	38	71
GS-10	15	34	32	36	31	35	11	60	47	14	38
GS-11	189	50	46	47	44	51	33	74	65	28	65
GS-12	539	48	43	47	40	49	27	73	67	23	65
GS-13	802	53	48	50	50	52	31	74	74	28	71
GS-14	326	55	58	58	52	51	32	73	72	26	71
GS-15	144	65	68	74	69	63	38	74	85	33	77

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Job Series

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Physical Scientist, Hydrologist, Meteorologist, and Student Trainees[1]	1525	53	50	52	49	53	30	74	74	25	70
Non-scientist	637	54	52	53	50	51	37	73	65	35	67

1. Physical Scientist (1301), Hydrologist (1315), Meteorologist (1340), and Student Trainee (1399)

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Tenure

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Less than 1 year	21	75	76	95	67	67	60	90	84	55	79
1 - <3 years	58	56	50	62	53	58	33	78	71	31	71
3 - <6 years	233	54	51	56	46	55	33	79	69	31	69
6 - <11 years	384	49	47	52	40	47	27	71	65	23	65
11 - <21 years	622	51	48	46	46	49	30	74	69	27	69
21+ years	844	56	53	55	55	55	34	73	76	30	72

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Organization (1/2)

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
National Centers for Environmental Prediction (NCEP)	183	52	54	52	46	45	33	70	73	30	64
National Headquarters	240	54	60	59	46	45	35	73	65	36	68
National Logistics Support Center (NLSC)	3	-	-	-	-	-	-	-	-	-	-
National Specialized Center (e.g. NTWC, PTWC, NDBC)	32	50	55	40	42	51	28	73	72	32	58
Center Weather Service Unit (CWSU)	32	67	67	69	55	71	44	89	83	44	81
Regional Headquarters (including Administrative Support Centers)	141	56	58	55	55	50	34	75	75	30	74
River Forecast Center (RFC)	98	54	50	52	50	55	24	76	74	32	73

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Organization (2/2)

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Weather Forecasting Office (WFO)	1281	53	47	52	49	54	32	74	73	25	71
Weather Service Office (WSO)	51	47	37	51	48	57	31	70	53	23	56
Stennis Space Center	5	-	-	-	-	-	-	-	-	-	-
National Water Center	21	44	57	50	29	33	30	61	54	30	55
Other/Not Listed	75	49	54	51	47	44	30	80	54	30	53

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Region

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Southern	354	51	40	50	48	54	30	72	70	23	68
Alaska	75	53	53	53	42	53	33	78	64	34	68
Pacific	38	46	45	50	43	44	26	67	53	20	62
Western	337	55	52	57	50	55	33	72	74	29	72
Central	478	55	53	53	52	56	30	76	77	26	72
Eastern	278	53	42	47	52	53	33	76	72	23	76
Other/Not Listed	11	51	42	36	45	39	37	64	91	33	69
Not Regionally Organized[1]	591	53	57	55	46	46	33	73	67	33	64

1. Category defined based on respondent self-selection into regional organizations including WFOs, WSOs, RFCs, CSWUs, and Regional HQs. Respondents that did not select these organizations are categorized as “Not Regionally Organized”.

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

Outcomes by Office Co-Location

Percentage agreement on outcome effectiveness

Benchmark

- Top Quartile
- Second Quartile
- Third Quartile
- Bottom Quartile

	n	Overall	Direction	Leadership	Culture & Climate	Accountability	Coordination & Control	Capabilities	Motivation	Innovation & Learning	External Orientation
Not Co-located	1170	52	45	51	49	54	31	74	72	25	71
Co-located	390	55	54	56	53	56	30	74	74	27	73
Not Applicable	602	53	57	54	46	46	33	73	67	33	64

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

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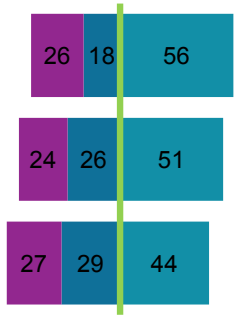
Direction Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Direction outcome questions



The NWS has a vision for the future that is both easy to understand and meaningful to employees

The NWS's strategy is aligned with its vision

Employees' day-to-day behaviors are guided by the NWS's vision and strategy

Direction practice questions

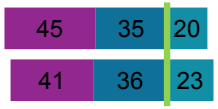
Shared vision

The NWS's vision is clearly communicated throughout the organization

Strategic clarity

The NWS translates its vision into specific strategic goals and milestones

Employee involvement



Managers align the NWS's goals with the personal goals of employees

Managers actively solicit employee involvement in setting the NWS's direction

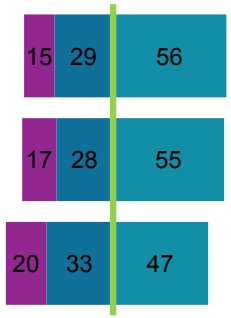
SOURCE: National Weather Service, June 2015 (n=2,162)

Leadership Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Leadership outcome questions



Leaders in the NWS (including my supervisor) steer the NWS toward success

Leaders in the NWS (including my supervisor) role model the values of the NWS

Leaders in the NWS (including my supervisor) make high quality decisions

Leadership practice questions

Leaders in the NWS (including my supervisor) provide continual pressure and influence

Leaders in the NWS (including my supervisor) use authority to get things done

Leaders in the NWS (including my supervisor) give employees the autonomy to make their own decisions

Leaders in the NWS (including my supervisor) ask the opinions of others before making important decisions

Leaders in the NWS (including my supervisor) demonstrate concern for the welfare of employees

Leaders in the NWS (including my supervisor) create a sense of teamwork and mutual support throughout the NWS

Leaders in the NWS (including my supervisor) challenge employees to do more than they thought was possible

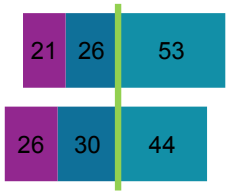
SOURCE: National Weather Service, June 2015 (n=2,162)

Culture and Climate Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Culture and Climate outcome questions



People want to work here because of the culture and work environment

The NWS's culture positively influences the way people behave

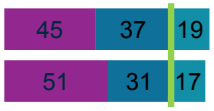
Culture and Climate practice questions

Open & trusting

Managers encourage honesty, transparency, and candid, open dialogue

Managers consult with employees on issues that affect them

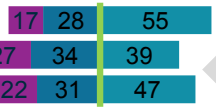
Internally competitive



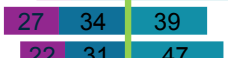
Results are made internally transparent to help motivate employees to perform

The NWS's incentive and recognition systems promote healthy competition among employees

Operationally disciplined



Day-to-day work is performed according to clear standards and objectives

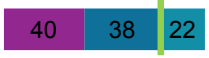


The NWS communicates clear standards of work

Managers emphasize the importance of efficiency and productivity

Creative & entrepreneurial

Managers encourage employees to experiment with new ideas to improve performance



The NWS protects creative activities and improvement initiatives from day-to-day pressures

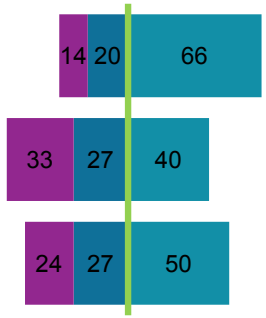
SOURCE: National Weather Service, June 2015 (n=2,162)

Accountability Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Accountability outcome questions



Employees clearly understand what is expected of them

Employees are held accountable for the results they are expected to deliver

Employees within the NWS have sufficient authority to make decisions

Accountability practice questions

Role clarity

The NWS's organizational structure helps create clear accountability

Jobs in the NWS are designed to have clear objectives and accountabilities for results

Performance contracts

Employees have written performance goals that clearly define what they are expected to deliver

The NWS sets performance goals for individuals that are challenging

Consequence management

The NWS provides attractive incentives to high performing employees

The NWS has created clear links between performance and consequences

Personal ownership

Managers create a sense of belonging to the NWS

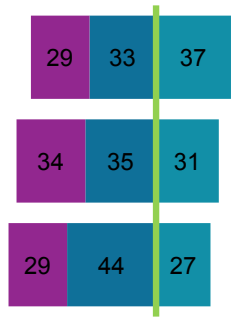
Managers encourage employees to take a personal stake in their jobs

SOURCE: National Weather Service, June 2015 (n=2,162)

Coordination and Control Questions
Percent of employees

Outcomes: Agree, Neutral, Disagree
Practices: Frequently, Sometimes, Infrequently

Coordination and Control outcome questions



The NWS effectively measures the performance of core activities

Reviews of organizational performance lead to corrective, follow-up action

The NWS is able to minimize unexpected performance results

Coordination and Control practice questions

People performance review

The NWS's performance feedback and review processes collect accurate information about employees' strengths,

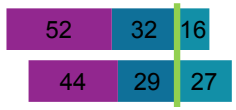
The NWS systematically tracks employees' performance over time

Operational management

Each unit of the NWS has explicit targets for its operating performance

The NWS has clear operating goals and metrics at all levels

Financial management



The NWS's financial measures are good indicators of its true economic performance

The NWS has clear oversight and control of its finances at all levels

Professional standards

The NWS uses formal policies to discourage employees from engaging in inappropriate activities

Risk management

The NWS encourages employees to identify risk issues and escalate them to the right level

The NWS is able to identify potential performance issues and threats before they become major problems

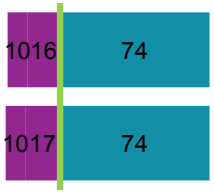
SOURCE: National Weather Service, June 2015 (n=2,162)

Capabilities Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Capabilities outcome questions



The NWS has the capability and knowledge to achieve its goals

The NWS has employees with the right skills to deliver its strategy

Capabilities practice questions

Talent acquisition

The NWS identifies and hires the best external candidates

The NWS hires from outside to fill open positions

Talent development

Managers in the NWS provide helpful coaching

Employees receive the training and development they need to be effective in their jobs

Process based capabilities

The NWS regularly develops and updates its procedures, manuals, and training guides

The NWS documents knowledge and ideas

Outsourced expertise

The NWS outsources functions or activities that can be better done by others

SOURCE: National Weather Service, June 2015 (n=2,162)

Motivation Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Motivation outcome questions

The NWS's employees are highly motivated

In the NWS, employees are generally enthusiastic about their jobs

Motivation practice questions

The NWS evaluates employees in part on whether they follow NWS values in their daily activities

Senior leaders clearly communicate a set of values that are personally meaningful to employees

Managers in the NWS provide praise, thanks, or other forms of recognition

Managers in the NWS find ways to make work more meaningful to their employees

The NWS offers top performers the most attractive career opportunities within NWS

Promotions in the NWS are based on merit

The NWS provides attractive financial incentives to motivate employees

The NWS provides meaningful non-financial rewards and recognition to those who deliver an outstanding contribution

The NWS rewards high performance with interesting opportunities or additional responsibilities

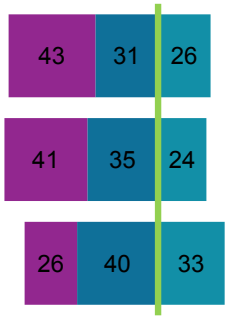
SOURCE: National Weather Service, June 2015 (n=2,162)

Innovation and Learning Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

Innovation and Learning outcome questions



The NWS effectively adapts to changes in its external environment

The NWS consistently implements new and better ways of doing things

The NWS makes the changes necessary to fulfill its vision

Innovation and Learning practice questions

Senior leaders drive innovation in the organization

Senior leaders devote sufficient attention to doing things differently

Employees participate in improvement activities

The NWS has clear processes and systems for employees to contribute improvement ideas

Management encourages different parts of the NWS to work together to make improvements

The NWS holds events to share knowledge and ideas across the organization

The NWS brings in 'best practices' from outside the NWS

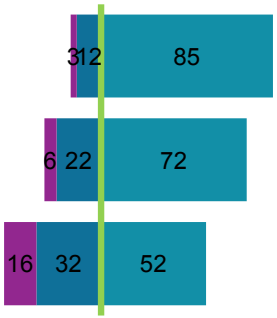
SOURCE: National Weather Service, June 2015 (n=2,162)

External Orientation Questions
Percent of employees

Outcomes
- Agree
- Neutral
- Disagree

Practices
- Frequently
- Sometimes
- Infrequently

External Orientation outcome questions

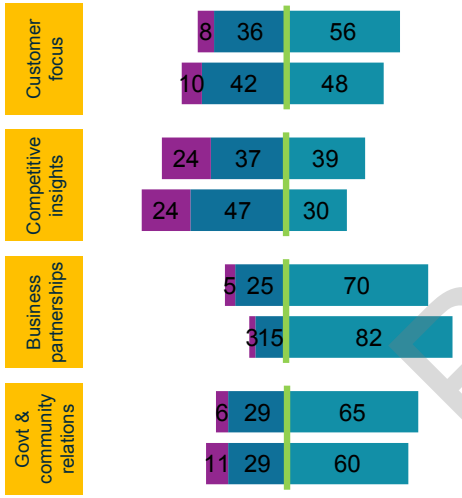


The NWS has developed high levels of public approval

The NWS effectively manages external business relationships with constituents, partners, and stakeholders

The NWS effectively responds to the changing needs of constituents, partners, and stakeholders

External Orientation practice questions



The NWS solicits feedback from its stakeholders to improve its ability to meet their needs

The NWS identifies and targets specific groups of stakeholders with tailored offerings

The NWS considers the strengths of its products and services compared to the similar private sector organizations

The NWS considers industry best practices when making decisions

The NWS works with external partners to help them perform well

The NWS maintains a network of external partners

The NWS invests in relationships with government, academic, and constituent groups

The NWS invests significant resources to build and maintain strong relationships with the community

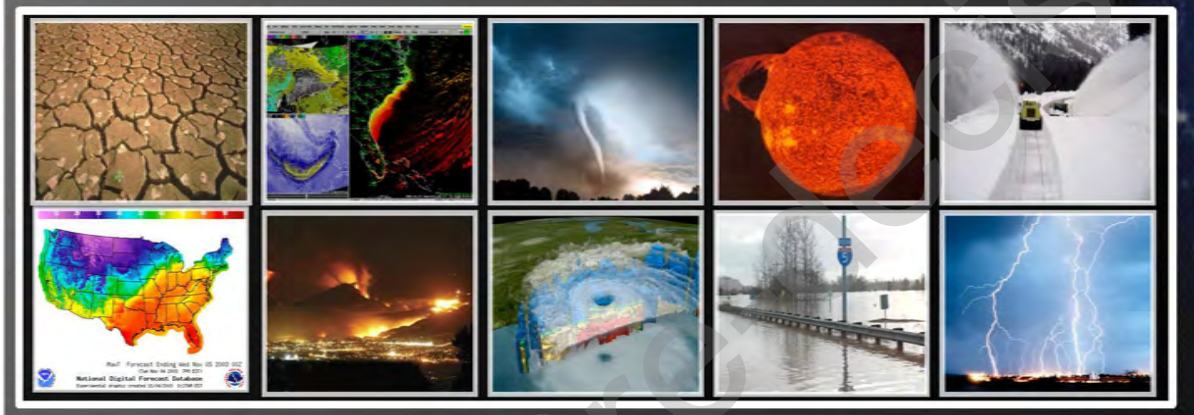
SOURCE: National Weather Service, June 2015 (n=2,162)

OHI3 Questions
Percent of 'Often' & 'Always'

	Question score	Question
Speed	38	Leaders in the NWS (including my supervisor) act quickly when faced with new challenges
	11	The NWS is able to adjust rapidly to new ways of doing things
	33	Managers are able to work quickly when faced with difficult problems
Decision-Making	33	Business decisions are guided by data and facts
Colla-boration	58	Employees cooperate and work together to achieve NWS goals
	39	The work environment maximizes interaction and cross-collaboration

SOURCE: National Weather Service, June 2015 (n=2,162)

Operations and Workforce Analysis (OWA) Phase 2 Deliverable: Development of Alternatives



October 2015
Preliminary and Pre-decisional

Executive Summary of Phase 2 Deliverable: Development of Options and Alternatives

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluate impact-based decision support services (IDSS), understand the NWS current state and gaps, develop options and alternatives, and test and evaluate options to move forward

Methodology: During Phase 2, a variety of stakeholders, including OWA core team members, SMEs, and OWC Executive Champions, have been engaged through workshops, site visits and interviews

Long-term options to create an integrated field structure: To address the Phase 1 findings, several long-term options have been developed to establish the philosophy for moving forward and to help guide the development of long-term options on an integrated field structure

1) **Operating model philosophy (including IDSS):** There are three potential operating model philosophies that respectively focus on core competencies, broad outreach, and deep core-partner relationships that could improve the consistency of IDSS delivery between field offices; each is based on different assumptions of what reduces the impact of weather on life and property
2) **Organization structure:** A broad set of options for the long-term field structure were identified and assessed against evaluative criteria that was established based on principles of change for NWS and ten tests of organizational design

Short-term options: As a first step forward, several options across the IDSS operating model, organization structure, and workforce can be tested and evaluated in the short-term and in support of the long-term options that are ultimately identified

Next steps: The Phase 3 objectives are to refine the set of options for the integrated field structure and to begin to test and evaluate a robust plan for selected short-term options

The Operations and Workforce Analysis (OWA) intends to achieve six objectives

FROM THE ORIGINAL STATEMENT OF OBJECTIVES

	Objectives
Ongoing	1 **Stakeholder Engagement and Change Management:** Develop the capacity to involve stakeholders throughout the project
Phase 1	2 **Evaluation of IDSS:** Better qualify and quantify IDSS across the entire organization (it will vary geographically and organizationally) 3 **Current State Baseline:** Understand and baseline current state operations and workforce model through a comprehensive assessment and analysis 4 **Current State Gaps:** Identify gaps in the current state operations, workforce, and organization required to support IDSS and achieve a Weather-Ready Nation
Phase 2	5 **Options and Alternatives:** Develop options for evolving NWS from current to future state to close gaps, leverage state-of-the-art science and technology, consider geographic differences and enable services and workforce concepts in NWS strategic documents
Phase 3	6 **Testing and Evaluating:** Advance recommendations to action through plans, quick wins, and phased implementation

The OWA program is structured to address the 6 objectives by the end of 2015

Objective Current focus

	Year 1			Year 2	Year 3
Phase	**PHASE 1: ASPIRE AND ASSESS**	**PHASE 2: ARCHITECT**	**PHASE 3: BEGIN TO TEST AND EVALUATE**	**PHASE 4: BRING TO SCALE**	**PHASE 5: ADAPT AND EXPAND**
Description of work	**1 Change Management and Stakeholder Engagement** Project governance structure and teams; stakeholder map and outreach plan				
	2 Evaluation of IDSS **3 Current State Baseline** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model **4 Current State Gaps**	**5 Recommendation of Alternatives** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce model	**6 Implementation Planning** ▪ Quick wins ▪ Higher risk/reward options ▪ Implementation and roll-out plans including – Project teams – Milestones – KPIs	**7 Execute Roll-Out Plan** ▪ Change agents ▪ Field and Forum ▪ Leader-ship coaching ▪ Rapid ROI review	**8 Launch New Programs** ▪ Field and Forum ▪ Weather event review ▪ Pilot review ▪ Program report
Timing	10 weeks	10 weeks	8 weeks	1 year	1 year
Deliverables	▪ Project governance structure and stakeholder map ▪ Communications plan ▪ Comprehensive report on current state baseline and gaps ▪ Workshop to review results and path forward	▪ Report with description of alternatives and prioritized selections for planning ▪ Workshop to review and decide on recommendations ▪ Stakeholder engagement report and "change story" content	▪ Detailed implementation, communication, and roll-out plan ▪ Workshop to share plan and build support ▪ Plan for ongoing change management efforts	▪ Training content ▪ Leader-ship materials ▪ Report rapid ROIs and roll out	▪ Training content ▪ Review weather events ▪ Review pilots ▪ Report on program

In Phase 2, workstream teams focused on identifying alternatives in the form of short and long-term options

Workstreams	Developing design options Aug.	Evaluating design options Sept.	Framing alternatives Late Sept. – Early Oct.	Phase 2 outputs
Workstream 1: Communications and stakeholder engagement	Develop Phase 1 sharing plan and initiate sharing ✓	Organize OHI action planning workshop and develop change story ✓	Develop plan for ongoing stakeholder engagement ✓	▪ **Long-term**: on-going stakeholder engagement ▪ **Short-term**: Phase 1 sharing plan, OHI action planning, change story
Workstream 2: Organizational structure	Identify short- and long-term org. structure options and develop case studies ✓	Evaluate options against design criteria (10 tests of organizational design) ✓	Frame alternatives ✓	▪ **Long-term**: options for integrated field structure ▪ **Short-term**: improved role clarity across office types
Workstream 3: Operating model (including IDSS)	Identify options for IDSS definition and metrics and develop case studies ✓	Evaluate options against design criteria ✓	Frame alternatives ✓	▪ **Long-term**: options for operating model philosophy ▪ **Short-term**: IDSS definition and policy, training, metrics
Workstream 4: Workforce model	Identify options for short- and long-term workforce models; develop case studies ✓	Evaluate options against design criteria ✓	Frame alternatives ✓	▪ **Long-term:** role/ skill mix in future states (to follow op & org model) ▪ **Short-term:** defining, selecting, developing & inspiring the workforce

Partially completed ✓ Launched/ completed

OWC (Aug. 19) — **Core team workshops (Sept.)** — **Joint core team workshop (Oct. 13 - 16)** — **OWC (Oct. 15)**

During Phase 2, a variety of stakeholders – including OWA core team members, SMEs, and OWC Executive Champions – have been engaged through workshops, site visits and interviews

Phase 2 has focused on involving core team members, SMEs, OWC Executive Champions, and stakeholders through site visits and interviews

Core team weekly meetings and workshops	▪ Core teams kicked off with ~20 team members across the four workstreams with weekly meeting cadence established ▪ Two joint webinars held with all team members to discuss OHI results and Phase 1 findings ▪ Three workshops were held to align on options within workstreams: – Sept. 14 – 16: Workforce core team in Kansas City, MO – Sept. 21 – 22: Operating model core team in Silver Spring, MD – Sept. 21 – 23: Organization structure core team in Tucson, AZ ▪ Integrated core team workshop on Oct. 13 – 16 to integrate options across workstreams and plan for Phase 3
SME webinars and OWC Executive Champions	▪ Two webinars held with subject matter experts (SMEs) to discuss Phase 1 findings ▪ 13 OWC members and advisors identified as Executive Champions for specific workstream teams
Site visits and interviews	▪ Completed site visits to four additional offices, including Salt Lake City, UT; Bohemia, NY; Upton, NY; and Slidell, LA ▪ Conducted additional ~55 interviews with ~35 internal staff and ~20 external stakeholders

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At the end of Phase 2, there are several key decision points to help move forward both long-term and short-term options

	Long-term options	Short-term options
Operating Model	LT.1 Determine IDSS operating model philosophy	ST.1 Define and deliver superior IDSS
Org. Structure	LT.2 Determine organizational structure to best support forecasting & IDSS	ST.2 Establish role clarity
Workforce	LT.3 Determine the skill and roles mix necessary to create a WRN (to follow decisions on LT.1 & LT.2)	ST.3 Define success, select leaders, and develop and inspire the workforce

Key Decision Points (KDPs):

KDP1: Which operating model philosophy should be built into long-term options?

KDP2: Which organization structure options should be further developed?

KDP3: Which short-term options should be prioritized to be developed into initiatives?

Long-term vision for integrated field model & short-term initiatives

LT.3 Lags behind operating model and org structure decisions

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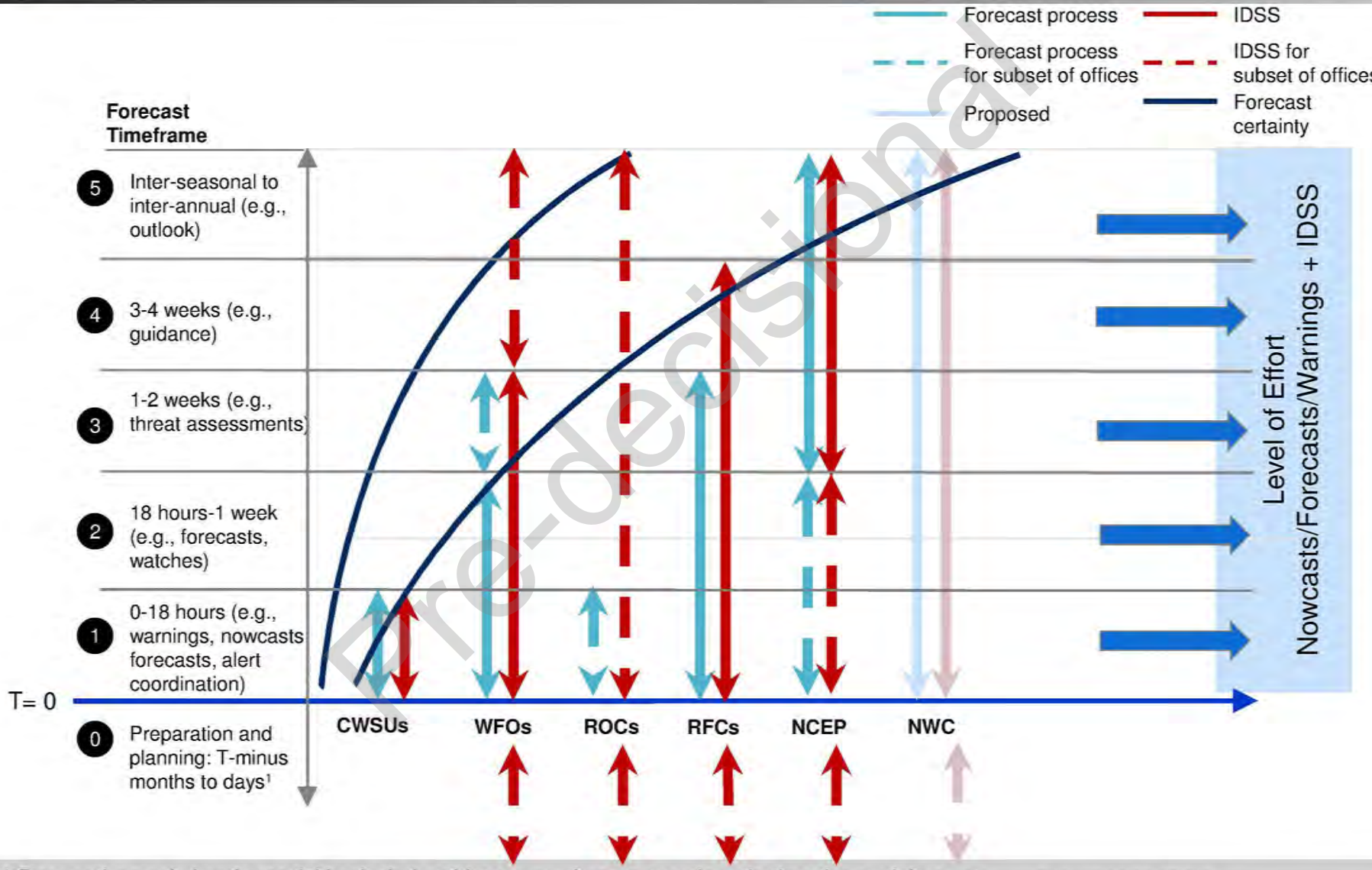
Current state of forecasting and IDSS functions by office type and forecast timing



1 Preparation and planning activities include tabletop exercises, outreach and education, trainings, etc.
Source: Interview with NWS leadership

The IDSS operating model was analyzed along the four major axes outlined in Phase 1: what, when, who, & how

PRELIMINARY

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

	Less expansive		More expansive	
What	Communicating by **standard products** that address stakeholder needs	*"We focus on ensuring our website has all of our products."*	Creating **customized information** for specific stakeholders	*"After issuing products, we will follow up to key stakeholders with more specific information."*
When	Performing IDSS **in response to high-impact weather events** (e.g., storm briefings)	*"We developed a flexible model to provide IDSS during severe events."*	Performing **recurring IDSS** including training and practice for mitigation, preparation, response, and recovery	*"We help our partners make decisions every single day."*
Who	**Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media	*"We focus on govern-ment entities top-down because they can deploy resources."*	**Including other partners** like schools, events, the public, and others	*"Our schools signed up for NWS Chat to discuss overnight weather in the winter."*
How	Providing a **narrow set of services** to events (e.g., only conference calls)	*"We don't do IDSS because we don't have the resources to dedicate to it."*	Providing a **broad range of services** (e.g., deploy staff to a sporting event)	*"We would like to deploy meteorologists to graduation ceremonies."*

1 From the NWS Weather-Ready Nation Strategic Roadmap

SOURCE: HQ and site interviews, June-July 2015

Each model is based on different assumptions about what drives weather readiness and NWS' value to the weather enterprise

PRELIMINARY

Potential options for future state operating model

Potential options	Features of the model	What would you have to believe in order to adopt this model?
"Core competency"	▪ Stakeholders limited to core partners ▪ IDSS Support limited to episodic products and interpretation/data ▪ Future investment focused on **improving forecast accuracy and technological superiority**	▪ NWS' **unique source of value to the weather enterprise is in observational data and forecasting, and warnings** ▪ To effectively promote weather readiness, **local flexibility for resource allocation is more important than establishing equitable service levels** ▪ Other stakeholders (hospitals and schools) can get better information from other sources (Emergency Managers and commercial weather)
AND/OR		
"Broad reach"	▪ Focus on growing stakeholder network beyond existing core partners ▪ Emphasis on **disseminating weather data to as many people as possible** ▪ Limits on maximum service levels for individual stakeholders	▪ **Stakeholder breadth drives weather readiness** ▪ Establishing equitable service levels should be prioritized
AND/OR		
"Deep relationships"	▪ Stakeholders limited to core partners with general service to others on request ▪ Emphasis on **capability building and scenario planning with core partners** ▪ Future investment focused on forecast interpretation while maintaining forecast accuracy	▪ Core partners are in a unique position to affect a community's weather-readiness most directly ▪ A **deep understanding of stakeholders' needs** will allow NWS to help others mitigate loss of life and property

The "Core competency" model prioritizes forecasting accuracy — where NWS capabilities cannot be easily replicated

PRELIMINARY

✕ Example operating model

Framework for establishing operating model options

		Less expansive — *More expansive*	
"What" IDSS to provide	Communicating by **standard products** that address stakeholder needs	✕	Creating **customized information** for specific stakeholders
"When" to provide IDSS	Performing IDSS **in response to high-impact weather events** (e.g., storm briefings)	✕	Performing **recurring IDSS** including training and practice for mitigation, preparation, response, and recovery
"Who" requests IDSS	**Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media	✕	**Including other partners** like schools, events, the public, and others
"How" to provide IDSS	Providing a **narrow set of services** to events (e.g., only conference calls)	✕	Providing a **broad range of services** (e.g., deploying to sporting event)

In the "Core competency" model, NWS focuses on providing observational data and forecasting skills and expertise

PRELIMINARY

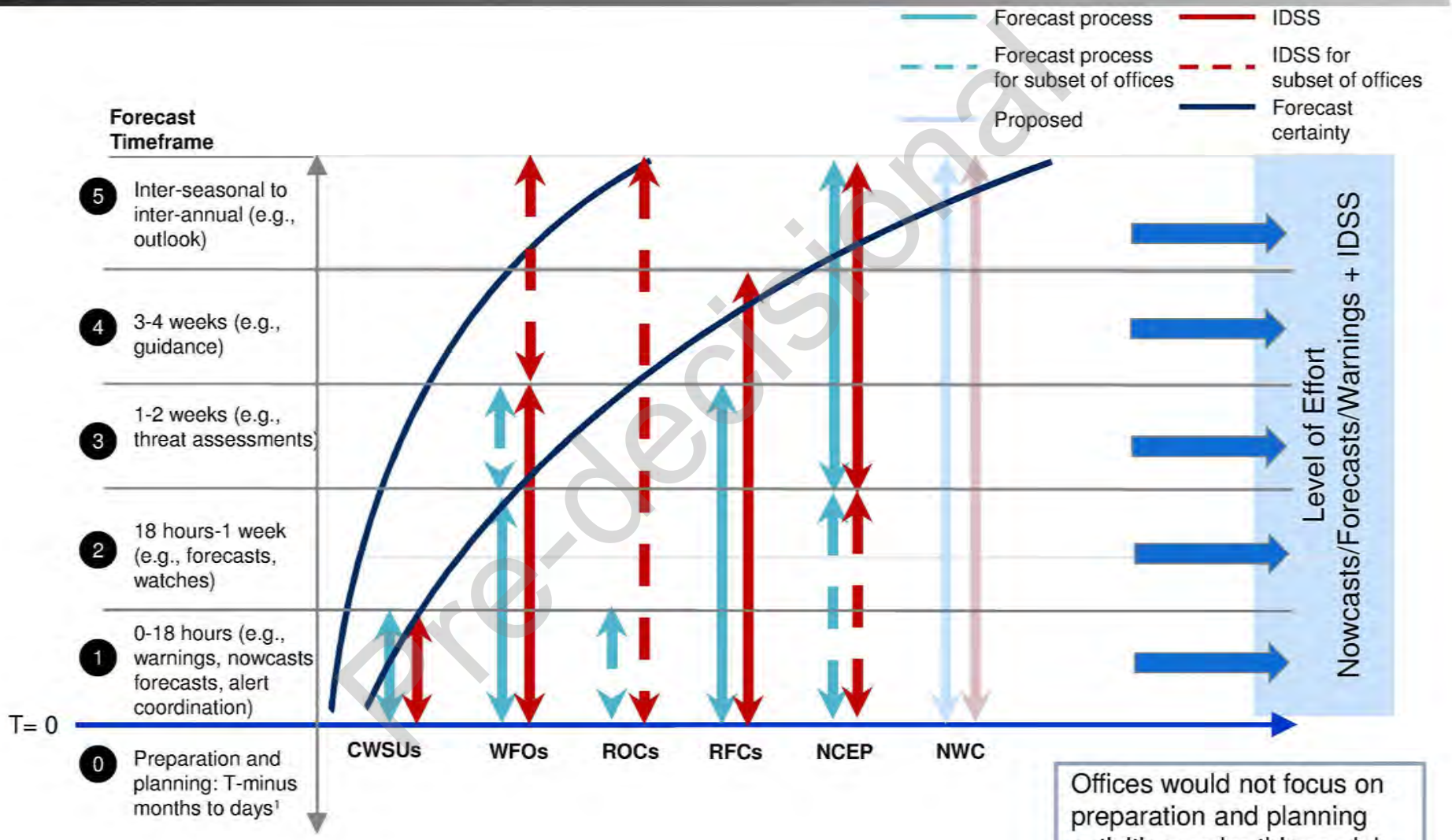
NWS ownership

Ownership by others in the weather enterprise (e.g., Commercial weather, EMs, NOAA)

	What	When	Who	How
Least expansive	Short and long-term forecasts	Episodic IDSS during high impact weather	Emergency Managers	Inbound communication requests from stakeholders
	Point and click forecasts by location on NWS website	Episodic IDSS prior to uncertain weather events	Federal government with mission-based NWS nexus	
	Watches, warnings, and advisories	Episodic IDSS weather support to high impact events	State/Local government with mission-based NWS nexus	
	Forecast discussions	IDSS based on stakeholder thresholds (Impacts Catalog)[1]	Media with dissemination capabilities	Remote support to stakeholders
	Spot forecasts	Recurring IDSS for emergency response preparations	Schools/Hospitals	
	Time-based short-term forecasts	Recurring IDSS for external stakeholder training	Utilities	
	Customized information	Recurring IDSS for long-term relationship and capability building	General public	Stakeholder support through deployments and/or embedding
	Oceanic phenomena discussion	Recurring IDSS for long-term climate planning	Venue Manager	
Most expansive	Climate-related data		Event Manager	

1 Includes Key Decision Points (KDP) with versions developed at the WFO level

Forecasting and IDSS functions by office type and forecast timing under the "Core competency" model



1 Preparation and planning activities include tabletop exercises, outreach and education, trainings, etc.
Source: NWS interviews

Case Study: Successful IDSS does exist under the "Core competency" model

PRELIMINARY

Context of the situation

- **Thunderstorms moving into Ferguson**; wind gusts 40 mph and lightning
- Law enforcement knew of a **planned protest and interstate shutdown on I-70**
- Multiple jurisdictions were present at Unified Command Post, but NWS remained at the office

NWS actions

- Provided **weather updates upon request** to St. Louis County Emergency Management Agency and monitored inbound phone traffic for real-time updates
- Notified St. Louis County Emergency Management Agency **proactively of approaching storms ~ 90 minutes ahead of arrival**

Impact on the stakeholders and the general public

- St. Louis County informed the leaders of the protest, who agreed to **delay their action until after the storm passed**
- A few hundred protestors were on the interstate; failure to disclose information could have resulted in large numbers of people caught on the interstate when storms hit, **placing lives in danger**

"They love that we're the resource that is helping them out; we free them up (law enforcement) to do what they need to do."

– NWS St. Louis

Protests on I-70, Saint Louis

SOURCE: Site interview, stltoday.com

Examples of the "Core competency" model exist today at NWS WFOs

PRELIMINARY

WFO #1

What	▪ Provides webinars and briefing products at times ▪ Focus on models as the basis for IDSS ▪ Forecasts and warnings take majority of time and effort
When	▪ Sometimes customize for higher impact events ▪ Prioritizing forecasting time
Who	▪ Focused on Emergency Managers ▪ Some marine entities ▪ State DOT
How	▪ External relationships handled directly through WCM; MIC manages people internally ▪ Customization occurs through follow up questions

"You have to want to do IDSS."

"Why don't we have the staff to do this work?"

"Forecasts and warnings maintain our credibility."

WFO #2

What	▪ Area forecast discussion and inbound phone calls ▪ Spot forecasts as needed for severe weather ▪ Aviation forecasts
When	▪ All IDSS is episodic because of the difficulties of travel ▪ Inbound requests can trigger IDSS (forecast delivery)
Who	▪ Borough Emergency Managers ▪ State DOT (local office) ▪ State Fire Service ▪ State-level relationships owned at regional level
How	▪ External relationships concentrated with WCM ▪ Customization occurs upon request from stakeholders

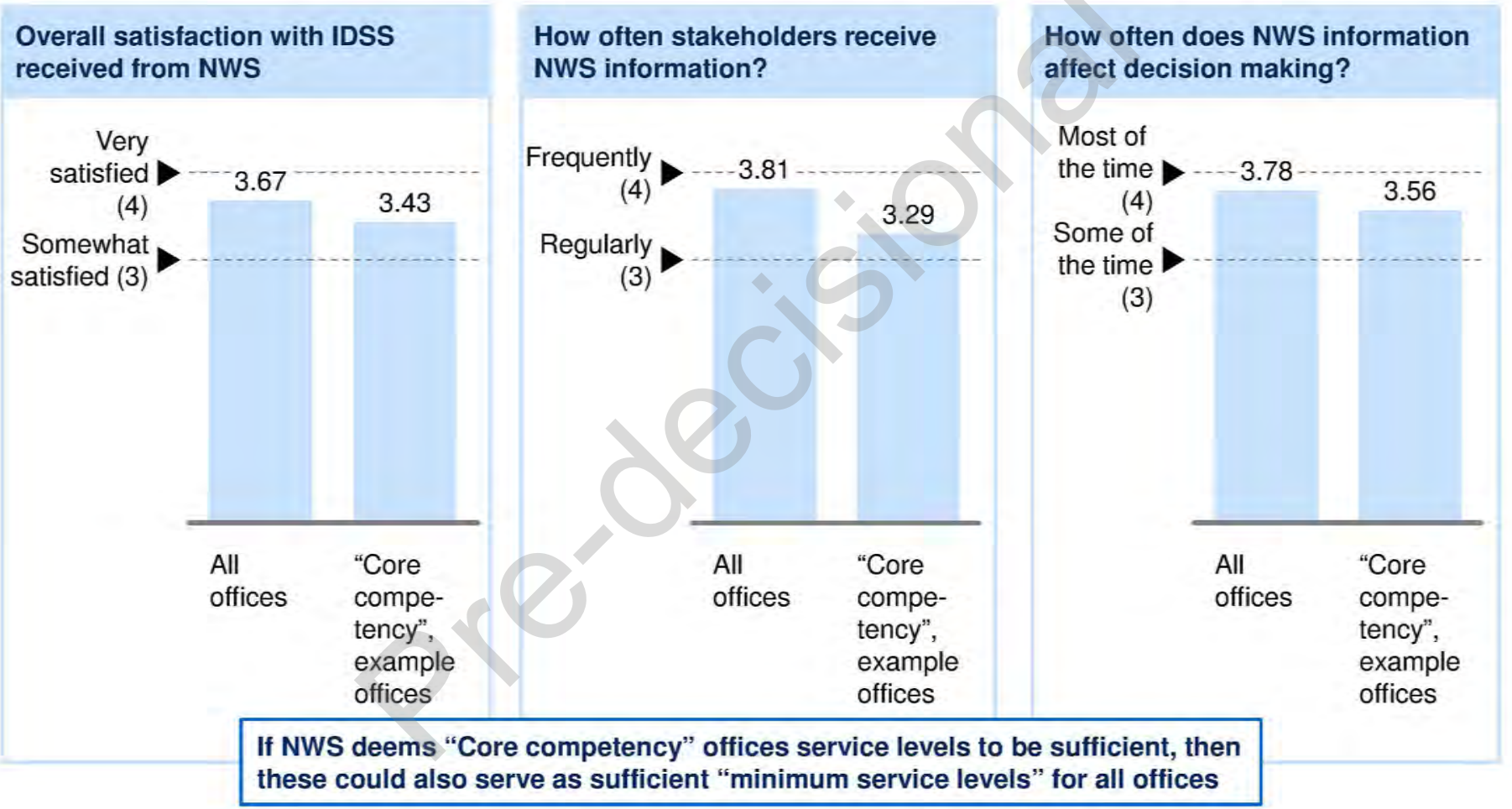
"Without the forecasts, IDSS is nothing."

"We have to spend so much time in the grids because our zones are so large, it doesn't leave time for proactive relationship building… not to mention the travel and communications challenges."

SOURCE: Site interviews

Stakeholders who work with these offices[1] report similar levels of satisfaction as those from other offices

PRELIMINARY



If NWS deems "Core competency" offices service levels to be sufficient, then these could also serve as sufficient "minimum service levels" for all offices

1 Two offices identified as an examples of "Core competency" WFOs; figures based on seven responses

SOURCE: IDSS Stakeholder Survey, Site interviews

Core partners indicated that they would likely remain satisfied with the "Core competency" model

PRELIMINARY

Stakeholder reactions to the "Core competency" model

Core partners	*"No reduction in service visible to us…we would truly appreciate increased accuracy and precision of forecasts and the products themselves… Emergency Managers would appreciate flexibility to allocate resources at the local level."* ***-State EM***	*"There is so much noise in this area around severe weather from broadcasters trying to make a name for themselves that I have to have the information from NWS directly in order to have the credibility to make decisions."* ***-Local Emergency Manager***
Other external stake-holders	*"I need to know that I can call in and get someone on the phone. I don't think my requests require a ton of NWS resources, but I really value the ability to get someone on the phone if I need clarification."* ***-Utilities Facilities Manager***	*"The credibility is important for me when I'm dealing with large events—the stakes are very high for me."* ***-University Facilities Manager***
Commer-cial weather	*"This the rightful place for the National Weather Service. It should focus on the activities that are uniquely the function of government and let the private sector tailor the information as necessary."* ***-Commercial weather stakeholder***	*"Again, while it won't directly affect our business model, I think the Weather Service pursuing weather readiness is a good thing because it raises the general level of awareness."* ***-Commercial weather stakeholder***

SOURCE: NWS and external stakeholder interviews

The "Broad reach" model prioritizes breadth of stakeholder relationships to help NWS information grow in impact

PRELIMINARY

✕ Example operating model

Framework for establishing operating model options

		Less expansive	*More expansive*	
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"How" to provide IDSS	Providing a **narrow set of services** to events (e.g., only conference calls)			Providing a **broad range of services** (e.g., deploying to sporting event)

The "Broad reach" model provides IDSS to a wider range of stakeholders

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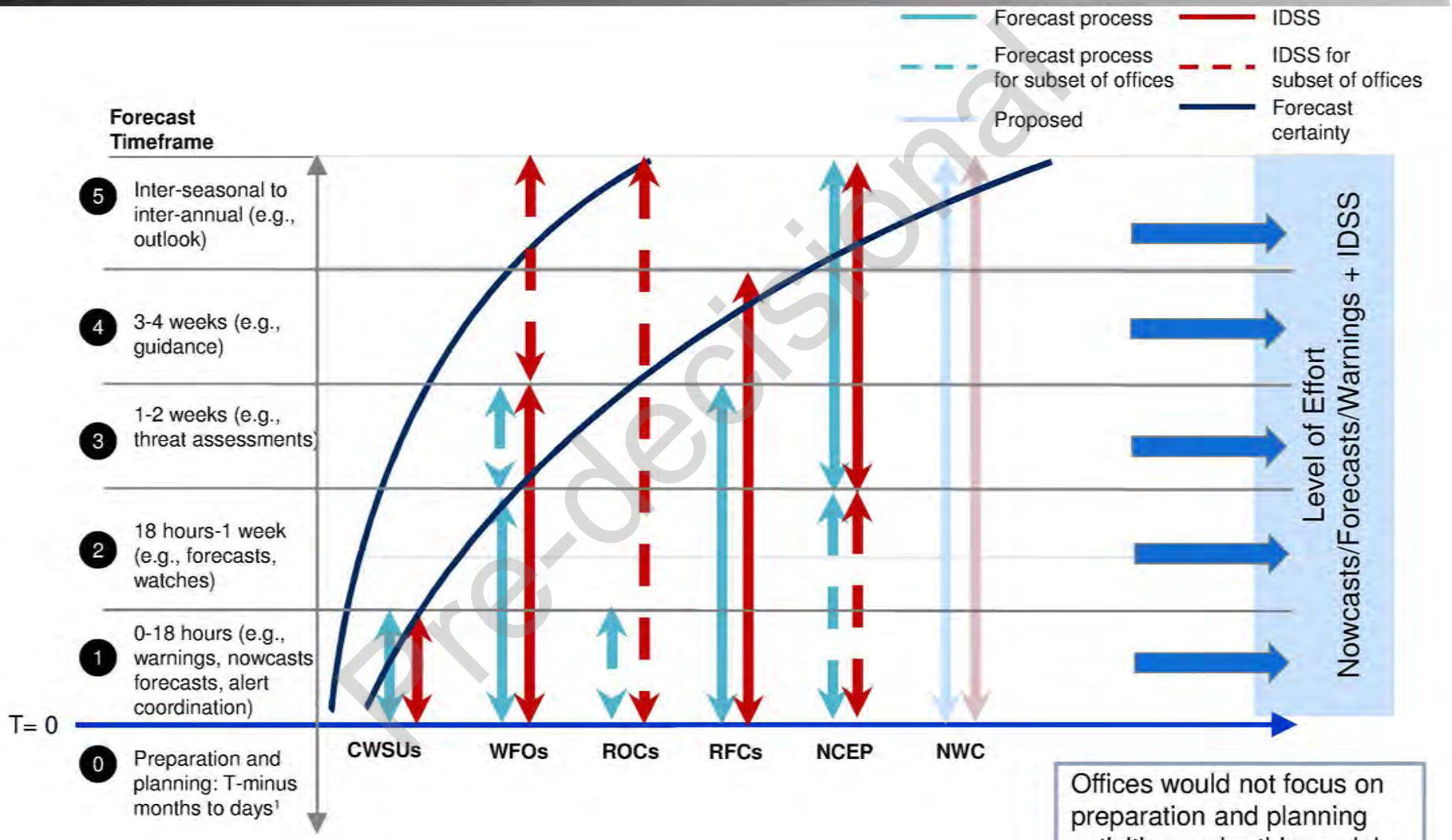

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Source: NWS interviews

Case Study: Implementing the "Broad reach" model could allow WFOs to pursue outcomes like this

PRELIMINARY

Context of the situation

- May 20, 2013: tornado touchdown at 2:56 PM CDT in **Moore, OK**
- **EF-5 tornado** caused catastrophic damage, claimed 24 lives and caused heavy property damage

Actions that the Weather Service took (at all levels)

- Norman WFO worked for 2 years with Moore's local leaders: Emergency managers, schools, and hospitals**, making it one of the first StormReady cities in its CWA**
- **Convective Outlooks highlighted threat 6 days out**, SPC–FEMA coordination began 4 days in advance
- Shane Cohea, Director of Emergency Preparedness at Moore, instructed medical facilities to draw their blinds and prepare patients for possible movement **more than an hour prior to the storm hitting**
- About 15 minutes later, and before the tornado had even formed, Moore Medical Center **halted patient care and surgeries and moved employees and patients to shelter areas**

Impact on the stakeholders and the general public

- **Moore Medical Center took a direct hit, but no lives lost**
- Since the devastation, Moore Medical Center has become a StormReady Supporter and WRN Ambassador; its new facility will have a robust in-place storm shelter

"The information you provided us ultimately saved more lives than we could ever count."

-Shane Cohea, Director of Safety, Security and Emergency Preparedness, Norman Regional Health System, Moore Medical Center

Moore Medical Center, planned new facility

SOURCE: Site and phone interviews

Examples of the "Broad reach model" exist in NWS today

PRELIMINARY

WFO #1

What	▪ Provides daily weather briefings at 9:00 AM for all events upon request from stakeholders ▪ Briefings are not tailored to specific events, but rather all events qualifying for IDSS on a given day
When	▪ Will support specific stakeholders with two possible tiers of service: – 1) when NWS will proactively call an event from the office should severe weather threaten – 2) where POC from the event can call any time with specific questions to the NWS
Who	▪ Emergency Managers ▪ Public service entities ▪ Focus particularly on EMs from smaller jurisdictions with lower available resources
How	▪ IDSS primarily is conducted from the office ▪ Deployments are conducted only upon specific request depending on staffing and whether the event is "worthwhile" (subjective decision made by WFO leadership)

"Our base bread and butter is forecasts and warnings. If the forecasts are garbage, then it doesn't matter what else we do."

""While Emergency Managers are much more in tune with the information that NWS can provide over the past 20 years, the ones who call NWS actively are still a significant minority."

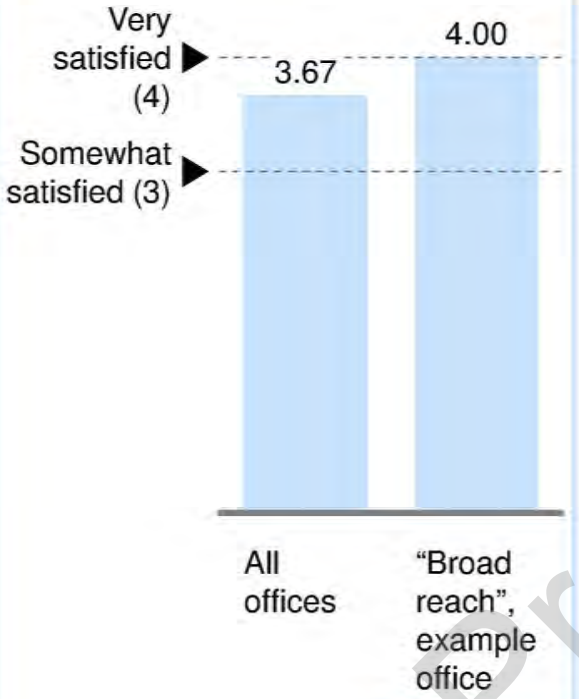
"We will support as many events as we can handle; we haven't yet hit our capacity."

SOURCE: Phone interviews

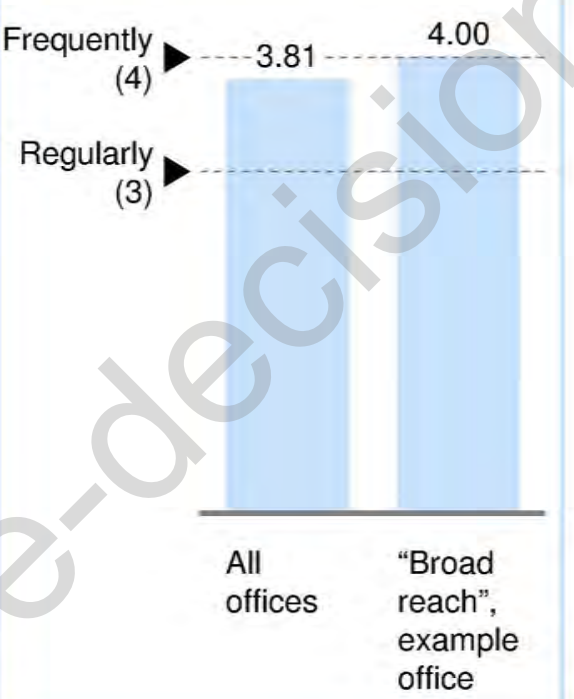
"Broad reach" stakeholders reported similar if not higher satisfaction with NWS services than other offices

PRELIMINARY

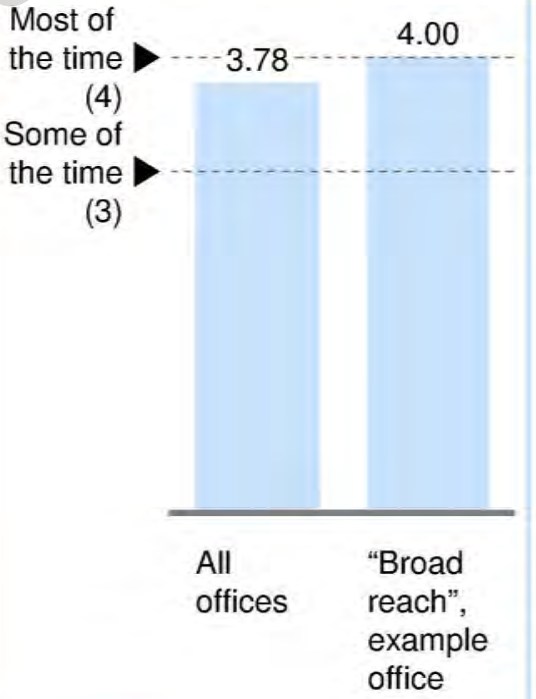
Overall satisfaction with IDSS received from NWS[1]



How often stakeholders receive NWS information?



How often does NWS information affect decision making?



This suggests that the "broad reach" model could meet customer expectations if applied across NWS offices nationwide

1 One office identified as an example of "Broad reach" WFO; figures based on seven responses

SOURCE: IDSS Stakeholder Survey, Site interviews

Commercial weather stakeholders had indifferent or negative reactions to the "Broad reach" model compared to other philosophies

PRELIMINARY

Stakeholder reactions to the "Broad Reach" model

Core partners

"As long as the service levels remain the same as we have right now, I don't see a problem in extending weather readiness further."
-State EM

"Breadth would drive readiness to a certain extent, this would reduce burden on EMs…but it doesn't take advantage of the network capabilities that other stakeholders have."
-State EM

Other external stake-holders

"We cherish our relationship with the National Weather Service. It has already directly saved lives."
-Hospital EM

"We have our own Weather Consultant Company providing weather."
- Event Planner, Insomniac Productions

"We receive information from a variety of sources, and since the data is already out there, it probably wouldn't make too much difference for our decisions."
- Local school system

Commer-cial weather

"The National Weather Service would be trying to replicate service levels already provided by other entities that they couldn't possibly replicate over the long term; it would harm the weather enterprise."
-Commercial weather stakeholder

"The needs and expectations of private sector entities change too quickly for NWS to serve them in a meaningful way."
-Commercial weather stakeholder

"This wouldn't affect our business model one way or the other."
-Commercial weather stakeholder

SOURCE: Site and stakeholder interviews

The "Deep relationships" model prioritizes understanding the decision-making needs of core customers

PRELIMINARY

✕ Example operating model

Framework for establishing operating model options

"What" IDSS to provide	Communicating by **standard products** that address stakeholder needs		Creating **customized information** for specific stakeholders
"When" to provide IDSS	Performing IDSS **in response to high-impact weather events** (e.g., storm briefings)		Performing **recurring IDSS** for mitigation, preparation, response, and recovery
"Who" to provide IDSS to	**Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media		**Including other partners** like schools, events, the public, and others
"How" to provide IDSS	Providing a **narrow set of services** to events (e.g., only conference calls)		Providing a **broad range of services** (e.g., deploying to sporting event)

The "Deep relationships" model supposes that others in the weather enterprise can better serve certain customers

PRELIMINARY

NWS ownership

Ownership by others in the weather enterprise (e.g., Commercial weather, EMs, NOAA)

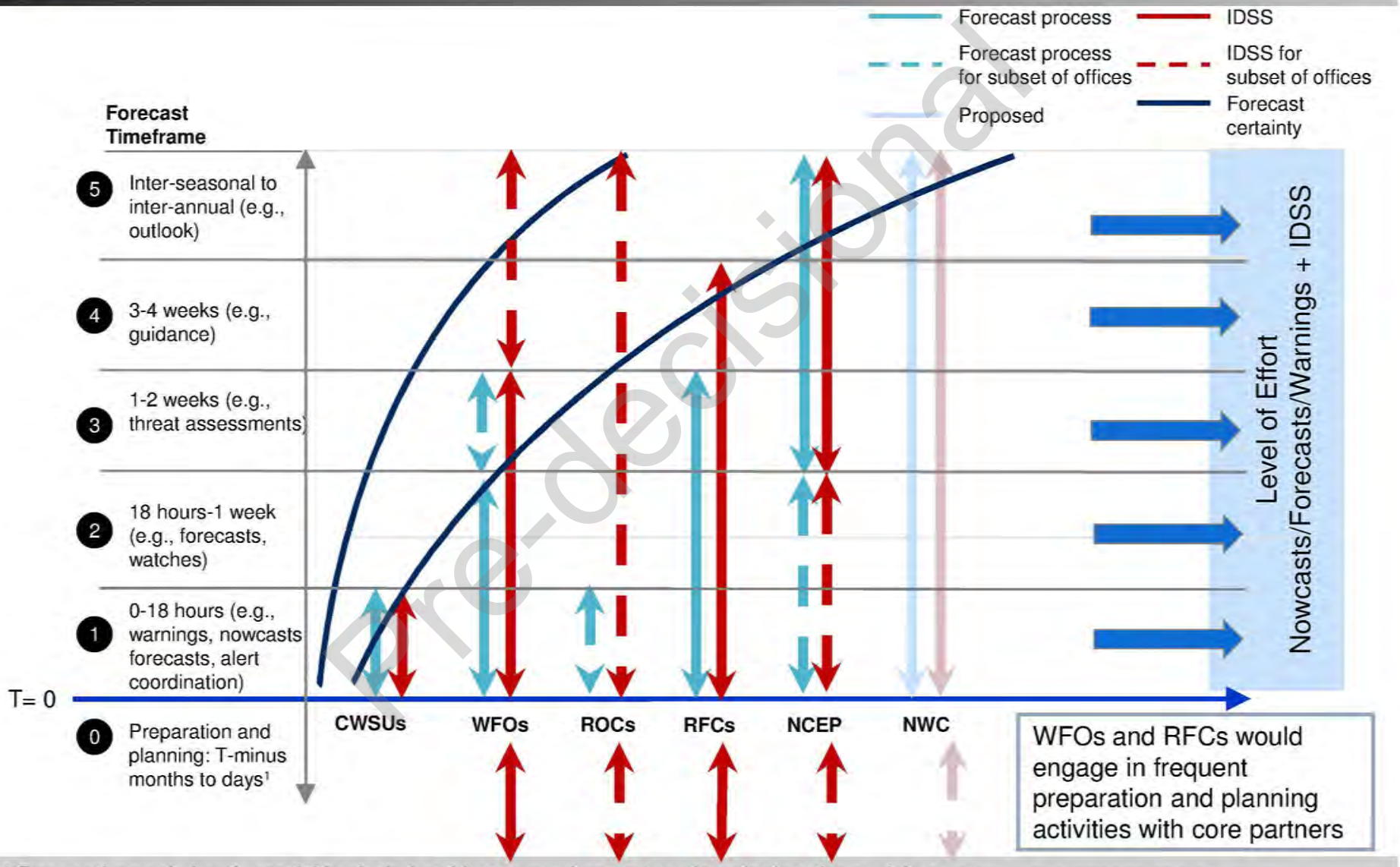
Least expansive

Most expansive

What	When	Who	How
Short and long-term forecasts	Episodic IDSS during high impact weather	Emergency Managers	Inbound communication requests from stakeholders
Point and click forecasts by location on NWS website	Episodic IDSS prior to uncertain weather events	Federal government with mission-based NWS nexus	
Watches, warnings, and advisories	Episodic IDSS weather support to high impact events	State/Local government with mission-based NWS nexus	
Forecast discussions	IDSS based on stakeholder thresholds (Impacts Catalog)[1]	Media with dissemination capabilities	Remote support to stakeholders
Spot forecasts	Recurring IDSS for emergency response preparations	Schools/Hospitals	
Time-based short-term forecasts	Recurring IDSS for external stakeholder training	Utilities	
Tailored forecasts	Recurring IDSS for long-term relationship and capability building	General public	Stakeholder support through deployments and/or embedding
Oceanic phenomena discussion	Recurring IDSS for long-term climate planning	Venue Manager	
Climate-related data		Event Manager	

1 Includes Key Decision Points (KDP) with versions developed at the WFO level

Forecasting and IDSS functions by office type and forecast timing under the "Deep relationships" model



1 Preparation and planning activities include tabletop exercises, outreach and education, trainings, etc.
Source: NWS interviews

Case Study: Deep relationships with the LVMPD allowed for sufficient preparation ahead of an anticipated large scale event

PRELIMINARY

Context of the situation

- The Electric Daisy Carnival (EDC) is a **3-day event** held annually at the Las Vegas Motor Speedway
- Held overnight starting each evening and ending at sunrise
- Attendance numbers were estimated at ~400,000 people

Actions that the Weather Service took (at all levels)

- Two years of NWS support to Las Vegas Metropolitan Police Department (LVMPD) Table Top Exercises (TTX) to test specific weather scenarios
- **TTX was held two weeks prior** to the start of the event
- Email briefings to Unified Command participants and local Emergency Managers began **6 days prior** to the start of the event
- Excessive Heat Watch and Excessive Heat Warning were issued 4 days and 2 days prior to the start of the event
- **NWS Las Vegas Weather Deployment Team was deployed** to provide routine briefings on potential for exceeding weather safety thresholds
- NWS also participated in LVMPD After-Action process for EDC

Impact on the stakeholders and the general public

- Stakeholder actions based on NWS information:
  - Public Information Officers (PIOs) began a media push with **heat safety information 3-4 days prior to event**
  - LVMPD held a supervisors meeting to discuss the heat and potential impacts
  - Event Organizers distributed empty water bottles to and increased water distribution
- Over 1400 medical calls made during the festival; 60%-80% of these calls were heat-related
- **LVMPD and first responders had the capacity to handle these medical problems**

NWS Briefing at Table Top Exercise for EDC

NWS Forecaster Deployed to Area Command

Heat Safety media push by agencies and event organizers got message out 3-4 days in advance

SOURCE: Phone interviews

Examples of the "Deep relationships" model also exist today at NWS WFOs

PRELIMINARY

WFO #1

What
- Provides individualized briefings for key stakeholders
- Capability building and scenario planning with core partners

When
- Embedding during severe weather
- Frequent recurring IDSS with core partners

Who
- Focused on emergency managers
- Government officials
- Other external stakeholders supported through inbound requests

How
- Embedding for large events upon request from core partners
- Regular relationship-building designed to grow capabilities of core partners

"IDSS is at the core of what we do; it's the value that only the NWS can bring to stakeholders"

"There is so much more that we could be doing for our core partners. That alone would stretch our resources even before starting to work deeply with other stakeholders"

WFO #2

What
- EMs provide observational support to WFO in the office when issuing WWAs
- Embedding for large events; less for severe weather

When
- IDSS during large events
- IDSS during fair weather to identify stakeholders and enhance preparedness

Who
- Emergency Managers
- Event POCs
- Government officials

How
- Whole office concept of performing IDSS
- Stakeholders desire "in person" recurring IDSS

"We will deploy to known events as necessary; all of our efforts are tied to the protection of life and property"

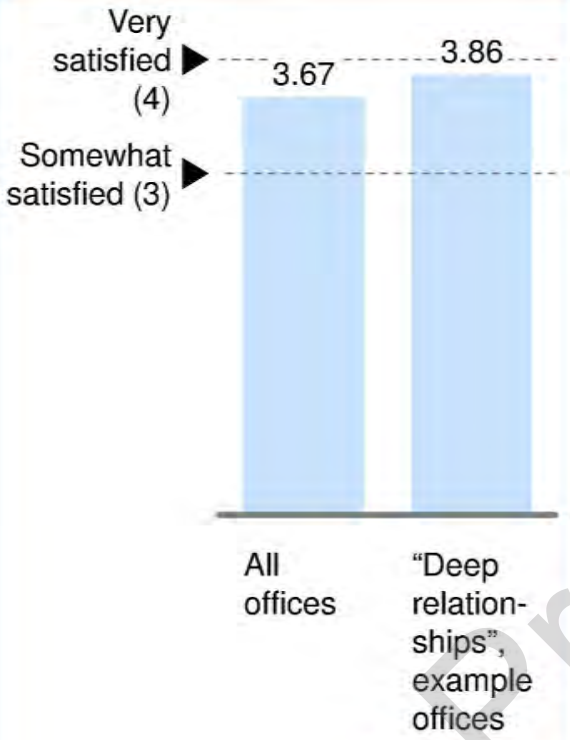
"The MIC constantly pulls rabbits out of the hat in order to make IDSS work for the office."

SOURCE: Site interviews

"Deep relationship" office stakeholders receive NWS support more frequently than offices at large

PRELIMINARY

Overall satisfaction with IDSS received from NWS[1]



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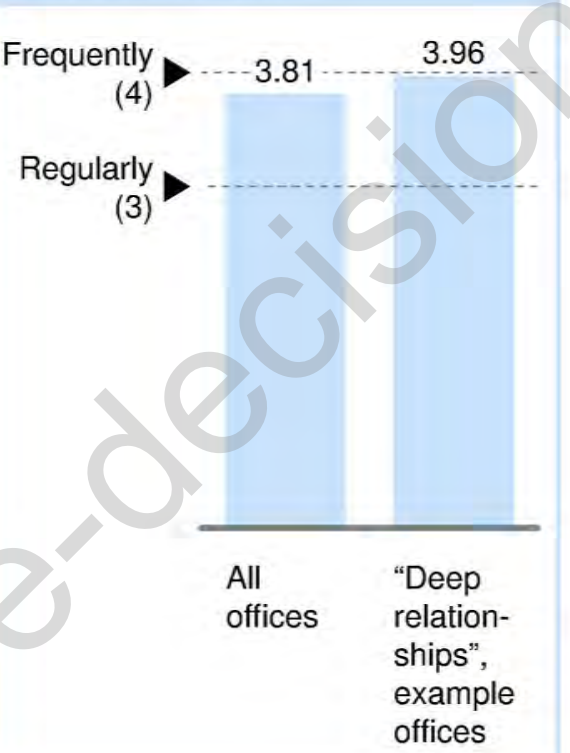

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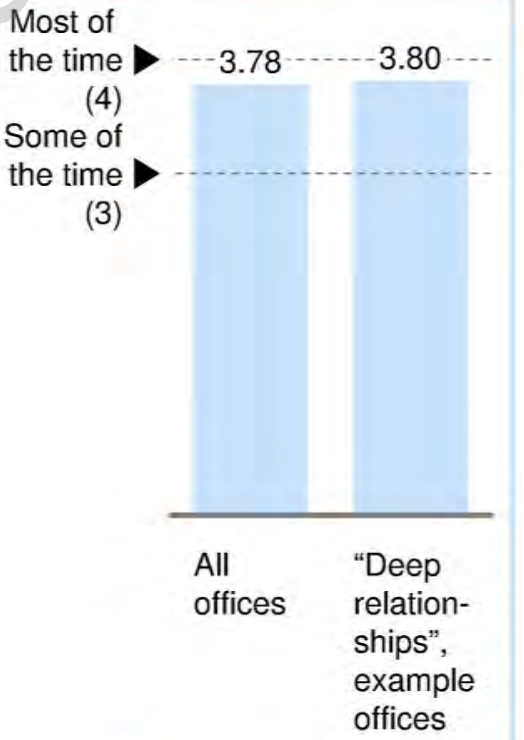


Survey indicates that stakeholders might have higher satisfaction if the "deep relationship" model is applied to offices nationwide

1 Two offices identified as examples of "Deep relationships" WFOs; figures based on fifty responses

SOURCE: IDSS Stakeholder Survey, Site interviews

Most core partners indicated that they would appreciate increased levels of support under the "Deep relationships" model

PRELIMINARY

Stakeholder reactions to the "Deep relationships" model

Core partners

"Having you there to provide forecasts and updates both during and in the days leading up to the Regatta was a tremendous asset."
-Local Incident Commander

"Being involved all the time with planning and preparedness is important…Does embedding change my action? Potentially…I probably wouldn't pay for embedding [over remote support] if I had to."
-State EM

Other external stake-holders

"Having the NWS at our side before the storm would help us prepare when it becomes real. We appreciate any help we can get with our plans and exercises."
-Hospital EM Director

"We want to be in the loop if for no other reason that if something were to happen at one of our facilities, the impact on society and government would be huge."
-Energy sector stakeholder

Commer-cial weather

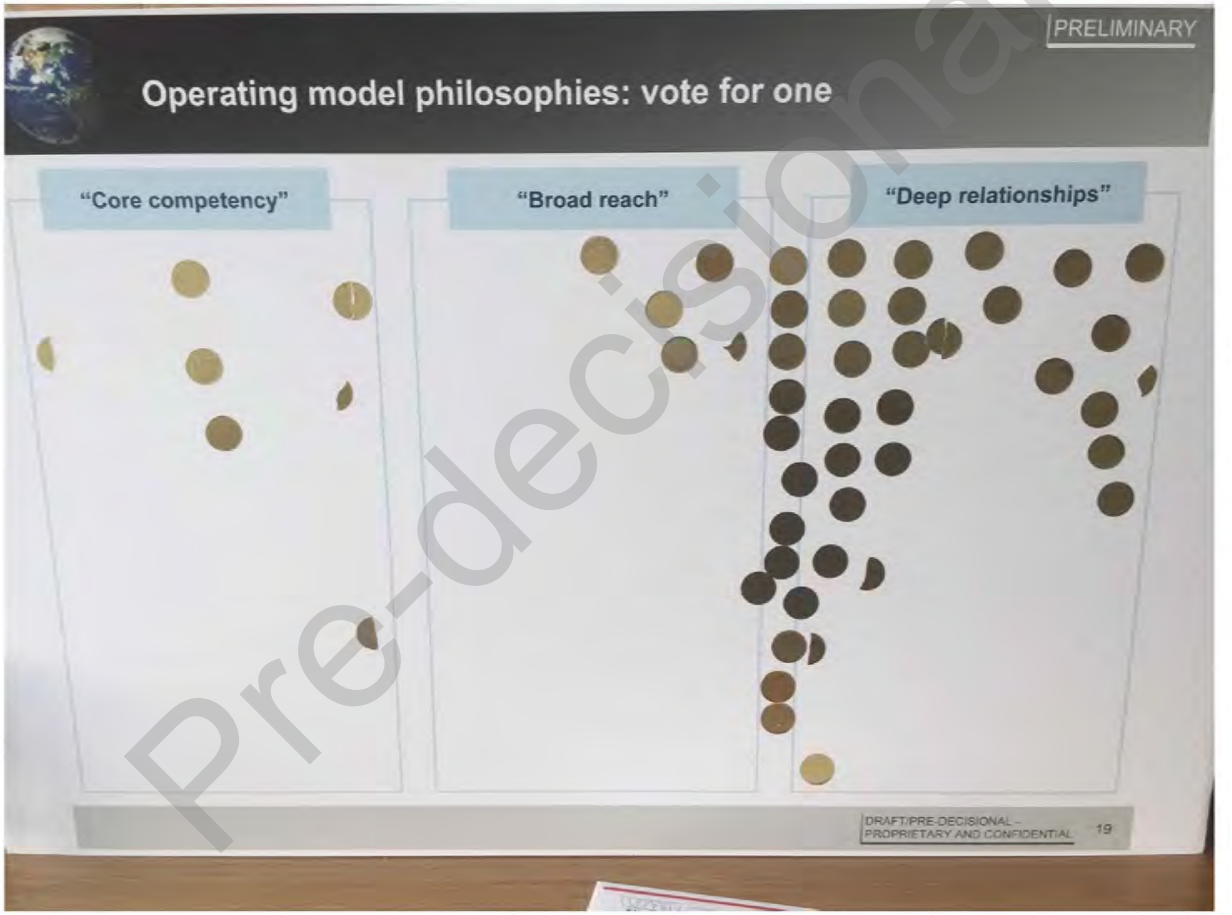
"It's not about our business model; it's that it would be bad for the weather enterprise. NWS would be foregoing investment in the technology and observations that we all rely upon for something else that commercial entities can already do much better."
-Commercial weather stakeholder

"That model is probably great for government-to-government relationships, which is a key role for the NWS. It makes sense for NWS to pursue because having government agencies pay for commercial weather would be difficult operationally and from an optics perspective."
-Commercial weather stakeholder

SOURCE: Site and stakeholder interviews

NWS Strategy Session discussion of IDSS operating model philosophies

Results of voting[1]: Executive Strategy Session, October 8



1 Based on voting from all attendees of the Executive Strategy Session after participating in a gallery walk with a discussion and explanations of the pros and cons of each operating model; results reflect one vote per attendee

Option Summary: each model has tradeoffs related to mission fulfillment, stakeholder needs, and resource requirements

Philosophy	Key assumptions	Pros	Cons
"Core competency" model	▪ NWS' **unique source of value to the weather enterprise is in observations, forecasts, and warnings** ▪ Local flexibility for resource allocation is more desirable than equitable service ▪ Non-core partners can get better weather information from other sources (e.g., EMs, commercial weather) ▪ NWS is viewed as the honest broker in the weather enterprise	▪ Creates potential for **higher quality observational data** inputs and resulting forecasts ▪ Offers **flexibility** to reallocate financial and personnel resources toward forecasting ▪ Promotes product **consistency** ▪ Likely to gain support from commercial weather ▪ Leverages operational infrastructure (99.9% dissemination capabilities)	▪ **Limits direct fulfillment of the mission** (mitigating the loss of life and property, impact of weather on economy) ▪ **Could diminish IDSS effectiveness** without "recurring" element ▪ Decreases participation as a partner in disaster life cycle ▪ **Reduces relationship levels** with core partners and social media presence
AND/OR			
"Broad reach" model	▪ **Stakeholder breadth drives weather readiness** ▪ Establishing equitable service levels should be prioritized ▪ NWS is viewed as the honest broker in the weather enterprise	▪ **Broadens the scope of stakeholders** to promote weather readiness ▪ Allows for **consistent service** across all stakeholders ▪ Allows NWS to help **protect vulnerable populations and critical infrastructure** ▪ Advantageous for all offices with dispersed stakeholder networks	▪ **Threatens the quality of NWS service** and therefore fulfillment of the mission (lack of deployment capability) ▪ Makes enforcing consistency difficult ▪ Limits relationship building over time with core partners ▪ **Will not be supported by commercial weather** ▪ Changes to NOAA's Partnerships Policy
AND/OR			
"Deep relationships" model	▪ Core partners are in a unique position to affect a community's weather-readiness most directly ▪ A **deep understanding of stakeholders' needs** will allow NWS to help others mitigate loss of life and property ▪ NWS is viewed as the honest broker in the weather enterprise ▪ Surge capacity still required in an emergency situation	▪ Allows for **in-depth understanding of customer needs** to tailor superior service over time ▪ Prioritizes relationship-building, which allows NWS a "**seat at the table**" with local emergency management communities ▪ Leverages "force multiplier" capabilities of core partners	▪ **Requires enabling investments** to sustain increased IDSS workload ▪ **May limit forecast accuracy improvement rates** if resources used for IDSS ▪ Limits direct support to vulnerable populations and critical infrastructure ▪ **Requires a more diverse skill set** than "pure meteorology" ▪ Schools and hospitals not directly addressed

Sample WFO stakeholder networks were used to develop a rough estimate of the FTEs required to implement each operating model nationwide

PRELIMINARY

1

- **Core competency office**
- **Broad reach office**
- **Deep relationships office**

Sample offices represent the level of service provided partners in each model

2 IDSS FTE ratio calculation

A) Determined each sample office's:
- IDSS staffing
- Forecasting staffing
- # core partners

B) Then, calculated:

$$\frac{(\#\ \text{IDSS FTEs})}{(\#\ \text{core partners})}$$

C) The IDSS FTE ratio was applied to stakeholder networks of three different CWA archetypes

3 Rural / semi-urban CWA

x core partners

Urban CWA

1.4x core partners

Highly urban CWA

2.3x core partners

4 Scaling nationwide

68 offices + 44 offices + 10 offices =

All 122 WFOs were divided into 3 different CWA archetypes based on population and population density[1]

Each model's total FTE was compared to current forecasting and IDSS FTE in the field

5

Total FTE VS. **Current FTE**

1 Added external stakeholders are assumed to require 10% the service of a current core partner (based off of qualitative MIC feedback and comparison of frequency and duration of non-core partners served at local offices); "school networks" are used in place of schools and calculated as a single partner (# of counties / townships, depending on region). SOURCE: US Census Bureau, Statemaster, CountyOffice.org, AHA, Public School Review, National Center for Education Statistics

The Core competency model would be sustainable under existing conditions while the others might require additional actions to unlock required resources

IDSS FTE Forecasting FTE PRELIMINARY

Estimated change to current FTE needs[1]

Required resource estimates are sensitive to changes in assumptions and should be considered "order of magnitude" estimates

1 Comparison to current FTEs include Lead Forecaster, General Forecaster and Intern positions as represented in current workforce data, not total billets allotted for these positions

2 Current staffing is not separated by forecasting and IDSS; these numbers are analyzed in aggregate; the "model" lines use different colors to show the relative expansion of IDSS under different models and are not meant to represent that forecasters and interns do not engage in IDSS

Options exist to support a prospective investment in the operating model; some relate only to ongoing operations

PRELIMINARY, ILLUSTRATIVE

How to close resources gap	Example short-term initiatives[1]
Increase efficiency of current operations	Roll out National Blend to offices where it is proven to work and will enable forecasters to spend less time in the grids
	Landlines to NOAA weather radio replaced
Discontinue certain operations	Deprioritize or centralize outreach and education for preparedness into the Communications Office at Headquarters

Possible long-term initiatives for further exploration

Explore partnership models with private sector entities to leverage expertise in content presentation for greater impact on stakeholders in the weather enterprise

Explore opportunities for contracted maintenance of observational infrastructure to leverage time for further IDSS

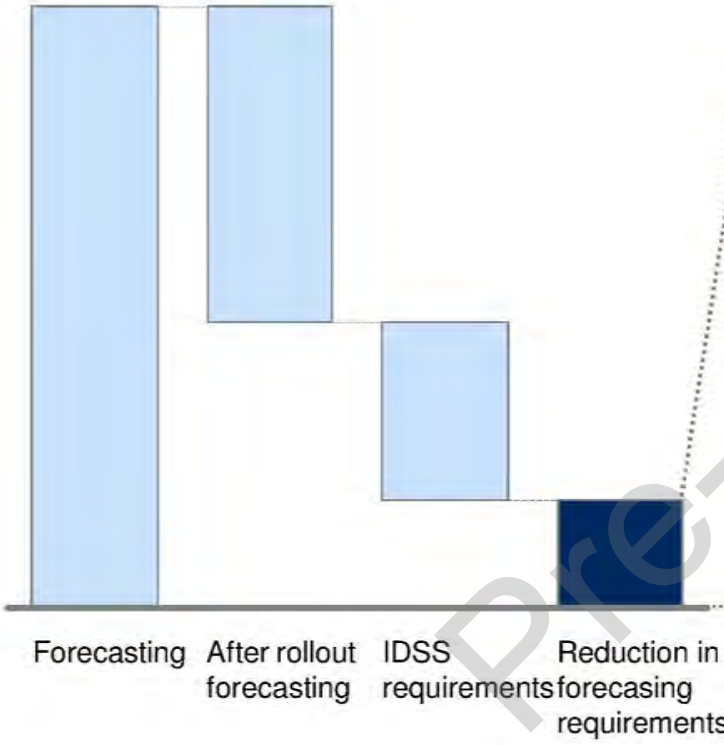
Set up a payment plan for stakeholders to help defray the costs of enhanced service (deployments, embedding, etc.)

1 Options cited were isolated to those under current operations and assumes no change in organizational structure or workforce; list is not meant to be illustrative and are from Core Team suggestions

Estimated impacts of the National Blend assume that long-term forecasting duties at WFOs[1] could be consolidated centrally

ILLUSTRATIVE, PRELIMINARY

The impact of the National Blend on resource requirements, FTE



1

Eastern Region offices (23)

+

Central Region offices (38)

+

Southern Region offices (32)

X

2

Estimate current forecasting needs at each office

- Assume each office dedicates 9-14 FTE to forecasting

X

3

Estimate current long-term forecasting needs

- Assume 25% of current forecasting is focused on the long term and could be reduced through National Blend implementation

1 Alaska, Pacific, and Hawaii regions are not included in this analysis because of limited usage of existing grids and relatively higher levels of variation in weather phenomena

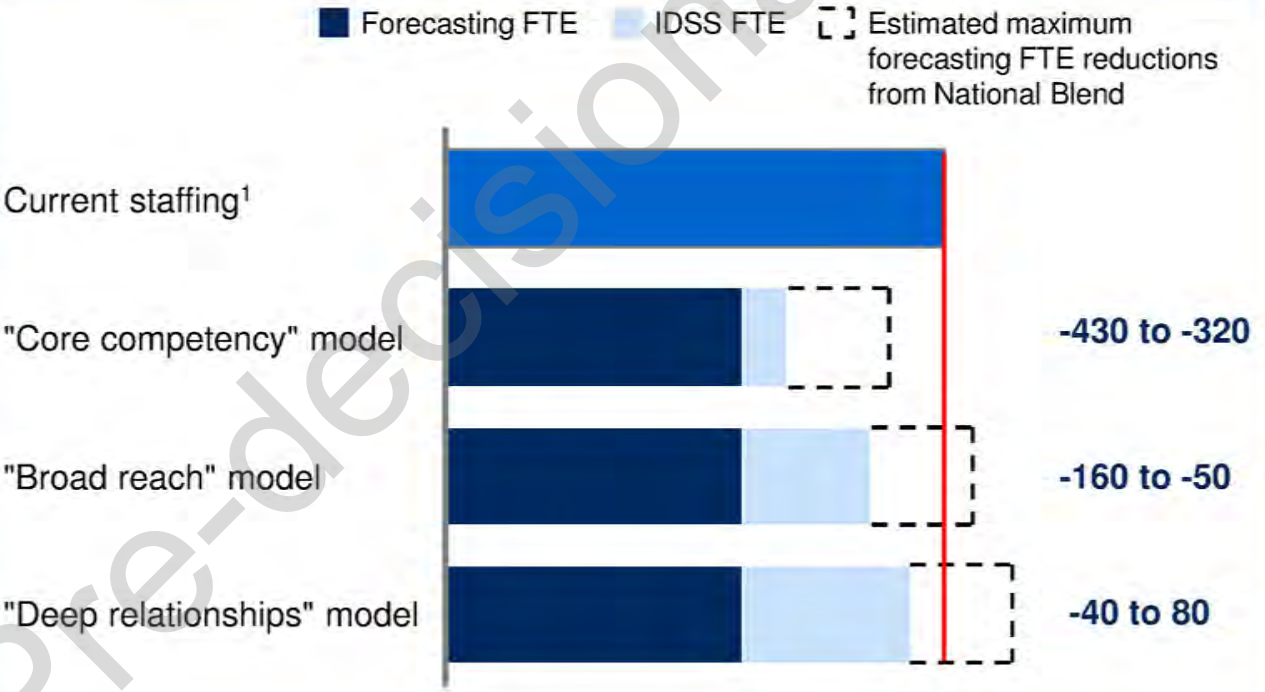
Reducing WFO long-term forecasting from the blended model could make resourcing expansive IDSS models more feasible

PRELIMINARY

Key Assumptions

- National Blend used only in Eastern, Central, and Southern Region offices
- Long-term forecasting (>2 days) is about 25% of total WFO forecasting activity today
- Currently WFOs dedicate 9-14 FTEs to forecasting regularly

Possible additional staffing required after implementing National Blend only



The "Broad Reach" model could be supported by implementing the National Blend alone, while the "Deep Relationships" model might require additional measures

1 Current staffing is not split between forecasting and IDSS functions

Initiative Option Summary: Renegotiate or reduce the number of phone lines to support NOAA Weather Radio

Goal: Reduce costs of maintaining NOAA Weather Radio

Potential Options	Pros	Cons	Projected Impact
Renegotiate local lines for bulk pricing[1]	▪ Capture price savings and reduce threat of future price increases through bulk purchasing	▪ Transition costs to new providers could be difficult in the short term	▪ Approximately 2 FTE could be used for IDSS[1]
AND/OR			
Reduce the number of phone lines per WFO site	▪ Easier to implement in the short term ▪ Lower risk of future costs from rising price to maintain copper analog lines	▪ Increased risk from loss of service	▪ Approximately 8 FTE could be used for IDSS[2]
AND/OR			
Implement VoIP solution to replace copper analog wires[3]	▪ Less ongoing maintenance costs than with analog wires ▪ Easier to capture bulk pricing discounts with enterprise solution	▪ Difficult to realize savings in the short term ▪ Slightly less reliable than copper analog lines in severe weather	▪ Approximately 14 FTE could be used for IDSS[3]

1 Assumes 20% cost reduction (from GSA estimates) from bulk renegotiations
2 Based on assumption of 50% fewer local lines into WFOs than currently exists, some of the anticipated 8 FTE costs would be reduced should offices choose to purse both bulk price negotiations and reduced number of lines
3 Analysis assumes that discontinuing NOAA Weather Radio would constitute a degradation of service and would thus be outside of solution scope; assumes 75% reduction in long-term operating costs of all lines
SOURCE: Headquarters interviews

Initiative Option Summary: Deprioritize or centralize outreach and education for preparedness

PRELIMINARY

Goal: Reduce local office costs for outreach and education activities dedicated to the general public

Potential Options	Pros	Cons	Projected Impact
Limit local involvement in Weather Ready Nation ambassador program	▪ Follows assumptions of "deep relationship" and "core competency" models ▪ Assumes one believes that WRN ambassador program has limited impact on community preparedness	▪ Public relations value of the program ▪ Would violate premise of "broad reach" model ▪ "Weather forecasts intrinsically have no value[2]" without proper interpretation	▪ Approximately 12 FTE could be used for IDSS[1] ▪ No impact to current forecasting resources at WFOs
AND/OR			
Centralize other collateral and outreach activities to limit the impact on WFO resources	▪ Increases equity and consistency of outreach ▪ Reduces redundant efforts across WFOs	▪ Limits local outreach and personalized service	▪ Approximately 9 FTE could be used for IDSS[2] ▪ No impact to current forecasting resources at WFOs

1 Assumes WRN ambassador program is responsible for 10% of WCMs' time currently
2 National Weather Service presentation to American Meteorological Society, August 2015
3 Based on outreach estimate of 150 hours per WFO beyond Weather Ready Nation Ambassador Program
SOURCE: Site interviews

Executive Summary of Phase 2 Deliverable: Development of Options and Alternatives

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluate impact-based decision support services (IDSS), understand the NWS current state and gaps, develop options and alternatives, and test and evaluate options to move forward

Methodology: During Phase 2, a variety of stakeholders, including OWA core team members, SMEs, and OWC Executive Champions, have been engaged through workshops, site visits and interviews

Long-term options to create an integrated field structure: To address the Phase 1 findings, several long-term options have been developed to establish the philosophy for moving forward and to help guide the development of long-term options on an integrated field structure

1) **Operating model philosophy (including IDSS):** There are three potential operating model philosophies that respectively focus on core competencies, broad outreach, and deep core-partner relationships that could improve the consistency of IDSS delivery between field offices; each is based on different assumptions of what reduces the impact of weather on life and property

2) **Organization structure:** A broad set of options for the long-term field structure were identified and assessed against evaluative criteria that was established based on principles of change for NWS and ten tests of organizational design

Short-term options: As a first step forward, several options across the IDSS operating model, organization structure, and workforce can be tested and evaluated in the short-term and in support of the long-term options that are ultimately identified

Next steps: The Phase 3 objectives are to refine the set of options for the integrated field structure and to begin to test and evaluate a robust plan for selected short-term options

Initial evaluation of long-term organization structure options involved developing an option set and testing against principles and criteria

Develop option set	Develop principles of change	Develop evaluative criteria	Test option set
▪ Evaluate drivers of change and potential impact areas of impact on current org state ▪ Create full spectrum of future state options ▪ Align approach with IDSS operating model philosophies	▪ Create NWS ideals that future changes to the field could align with ▪ Align with 10 tests of organizational design	▪ Create customized NWS evaluative criteria based on principles of change and 10 tests of organizational design	▪ Evaluate full spectrum of future state options ▪ Test pros and cons and potential impacts of each option ▪ Recommend tentative deep dives

Develop option set | Develop principles of change | Develop evaluative criteria | Test option set

In order to develop initial option set, NWS should first decide WHAT functions should be in the field, and then WHO and WHERE

	Description	Current state of the field
A **WHAT functions are performed in field offices** *(vs NCEP, Region, & HQ)*	▪ Where will **forecasting and warnings** (across each time horizon) occur? ▪ Will field **provide IDSS**? ▪ Will field continue to maintain **obs network** and **admin**?	▪ **Short-term and long-term forecasting** in WFOs, along with **WWAs** ▪ **Varying levels of IDSS** provided by field offices ▪ Manages own **administrative work** and **observations network**
B **WHO performs those functions** (*e.g., skill mix necessary, requisite roles*)	▪ What **skills** and **roles** are required to support those functions in the field? ▪ Will needs for **skills and roles** change who is in the field?	▪ Forecaster hiring prioritizes **skills in weather-related science** ▪ Training provided for IDSS ▪ Additional positions provide mission support and support maintenance of obs network
C **WHERE they need to be located to perform those functions** *(e.g., deployed, embedded)*	▪ Where do staff in the field need to be **located** (e.g., embedded, deployed, at local offices) to support the functions that remain in field?	▪ Forecasters and other field staff work from **"cookie cutter" WFOs** and other, more specialized field offices ▪ Some forecasters are deployed (IMETs) or embedded for IDSS

Develop option set | Develop principles of change | Develop evaluative criteria | Test option set

Depending on functional changes, there is a spectrum of options NWS could consider, ranging from status quo to changes in function

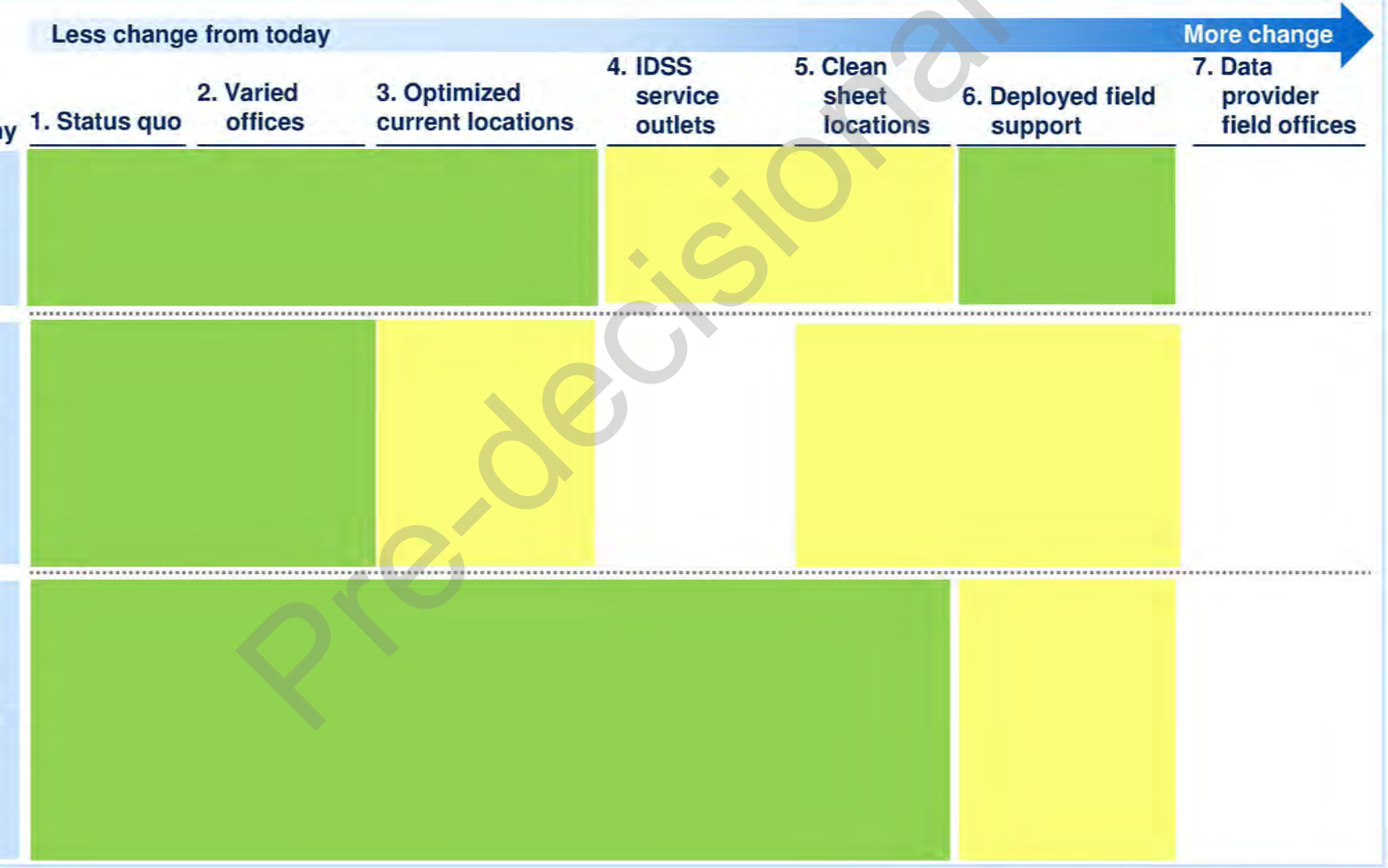
Resulting change to current org structure

Less change from today → More change

	1. Status quo	2. Varied offices	3. Optimized current locations	4. IDSS service outlets	5. Clean sheet locations[1]	6. Deployed field support	7. Data provider field offices
A **WHAT functions performed in field offices** *(vs NCEP, Region, HQ)*	▪ **No change** to current functions	▪ Optional change to forecasting ▪ **Workload dependent on IDSS and obs network**	▪ Optional change to forecasting ▪ **IDSS focused on key core partners**	▪ Centralized forecasting ▪ **Field focuses on IDSS provision**	▪ Optional change to forecasting ▪ **IDSS focused on key core partners**	▪ Centralized forecasting ▪ IDSS focused on **network of core partners**	▪ Centralized forecasting ▪ No field focus on IDSS ▪ **Focus on obs collection & maintenance**
B **WHO performs these functions** *(e.g, skills and roles in field)*	▪ No change	▪ **Change to who:** Field offices differ in size and potentially in skill mix to focus on local workload	▪ Potential change to WHO	▪ **Change to who:** Skills and roles change to focus on IDSS skills and roles	▪ Potential change to WHO	▪ Potential change to WHO	▪ **Change to who:** Roles focus on excellence of provided data and maintaining obs network
C **WHERE located to perform functions** *(e.g., in person, deployed)*	▪ No change	▪ Potential change to WHERE	▪ **Change to where:** IDSS embedded; responsibilities across CWAs combined	▪ Potential change to WHERE	▪ **Change to where:** Functions dictate where NWS is in the field without accounting for current locations	▪ **Change to where:** Functions performed by deployed field support staff	▪ Potential change to WHERE
Potential Impact to current field org structure	▪ Function of field office does not change substantially from current field office	▪ Each field office varies to accommodate current workload variance in its community	▪ Offices change to solve for overlaps in responsibilities and increase consistency	▪ Offices change in order to primarily act as IDSS providers and disseminators of information for other offices	▪ Offices are ideally located across NWS to have balanced workload and to be able to reach correct partners	▪ Field flexible to needs of stakeholder and can adapt to future changes to technology	▪ National Weather Service should focus on remaining pre-eminent source of data

1 Clean sheet refers to the starting point of a "clean sheet" in which existing locations are not considered:

Some options align easily with the different IDSS philosophies



Develop option set | **Develop principles of change** | Develop evaluative criteria | Test option set

In order to further evaluate each option, OWA's org core team developed a list of core principles the change should align with

Current principles for the organizational change

- **Maintain excellent service**: Organization structure options must allow NWS to continue to provide excellent forecasts and IDSS
- **Continue as a science-based, service provider**: Science is the foundation. Organization structure options must allow for more effective R2O/O2R and must complement and sync with system infrastructures/network infrastructures that will allow agency to provide excellent science-based service
- **Maintain an open attitude to all ideas and options**: Organization structure options do not have to conform to preconceived notions of how government agencies are structured, but must be respectful of good practices/ case studies and comply with public laws/executive orders
- **Improve the overall health of NWS through practice improvement**: Organization structure options should address not only structural issues at the field level but also other changes that may be needed to support mission delivery and help improve organizational health
- **Demonstrate that consistency doesn't always mean uniformity**: Organization structure options must consider many varying factors and achieve balances across these differences while striving for standard levels of service
- **Provide opportunity for professional growth of individuals, agency and culture**: Organization structure options that allow employees to be nimble/free to grow professionally (e.g., don't "stovepipe" individuals in specific career paths based on their duty station, centers of innovation to think and learn, telework/telecommute locales)

Additionally, the team used ten tests of organizational design to create a thorough understanding of the effects of the change

Organization Fit Tests

Would this design fit/work in this organization?

Operating unit strategies

- Does design direct management attention to high priority activities?

Leadership strategy

- Does design add value, e.g., by enabling coordination between key functions or driving strategic initiatives?

People and culture

- Can key people implement design and function well within it?
- Does it fit the culture and traditions of the organization?

Resources

- Is design feasible given available resources, e.g., budget, IT systems, field office locations?

Robustness of Structure Tests

How robust and effective is this design?

Difficult links

- Does design provide solutions for important but potentially difficult links between units?

Specialist cultures

- Does design give important specialist cultures within NWS sufficient autonomy and protection from influence of main culture?

Redundant hierarchy

- Does design ensure that each management level creates value and has knowledge and competence required to do so?

Accountability

- Do all units in design have clear performance measures that balance time spent managing them with value they add?

Flexibility

- Will design be flexible enough to cope with uncertainties, adapt to current challenges, and prepare for future opportunities?

Excessive complexity

- Does design reflect complexity of stakeholder relationships while being sufficiently straightforward to work with?

Develop option set | Develop principles of change | **Develop evaluative criteria** | Test option set

Aligning the principles with 10 tests of design produced a set of customized evaluation criteria to assess each option

Evaluative Criteria

Supports mission	▪ **Aligns with WRN and supports IDSS:** will it enable NWS to support its mission of a Weather-Ready Nation? ▪ **Does not significantly degrade service:** does it allow NWS to continue providing the same level of service in all aspects of the mission? ▪ **Promotes consistency without reducing innovation:** is it a helpful framework and is a consistent feel created that allows for flexibility to account for the unique context of each office?
Supports culture	▪ **Aligns with strengths of NWS culture:** does it maintain NWS as a science-based service organization and support employee motivation and customer service? ▪ **Improves organizational health:** does it increase collaboration, improve role clarity, and increase overall organizational health?
Is flexible, feasible and implementable	▪ **Flexes with technology changes:** does it enable technology modernization while reflecting current levels of technology? ▪ **Accounts for workload variance:** does it account for differences in workload across different WFOs? ▪ **Is financially feasible:** does it fall within current envelope of NWS costs? ▪ **Can be implemented:** is it technically, geographically, and organizationally possible to implement this option?

Based on preliminary evaluation of impacts and costs of each option, options 2, 3 and 4 could be candidates for further evaluation

Long-term options scored against evaluative criteria

=Recommended for deep dives
= Low
= High

	Supports mission			Supports culture		Flexible, feasible, & implementable			
	WRN-aligned & supports IDSS	No de-graded service	Improve cons-istency	Supports culture's strengths	Improves org health	Flexes with changes	Allows for workload variance	Financial feasible	Ease to implement
Option 1: Status quo									
Option 2: Varied offices									
Option 3: Optimized current locations									
Option 4: IDSS service outlets									
Option 5: Clean sheet locations									
Option 6: Deployed field support									
Option 7: Data provider field offices									

SOURCE: Core team assessment of options against evaluative criteria

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 1: Retaining status quo, even with additional changes to clarify roles could not allow NWS to adapt to future changes

Description

- NWS makes short-term changes to improve role clarity but otherwise **does not make changes to current org structure**

Resulting changes to function and field structure

- **None**

Some potential impacts

- **High ease of implementation** as requires no significant structural changes
- **Currently financially feasible** based on current operational model
- **Fulfills mission at current demand level**, though questionable whether it is sustainable

Some potential risks

- **Does not account for workload variations**
- **Lack of adaptability to** future changes in workload or technology
- **Does not promote healthy** organizational culture
- Stakeholder concerns could potentially lead to more external scrutiny

Rating along evaluative criteria

1. Supports mission
2. No degraded service
3. Improve consistency
4. Support culture
5. Improve org health
6. Flexible/adaptable
7. Accommodates variance
8. Financially feasible
9. Ease to implement

Takeaways: Current structure does not promote organizational health[1] or lead to ability of NWS to adapt to changes in technology

1 Based on 2015 OHI results which included responses from 49% of all NWS employees

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 2: Adjusting for workload variability by varying skill mix and who are in offices could increase ability to support mission

Description:

- NWS aligns to the different needs and levels of workload for each field office by varying number of staff based on the future operating model

Resulting changes to function and field structure

- **WHAT**: Offices could perform only IDSS and ET/IT maintenance outlets OR could be mini WFOs with all functions

Optional:

- **WHERE**: E.g., Could change some office locations
- **WHO**: E.g., Small offices could be only IDSS and ET/IT maintenance outlets OR could be mini WFOs with all functions

Some potential impacts

- **Accommodates workload variance** differences between difference offices
- **Difference in office sizes can play different functional roles,** leading to increased flexibility
- **Fulfills mission at current demand level**, though unclear whether it is sustainable

Some potential risks

- **Does not address consistency**
- **Increase separation between offices**; service backup issues
- **Significant analysis necessary to decide the correct sizes and layout of offices**
- Could potentially create more **narrow career path**

Rating along evaluative criteria

1. Supports mission
2. No degraded service
3. Improve consistency
4. Support culture
5. Improve org health
6. Flexible/adaptable
7. Accommodates variance
8. Financially feasible
9. Ease to implement

Details on next pages

Option 2: Offices could adjust to different office needs by allowing different mixes of skils and roles from office to office

Impact on WHO

Less variance

More variance

Example potential structure	Impact	Questions to consider
 **Two flavors of offices with different functions/staff**	⊕ Easy to implement ⊕ Functionally, responsibilities and roles by office type remain clear ⊖ Allows little additional room to account for workload variation	▪ How would NWS decide between location of small vs. large offices? ▪ What would be relationship moving forward of small to large offices? (i.e., would small offices answer to large offices?)?
 **Three flavors of field offices with different skills/roles**	⊕ Provides multiple variations of size to account for workload differences without significant complexity in defining roles or implementing ⊖ Does not allow significant customization by location	▪ Is three offices the correct choice, or are there reasons (e.g., obvious differentiators between office workload) to align to 4,5, etc., office sizes?
 **Skills and roles in each office customized to needs of its CWA**	⊕ Easy to customize ⊕ Can align exactly with analysis to be as efficient as possible ⊖ Complex to implement as could require 122 different office variations ⊖ Could lead to additional ambiguity in role by offices	▪ What combination of workload drivers (e.g., number of stakeholders, number of weather events, size of AOR) would be used to determine exact number of FTEs? ▪ How would seasonal or event based variations in workload be accounted for?

Option 2: Because of the flexibility inherent in varying office sizes, this option aligns with any of the IDSS philosophies

Potential impacts for each different functional model

Impact within each philosophy of IDSS

⊕ = works with this option
⊕ = may work with this option
⊕ = might not work with option

Core competency	⊕	▪ **Could align to core competency model;** Could be able to align offices to specific workload needs of a slimmer model
Broad reach	⊕	▪ **Could align to broad reach model;** could accommodate broader networks of constituents potentially flexing staff between larger offices
Deep relation-ships	⊕	▪ **Could align to deep relationships model;** could scale up resources to align with high-priority relationships in some areas, aligning workforce to key stakeholders

Potential benefits

- **Accommodates workload variance** differences between difference offices
- **Difference office sizes can play different functional roles,** leading to increased flexibility
- **Fulfills mission at current demand level**, though unclear whether it is sustainable
- Potentially **increase available resources** for NWS by allowing staff at larger offices to flex to help staff at smaller offices during severe weather events
- **Could potentially achieve** within current financial envelope
- Lead to ability in future for organization to adapt to stakeholder needs, which could be much more complex of a change

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 2: However, different offices sizes could increase overall organizational complexity, necessitating greater role clarity for field

Potential risks

- Additional **layers within the organization** could increase complexity and potentially the level of bureaucracy within the NWS
- **Increased difficulties with deciding the correct size of each office type** could lead to increased complexity across NWS
- WFOs could become **more independent** and competitive without the correct connections between them

Potential mitigation strategies

- Ensure that **offices do not "stack"** to each other and that office support is directly through regional HQ
- Create **additional analysis with WFO** and regional input in order to understand correct size for each office
- Ensure an organizational system and **collaborative process** across regions in order to foster cooperation and team work across all sizes of WFOs

What we have to believe

- NWS could be able to **transfer workforce between offices** in order to create new models
- New, more **specific roles** could be created in order to focus on specific tasks and also foster movement across offices throughout the organization
- There are offices in which **workload can be shifted away from the locale** without degradation of service

Develop option set > Develop principles of change > Develop evaluative criteria > Test option set

Option 2: A full evaluation based on all criteria shows that this option could help increase overall flexibility of organization

Option:
Vary office size

Evaluation and scoring of options

	Overall	Key Strength	Notes
WRN-aligned & supports IDSS	◑		Supports IDSS without significant change
No degraded service	◕	✓	No degradation of service
Improves consistency	◔		Does not significantly increase consistency; potential decrease
Supports culture's strengths	◑		Science focus; less independence at WFO
Improves org health	◕	✓	Increases number of layers and potential bureaucracy
Flexes with tech changes	◑		Relatively easy to adapt in future
Workload variance	◕	✓	Could create options based on current functions
Financially feasible	◕		Could be agnostic to current cost envelope
Can implement	◑	✓	Moving FTE around; no infrastructure changes

Conclusions

- **Allows for continuous support and level of current service**
- **No significant savings in** without additional organizational changes
- **No large change in service levels** provided by the National Weather Service; some communities could protest any changes to offices
- **More flexibility** in current state to adjust to future changes in tech
- **Needs assessment** to create the WHO and WHERE aspects of the change following the function

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 3: Optimizing offices so they are focused on IDSS without centralizing forecast could focus NWS on mission support

Description:

- NWS optimizes for IDSS but keeps forecasting in the field; roles and skills mix change to accommodate focus on IDSS

Resulting changes to function and potential shift in field structure

- **WHAT:** Local workload of IDSS and obs network would determine needs for each different field office

Potential shift in field structure:

- **WHO:** Role and skills mix change across field
- **WHERE:** Optional change to WHERE

Some potential impacts

- **Could allow org structure to accommodate current variance** beyond just moving around workforce
- Services and financial resources **better aligned to needs of communities and mission**
- **Increased transparency** in org structure, leading to increase in overall org health

Some potential risks

- Potential challenge to **implement without locational shift**
- Could potentially require locational changes to create an effective model, and be feasible
- Without above, could lead to an increase in workload for offices and low morale
- Could lead to **stakeholder concerns**

Rating along evaluative criteria

1. Supports mission
2. No degraded service
3. Improve consistency
4. Support culture
5. Improve org health
6. Flexible/adaptable
7. Accommodates variance
8. Financially feasible
9. Ease to implement

Details on next pages

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 3: Field could potentially change who is in the field (and where they are) if consistency and IDSS focus are prioritized

Changes to "Who"	Example potential structure	Impact	Considerations/questions
IDSS provided via embedding	▪ **IDSS roles embedded ; focus offices on forecasting still**	⊕ Could help align IDSS and keep core partners happy ⊕ Could flex to changes in future ⊖ Resource intensive option ⊖ Could create further distance and lack of consistency	▪ Does NWS or partners have additional resources that could be allocated to this option? ▪ NWS could need to choose one core partner to align to (mainly) in the case of local embedding – aligns best with "deep" relationships
	▪ **Current office structure retained**	⊕ Could use current office structure to create consistency for partners and increase feelings of normalcy in staff ⊖ Does not allow significant flexibility by location; could lead to empty space	▪ **Would the functional changes at the NWS to increase consistency and equitable workload across offices necessitate changes to office locations?**
IDSS provided from field offices	▪ **Field offices have responsibilities combined or merged to reduce redundancies**	⊕ Could help align resources to highest priority needs of NWS ⊕ Could create lean, flexible organization ⊖ Difficult to keep all stakeholders happy ⊖ Potential decrease in morale	▪ How would the NWS decide what offices to consolidate? ▪ What would be the threshold necessary for offices to meet before they are consolidated? ▪ Would locales still be provided IDSS, just from another office or location?

Option 3: NWS could align field with current stakeholder needs & re-allocate resources to critical NWS needs

Potential impacts for each different functional model

Impact within each philosophy of IDSS

⊕ = works with this option
⊕ = may work with this option
⊕ = might not work with option

Core competency

⊕

- **Could align to core competency model;** leaner version of IDSS might drive fewer office locations

Broad reach

⊕

- **Could align to broad reach model** if few changes were made to "where" NWS based services from or if IDSS were provided remotely

Deep relation-ships

⊕

- **Could align to deep relationships model;** could align embedded resources or office locations to key core partners, and focus IDSS and mission-delivery on these core partners

Benefits

- **Moves organization and mission delivery closer to the key core partners** and could help the field align itself in the future to provide excellent IDSS
- **Strengthen consistency and ability to consolidate across organization,** leading potentially to increased organizational excellence
- **Financially, could align budget to critical needs of NWS moving forward** and provide additional flexibility of budget in the future
- Could lead to **better long-run organizational health**, as mission-alignment is clarified, and span of control could also be reduced or better aligned (if consolidation was managed in an organized manner)

Option 3: Structural impacts of this option could lead to stakeholder concerns, low morale, and temporarily degraded service

Potential Risks

- Could be significant **Congressional and local pushback** to office consolidation or closings, **reducing chance of implementation success**
- **Does not directly create flexibility** to address future, as-yet unknown changes to technology or stakeholder needs
- Could lead to **low organizational morale**
- Could distance IDSS from some key communities if consolidation occurs
- Travel **increase** for obs and tech work
- **Temporary degradation in service**

Potential mitigation strategies

- Create **transparent method to determine next steps**, with **stakeholder buy-in** early in the process
- Pair with functional changes to increase functional flexibility to future changes
- **Implement slowly to decrease organizational disruption** for both stakeholders and NWS staff
- **Better arm obs and tech staff** (e.g., make ESAs more mobile) to provide maintenance and repair over larger areas

What we have to believe

- NWS could be able to **explain and defend any impact on changes to "where"**
- **Office functions and workload shifted** could lead to better consistency
- **Functions in offices can be scalable**, so that consolidated offices could be able to bear responsibilities or increases in workload if their areas of responsibilities increase
- Observations and technical work could be managed from further distances effectively

Option 3: Creating consistency could help better align with mission, but could lead to local degradation of services

Option: Vary office size	Overall	Key Strength	Notes
WRN-aligned & supports IDSS	◕	✓	Aligns with Core and Deep IDSS philosophies
No degraded service	◑		Temporary degradation of service
Increases consistency	◔		Does not directly increase functionality
Supports culture's strengths	◑		Could make data and obs network harder to reach
Improves org health	◑		Could decrease span of control; lead to low morale
Flexes with tech changes	◔		Alone, could not flex in future to tech changes
Workload variance	◕	✓	Fix variance via changes to the WHO
Financially feasible	◕	✓	Would be financially aligning to critical needs
Can implement	◔		Could lead to stakeholder concerns

Evaluation and scoring of options

Conclusions

- **Allows for effective, lean model of IDSS or focus on one particular partner**
- **Financially, consolidation could lead to better NWS alignment across org**
- **Reduction in workload necessary at WFO to work** (e.g., through centralization of forecasting)
- **No direct increase in flexibility to future changes**
- **Could lead to significant pushback, both internally and externally**
- **Needs objective assessment** to create list of offices to objectively create a model for consolidation in future

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 4: Shifting offices to act as outlets for IDSS and other services could potentially require centralizing some workforce

Description:

- NWS changes function of field offices to be used mainly as outlets for IDSS and services (e.g., aligning with other line offices, agencies)

Resulting changes to function and potential shift in field structure

- **WHAT:** Offices would focus on IDSS function in particular

Potential shift in field structure:

- **WHO:** Role and skills would be determined by IDSS needs
- **WHERE:** Optional change to WHERE for some functions

Some potential impacts

- **Would align NWS directly with core partners,** emphasizing mission and key part of NWS' current value proposition
- **Flexible** organization could be able to adapt to needs of NWS in future
- **High financial feasibility** and could lead to additional resources for NWS to utilize in future

Some potential risks

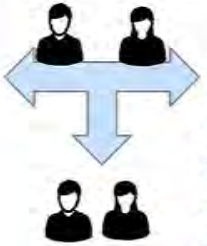
- **Risk perceived to not support current culture** of NWS as "science-based organization"
- **Could degrade service** by separating staff expertise from the field or from other forecasting
- **Difficult to implement** from a status quo that currently integrates forecasting and IDSS so closely and without reducing forecast workload

Rating along evaluative criteria

1. Supports mission
2. No degraded service *
3. Improve consistency
4. Support culture
5. Improve org health
6. Flexible/adaptable
7. Accommodates variance
8. Financially feasible
9. Ease to implement

Details on next pages

Option 4: Functional changes could impact "where" staffed in field offices, with different potential impacts to where they are located

Impact to "Where"	Example potential structure	Impact	Considerations/questions
No change to "where" in field	 **Retain most staff full time in field offices**	⊕ Small change could lead to less disruption for staff & partners ⊕ Could centralize forecast above field, leaving more staff to focus on IDSS ⊖ Potentially little impact to flexibility	▪ **Do functional changes NWS has decided to make require centralization or other changes in field?** ▪ Will NWS be a flexible and lean enough organization to succeed without centralization?
	 **Centralize some functions above the field level**	⊕ Leaner model could focus impact of NWS on the core aspects of its IDSS delivery ⊕ Leaner model could better flex in future ⊖ Would lead to potential degradation of service	▪ Create implementation timeline to ensure centralization does not create degradation of services ▪ Could lead to stakeholder concerns at local level or internally ▪ Would need to believe functions could be centralized above field ▪ Could separate IDSS from forecasting
Change to "where" is in field	 **Centralize staff to be deployed into field or work from region/national centers**	⊕ Create lean model for IDSS ⊕ Financially, provide flexibility to strengthen NWS ⊖ Would garner significant internal and external pushback ⊖ Could lead to significant degradation of IDSS services, as link between stakeholder needs and what NWS provides could be more distance	▪ Would need to be believe that all functions could not need to be performed locally (e.g., data collection, obs maintenance, IDSS) ▪ How could this impact outreach to new stakeholders; could outreach be just as effective done by a deployable team or remotely? ▪ Would remote/deployment be financially more feasible?

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 4: A field focus on IDSS could align with core competency and deep relationships philosophies, with focus on mission

Potential impacts for each different functional model

Impact within each philosophy of IDSS

⊕ = works with this option ⊕ = may work with this option ⊕ = might not work with option

Core competency ⊕

- **Could align to core competency model;** focus on IDSS could allow the lean version of IDSS to be performed efficiently and at high level of service and impact

Broad reach ⊕

- **Not an ideal match for broad reach model;** broader outreach needs and a broader map of stakeholders could pose challenges for leaner or distant staff

Deep relation-ships ⊕

- **Could align to deep relationships model;** staff could focus on specific partner rather than specific "locale"

Benefits

- **Functionally, staff focused on IDSS;** provides additionally flexibility of this resource to provide excellent IDSS
- **Some centralization of functions could potentially increase consistency** in forecasting, leading to more effective messaging across local and regional borders
- **Would not directly provide financial flexibility,** but with office consolidation could provide NWS with budget flexibility to support mission-critical initiatives
- Focus on **IDSS for one or two core partners could ensure service excellence** in IDSS
- Could create **ability of organization to flex** depending on future technological changes

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 4: Centralizing forecasting function above field could lead to a separation between the science and IDSS and significant pushback

Potential risks

- Depending on future technological changes, could **lead to degradation in service** as IDSS is separated from local understanding of needs and science
- **Significant change could cause concernts and implementation risks** from both internal NWS sources and external stakeholders
- Could lead to **little financial savings without additional consolidation**; necessitating that obs collection & maintenance centralized above field level

Potential mitigation strategies

- Ensure that function centralization will lead to **no significant degradation of services** across any function before implementing :
  - Centralizing forecasting
  - Centralizing IDSS
  - Centralizing data collection and observations network
- Create objective and **transparent method of analysis** to create centralization
- Create a **longer timeline to implement** where centralization occurs over extended period

What we have to believe

- It could be **effective to centralize resources without consolidating offices** (if consolidation was not occurring)
- **Customers could continue to value IDSS** in the long-run
- **Forecasting and IDSS functions could be treated separately**, and one or both could be centralized above the field and still be effective
- **Technological changes could support centralization** of functions
- NWS could provide an **effective rationale** to help push implementation forward with stakeholders

Option 4: Centralizing some functions necessitates a defense of its functional efficacy to allay pushback

Evaluation and scoring of options

Option: Vary office size	Overall	Top 3 rank of deep dives	Notes
WRN-aligned & supports IDSS			Supports IDSS withou significant change
No degraded service			Depends on level of centralization; risk of degradation increases
Improves consistency		✓	Could improve consistency
Supports culture's strengths			Lack of field model could decrease value proposition
Improves org health			Could decrease organizational morale
Flexes with tech changes		✓	Relatively easy to adapt in future
Workload variance		✓	Variance addressable by focus on IDSS
Financially feasible			Independent of consolidation, less impact
Can implement			Dependent upon level of centralization; could cause significant pushback

Conclusions

- **Different options of centralization across each function;** leaving IDSS in field could lead to effective mission delivery
- **Future tech changes and belief in current tech necessary to support centralization of forecast function**
- **Increases overall organizational focus and flexibility to deliver IDSS** if we believe we can separate IDSS from science
- **Centralization could help increase adaptability to future changes**
- **Could be implemented slowly over an extended timeline,** accounting for current vacancies and attrition

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 5: Clean sheet NWS locations could allow adaptability to current stakeholder needs but may not accommodate future change

Description:

- NWS changes office location by creating a bottom-up clean sheet in which non-current NWS locations are considered as options

Resulting changes to function

- **WHAT** — Select functions based on exact workload needs of current NWS stakeholder map

Some potential impact

- **Would allow NWS to clean sheet workload** and build organization based on precise workload needs
- Could better **support mission** and **increase service in future**
- Over long-term, offices could be practically located, **increasing transparency**, leading to increase in overall org health

Some potential risks

- Short-term, **mission and culture could be disrupted** by such large changes
- **Challenge to implement** geographically and physically
- Changes could become **outmoded with future changes** to technology
- Large needs for resources to implement **not financially feasible**

Rating along evaluative criteria

1	Supports mission
2	No degraded service
3	Improve consistency
4	Support culture
5	Improve org health
6	Flexible/adaptable
7	Accommodates variance
8	Financially feasible
9	Ease to implement
	Average:

Takeaways: Resource and practical implications of a pure clean sheet re-organization of the National Weather Service, along with potential disruptions to the mission during a prolonged change process, lead this to be a sub-optimal option

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 6: Creating a flexible and adaptable IDSS staff could increase ability of NWS to adapt but potentially not align with strengths of NWS

Description:

- NWS deploys IDSS; IDSS is still provided locally by embedding with stakeholders and/or working as a deployed workforce

Resulting changes function

- **WHAT:**
  - Centralize functions and create deployable workforce to increase flexibility

Some potential impacts

- Would increase NWS ability to **flex and adapt** to future changes
- Would allow NWS to **align directly with workload** in the field from a central position
- In long-run, could create **additional financial resources** NWS could allocate to training, research, IDSS or improving tech

Some potential risks

- **Does not support current culture** of aligning forecasting needs with local IDSS needs
- **Could degrade service** by separating intelligence collection from mission-delivery
- **Difficult to implement** given necessary technical and observational field needs of current NWS system

Rating along evaluative criteria

1	Supports mission	
2	No degraded service	
3	Improve consistency	
4	Support culture	
5	Improve org health	
6	Flexible/adaptable	
7	Accommodates variance	
8	Financially feasible	
9	Ease to implement	
	Average:	

Takeaways: Consolidating office locations into one, large office could increase overall adaptability of organization to change and be financially feasible in long-run; however, under current conditions, such consolidation could lead to degraded service and lack of ability to support a service-oriented field-office culture

Develop option set > Develop principles of change > Develop evaluative criteria > **Test option set**

Option 7: Providing no IDSS in the field could challenge NWS' ability to support its mission

Description:

- NWS varies the **number of staff at each office** based on the workload needs of its location and aligned operating model

Resulting changes to functions

- **WHAT:**
  - Focus only on centralized forecasting and data collection functions

Some potential impacts

- **Relatively financially feasible,** given mission scaling back and reduction of IDSS workload
- **Currently financially feasible** based on current operational model
- **Forecasting could not be degraded** though IDSS service-level could be intentionally decreased at field level

Some potential risks

- **Could not fully consolidate offices** with current obs network
- **Does not support current mission**
- **Does no support current strengths of culture**
- Could lead to significant **loss of motivation in staff**, who believe in and are driven by mission to protect lives and property

Rating along evaluative criteria

1	Supports mission	
2	No degraded service	
3	Improve consistency	
4	Support culture	
5	Improve org health	
6	Flexible/adaptable	
7	Accommodates variance	
8	Financially feasible	
9	Ease to implement	
	Average:	

Takeaways: No longer providing IDSS could make it difficult to fill current gaps to help stakeholders move forward into a "weather-ready nation" despite allowing NWS to accommodate variance and flex more easily in the future

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This slide has been redacted because it contains confidential and/or pre-decisional information.

Executive Summary of Phase 2 Deliverable: Development of Options and Alternatives

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluate impact-based decision support services (IDSS), understand the NWS current state and gaps, develop options and alternatives, and test and evaluate options to move forward

Methodology: During Phase 2, a variety of stakeholders, including OWA core team members, SMEs, and OWC Executive Champions, have been engaged through workshops, site visits and interviews

Long-term options to create an integrated field structure: To address the Phase 1 findings, several long-term options have been developed to establish the philosophy for moving forward and to help guide the development of long-term options on an integrated field structure

1) **Operating model philosophy (including IDSS):** There are three potential operating model philosophies that respectively focus on core competencies, broad outreach, and deep core-partner relationships that could improve the consistency of IDSS delivery between field offices; each is based on different assumptions of what reduces the impact of weather on life and property
2) **Organization structure:** A broad set of options for the long-term field structure were identified and assessed against evaluative criteria that was established based on principles of change for NWS and ten tests of organizational design

Short-term options: As a first step forward, several options across the IDSS operating model, organization structure, and workforce can be tested and evaluated in the short-term and in support of the long-term options that are ultimately identified

Next steps: The Phase 3 objectives are to refine the set of options for the integrated field structure and to begin to test and evaluate a robust plan for selected short-term options

Overview of short-term options

Focus of following section

	Options
Operating Model (1-3)	1. Develop nationwide prioritization guidance on delivering IDSS 2. Create uniform training and process maps related to IDSS 3. Clarify IDSS service delivery expectations through cascading goals through planning, establishing metrics, and clarifying the role of policy
Organizational Structure (4-7)	4. Align all Tsunami programs under a single entity 5. Increase alignment and connectivity between RFCs 6. Clarify the respective roles clarifying the roles of National Service Programs, NCEP, other centers and HQ 7. Increase collaboration and connectivity between field offices
Workforce (8 - 11)	8. Improve career paths and roles 9. Develop the workforce 10. Recruit and hire the right talent 11. Increase regional support of the field

SHORT-TERM OPTIONS: OPERATIONAL MODEL

1 Issue: Centralized guidance has not led to a common methodology for the provision of IDSS by field offices to date

What we learned:

Field offices vary in the way they provide IDSS. Additionally, there are few, if any, common factors (e.g., size of stakeholder community) that would lead offices to prioritize IDSS-related activities similarly today.

Vision for the future:

1a

From: Prioritization is based on different local and regional criteria leading to high variance in methods of prioritization between offices

To: Centrally-developed methodology offer prioritization guidance to drive weather readiness and still allow for some local variation

1b

From: No national system is used to verify consistency in how offices prioritize different types of IDSS

To: National or regional programs develop understanding of how offices prioritize and provide consistency

SOURCE: Site interviews

SHORT-TERM OPTIONS: OPERATIONAL MODEL

1 Option Summary: there are pros and cons to instituting a nationwide system of prioritization guidance

Goal: Prioritization guidance

Potential Options	Pros	Cons
1a Create a set of prioritization criteria which can be used by local offices	▪ Increases consistency of IDSS prioritization across offices ("how" offices prioritize") ▪ Drives accountability ▪ Promotes performance of IDSS ▪ Allows WFO leadership to share local insights with national leadership	▪ Limits variation within IDSS outputs ("what" offices prioritize) ▪ Reduces flexibility at local offices ▪ Requires investment of time and resources
AND/OR		
1b Institute a nationally-run office review system to assess local methods of prioritization	▪ Can increase consistency of IDSS prioritization across offices ▪ Improves NWS culture by reducing local and regional variation ▪ Increases local perception of headquarters' transparency ▪ Improves national and regional role clarity	▪ Is challenging to implement ▪ Requires significant investment of senior executives' time ▪ Is more ambiguous than a concrete system of metrics

1a Prioritization guidance helps offices articulate appropriate service levels within policy boundaries

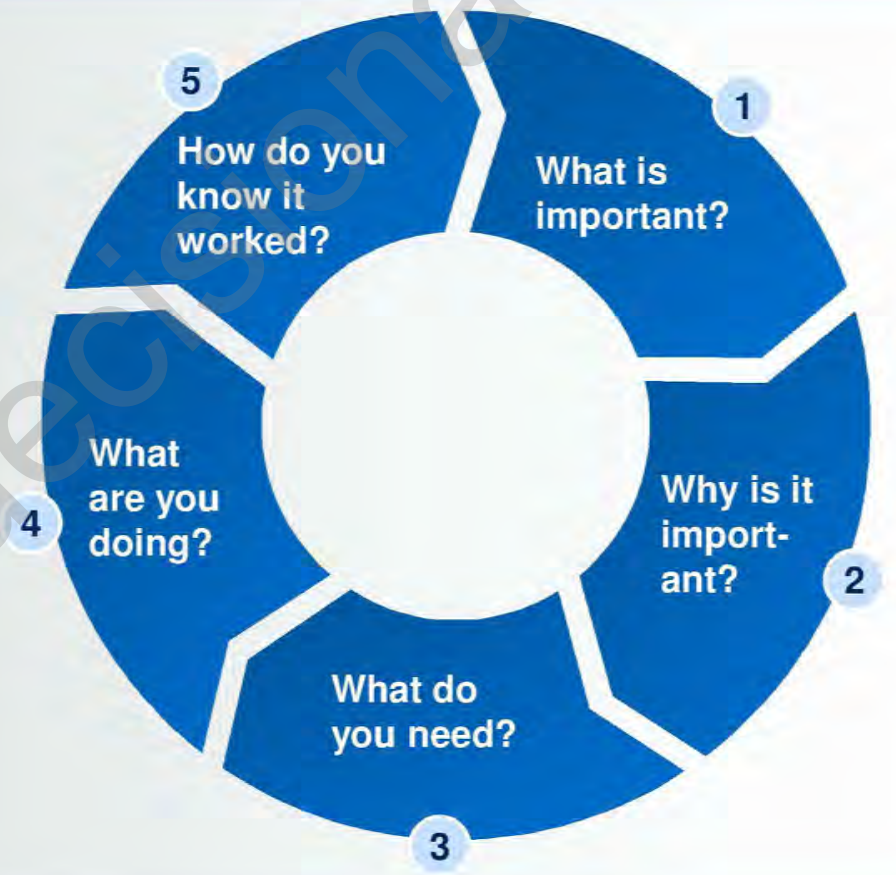
Role of prioritization guidance

Prioritization guidance helps local MICs navigate within the bounds of policy:

- Provides a methodology for making local decisions
- Standardizes a five-step process for decision-making which can operate at all WFOs

The result is the creation of locally tailored action plans:

- Creates consistency in *how* local decisions are being made
- Allows for some flexibility in *what* local decisions are being made



SOURCE: Core team workshop

SHORT-TERM OPTIONS: OPERATIONAL MODEL

1b Case study: other organizations have instituted systems of prioritization guidance to allow for local flexibility with oversight

Context of case study

- Federal agency with mission to protect lives and property and professionalized workforce
- Organization included over fifty local field offices which operated as isolated fiefdoms
- Central guidance to mitigate most important local threats
- No single system for prioritizing threats and interventions against those threats

Prioritization guidance

Headquarters conducted video calls with small groups of local offices quarterly to:

- Determine and assess local priorities
- Develop intervention plans to address
- Recommend reprioritization and new intervention plans where necessary
- Assign each office a green / yellow / red rating based on their current prioritization process

Intended impact

- Create consistency of how threats and interventions are prioritized
- Allow for local flexibility to address variable threats across the country
- Provide direct line of sight from Headquarters into the field and increase local leadership's accountability
- Increase transparency of headquarters' priorities and considerations

SOURCE: Team research and external interviews

SHORT-TERM OPTIONS: OPERATIONAL MODEL

2 Issue: IDSS and communication training and even standard processes vary across offices

What we learned:

While many employees are capable of providing excellent IDSS, many others do not have the skillsets required to perform IDSS. Approaches to developing these skillsets vary locally and regionally.

Vision for the future:

2a

From: Current national trainings are primarily web-based, do not incorporate communication skills, and other trainings vary region-to-region

To: Uniform IDSS and communications trainings are provided to Regions, and employees receive IDSS and communications retraining throughout their careers

2b

From: Some WFOs create their own processes, even for standardized tasks like remote IDSS

To: Process maps for the NWS most common standardized products and services are created and improve efficiency

SOURCE: Headquarters and Site interviews

2 Option Summary: there are pros and cons to creating training and process maps to build employees' skillsets and capabilities

Goal: Developing talent and skills

Potential Options	Pros	Cons
2a Create uniform IDSS & related comms training and integrate throughout an employee's career	▪ Creates and reinforces uniform definition of IDSS ▪ Builds skills necessary to IDSS	▪ Removes some autonomy from WFOs and regions ▪ Requires allocation of time and resources
AND/OR		
2b Create process maps for easily standardized activities	▪ Increases consistency across offices ▪ Allow local employees to realize efficiency gains through standard processes expected of all offices	▪ Less effective with non-standard processes like IDSS provision ▪ Isolated technical issues (Alaska/Pacific Regions) could limit near term impact

SHORT-TERM OPTIONS: OPERATIONAL MODEL

2a Planned IDSS training relies heavily on FEMA-based e-learning courses; scenario-based learning modules have yet to be developed

Other learning method | FEMA-developed course | Virtual learning | In-residence learning

Module	All forecasters	Managers
ICS foundation	Introduction to ICS	National response framework
	NIMS – an introduction	ICS for single resources and initial action incidents
		Intermediate ICS for expanding incidents
Partnership building	Emergency manager – an orientation to the position	
	Special event contingency planning for public safety agencies	
	Preparing for federal disaster operations – FEMA response partners	
	Warning coordination	
Risk com-munication	Effective communication	
	Risk communication during high-impact event	
	Building and delivering effective presentation and briefing (to be developed)	
	Understanding the variety of communication needs and modes to support decision-making (to be developed)	
Service evaluation	Debrief process and IDSS event post-mortem (to be developed)	Exercise evaluation and improvement planning
	Exercise for IDSS simulation (to be developed)	Exercise design
		Human performance improvement in the workplace

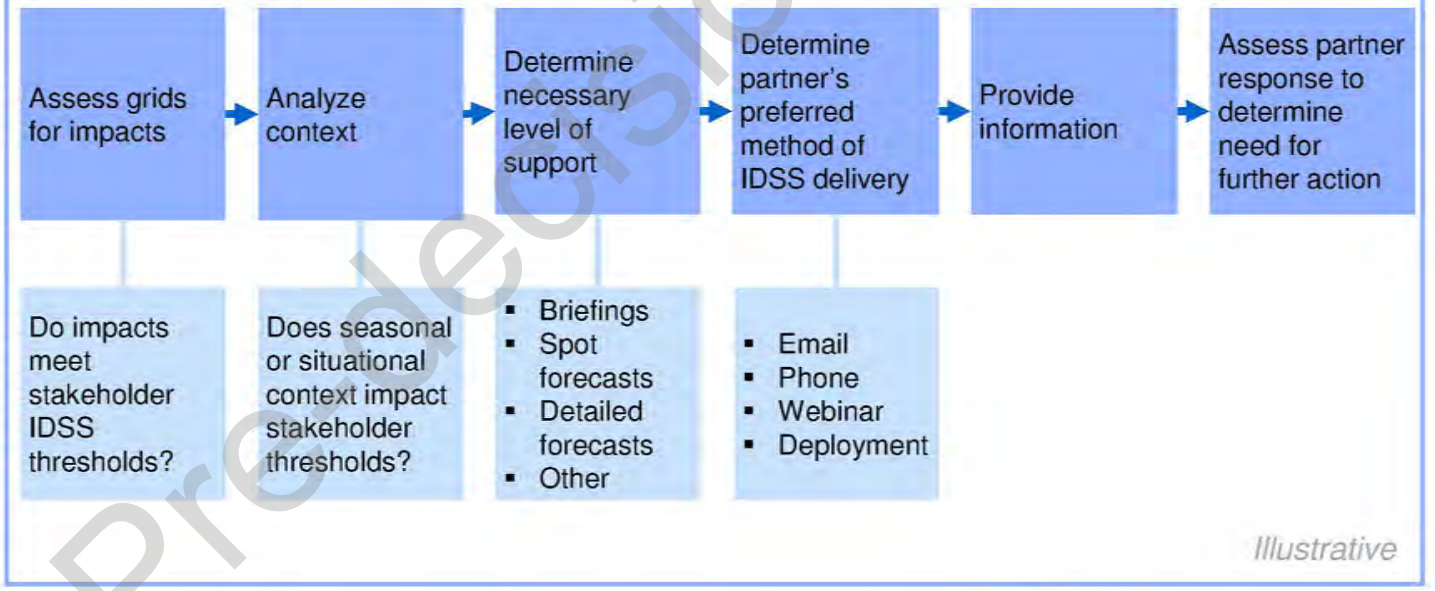
2b Process mapping helps standardize frequently repeated tasks and can improve efficiency

Role of process maps

Process maps are best used to identify small, but easily achievable process efficiencies

- Isolating a single process within the value stream
- Identifying non-value added activities within a process
- Supporting short-term process planning
- Informing local activities and decision-making
- Serving as a basis for an office's standard work

Process map for remote IDSS support



Process maps are less effective at providing guidance for non-standard activities

SOURCE: MIC interviews

SHORT-TERM OPTIONS: OPERATIONAL MODEL

3 Issue: Centralized formal mechanisms focus on policy and do not establish clearly how the field fits into the overall vision

What we learned:

Centralized guidance focuses on policy but still results in local offices interpreting policy and implementing differently. Increased clarity using multiple influence methods could support clarity of communications to the field offices[1]

Vision for the future:

	From:	To:
3a	Field has confusion about the overall NWS vision and how they fit into that vision	Transparent planning process leverages employee input with targeted, cascading goals to clarify local responsibilities and expectations
3b	There is a lack of sufficient IDSS performance metrics	Performance metrics promote local accountability at all steps of the forecasting process
3c or 3d	National policy does not establish effective IDSS standards and can be cumbersome to establish	Central policy can establish a "floor" of required field activities and/or establish a "ceiling" of unauthorized activities OR Prioritization guidance leads to consistency and equity of service delivery across field offices

1 Field offices are understood to include all offices with front-line service delivery to stakeholders (including WFOs and RFCs and in certain circumstances NCEPs

SHORT-TERM OPTIONS: OPERATIONAL MODEL

3 Option Summary: there are pros and cons to instituting minimum and maximum levels of IDSS with policy and metrics

Goal: Reinforcing change with formal mechanisms

Potential Options	Pros	Cons
3a Clarify local responsibilities, expectations in planning process	▪ Increases clarity and specificity of mission ▪ Creates actionable objectives supported by key and supporting indicators at the regional and local level ▪ Links local activities to mission fulfillment	▪ Impacts current planning process ▪ Simplifies objectives of weather ready nation ▪ Requires investment of time and resources
AND/OR		
3b Create a comprehensive set of performance metrics	▪ Reinforces policy decisions ▪ Allows for tracking WFO performance over time ▪ Helps drive national consistency ▪ Creates specific, achievable goals for frontline employees	▪ Requires investment of time and resources ▪ Is more difficult to tie metrics to outcomes than to activities ▪ Requires modification of current systems and processes to collect and discuss metric data
AND/OR		
3c Limit policy to creating defined minimum and/or maximum standards for IDSS	▪ Mandates required activities ▪ Helps define the "swim lanes" between the public and private sector through maximum level of service ▪ Allows for limited flexibility to address local conditions and stakeholders	▪ Allows for some variation ▪ Creates the potential for reduced equity to some partner groups ▪ Assumes a reduction in the role of policy as a lever to drive change
OR		
3d Use policy to guide office prioritization	▪ Increases consistency across NWS ▪ Increases local accountability for fulfilling national policy priorities ▪ Ensures equitable services delivered to stakeholders nationwide	▪ Results in cumbersome policy regulations with high numbers of regional and local addenda

SHORT-TERM OPTIONS: OPERATIONAL MODEL

3a The annual operating plan can be cascaded to the regional and local levels with specific actions and objectives

Strategic plan: *America is Open for Business*

Strategic Objective 3.2

Build a Weather-Ready Nation

Key strategies

- Evolve NOAA's National Weather Service
- Improve the accuracy and usefulness of forecasts
- Enhance decision support services for emergency managers

Strategic Objective 3.2 performance indicators

Key indicators	▪ **Number of days of forecast accuracy and warning lead time** ▪ Customer Satisfaction Index for NOAA's National Weather Service
Supporting Indicators	▪ Number of trainings available and enhancements to the Census Bureau's *OnTheMap for Emergency Management* website

Opportunities to cascade strategic plan

- Strategic plan's articulation of vision and mission of NWS could be briefed to the field
- National objectives could be cascaded to regional and local levels with associated goals and performance indicators
  - Region and WFO's roles and objectives would be clearly articulated and made actionable
- "Enhance decision support services" could be clarified and broken down into smaller sub-objectives following the selection of an operating model philosophy

"It's more like "consistency" and "do IDSS" are the messages. And those messages don't come with any definitive direction or guidance." – Local MIC

" I have no idea what Weather Ready Nation means. What are we doing with this program? Why aren't we using this branding on a wide array of initiatives?" – Local TV Reporter

SOURCE: America is Open for Business: 2014-2018 Strategic Plan

3b Metrics which are "SMART" will have the greatest impact on NWS operations

Principles for establishing metrics

- Metrics should not only measure current strengths and weaknesses, but also be able to answer the following questions:

Specific	Is it clear, straightforward, and easily generated?
Measurable	Is the measurement process easy and unambiguous?
Actionable	Can the team responsible for the metric directly influence it?
Relevant	Is it aligned with the business unit's strategy and objectives?
Time-bounded	Can it be measured at a frequency that will allow us to solve problems within the reporting cycle?

A limited number of metrics at any one level of the organization will ensure clarity and increase ease of management

Result of a "SMART" approach

- If these criteria are met, metrics can be used for two new management functions:
  - **Ongoing IDSS fulfillment:** Flagging inconsistencies in WFOs' performance of their ongoing IDSS duties
  - **Policy reinforcement:** Communicating expectations of consistency in local interpretations of national policy

SOURCE: World Meteorological Organization's *Strategy for Service Delivery and its Implementation Plan*

SHORT-TERM OPTIONS: OPERATIONAL MODEL

3b Performance metrics could be expanded beyond GPRA metrics to promote local accountability at all steps of the forecasting process

– – Critical to NWS' strategy and shows gap in current state

	0 Continuous research and situational awareness	1 Observations	2 Central processing	3 Analyze and forecast	4 Dissemination and decision support	5 Response & feedback
Importance to NWS strategic goals	**Critical to mission delivery** ▪ Improve IDSS ▪ Sustain a highly skilled workforce ▪ Maintain service consistency ▪ Work with partners	▪ Enabler to mission deliver	▪ Enabler to mission deliver	**Critical to mission delivery** ▪ Provide better forecasts and warnings ▪ Maintain product consistency	**Critical to mission delivery** ▪ Improve IDSS ▪ Maintain service consistency ▪ Work with partners	▪ Step not owned by NWS
Current metric or indicator	▪ Currently untracked	▪ Accuracy, coverage, uptime, number of observers	▪ Model accuracy	▪ GPRA goals	▪ Service assessment	▪ Stakeholder feedback
SMART[1] score		S M A R T	S M A R T	S M R	A R	M R T
Rationale for SMART score		▪ Observations metrics drive observational infrastructure improvements	▪ Accuracy is a key driver for model and process improvements	▪ Dependent on large sample size, includes events with disparate durations	▪ Qualitative narratives which are not immediately actionable	▪ Qualitative responses with low response rates dependent on stakeholder expectations

1 "SMART" criteria measure whether metrics are specific, measureable, actionable, relevant, and time-bounded
SOURCE: World Meteorological Organization's *Strategy for Service Delivery and its Implementation Plan, NWS101*

SHORT-TERM OPTIONS: OPERATIONAL MODEL

3b NWS could establish a focused set of metrics to improve and standardize IDSS performance

Forecasting step		Suggested metrics	Activity tracked by metrics
0 Continuous research and Situational awareness	Thought leadership	▪ Papers published ▪ Papers cited	▪ Partners' perception of NWS credibility
	Training	▪ # employees qualified to perform different activities (e.g. briefing, aviation, etc)	▪ Offices' forecasting and IDSS capabilities
	Domain awareness	▪ # core partners in CWA	▪ Offices' awareness of IDSS responsibilities
	Educating stakeholders	▪ % of core partners educated on NWS' capabilities in past year	▪ Offices' performance of required IDSS
3 Analyze and forecast[1]		▪ 1-2 GPRA metrics compared to national average	▪ Offices' forecast quality for locally critical weather conditions
4 Dissemination and decision support		▪ Average time until response to core partners' request	▪ Offices' episodic IDSS timeliness

1 Proposed metric(s) will vary locally by WFO, jointly selected as part of prioritization process

SOURCE: Operating model core team workshop

3b Metrics could be cascaded through NWS to be relevant at all levels of the organization

NWS group	Metrics owned by group	Rationale
Headquarters	0 Training; 0 Thought leadership	▪ Limited ownership of service delivery metrics ▪ Responsibility for nation-wide metrics ▪ Line of sight into missed targets and key trends at lower levels of the organization
Region	0 Training	▪ Limited ownership of service delivery metrics ▪ Comprehensive view of all WFO's missed targets and key trends
Local leadership	0 Educating stake-holders; 0 Domain awareness	▪ WFO-specific view of performance, focused on ongoing outreach and IDSS activities ▪ Creation of local goals and stretch goals for "dissemination and decision support" and "analyze and forecast" metrics
Frontline employee	4 Decision support; 3 Analyze and forecast	▪ Limited, targeted metrics which drive episodic forecasting and IDSS performance ▪ Accountability for individual actions and decisions

3c Central policy can require certain and prohibit other service levels that are outside the scope of the NWS mission

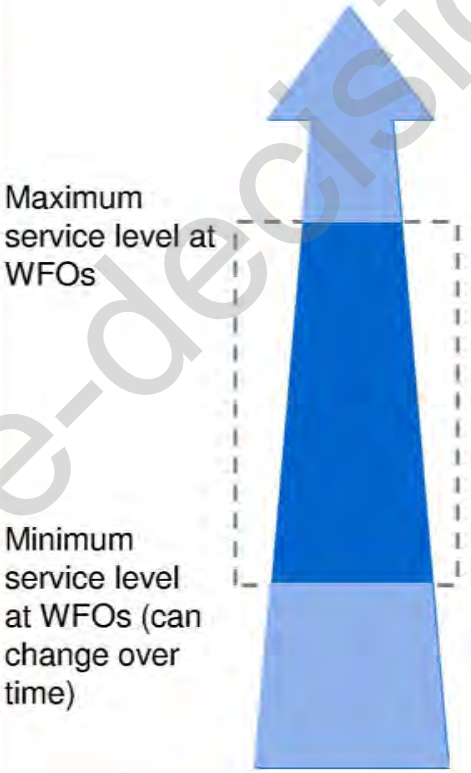
Details follow

Limited existing IDSS policy

- NOAA partnership policy: changes to NWS information services must be sent out for public comment to the weather enterprise
- NWS policy on core partners: definition of core partners
- NWS policy on service levels (draft): appropriate tiers of service

Policy that outlines maximum and minimum IDSS service levels at WFOs

IDSS service level at WFOs



- Issues where offices might differ in activity levels based on their CWA
- Issues where policy could require or prohibit certain office activities

Required and prohibited example standard levels

Unauthorized IDSS activities

- Deployments to events not supporting core partners
- Specialized IDSS for a particular commercial company

Minimum service required

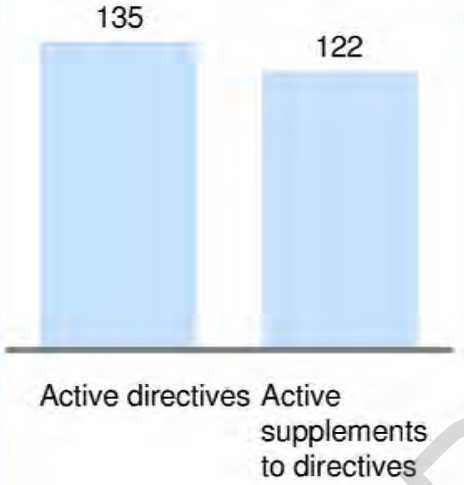
- Identify core partners in CWA
- Meet to establish common service availability
- Develop general presentation that is used for severe weather events

SHORT-TERM OPTIONS: OPERATIONAL MODEL

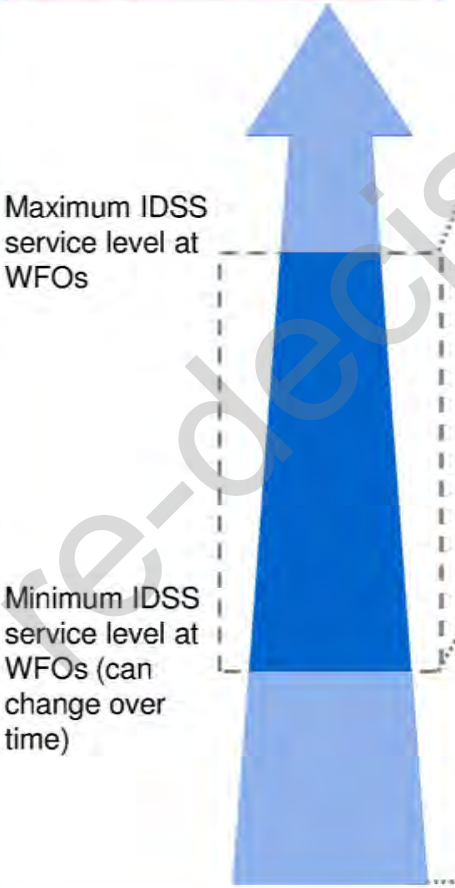
3d However, relying on policy alone can lead to cumbersome regulations on questions of how offices prioritize resources

Issues where offices might differ in activity levels based on their CWA

Number of Operations and Services Policies, NWS Directives System



IDSS service level at WFOs



Example policy	Possible implications	Questions to consider
▪ Recommended tiering of services for stakeholder groups (government core partners, other stake-holders, etc.)	▪ Offices have to modify service levels and risk losing optimized levels of resource allocation among existing stakeholders	▪ Can establishing policy ensure that resources are optimized toward reducing the impact of adverse weather?

SOURCE: NWS Directives System (02 October 2015), noaa.gov

Overview of short-term options

Focus of following section

	Options
Operating Model (1-3)	1. Develop nationwide prioritization guidance on delivering IDSS 2. Create uniform training and process maps related to IDSS 3. Clarify IDSS service delivery expectations through cascading goals through planning, establishing metrics, and clarifying the role of policy
Organizational Structure (4-7)	4. Align all Tsunami programs under a single entity 5. Increase alignment and connectivity between RFCs 6. Clarify the respective roles clarifying the roles of National Service Programs, NCEP, other centers and HQ 7. Increase collaboration and connectivity between field offices
Workforce (8 - 11)	8. Improve career paths and roles 9. Develop the workforce 10. Recruit and hire the right talent 11. Increase regional support of the field

SHORT-TERM OPTIONS: ORG STRUCTURE

4 Issue: The current Tsunami Warning Centers are not able to effectively collaborate with each other

What we learned:

By changing or creating new structural connections between the organization, NWS could clarify the roles and responsibilities of the different Tsunami Warning Centers and other NWS programs to help strengthen their ability to provide IDSS

Vision for the future:

From:	To:
4a	All Tsunami programs fall under one National Center roll, act as a Center of Excellence and combine resources to provide excellent IDSS
4b The current Tsunami Warning Centers are not able to effectively collaborate with each other, in part because they each answer to separate NWS regions	**OR:** All Tsunami programs answer as one program directly to the COO, which allows for easier management and focus on operations and service-delivery
4c	**OR:** Tsunami programs answer to NOAA (or other NOAA line office), streamlining the organizational structure of NWS and aligning Tsunami programs closer to their partners

SOURCE: Site interviews

SHORT-TERM OPTIONS: ORG STRUCTURE

4 Option Summary: there are pros and cons to aligning the PTWC, NTWC, ITIC & tsunami program with each other

Goal: Align the PTWC, NTWC, CTWC and ITIC with each other, and in a way that would help them provide excellent IDSS

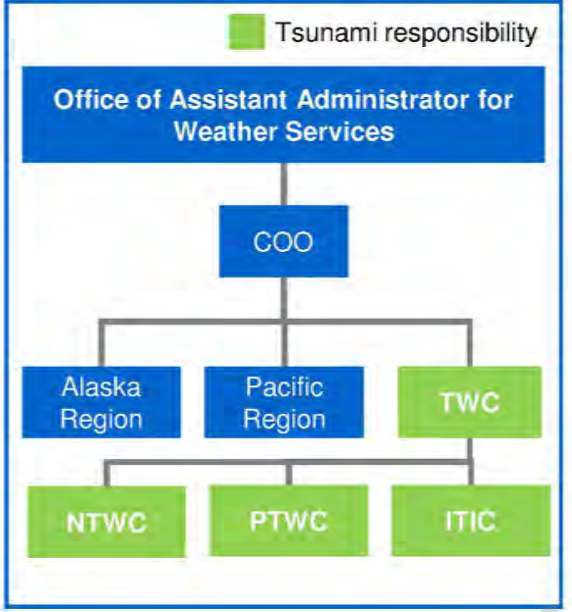
Potential Options	Pros	Cons
4a Align under NCEP	▪ Fits with the goals/objectives of the NCEP model prioritizing research along with operation ▪ Connects NCEP to OPC and EMC including the models and resources they use on similar research	▪ Potentially reduces NCEP's connection to field and ability to provide necessary operations to deliver on event-driven missions
OR		
4b Answer to COO as one TWC	▪ Builds stronger relationships between TWCs and local WFOs allowing an improved focus on operationalization ▪ Simplifies implementation by removing TWCs from regional structure	▪ Maintains Tsunamis as having a separate operational culture ▪ Fails to address differences with TWC structures and mission
OR		
4c Align under NOAA (or other) line office	▪ Creates potential for easier and deeper connectivity between TWCs and key partners ▪ Increases role clarity by aligning Tsunamis with NOAA	▪ Creates need for NOAA to confront or challenge TWCs ▪ Possibly leads to reduced ability by TWCs to be effective in an emergency because of distance from WFOs

SHORT-TERM OPTIONS: ORG STRUCTURE

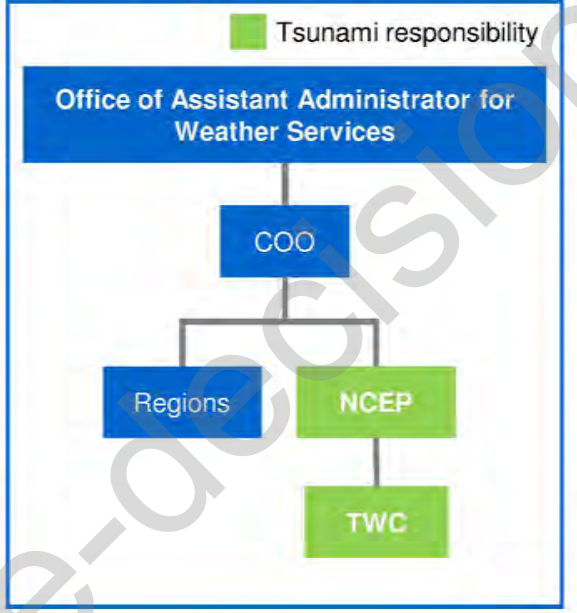
4 NWS could consolidate Tsunami Warning Centers, with multiple options for future states to reduce ambiguity and overlap

Potential future option sets for Tsunami Warning Centers

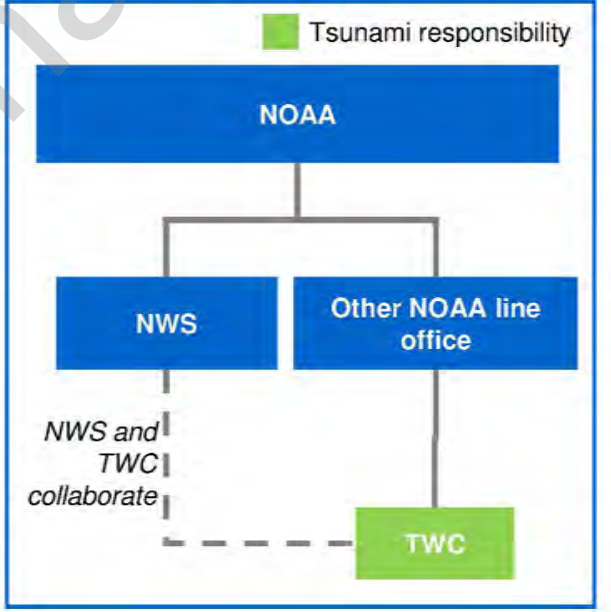
Option: Align under COO



Option: Align as NCEP



Option: TWC answers to NOAA



Additional considerations

- Retaining two separate geographic locations within any option would help to cover Pacific Ocean
- The two pacific ocean centers would need aligned on their modeling, programming, and operational model to reduce inefficiencies and redundancies
- ITIC has an international mission that better aligns with mission outside of NOAA; however, even if not aligned under NOAA, it must be fulfilled
- Academically-oriented centers (VAACs) may warrant same analysis

SHORT-TERM OPTIONS: ORG STRUCTURE

5 Issue: RFCs do not feel adequately connected to the National Weather Service nor are they able to collaborate with one another

What we learned:

By changing or creating new structural connections between the organization, NWS could clarify the roles and responsibilities of River Forecast Centers in order to support their particular needs in providing IDSS to their core partners

Vision for the future:

From:

5a

RFCs currently do not feel adequately connected to the National Weather Service nor are they able to collaborate with one another

5b

To:

RFC role clarity issues have been addressed by organizational health and policy changes

OR:

RFCs are more effectively aligned under the National Water Center, allowing them to collaborate with each other more easily, and communicate with a single voice

From:

5c RFCs are not adequately aligned with their core partners, which keeps them from providing the level of support and IDSS their core partners need

To:

RFCs are co-located with their core stakeholders in order to create alignment between the needs of their core partners and their operations

SOURCE: Site interviews

SHORT-TERM OPTIONS: ORG STRUCTURE

5 Option Summary: there are pros and cons to creating alignment for RFCs to increase connectivity and consistency

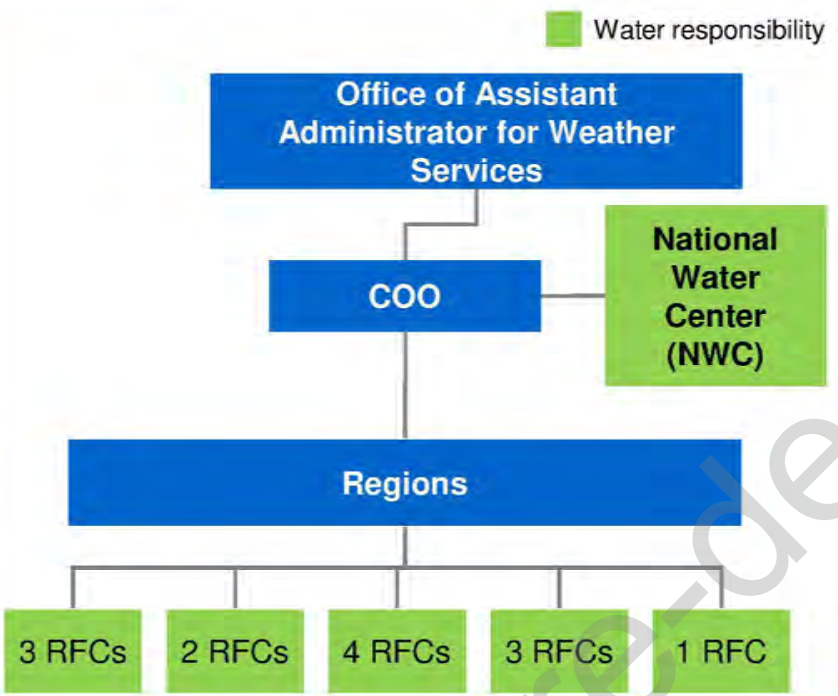
Goal: Create alignment for RFCs in National Weather Service that helps increase the correct type of consistency across them and helps empower them to help create a WRN

Potential Options	Pros	Cons
5a Keep status quo, where RFCs answer to regional HQ	▪ Acknowledges strength of "status quo:" RFCs currently act relatively independently to provide specialized IDSS to their stakeholders ▪ Maintains relationship between WFOs and RFCs; both answer to RDs and can easily share information through region	▪ May devalue RFC relationships with core partners by retaining current distance – WFOs are just one of RFCs many stakeholders ▪ Distances RFCs from rest of organization due to most regions' focus on weather, not water ▪ Fails to address RFC resource challenges
OR		
5b Align under a national program or the National Water Center directly	▪ Organizes RFCs under a single management (regardless of whether it is a national program or the National Water Center) ▪ Supports RFCs with NWC resources ▪ Develops a national voice for water ▪ Allows for sharing of best practices	▪ Could potentially de-prioritize WFOs as a partner for RFCs and increase organizational feelings of separation between the two ▪ Could take away emphasis of operationalization of RFCs and lessen impact during severe weather events
AND/OR		
5c Embed with stakeholders	▪ Aligns with historical precedents; RFCs have been hosted in past and are very closely aligned with primary stakeholders at nearly all 13 RFCs ▪ Allows for optimal sharing of best practices, data and technology with core stakeholders	▪ Could distance RFCs from NWS ▪ Requires stakeholders' ability to host RFCs

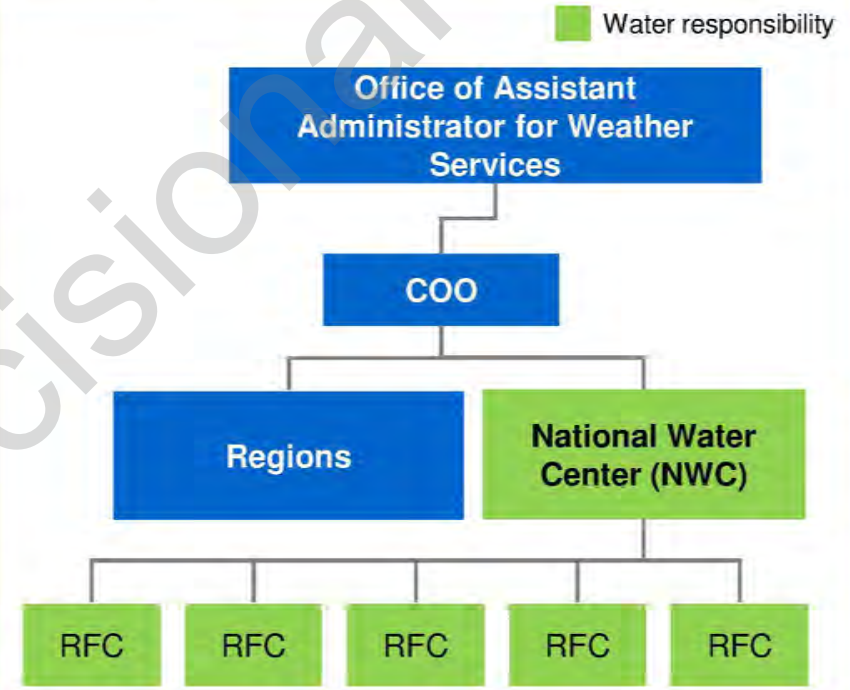
SHORT-TERM OPTIONS: ORG STRUCTURE

5 Depending on whether the status quo is sustainable or not, RFCs could be re-organized to answer directly to the NWC

Status quo option for organization structure



Secondary option for organization structure



Additional considerations

- Vision and mission of NWC and resources and abilities aligned to NWC are critical decisions that should be aligned with needs of RFCs and field
- Could additionally require alignment between NSPs and NWC to help align RFC to all water resources in NWS
- Would need to clarify reporting lines of Service Hydrologist
- If status-quo is chosen, current variance in hydro programs between regions and lack of communication between RFCs and their regions would need to be addressed

SHORT-TERM OPTIONS: ORG STRUCTURE

6 Issue: Lack of role clarity between National Service Programs & NCEP has led to perceptions of competition between them

What we learned:

By changing or creating new structural connections between NCEP and the National Service Programs (NSPs), NWS could clarify the roles and responsibilities of other offices, as well as increase collaboration between different offices

Vision for the future:

From:	To:
6a	NSPs help align programs in the field by providing administrative guidance directly to field offices and by acting as an intermediary between NCEP and the field
6b NSPs and NCEPs are primarily distinguished based on their planning role at the national level; Lack of role clarity on execution between NSPs and NCEP has led to perceptions of competition between them	**OR:** NSPs help align programs in the field by overseeing field office programs and by acting as a direct connection between the field and NCEP
6c	**OR:** National Service Programs are aligned under NCEP in order to reduce program redundancies, and NCEP focuses on providing program management and oversight to the field

SOURCE: Site interviews

6 Option Summary: there are pros and cons to clarifying the roles of National Service Programs, NCEP, other centers and HQ

Goal: Clarify the roles of National programs, NCEP and HQ as they align with the field

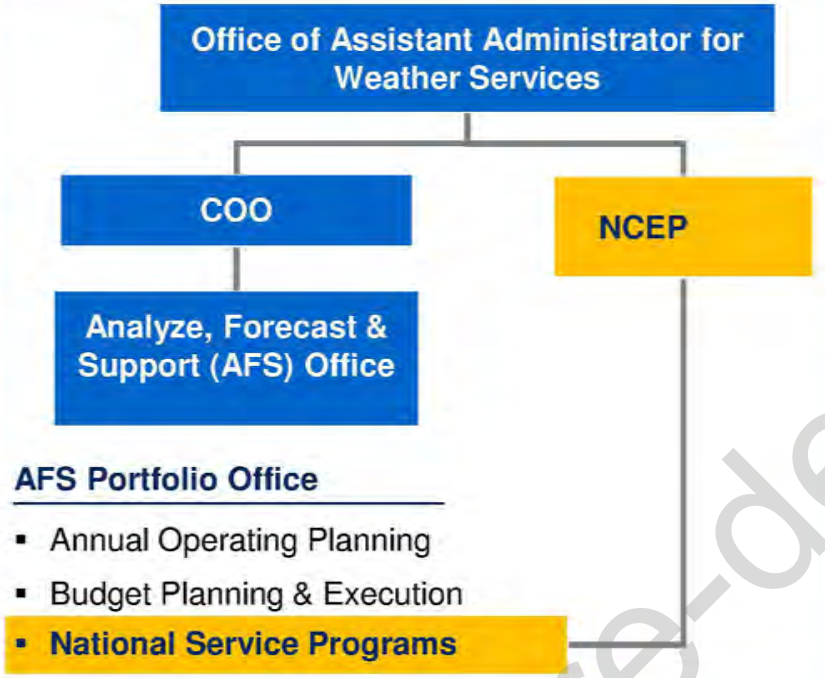
Potential Options	Pros	Cons
6a Employ NSPs as policy aggregators across field and NCEP and through RDs	▪ RFCs would have one management (regardless of whether it's a national program or the National Water Center) ▪ NWC has resources that could help support RFCs ▪ Would allow for a national water voice ▪ Allow to share best practices	▪ Would require additional resources at NSPs to support this ▪ Significant time investment, both for NSPs and for field offices ▪ Could see push back from regions and NCEP ▪ Could be too small of a change to create vertical alignment
OR		
6b Allow NSPs to directly oversee and set policy requirements for field and NCEP; field reports into NSPs	▪ Retains integrity of HQ role and integrity of the current 1-3 planning and field execution cycle ▪ May lead to better integration of NCEP and NSPs if NCEP answers directly to NSPs ▪ Leads to faster and more efficient vertical alignment within service programs	▪ Creates ambiguity within reporting lines ▪ Increases workload of MICs, potentially to a large degree ▪ Potentially challenges NCEP, leading to implementation challenges ▪ Would require additional resources for NSPs to support this type of management structure
OR		
6c Disband NSPs and use NCEP to set policy and operational requirements with field input	▪ NCEP has resources that could be allocated in a more direct manner to support field ▪ Increases opportunity to centralize and automate functions via NCEP compared to the field ▪ Potentially aligns NCEP more closely with field needs ▪ Could lead to reduced redundancy	▪ Fails to fix "status quo" challenges; NCEP perceived as unresponsive to field ▪ Blurs logical model of separation between NCEP and field ▪ Forces adaptation: NCEP currently does not cover all service areas or responsibilities

SOURCE: Site interviews

SHORT-TERM OPTIONS: ORG STRUCTURE

6 One option would be for NSPs to lead portfolio responsibilities; program responsibilities could also be aligned under NCEP

Connection between NCEP and NSPs



Option: NCEP aligned with NSPs

What it would look like:

- **NSPs oversee and explain policy**
  - NSPs would align with MICs/HICs (or potentially SOO/DOHs) on policy through direct communications (e.g., monthly meeting)
  - NCEP would communicate to field through NSPs
- **AND/OR NSPs manage policy as well**
  - Office responsibilities for programs are managed directly by NSP administrators

OR

NSPs aligned under the NCEP

What it would look like:

- NSPs are first each aligned to an NCEP (some would have to be aligned to a general NCEP or have a new NCEP created)
- NCEP then acts with head of AFS and regions to run NSPs

Additional considerations

- Would require additional investigation into current reporting and management lines, especially with respect to region and NSPs
- Service Divisions at the Regional Headquarters would be required as champions, especially initially, to create buy in and implement any of the program changes
- Changing reporting lines would necessitate transparency and clarity in what the roles actually mean

SHORT-TERM OPTIONS: ORG STRUCTURE

7 Issue: A current disconnect between field offices and the rest of the NWS leads to lack of collaboration and communication

What we learned:

By changing or creating new structural connections between the fields offices and other parts of NWS, NWS could clarify the roles and responsibilities of offices, as well as increase collaboration between different offices

Vision for the future:

From:	To:
7a Leaders in the field feel that they are not heard by leadership at headquarters and that they cannot collaborate on policies that affect the field	A MIC/HIC council advises NWS leadership on strategy and policy, directly connecting and aligning HQ with the field
7b Field offices are not given a formal opportunity to collaborate and distribute workload during severe weather events	Partner offices support each other, flexing their staff during severe weather events, distributing both administrative and support as well forecasting and IDSS workloads
7c Field offices feel disconnected from, and sometimes competitive with, other field offices as well as from regional and national headquarters	Best practices are shared and lines of communication between field offices opened through an FTE rotation program
7d Field offices feel disconnected from each other and from larger regional goals	Field offices run or set the agenda for monthly interregional meetings which foster communication between offices and allow for local impact if regional goals

SOURCE: Site interviews

SHORT-TERM OPTIONS: ORG STRUCTURE

7 Option Summary: Increase collaboration and role clarity between field offices

Goal: Increase collaboration between field offices in order to better support a WRN and increase role clarity for offices

Potential Options	Pros	Cons/Risks
7a Create MIC/HIC council whose leadership advises HQ on strategy & policy	▪ Creates accountability between regional HQ and field/HQ ▪ Allows in future for flexing to a more sub-regional model ▪ Raises level of understanding between HQ and field (in both directions) ▪ Helps HQ align policies with field needs	▪ Requires additional time investment from MICs and HICs, who are already busy ▪ Could reduce MIC and HIC attentiveness on some local issues (e.g., hydro, tech, obs network) ▪ Requires time investment and buy-in of HQ leadership
AND/OR		
7b Assign field offices partner offices to provide support during events (for both forecast & IDSS and admin & support)	▪ Allows for informal flexing of staff across regions ▪ Provide separate support for forecast/IDSS (which might require additional specialized knowledge of climate/type of weather event) and admin/tech ▪ Creates ability for remote support ▪ Increases strength of local IDSS ops	▪ May not account for regional or local-based skillsets, and potentially requires additional training for non-local personnel ▪ Could entail significant resource investment given time and travel necessary in order to flex ▪ Limits partner offices' ability to assist based on their own weather types/climatology ▪ Necessitates similar ops models/expectations across offices
AND/OR		
7c Establish FTE rotation program across levels of NWS and regions	▪ Generates excitement around sharing and understanding the broader vision of NWS (not just WFOs) ▪ Shares best practices across and within regions ▪ Could draw support in short run from NWSEO and field	▪ Requires forecaster time and dedication of resources, including funding for travel ▪ Discounts some forecasters who may not be interested in a rotation program ▪ Possibly leads to operational challenges when rotating between different types of offices
AND/OR		
7d Create monthly region-wide strategy meetings/field manager calls led by field	▪ Exploits opportunity to begin defining roles immediately: monthly or bi-monthly calls already occur in most regions ▪ Facilitates MIC/HICs ability to see a broader picture and align with other MIC/HICs in their region ▪ Increases cooperation between field and region ▪ Could provide opportunity for HQ and COO to engage at regional level and hear from field management in structured call ▪ Offers MIC/HICs an opportunity to build leadership capabilities	▪ Creates possibility for a "status quo" bias when RD leads and sets agenda for call ▪ Requires HQ check-ins for follow-through ▪ Weakened by low or non-regular MIC/HIC participation; could possible need to be mandatory for MICs and HICs

SHORT-TERM OPTIONS: ORG STRUCTURE

7 Each option could help provide a network for field offices to collaborate with each other and feel supported by NWS

Option compairson

Potential Options		Does best practice currently exist?	Does it improve collaboration? Between field offices	Does it improve collaboration? From field to other	Can it increase consistency?
7a MIC/HIC Council		▪ No, does not currently exist in NWS	✓	✓	✓
7b Partner Offices	Admin	▪ No, does not currently exist	✓		
	Forecast/IDSS	▪ Yes, in some regions, but does not align to weather or core partners	✓		✓
7c FTE Rotation Program		▪ Yes, currently exists between WFOs in some regions	✓	✓[1]	✓
7d Region-wide regular strategy meetings/field calls		▪ Yes, currently exists in Western and Southern regions	✓	✓	✓

Additional considerations

- Scaling across all field offices for any options would be initially a challenge
- Participation at field office levels would have to be decided in a way that provides good representation across offices and does not lead to a perception of favoritism
- Requires any new programs to have well defined roles and policies around them so they are transparent and easy to understand
- Where possible, options could be built from current best practices in regions that could be expanded to the rest of NWS

1 Depending upon the offices of the rotation program, this option could improve collaboration throughout the NWS

Overview of short-term options

Focus of following section

Options

Operating Model — 1-3

1. Develop nationwide prioritization guidance on delivering IDSS
2. Create uniform training and process maps related to IDSS
3. Clarify IDSS service delivery expectations through cascading goals through planning, establishing metrics, and clarifying the role of policy

Organizational Structure — 4-7

4. Align all Tsunami programs under a single entity
5. Increase alignment and connectivity between RFCs
6. Clarify the respective roles clarifying the roles of National Service Programs, NCEP, other centers and HQ
7. Increase collaboration and connectivity between field offices

Workforce — 8 - 11

8. Improve career paths and roles
9. Develop the workforce
10. Recruit and hire the right talent
11. Increase regional support of the field

SHORT-TERM OPTIONS: WORKFORCE

8 Issue: the met career path requires many hiring actions and changes of station; non-mets have limited adv. opportunities

What was learned:

Progressing from an intern to an MIC15 can require as many as 5 hiring actions and 5 changes of station. Interns are prevented from issuing forecasts based on title, not merit. MICs have no supervisory experience prior to assuming the role and report frustration with filling forecasting shifts and completion of admin tasks

Vision for the future:

	From:	To:
8a	Regardless of skill, Interns are not allowed to issue forecasts until a journeyman position is vacated. Moving up in the NWS often means moving where you live	Entry level mets are called meteorologists and their manager determines when they are ready to issue forecasts. GS levels for each position are uniform across the NWS
8b	Meteorologists do not have the opportunity to supervise employees until they become an MIC – a situation described by one MICs as "ready, set, fail"	Supervision responsibilities are distributed between the MIC, WCM and SOO, providing leadership experience and reducing the avg. span of control to 1:7
8c	The role of HMTs in the modern NWS is unclear. WFOs employ them in varying ways and some MICs report that given a choice, they prefer hiring an intern who will eventually be able to issue forecasts	The 85 remaining HMTs are trained-up to become meteorologists or are phased out through attrition. The remaining billets have been repurposed to met positions
8d	Before the MAR there were ~40 COOP Program Managers; today there is one OPL for each WFO	The number of OPL positions have been right-sized. The remaining billets have been repurposed to met positions

SOURCE: Phase 1 OWA findings and site interviews

8 Option Summary: there are pros and cons to revising 1340 and 1341 series career paths

Goal: Improve the career path for meteorologists & provide MICs with greater flexibility in staffing

Potential Options	Pros	Cons
8a Create one progression for forecasters from GS 5-12 and make GS levels for each position uniform	▪ Allows MICs to promote mets when ready ▪ Reduces number of hiring actions and PCS ▪ Higher career ladder for entry-level mets ▪ Improves work environment by removing apprenticeship feel	▪ Removes gate at journeyman position where low performers can be filtered out ▪ May increase personnel costs depending on future ratio of GS 5-11 vs GS 12 ▪ May increase costs related to WCM/SOO and MIC GS level increase
AND/OR		
8b Give supervisory authority to WCMs and SOOs	▪ Provides supervisory experience earlier in a mets' career ▪ Reduces MIC span of control from 1:22 to 1:7 ▪ Allows time for increased support of frontline employees ▪ Facilitates potential transition to level 5 reviews for all employees	▪ Requires additional training for WCMs/SOOs, which some may not want ▪ Adds responsibility to WCM/SOO role, potentially to degradation of other tasks ▪ May conflict with "whole office model" depending on how supervisees are divided between WCMs and SOOs
AND/OR		
8c Phase out HMTs and repurpose FTE to 1340 series	▪ Makes available FTEs that could be repurposed, as traditional public weather duties for HMTs in WFOs are going away ▪ Phases out position that has a limited career path	▪ Would still need 1341 series for met techs in WSOs, etc. ▪ Removes relocation flexibility for met techs in Alaska/Hawaii ▪ Removes a pipeline of 1341s to fill OPL position (addressed by 9d)
AND/OR		
8d Reframe the OPL and DAPM positions to 1340 Service Climatologist or other area-specific need	▪ Opens position to 1340 career path ▪ Provides another position that can perform shiftwork in severe weather & increases flexibility ▪ Expands role to include increasingly important climate services	▪ May create discontent among current OPLs ▪ Removes one of the few advancement opportunities for HMTs (not factor if HMTs repurposed in 11b) ▪ May require increase in GS-level if added duties

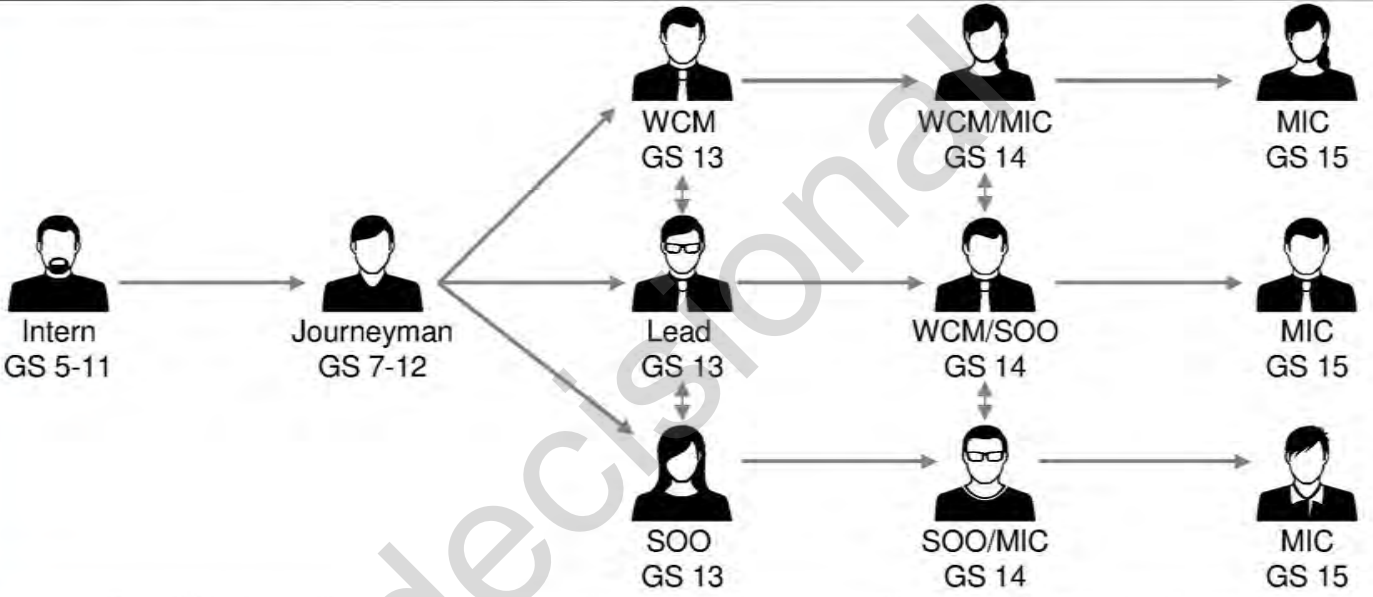
SOURCE: Phase 1 OWA findings and site interviews

SHORT-TERM OPTIONS: WORKFORCE

8a Create one career progression for NWS forecasters from GS 5-12 and make GS levels for each position uniform

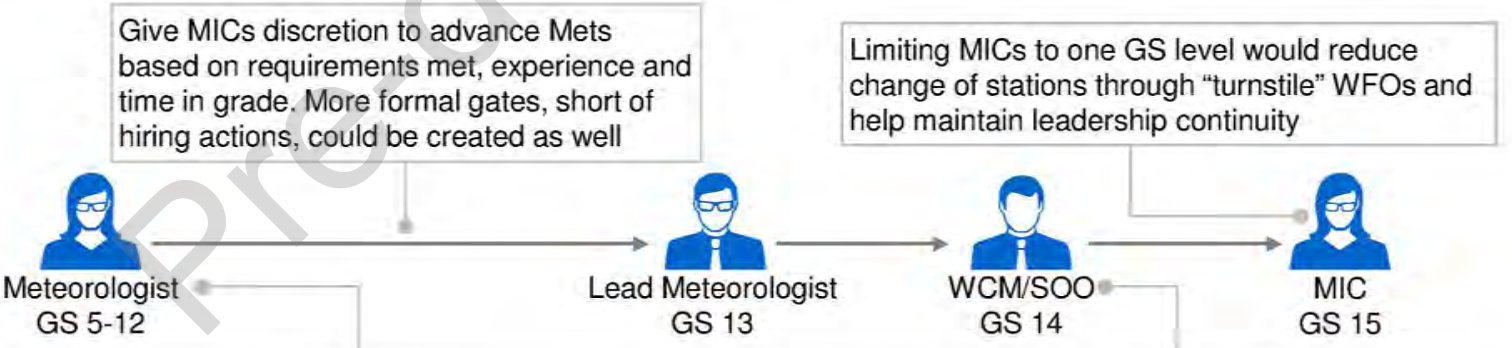
Current

- Each change in position ( ) results in a hiring action and a potential change of station
- From intern to MIC, an employee could go through 5 hiring actions



Future option[1]

- Reduces the number of hiring actions and changes of stations
- If experience in different locations is desired, rotational assignments could be created



1 This ex. does not include other career progression options or other career series, which also warrant exploration
SOURCE: Phase 1 OWA findings and site interviews

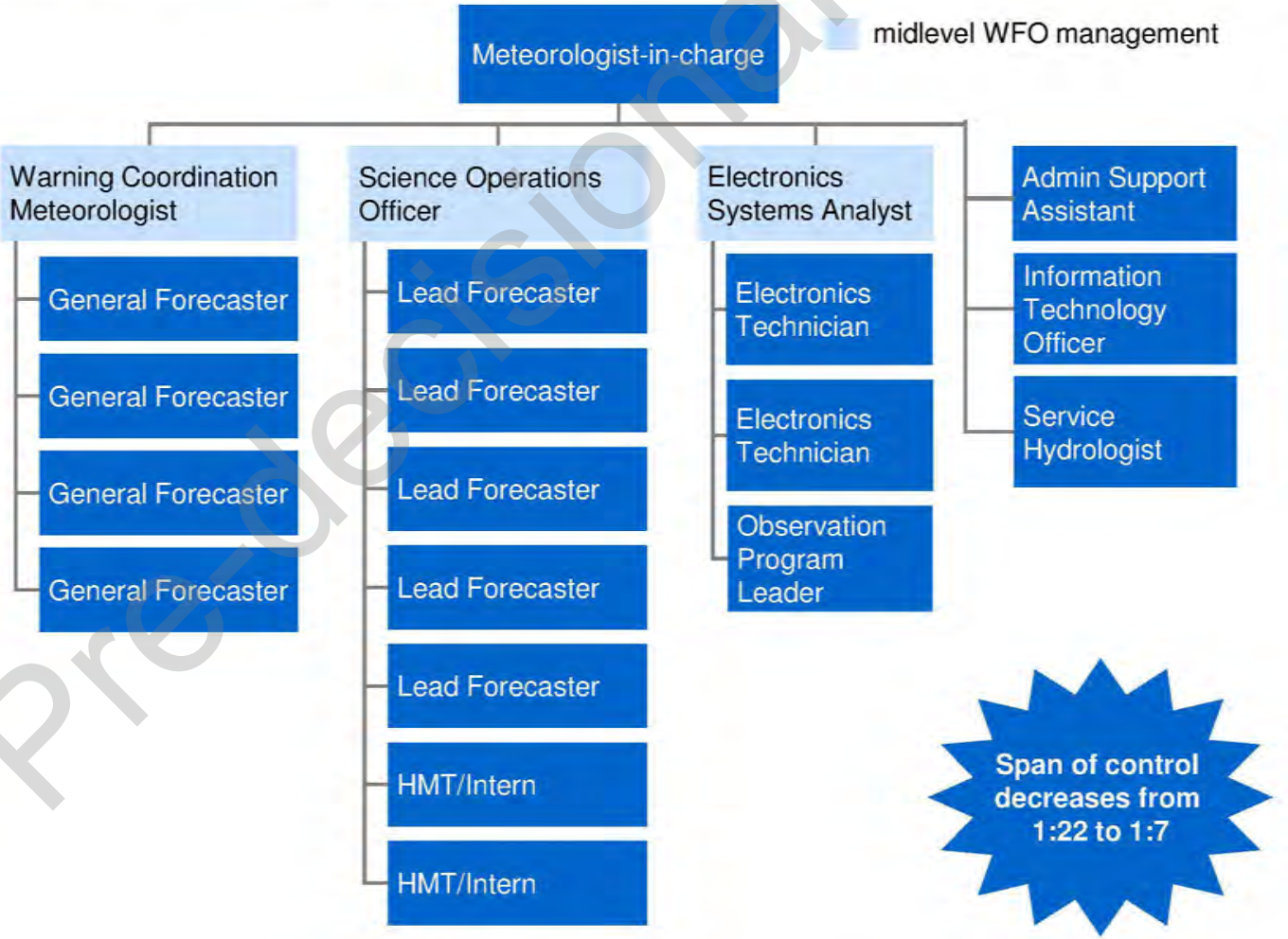
SHORT-TERM OPTIONS: WORKFORCE

8b Give supervisory authority to WCMs & SOOs to provide leadership experience and address span of control issues

Potential Action Steps

- **Give supervisory authority to WCMs and SOOs**
- **Divide supervisory responsibilities between the MIC, WCM and SOO**
- **Set expectation that there will be increased mentorship between supervisors and supervisees**

Potential WFO reporting structure



SOURCE: Phase 1 OWA findings and site interviews

SHORT-TERM OPTIONS: WORKFORCE

8c Officially phase out HMTs in CONUS and repurpose billets to 1340 meteorologists or other positions

Potential Action Steps

Officially establish that no additional HMTs will be hired in CONUS

3 HMTs have been hired since 2013[1]

Offer training to HMTs interested in become Mets[2] or phase-out through attrition

76 HMTs in CONUS (9 outside[3]) & **42** are retirement eligible now (+20 more in 5yrs)

Steer future applicants into roles that offer more career growth

Current State

- When offered the choice of hiring an HMT or an Intern, MICs have overwhelmingly chosen Interns. There are currently 22 vacant HMT FTEs
- During the MAR San Jose State trained approximately 200 Met Techs to become meteorologists
- An HMT's career path includes only one position advancement option

1 Data from NWS table of organization 6/8/15
2 Another option could be to create an "operational meteorologist" series that would not require a met degree
3 Does not include Met Techs

SHORT-TERM OPTIONS: WORKFORCE

8d Right-size the number of Observations Program Leaders (OPL) and repurpose remaining billets to 1340 positions

Potential Action Steps

Right-size the number of OPL positions & give each a larger area of responsibility

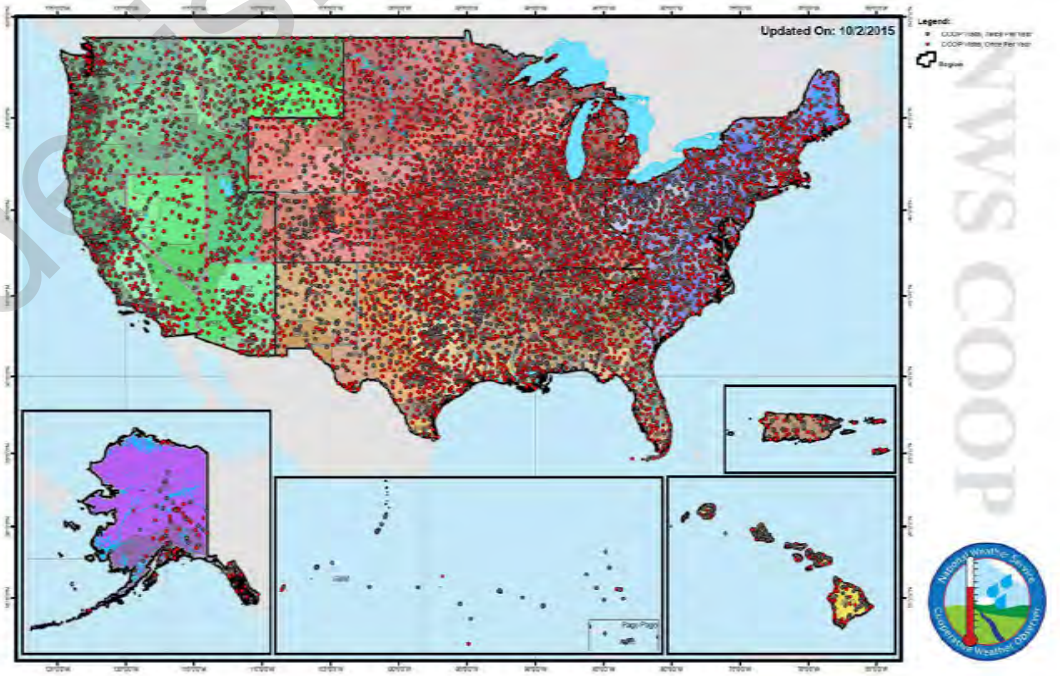
- There were ~40 COOP Program Leads (CPLs) nationwide prior to the MAR
- Today there are 105 OPL FTEs (14 are vacant)
- There are fewer COOP sites today (~8,700) than there were before the MAR

"Fewer people who are better qualified and more interested would mean more consistent maintenance across the board"

OR

Make the COOP program a focus of WFOs and a shared responsibility of all

- COOP sites are located across the US & visited once or twice a year



AND

Repurpose the remaining billets to 1340 positions[1]

- OPLs are already used as "jack-of-all-trades" in many WFOs. The 1340 series offers MICs greater flexibility

1 Phasing out HMTs, option 8c, would also decrease the supply of non-met OPL candidates
SOURCE: Phase 1 OWA findings, site interviews, NWS table of organization 6/8/15

SHORT-TERM OPTIONS: WORKFORCE

9 Issue: opportunities to improve learning and development at NWS, potentially aligned to a competency model

What was learned:

The vast majority of NWS leadership is "grown" within the organization; however, the NWS does not have a defined competency model and it does not emphasize leadership in performance management tools

Vision for the future:

	From:	To:
9a	It is unclear what leadership means in the NWS; great science & great leadership are seen as the same	The NWS has a uniform competency model which employees can aspire to, leadership is expected and welcomed at all levels of the organization
9b	The NWS does not have an established development path. Employees choose trainings with little direction from the NWS or supervisors	The NWS has a well-established development path that includes a well balanced mix of web, field and in-residence training
9c	Management and leadership are seen as synonymous	Leadership training is included throughout an employee's career and leadership is expected and welcomed at all levels of the organization
9d	MICs/HICs oversee approximately 60% of the NWS workforce, are given enormous responsibility and autonomy, but they are not offered a uniform onboard training	There is a national in-residence training specifically for new MICs/HICs that builds on leadership training that has been integrated throughout the NWS career path
9e	Different performance management systems are used for different levels of employees, with some on a pass / fail system and some on a "level 5" system	The same type of performance management system is used for all employees and it is aligned to the NWS' competency model and priorities

SOURCE: Site interviews

SHORT-TERM OPTIONS: WORKFORCE

9 Option Summary: pros and cons to developing a learning path & performance reviews, potentially tied to a competency model

Goal: Develop leaders – at all levels of the organization – capable of providing superior IDSS

Potential Options	Pros	Cons
9a Develop a competency model	▪ Explicitly sets expectations for current and future employees ▪ Introduces objectivity on how to succeed in the NWS by setting out transparent 'rules of the game' ▪ Provides direction and purpose to efforts to strengthen skills – from HQ to WFOs	▪ Requires organizational alignment on competencies and behaviors ▪ To be effective, also requires alignment of performance review process, compensation, and individual development plans
AND/OR		
9b Establish a set learning and development path	▪ Sets baseline expectation of skills ▪ Allows opportunities to influence culture across the organization ▪ Makes training and development more transparent	▪ Requires alignment on appropriate baseline skills and culture ▪ Requires allocation of time and resources
AND/OR		
9c Integrate leadership training throughout an employee's career	▪ Helps prime the NWS leadership pipeline ▪ Best practice of strong leadership organizations ▪ Creates better leaders and followers	▪ May set expectation that all employees will rise to formal leadership ▪ Requires allocation of time and resources
AND/OR		
9d Create an orientation course specifically for new MICs & HICs	▪ Highlights the importance of the role Establishes baseline leadership expectations to set up MICs/HICs for success ▪ Creates informal network of MICs/HICs in cohort ▪ Builds communication channels btwn HQ and new MICs/HICs at the beginning of their tenure	▪ Requires additional time and resources Creates leadership gap at WFOs while new MICs are in training ▪ May weaken connection between MICs/HICs and region, which has traditionally offered onboarding programs
AND/OR		
9e Create performance reviews based on the competency model	▪ Reinforces expectations regarding personal and organizational competencies & leadership ▪ Replaces pass / fail measures with system that helps identify high potential candidates	▪ Requires reworking of current performance management tools ▪ Necessitates org-wide agreement to evaluate all employees using level 5s ▪ Increases time & effort for performance evals

SOURCE: Phase 1 OWA findings and site interviews

SHORT-TERM OPTIONS: WORKFORCE

9a Create a competency model that explicitly sets expectations for all employees

Potential Action Steps

Develop a small number of competency clusters that are clear, aligned with the NWS' mission, and easy to recall

Align those competencies with specific, measureable behaviors

Use those behaviors to inform performance evaluations, hiring, and development paths

Sample model from a leading people organization

ILLUSTRATIVE

Establishes enduring trust-based relationships

Mobilizes people and organizations to act

Communicates effectively with all audiences

Communications rating scale:

1. Structures and writes sections of documents with limited guidance
2. Prepares well-written, logical documents with minimal guidance
3. Develops thoughtful plans to engage stakeholders, reinforcing our top mngt. approach
4. Chooses the right sequence of comms to engage the client with maximum impact
5. Has strong presence, commanding attention with all audiences

9b Integrate leadership training throughout an employee's career

U.S. AIR FORCE

The U.S. Air Force includes leadership training – separating leadership, followership and management – throughout an airman's career. The Air Force progressively increases an airman's supervisory responsibility and measures performance using a leadership model

Leadership education & supervision in the United States Air Force

Rank	Time in Rank	# of Supervisees	Training or Professional Military Education
Cadet Ranks	2-4 years	Lead other cadets	ROTC, USAF Academy, Officer Training School
2Lt	2 years	1 or 2 enlisted personnel by 2nd year	Tech School (e.g., Weather Officer School)
1Lt	2 years	1 to 4 – lead a small flight	Air and Space Basic Course
Capt.	4 years	2-6 senior enlisted personnel	Squadron Officer School
Maj	3 years	1-3 officers – lead a large flight	Air and Staff Command College
Lt Col	3 years	6-8 officers – lead a squadron (40-80 ppl, includes several flights)	Squadron Commander School
Col	3 years	6-8 high ranking officers – lead a group (includes several squadrons)	War College

Illustrative

United States Air Force leadership competencies

Personal Leadership

- Exercise Sound Judgment
- Adapt and Perform Under Pressure
- Inspire Trust
- Lead Courageously
- Assess Self
- Foster Effective Communication

Leading People and Teams

- Drive Performance through Shared Vision, Values, and Accountability
- Influence through Win/Win Solutions
- Mentor and Coach for Growth and Success
- Promote Collaboration and Teamwork
- Partner to Maximize Results

Leading Institutions

- Shape Air Force Strategy and Direction
- Command Organizational and Mission Success through Enterprise Integration and Resource Stewardship
- Embrace Change and Transformation
- Drive Execution
- Attract, Retain, and Develop Talent

SOURCE: site interviews and U.S. Air Force publicly available materials

SHORT-TERM OPTIONS: WORKFORCE

9c Establish a learning and development path that includes leadership, IDSS and communications training throughout

- In-residence trainings are supplemented by on-the-job skill building and e-learning
- "Core" requirements are laid out for each position
- "Electives" are determined by individual interest
- Supervisors work with employees to create a development plan

LEAD 3 . . .

LEAD 2: (MGT05 Mngt & Supervision could be basis)	**Audience**: MICs/HICs **Location**: Kansas City or Silver Spring	**Focus**: - Leadership (organization) - IDSS & Communication - Technical skill building - Interconnections w/ NWS
LEAD 1: (MGT06 Field Operations Mngt could be basis)	**Audience**: WCMs & SOOs **Location**: Kansas City or Silver Spring	**Focus**: - Leadership (others) - IDSS & Communication - Technical skill building - Interconnections w/ WFOs
LIFT: (existing LEAD, LIFT, BLAST trainings could be basis)	**Audience**: Mets in 2nd to 3rd year[1] **Location**: regions	**Focus**: - Leadership (self) - IDSS & Communication - Technical skill building - Interconnections w/ core partners
Onboarding for new NWS employees	**Audience**: All new hires **Location**: Kansas City or Silver Spring	**Focus**: - NWS mission, values and culture - Leadership model (self) - NWS, NOAA, & Commerce structure - General skill building

1 This example is specific to meteorologists, but the structure and/or actual classes could be open to a wider range of positions

SOURCE: Phase 1 OWA findings and site interviews

SHORT-TERM OPTIONS: WORKFORCE

9d Create an orientation course specifically for new MICs/HICs

Potential Action Steps

Develop a curriculum specific to the challenges of leading a WFO/RFC

Leadership | Communication | Labor relations | Coaching & feedback | Performance reviews

**Illustrative, not exhaustive*

Limit attendance to MICs/HICs only to create an intimate and safe learning environment

"MGT05 - Management and Supervision" is currently open to the following positions:

MICs, HICs, ESAs, DAPMs, & Regional and HQ employees with signature authority & when there is space

WCMs, SCHs, SOOs, DOHs, regional and headquarters program managers/team leads & Non-bargaining unit employees from NOAA and other fed. agencies meeting the criteria

Involve veteran MICs/HICs, regional and national staff, and outside experts as faculty

- GE's Crotonville Executive Development Center trains several thousand people a year in training courses tailored for all executive levels
- There is a clearly defined professional development path from junior executive level entry through corporate officer training
- Faculty members include GE leaders (including CEO), university professors, and external consultants/speakers

SOURCE: http://www.nwstc.noaa.gov/cgi/course.cgi/?course=mgt05

9e Use the new competency model to inform performance reviews for all employees

Potential Action Steps

Align the "level 5" performance evaluation with the NWS' competency model

Performance Element	Individual Weights (Total must equal 100)	Element Rating (5, 4, 3, 2, 1)	Score
Customer Service	20		0
Weather, Water and Climate Services	25		0
Program Execution	20		0
Management/Leadership	20		0
Property Custodian	15		0
Check One: ☐ Summary Rating ☐ Interim Rating		TOTAL SCORE	0

Screen-shot of sample level 5 summary page

Provide a progressive scale for each desired behavior (i.e. major activity) to facilitate ratings

Weighting Factor (The weight for each element should reflect the significance within the framework of the Department's or bureau's organization goals. Weights should not be assigned based on the percentage of time an employee spends working on that element.) **Enter the weight for this element in the adjacent box:→** Element Weight: 20

Results of Major Activities: Identify results that need to be accomplished in support of the performance element. A minimum of 3 and a maximum of 6 measurable results must be listed.

1. Resources are managed to accomplish the Department's Strategic Goals and NWS objectives. NWS priorities are communicated to staff.
2. Employees are coached to realize their potential (e.g., using individual development plans or training programs) and employee performance is managed through development of performance plans, continuous feedback on performance, performance appraisals, and resolution of performance deficiencies. Recognition programs (i.e., monetary, non-monetary, or honor awards) are routinely utilized to acknowledge employee performance.
3. Employment actions such as selections and promotions are managed, and are consistent with Merit System Principles, equal opportunity and diversity principles, and do not violate Prohibited Personnel Practices.
4. Recruitment, retention, and developmental strategies are applied in hiring and retaining qualified employees.
5. Office complies with legal and reporting obligations, the Privacy Act, and other applicable statues, including the requirements of governmental and other suppliers of data to the NWS to ensure the confidentiality of Personally Identifiable Information (PII).

Criteria for Evaluation: Supplemental Standards are required for each element and must be defined at Level 3 performance in terms of quality, quantity, timeliness, and/or cost-effectiveness. Attached Generic Performance standards also apply.

Major Activities listed under "Management/Leadership"

Use the revised "level 5" evaluation for all employees, in order to identify high potential leadership candidates

PART I. PERFORMANCE PLAN		
A. CRITICAL ELEMENTS *(LIST at least TWO but no more than FIVE)* (Expand size of blocks as desired)	**B. RATING** *(Mark One)*	
	Meets or Exceeds	*Does Not Meet*
1. **Warnings, Watches, Advisories, and other hazardous event service:** Initiates appropriate actions to deal with impending significant weather events (e.g., severe local storms, flash floods, winter weather, etc.) Prepares products in prescribed formats; ensures that they clearly and accurately convey the intended message that they are issued in a timely manner, and are disseminated properly. Coordinates with other NWS Offices and other agencies, groups, and volunteers as necessary, adhering to agency policies. Handles contacts in a courteous and business-like manner with up-to-date knowledge of when and to whom to refer questions.		

Screen-shot of pass / fail performance plan

Current State

- Non-bargaining unit employees are evaluated using a "level 5" system, where management & leadership are grouped together; ~30% of the performance measures pertain to property management
- In the current "level 5" ratings, it is difficult to pinpoint what distinguishes someone from one level or another. Under "Management/Leadership" there are 5 major activities, which is supplemented by 6 associated criteria and two-pages of generalized text
- Bargaining unit employees are evaluated using a pass / fail system, with no way of differentiating between high and low passes

SOURCE: Level 5 Performance Management Record

SHORT-TERM OPTIONS: WORKFORCE

10 Issue: The NWS can streamline internal and external hiring and prioritize requirements, particularly for Mets & MICs

What was learned:

91% of the NWS leadership were hired as internal candidates, but the NWS does not uniformly select for leadership and associated communication skills in entry level or management positions

Vision for the future:

	From:	To:
10a	Degree requirements for meteorologists (series 1340) have not be updated since 1997	Degree requirements for meteorologists are closely aligned with the skills necessary to be successful in the NWS
10b	Only 9% of NWS leadership is hired externally. Great science and great leadership are often seen as synonymous	The NWS hires the best leaders available from a diverse applicant pool, including candidates from across the federal and private sector
10c	Regions & WFOs develop their own job announcements and interview questions. All new hires (including internal NWS candidates) undergo PIV security checks	Standardized job announcements & interview questions are used for all WFO positions. Internal NWS candidates go through an accelerated hiring path

SOURCE: Phase 1 OWA findings and site interviews

10 Option Summary: there are pros and cons to amending hiring requirements and practices for mets and MICs/HICs

Goal: Attract the highest caliber talent available to create a Weather Ready Nation

Potential Options	Pros	Cons
10a Replace Diff. EQs with multivariable calculus, add science / technical communications, and amend elective courses for 1340 series	▪ Supported by WMO BIP-M and AMS 2010-15 statement on undergrad degrees ▪ Opens space for more important coursework ▪ Does not impact daily service delivery[1] ▪ Positions requiring additional math/science can still prescribe in the job announcement ▪ Addresses Phase 1 OWA findings showing current gap in forecaster IDSS competencies ▪ Greater background/diversity in workforce	▪ May be perceived as a loss of scientific rigor for meteorologists ▪ Would impact all 1340s in gov,; requires coordination with OPM ▪ Limits ability to perform advanced model analysis ▪ Rigorous science and tech comm. classes may not be available
AND/OR		
10b Hire MICs & HICs under a more general management series	▪ Encourages additional applications from external candidates which could bring fresh perspectives ▪ Emphasizes selection for leadership skills	▪ Perceived or actual reduced focus on science ▪ May create tension between new hires and established workforce ▪ may slow hiring and selection process for crucial positions if external hires increase
AND/OR		
10c Streamline hiring by standardizing job announcements & interview questions, & skipping PIV checks for NWS employees	▪ Standardizes selection criteria and process to promote fair and consistent hiring ▪ Could lead to increased diversity recruitment ▪ Reduces time to hire ▪ Allows emphasis on selection for leadership ▪ Makes the best use of time investment of candidate and hiring officials	▪ Takes some autonomy away from regions and WFOs ▪ Updating job descriptions and hiring questionnaires will become responsibility of HQ ▪ Removes only process to check security status of current employees

SOURCE: Phase 1 OWA findings and site interviews

10a Revise 1340 series requirements to align with the NWS' new leadership / competency model

Potential Action Steps

Replace 3 semester hour ordinary differential equations requirement with multivariable calculus[1]

Edit elective courses to include social/ behavioral science or other courses that are more in line with a WRN

Add 3 semester hour requirement for written, oral, and multimedia science/technical communication

Meteorology Series, 1340
Individual Occupational Requirements

Delete
Amend
Add

Basic Requirements:

A.Degree: meteorology, atmospheric science, or other natural science major that included:

1. At least 24 semester (36 quarter) hours of credit in meteorology/atmospheric science including a minimum of:
   a) Six semester hours of atmospheric dynamics and thermodynamics;*
   b) Six semester hours of analysis and prediction of weather systems (synoptic/mesoscale);
   c) Three semester hours of physical meteorology; and
   d) Two semester hours of remote sensing of the atmosphere and/or instrumentation.
2. Six semester hours of physics, with at least one course that includes laboratory sessions.*
3. Three semester hours of ordinary differential equations.*
4. At least nine semester hours of course work appropriate for a physical science major in any combination of three or more of the following: physical hydrology, statistics, chemistry, physical oceanography, physical climatology, radiative transfer, aeronomy, advanced thermodynamics, advanced electricity and magnetism, light and optics, and computer science.

** There is a prerequisite or corequisite of calculus for course work in atmospheric dynamics and thermodynamics, physics, and differential equations. Calculus courses must be appropriate for a physical science major.*

or

B. Combination of education and experience -- course work as shown in A above, plus appropriate experience or additional education.

1. Hiring officials selecting for more research based met positions could be allowed to amend positions announcements to select for diff. eqs and/or other necessary skills

SOURCE: Phase 1 OWA findings, site interviews, American Meteorological Association. OPM occupational requirements

10b Draw in a wider-range of leadership talent by targeting external hires with diverse backgrounds

Potential Action Steps

Rename the MIC/HIC position, "Leader in Charge," or a similarly generic name

Reclassify the MIC/HIC position under a more general OPM management series, such as GS 0340 or 13XX

Target recruiting efforts to attract experienced managers and leaders from the public and private sector

~~Meteorologist-in-Charge 14~~ "Leader in Charge"

~~GS-1340-14~~ GS 0340 or 13XX

Factor 1 – Knowledge Required by the Position

- Mastery of the theories and principles associated with operational meteorology and hydrologic services, generally equivalent to a Master's degree in meteorology or the equivalent in depth and breadth of operational weather forecast and warning experience.

- Knowledge of all meteorological and hydrologic service requirements and observational programs assigned to the NWS offices within the service area. A basic understanding of radar meteorology is essential.

- Knowledge of the operational characteristics of complex electronic and electro-mechanical equipment and systems utilized by the NWS in data acquisition, communications and services delivery within the service area.

- Knowledge of and skill in the application of sound management and supervisory practices and leadership principles, with emphasis on planning techniques and project/program implementation management.

- Thorough understanding of the theories of interpersonal relationships.

- A high order of skill in both written communications and in public speaking, as well as a basic understanding of the approaches and techniques employed by the electronic and newsprint media.

- Basic understanding of relevant DOC, NOAA, and NWS policies governing the management and supervision of employees and of the provision of weather services, including Federal EEO principles.

Target successful leaders in organizations with similar missions in the military, public and private sector

SOURCE: Phase 1 OWA findings, site interviews, OPM occupational requirements

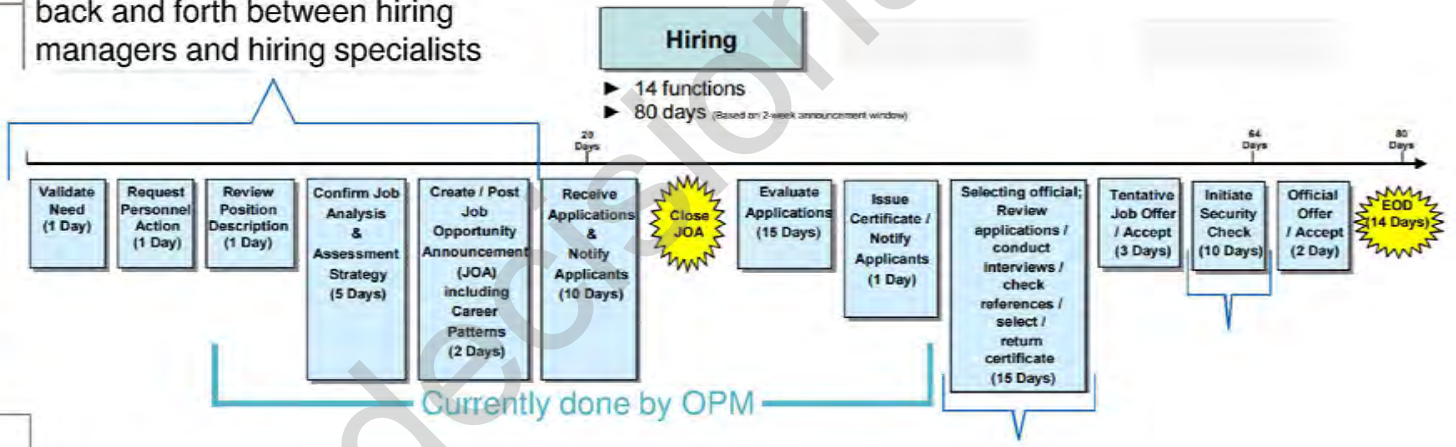
SHORT-TERM OPTIONS: WORKFORCE

10c Streamline current hiring by standardizing announcements & interview questions, and skipping PIV checks for NWS employees

Potential Action Steps

Standardize position descriptions, analysis & assessment strategies, and job announcements

OPM budgets 10 days to prepare job announcements. The process is often extended due to back and forth between hiring managers and hiring specialists



Create uniform interview questions for each position, which can be tailored by regional hiring boards

Currently hiring officials create their own interview questions. A creative, but non-standard question asked recently of an MIC candidate was, "Without naming names, what is the most destructive thing you have seen a supervisor do during your career?"

Skip PIV security checks for current NWS employees

NOAA policy requires that all hires (including internal NWS candidates) go to OSY to conduct a PIV security check, which can take 5-10 days

SOURCE: Phase 1 OWA findings, site interviews, OPM website

SHORT-TERM OPTIONS: WORKFORCE

11 Issue: There is not a uniform understanding of how regional offices should support MICs in the field

What was learned:

Regional directors have so many direct reports that they are unable to adequately support their MICs as mentors. Communication between regions and field offices is inconsistent and regions approach admin tasks in different ways

Vision for the future:

From:	To:
11a Regional directors have supervisory authority over every MIC and HIC in their region (26-40 in CONUS), in addition to their regional staff	Supervision of MICs is divided among appropriate regional personnel to reduce span and control to ~1:8. Regional supervisors have the capacity to serve as coaches and pass information up from and down to WFOs
From:	**To:**
11b Most regions do not have formal structures to bring MICs together, best practices are infrequently shared & there is not a forum to address overlap between WFOs	Field office leadership and regional leaders meet regularly to share best practices and deconflict overlap in formal sub-groups
From:	**To:**
11c There is not a uniform strategy for which admin tasks should be centralized within a region. There are no established best practices for task in WFOs	Most administrative tasks have been centralized at the regional level, leading to time and cost efficiencies. Standard operating procedures have been established for those tasks left in the WFOs

SOURCE: Phase 1 OWA findings and site interviews

11 Option Summary: there are pros and cons to changing how regional offices support MICs in the field

Goal: Increase support of MICs and WFOs

Potential Options	Pros	Cons
11a Distribute supervision of MICs within regional offices to address span of control issues and increase support of MICs	▪ Reduces RD span of control ▪ Increases support available to MICs ▪ May increase consistency (e.g., alignment on goals, approach to core partners) and communication (e.g., identification of issues, R20) within regions	▪ Adds responsibility to Deputy RD or other positions ▪ May need to be create additional roles ▪ May add cost if increased travel is expected ▪ Adds layer on the org chart ▪ May conflict with long-term reorganization
AND/OR		
11b Create regional support groups for field offices	▪ Could provide flexibility across region to adapt to regional needs – groups could be standing or ad hoc ▪ Could focus region on intra-regional needs and put resources to work in supporting the field	▪ May require additional leadership at the regional level so that RD is not overburdened ▪ Could create "turf wars" across different groups if resources are allocated differently
AND/OR		
11c Centralize administration at region level & establish best practices for tasks left at WFOs	▪ Could lead to efficiencies and cost savings across NWS ▪ Reduces duplication of effort between WFOs and regions ▪ Saves time of MIC – reduces time spent on non-value-add activities	▪ Need for independence and variation across WFOs and other field offices would be lost ▪ Could potentially increase bureaucracy around administrative needs and lead to longer waits

SOURCE: Phase 1 OWA findings and site interviews

SHORT-TERM OPTIONS: WORKFORCE

11a Address RD span of control issues and increase support of MICs & HICs

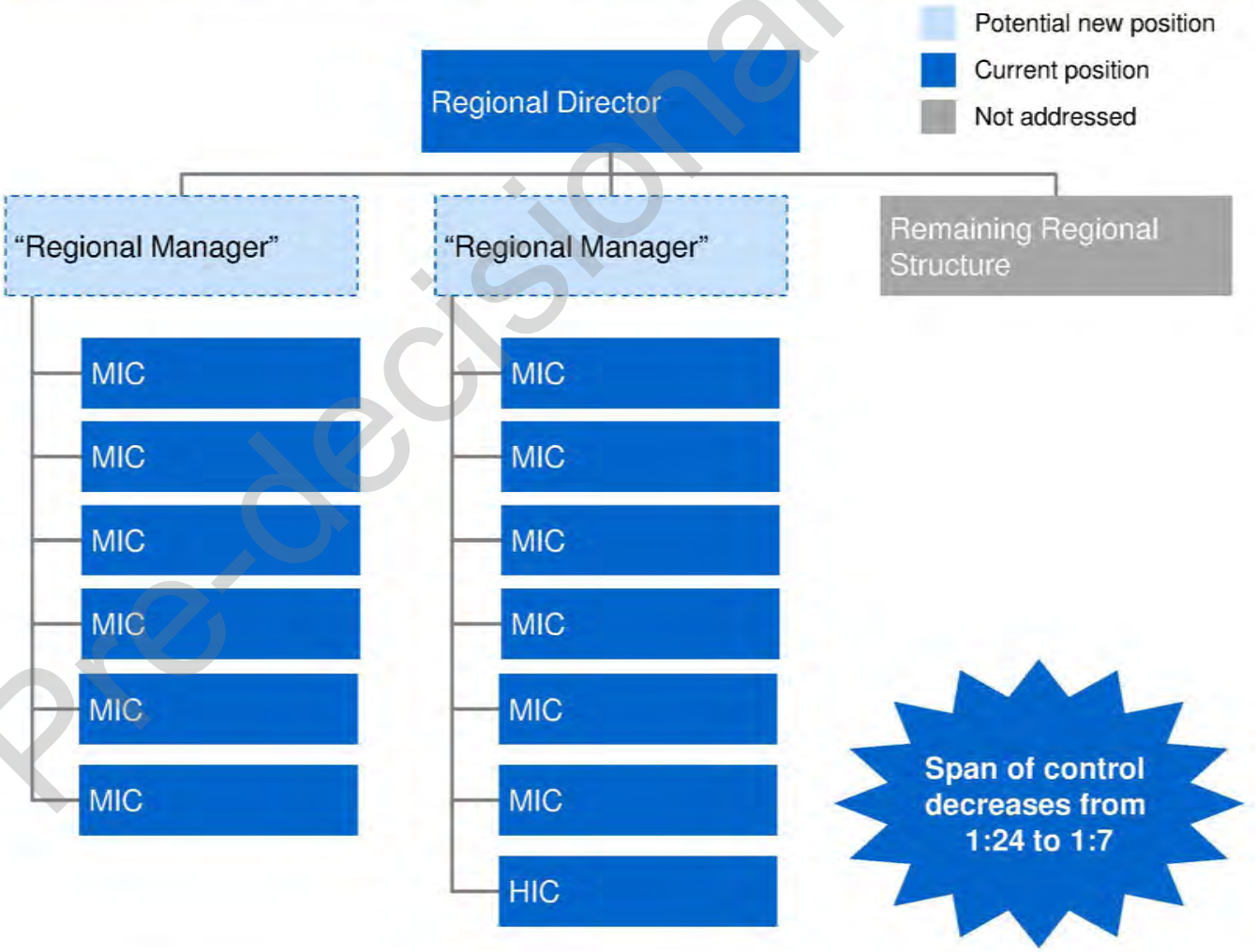
Potential Action Steps

Divide supervisory authority of MICs & HICs among multiple regional staff to address span of control issues

Add additional Deputy RD roles (or similar tenure level position) to maintain best practice span of control

Increase communication between the region and field offices

Potential Regional Office reporting structure for WFOs



SOURCE: Phase 1 OWA findings & site interviews

11b Create regional support groups for field offices

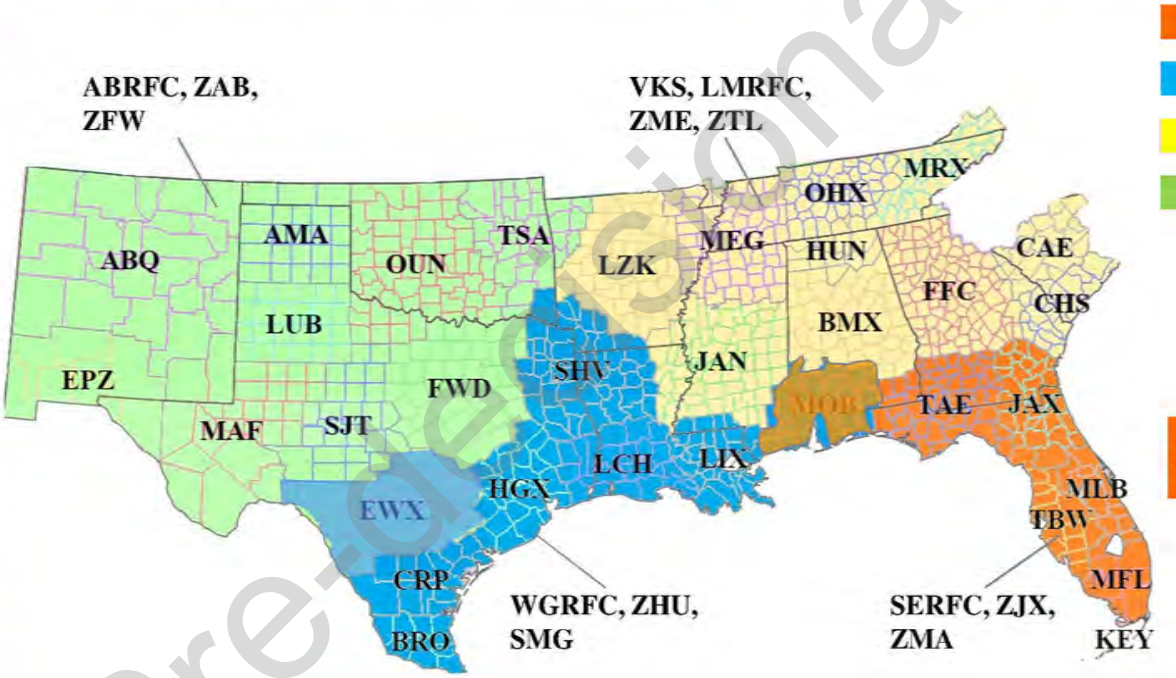
Potential Action Steps

Create regional sub-groups of MICs/HICS to serve as peer-support groups where best practices can be shared

Encourage communication between the sub-groups and the region

Consider having supervisory "Regional Operations Officers" serve as sub-group facilitators

The Southern Region field offices have been organized into SMART groups (Senior Manager Advisory Regional Team), which are based on roughly similar geographical areas



Regional manager

- MIC
- MIC
- MIC
- MIC
- MIC
- MIC
- HIC

- SMART groups help coordinate issues within similar areas, streamline feedback to the regions, and increase interactions and relationships between offices

SOURCE: Phase 1 OWA findings & site interviews

SHORT-TERM OPTIONS: WORKFORCE

11c Centralize administration at region level & establish best practices for tasks left at WFOs

Potential Action Steps

Survey regions to determine which admin functions could be centralized in order to increase efficiency and reduce costs

Develop standardized operating procedures for admin tasks left in WFOs

Currently, centralized administrative tasks vary from region to region

X Region

Regional HQ
- Inventory
- Maintenance
- Travel

WFOs
- Procurement
- Timecards

Y Region

Region HQ
- Procurement

WFOs
- Maintenance
- Travel
- Inventory
- Timecards

All regions

WFOs
- Time cards
- Inventory
- Vehicle maintenance processing

Region HQ
- Facilities/Maintenance
- Lease coordination
- Contracts
- Procurement
- Travel Centralized billing
- Vehicles (lease monitoring, maintenance reminders)
- Budget Allocation

Illustrative, not exhaustive

SOURCE: Phase 1 OWA findings & site interviews

Executive Summary of Phase 2 Deliverable: Development of Options and Alternatives

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluate impact-based decision support services (IDSS), understand the NWS current state and gaps, develop options and alternatives, and test and evaluate options to move forward

Methodology: During Phase 2, a variety of stakeholders, including OWA core team members, SMEs, and OWC Executive Champions, have been engaged through workshops, site visits and interviews

Long-term options to create an integrated field structure: To address the Phase 1 findings, several long-term options have been developed to establish the philosophy for moving forward and to help guide the development of long-term options on an integrated field structure

1) **Operating model philosophy (including IDSS):** There are three potential operating model philosophies that respectively focus on core competencies, broad outreach, and deep core-partner relationships that could improve the consistency of IDSS delivery between field offices; each is based on different assumptions of what reduces the impact of weather on life and property
2) **Organization structure:** A broad set of options for the long-term field structure were identified and assessed against evaluative criteria that was established based on principles of change for NWS and ten tests of organizational design

Short-term options: As a first step forward, several options across the IDSS operating model, organization structure, and workforce can be tested and evaluated in the short-term and in support of the long-term options that are ultimately identified

Next steps: The Phase 3 objectives are to refine the set of options for the integrated field structure and to begin to test and evaluate a robust plan for selected short-term options

Operations and Workforce Committee: Phase 2 Input Sheet

Long-term: operating model philosophy

Select one IDSS operating model philosophy

Op. model ☐ "Core competency" ☐ "Broad reach" ☐ "Deep relationships"

Long-term: organizational structure

Select preferred org structure options (no more than 2)

Org. Struct.

☐ Status quo
☐ Varied offices
☐ Optimized current locations
☐ IDSS service outlets
☐ Clean sheet locations
☐ Deployed field support
☐ Data provider field offices

Name:

Short-term options

	Rank options below (1- 3)	Options	Select sub-options below (based on guidance)	Sub-options	Comments
Operating model 1-3	1. _____	1. Develop nationwide prioritization guidance on delivering IDSS	☐ Select up to 2 ☐	1A. Create a set of prioritization criteria which can be used by local offices 1B. Institute a nationally-run office review system to assess local methods of prioritization	
	2. _____	2. Create uniform training and process maps related to IDSS	☐ Select up to 2 ☐	2A. Create uniform IDSS & related comms training and integrate throughout an employee's career 2B. Create process maps for easily standardized activities	
	3. _____	3. Institute minimum and maximum levels of IDSS using policy and metrics	☐ Select up to 3 (only C or D) ☐ ☐ ☐	3A. Clarify local responsibilities, expectations in planning process 3B. Create a comprehensive set of performance metrics 3C. Limit policy to creating defined minimum and/or maximum standards for IDSS 3D. Use policy to guide office prioritization guidance	
	Rank options below (1- 4)				
Organizat-ional structure 4-7	4. _____	4. Align all Tsunami programs under a single entity	☐ Choose 1 ☐ ☐	4A. Align under NCEP 4B. Answer to COO as one TWC 4C. Align under NOAA (or other) line office	
	5. _____	5. Increase alignment and connectivity between RFCs	☐ Select up to 2 (only A or B) ☐	5A. Keep status quo, where RFCs answer to regional HQ 5B. Align under a national program or the National Water Center directly 5C. Embed with stakeholders	
	6. _____	6. Clarify the respective roles clarifying the roles of National Service Programs, NCEP, other centers and HQ	☐ Choose 1 ☐ ☐	6A. Employ NSPs as policy aggregators across field and NCEP and through RDs 6B. Allow NSPs to directly oversee and set policy requirements for field and NCEP; field reports into NSPs 6C. Disband NSPs and use NCEP to set policy and operational requirements with field input	
	7. _____	7. Increase collaboration and connectivity between field offices	☐ Select up to 4 ☐ ☐ ☐	7A. Create MIC/HIC council whose leadership advises HQ on strategy & policy 7B. Assign field offices partner offices to provide support during events (for both forecast & IDSS and admin & support) 7C. Establish FTE rotation program across levels of NWS and regions 7D. Create monthly region-wide strategy meetings/field manager calls led by field	
	Rank options below (1- 4)				
Workforce 8 - 11	8. _____	8. Improve career paths and roles	☐ Select up to 4 ☐ ☐ ☐	8A. Create one progression for mets from GS-5-12 & make GS levels uniform 8B. Give supervisory authority to WCMs and SOOs 8C. Phase out HMTs and repurpose FTEs to 1340 series 8D. Reframe and right-size OPL position	
	9. _____	9. Develop the workforce	☐ Select up to 5 ☐ ☐ ☐ ☐	9A. Develop a competency model 9B. Establish a set learning and development path 9C. Integrate leadership training throughout career path 9D. Create an orientation course specifically for new MICs/HICs 9E. Create performance reviews based on competency model	
	10. _____	10. Recruit and hire the right talent	☐ Select up to 3 ☐ ☐	10A. Amend 1340 series requirements 10B. Hire MICs/HICs under a more general management series 10C. Standardize job announcements and interview questions. Skip PIV checks for NWS employees	
	11. _____	11. Increase regional support of the field	☐ Select up to 3 ☐ ☐	11A. Distribute supervision of MICs within regional offices 11B. Create regional support groups for field offices 11C. Centralize administration at regional level & establish SOPs for admin tasks at WFOs	

Appendix

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Operations and Workforce Analysis (OWA) Phase 3 Deliverable: Fully Integrated Field Structure and Actionable Ideas

December 11, 2015
Preliminary and Pre-decisional

Executive Summary of Phase 3 Deliverable

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluating impact-based decision support services (IDSS), understanding the NWS current state and gaps, developing options and alternatives, and testing and evaluating options to move forward

Methodology: During Phase 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO have been engaged through workshops, site visits and interviews

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Actionable ideas: Several ideas were refined across the workforce, organizational structure, and IDSS operating model, including:

- **Workforce**: progression model for GS 5 – 12, onboarding course for new hires, orientation course for new MICs/ HICs, and greater supervisory authority for other roles in the field
- **Organizational structure**: roles of the National Service Programs with respect to the integrated field, better alignment of the Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner prioritization criteria and office review

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

During Phase 3, the OWA project focused on refining actionable ideas and the fully integrated field structure

Current focus *Italics* indicates "to be determined"

	Year 1			Year 2	Year 3
Duration					
Phase	**Phase 1: aspire and assess**	**Phase 2: develop ideas**	**Phase 3: refine ideas**	***Phase 4***	***Phase 5***
Timing	May – Aug.	Aug. – Oct.	Oct. – Dec.	2016	2017
Description of work	**1 Change Management and Stakeholder Engagement** Project governance structure and teams; stakeholder map and outreach plan				
	2 Evaluation of IDSS **3 Current State Baseline** ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce **4 Current State Gaps**	**5 Identification of ideas** including ideas across: ▪ Organizational structure ▪ Operating model (including IDSS) ▪ Workforce	**6 Refinement of ideas** ▪ Refine fully integrated field structure ideas ▪ Refine a set of actionable ideas for: – Organizational structure – Operating model (including IDSS) – Workforce	▪ *Proposal develop-ment* ▪ *Change agents* ▪ *Field and Forum* ▪ *Leader-ship coaching* ▪ *Test and evaluate*	▪ *Field and Forum* ▪ *Weather event review* ▪ *Test and evaluate*

In Phase 3, workstream teams focused on developing prioritized short-term options into pre-proposal initiatives and communicating key messages to the field

Partially completed ✓ Launched/ completed

Workstreams	Prioritizing options Oct.	Developing pre-proposal ideas Nov.	Evaluating pre-proposal ideas Early Dec.
Workstream 1: Communications and stakeholder engagement	Identify key messages and messengers to deliver them ✓	Develop current from-to story ✓	Develop overarching communications plan ✓
Workstream 2: Organizational structure **Workstream 3: Operating model (including IDSS)** **Workstream 4: Workforce**	Identify priority short-term options to pursue and ✓	Develop prioritized options into pre-proposal ideas ✓	Evaluate pre-proposal ideas to develop into proposals ✓
Workstream 5: Fully integrated field structure	Determine impact of changes to "what" functions are performed in field ✓	Evaluate changes to "who" (e.g., skill and role mix) and "where" ✓	Assess implications, including scenario analysis, for potential field structure options ✓

Phase 3 outputs

- Key messages and messengers to deliver them
- Current from-to story
- Overarching communications plan

- Pre-proposal ideas for prioritized actionable ideas

- Options for fully integrated field structure

Core team workshops (During November) — **OWC (Nov 19)** — **OWC (Dec 7)**

During Phase 3, core team members refined actionable ideas and stakeholders were engaged in discussing them

Phase 3 focused on involving core team members, NWS owners and SMEs in refining ideas and engaging stakeholders

Core team weekly meetings and workshops	▪ Weekly meetings have been held with core teams and NWS owners: Deirdre Jones, Kevin Cooley, John Murphy, Ray Tanabe, Andy Stern, Bill Lapenta, David Murray, John Ogren, and Chris Strager ▪ Four workshops were held to align on actionable ideas within workstreams: – Nov. 9 – 12: Organization structure workshop in Silver Spring, MD – Nov. 12 – 13: Workforce workshop in Kansas City, MO – Nov. 12 – 13: IDSS operating model workshop in Silver Spring, MD – Nov. 17 – 18: CSE workshop in Fort Worth, TX
NOAA, manager and all staff engagement	▪ Participated in the WR MIC/ HIC and shared Toolkit Chapter 1 on Phase 1 findings ▪ Participated in SR MIC/ HIC and shared Toolkit Chapter 2 on IDSS philosophy ▪ Nov. 12 – 19, engaged managers (172 dial-ins) and then all staff (229 dial-ins) on IDSS “deep relationships” philosophy; provided Toolkit Chapter 2 ▪ On Nov. 13, shared Phase 2 update and Phase 3 actionable ideas with NOAA leadership; provided Toolkit Chapter 2 materials ▪ Conducted interviews and engaged NWS leaders on fully integrated field structure
NWSEO leadership engagement	▪ On Nov. 12, discussed IDSS operating model philosophy and other ideas with NWSEO leadership ▪ Collected input from NWSEO leadership and incorporated into Phase 3 ideas ▪ Discussed options for on-going engagement
External stakeholder engagement	▪ Supported Dr. Uccellini with talking points for engagement of emergency managers at IAEM and Big City Ems ▪ Presented Phase 1 findings to EISWG

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Actionable ideas: Several ideas were refined across the workforce, organizational structure, and IDSS operating model, including:

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Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

OWA Phase 3: Fully Integrated Field Structure

Input (Key Decision Points)

- **Does the proposed forecast process flow reflect an effective way for NWS to evolve in the future?**
- Are the concepts of “focus” and “flexibility” effective ways to address workload variability using strategic resourcing in the field?
- What additional next steps are needed to advance the fully integrated field structure discussion?
- What additional ideas could OWA pursue to strengthen roles and skills and support change to fully integrated field structure?

There is extensive rationale for considering changes to the fully integrated field structure

Rationale for considering changes to the fully integrated field structure

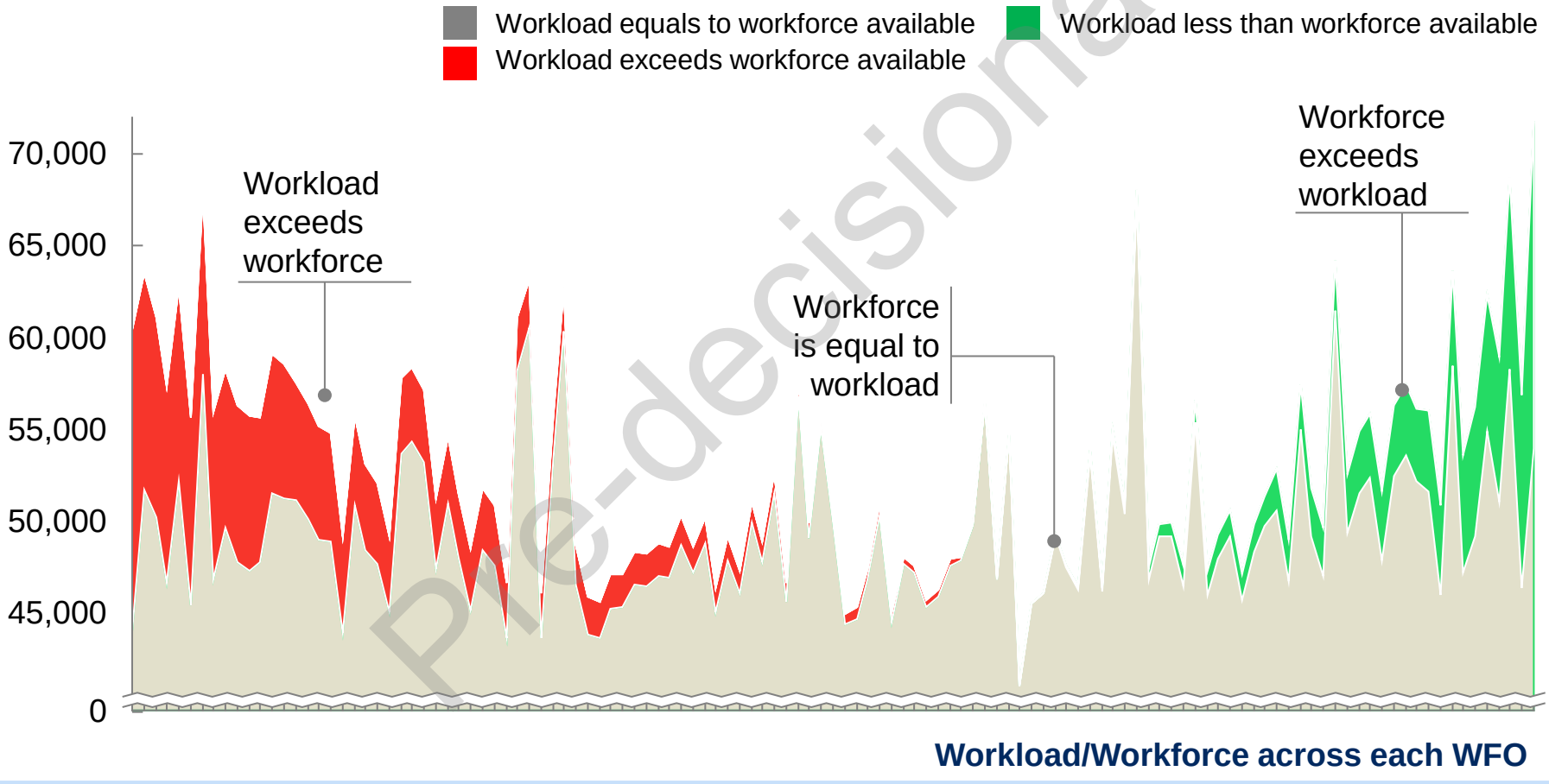
- The current and future **demand for IDSS and other products and services from core partners is growing;** forecast offices are adopting various approaches to provide IDSS
- Communities are best served when **forecasts and warnings focus on the particular impacts that core partners care about; situational awareness is critical to preparedness**
- **Consistency in service delivery and forecast accuracy is key** to serving core partners and increasing trust in NWS
- NWS must continue to **provide the best data to core customers via a growing observations network**
- **Probabilistic forecasting is here and is expanding** as expectations increase beyond the information provided by deterministic forecasts; additionally, greater demands on the 0-48 hour time frame and fundamentally different approaches are being considered for short-term weather, water and climate forecasting and warnings (e.g., FACETS)
- **The workload across NWS varies** by office and over time
- **Integration with other NOAA line offices is critical for NWS and NOAA to** fulfill their missions
- NWS is **constrained in terms of human resources** by hiring and attrition rates

SOURCE: NWS interviews

Phase 1 findings indicate that workforce[1] and workload[2] varies across WFOs, both location-to-location and over time

WFO Workforce[1] available compared against expected workload[2] based on workload drivers, 2014

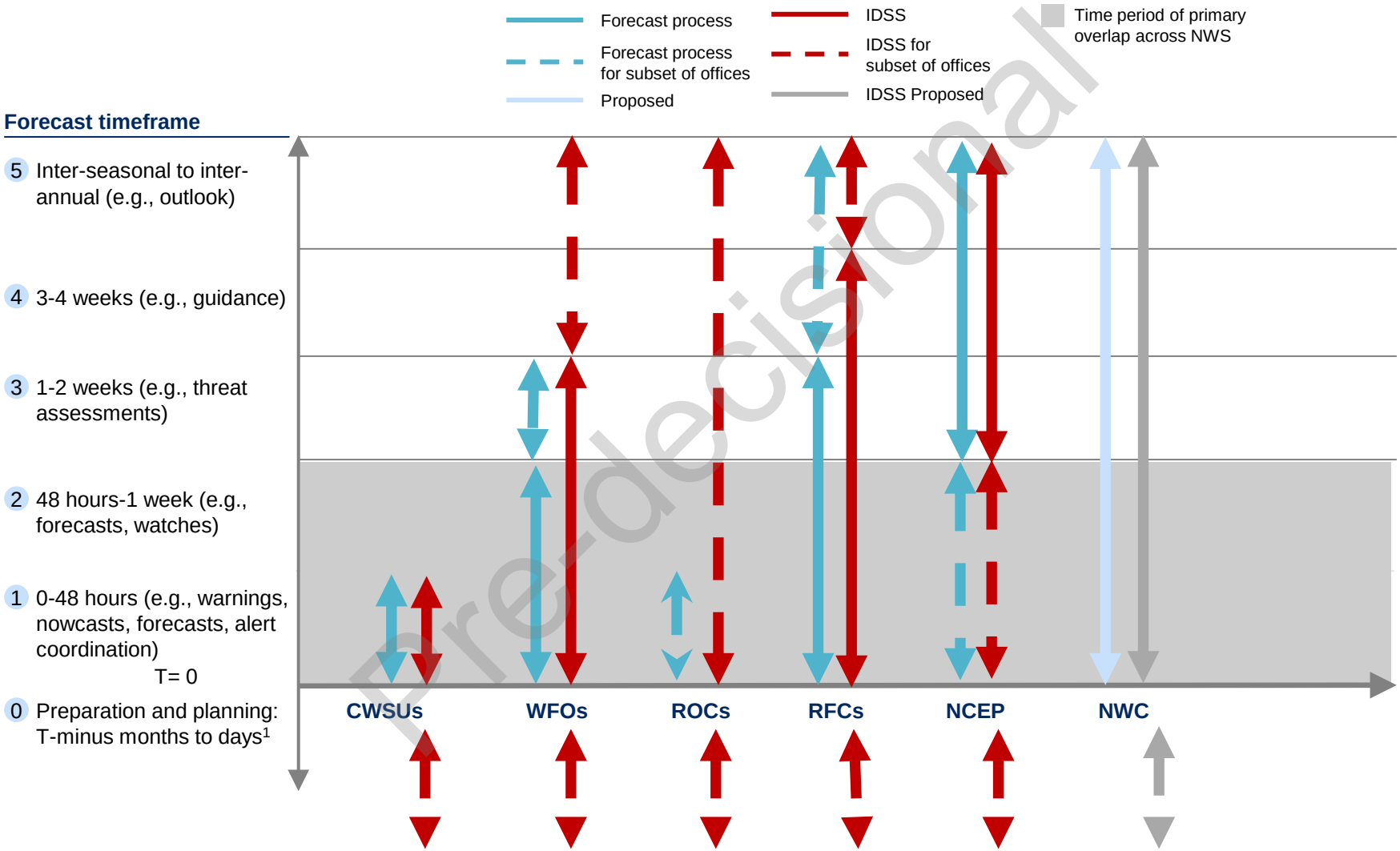
Hours worked by WFO



1 Workforce defined as current available FTE hours (including overtime) worked across WFOs
2 Workload defined as expected workload based on team regression analysis accounting for variance in workload drivers

SOURCE: NWS Overtime data by biweekly pay period, 2002-2015; NWS CFO's FTE data by year, 2008-2014; NWS WWA data, 2008-2014, 2008-2014 NWS Severe weather event data, Storms events database, National Climate Data Center

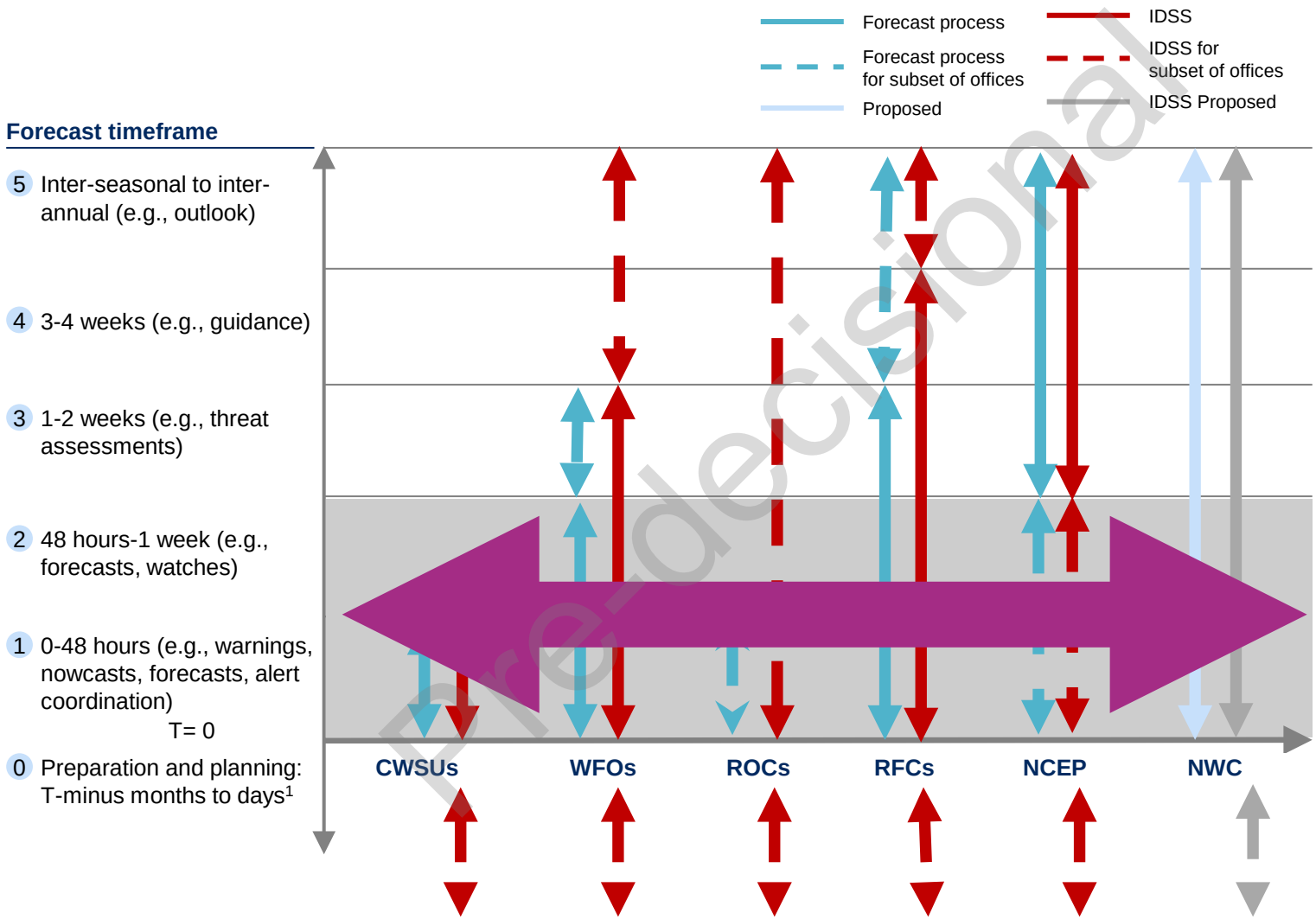
Forecast-related activities in 0 hr–1 week timeframe are critical to serving core partners; overlap exists across responsibilities



1 Preparation and planning activities include tabletop exercises, outreach and education, trainings, etc

SOURCE: Interview with NWS leadership

Functionally, NWS could focus on collaboration across the entire organization through a fully integrated field structure



NWS could increase collaboration in forecast process:

- Different parts of NWS would still each play a role in forecast process
- By collaborating, NWS could create an efficient singe process across organization
- NWS could better focus on provision of the best *science-based service* to its core partners

1 Preparation and planning activities include tabletop exercises, outreach and education, trainings, etc

SOURCE: Interview with NWS leadership

Additionally, in the midst of this change, a local NWS presence is critical to build a "Weather-Ready Nation"

NWS local presence is critical for four main reasons

1. **NWS observations and infrastructure collected and maintained locally** critical for excellent forecasts and warnings and IDSS-provision, but also for operations of the entire Weather Enterprise
2. **Creating or providing excellent local forecasts and warnings relies on "local knowledge"** based on current technological and forecasting needs
   - Situational awareness is critical to supporting communities and core partners
   - Some watches, warnings and advisories currently require local needs and location in order to sufficiently protect communities
3. **Given deep relationships model, core partners currently best served from nearby forecast office**;
   - Understanding what core partners need and gaining their trust requires creation and maintenance of local relationships
   - Different communities have different networks and types of core partner relationships, and require local knowledge to provide the best services to protect community
4. **NWS continues to offer particular value as a service outlet for "NOAA in your neighborhood"** for most communities in the U.S.

SOURCE: NWS interviews

A range of technological, workforce and cultural enablers are needed to successfully shift to a new, collaborative model

Enablers of change in forecast-related functions and assumptions around change

Success of National Model Blend[1]	▪ National Model Blend could provide accurate model data to support post-processing of local forecasts for all offices in NWS, requiring less intervention "in the grids"[2] ▪ FY17-18 timeline for testing of short-range (Day 0-3) forecasts; FY19 move towards probabilistic models ▪ Data and models could continue to support the National Model Blend through its iterations given data, processing and bandwidth requirements; forecast offices could receive data through available processing ability, bandwidth, and AWIPS II
Increased communication & collaboration from NCEP to forecast office[3]	▪ NWS could increase and support a structural feedback loop on accuracy of National Model Blend forecasts ▪ Forecast offices could provide feedback on model in a timely manner to NCEP ▪ Additionally, NWS could create structural lines of communication and processes to support forecast offices-to-NCEP collaboration across NWS
Shift towards managing information flow Day 1+	▪ For Hour 18 and beyond, forecasters could embrace change to manage information flow rather than tweak data during fair weather ▪ Forecaster ability to provide situational awareness during severe weather or in Day 0 could be maintained even with shift "out of the grids"[2]
Culture of trust, within NWS and between NWS and partners	▪ Shift towards deep relationships model to increase trust between providing IDSS to core partners is critical to creating a "Weather Ready Nation" ▪ Relationship built on trust between forecast offices,[3] NCEP, and other parts of NWS ▪ Training and support could be provided to offices to support collaboration ▪ Offices and staff prepared to be flexible and collaborative in day-to-day operations

1 Also, with reference to CWSUs and aviation weather, a national aviation model is critical; additional, for hydro program, a national water model is discussed further in next pages ; 2 "In the grids" or "out of the grids" references the NWS used term that refers to forecast activities adjusting gridded forecasts 3 Forecast offices includes all office performing forecast duties, including WFOs, CWSUs, ROCs, and certain NCEP

SOURCE: NWS interviews

Creating a culture of trust between personnel in different offices is critical to create a collaborative process across NWS

Trust equation explains what success of collaborative process would look like

The Trust Equation

$$< \frac{(\text{Credibility} + \text{Reliability} + \text{Familiarity})}{\text{Self-Orientation}} >$$

Credibility: Personnel know that information received from other parts of NWS is accurate; personnel can believe in National Model Blend

Reliability: Personnel feel they receive information in a timely matter and they will be responsive to feedback from other parts of the organization

Familiarity: Different personnel throughout NWS feel like they are familiar understand other parts of the organization, and how they relate

Self-orientation: Personnel take pride in what NWS delivers as an organization, rather than what they can deliver independently

SOURCE: NWS interviews

NWS is currently setting goals and investigating questions around changes to hydrological program and national water model

Goals for changes in hydrological program forecast process workflow

- **NWC national water model initial implementation successful**
  - Verify national water model
  - Create plans for testing, training, and support
  - Develop overall timeline
- **Steady enhancement and improvement of NWS national water model**
  - Stair-step implementation of increased capabilities
- **Fully integrated field structure for hydrology**
  - Provide integrated and coordinated IDSS at national, regional and local scale
  - Continue to maintain scientific rigor and excellence

Currently, questions around creation of new model are being addressed by hydro strategy team

- What observations system enhancements are necessary to implement and maintain a successful national water model?
- What criteria will determine whether national water model is successful enough to retire legacy models?
- How can NWS ensure proper interpretation, integration, and leverage of information from national water model to enhance IDSS?
- What additional operational changes will be necessary to support use of national water model at NWC, regional, and RFC and WFO level?
- What will be the role of regional and local modeling in the new paradigm given success of national water model?

SOURCE: NWS hydro team interviews

NWS is additionally setting goals and investigating questions around changes to aviation program workflow

Goals for changes in aviation program workflow

- **National aviation grid populated by AWC**
  - Currently, national aviation model managed at AWC
  - In future, could use AWC to populate local aviation grids with strengthened national model
- **Steady enhancement and improvement of relationships with core partners**
  - Potential focus on providing WCM-like capabilities for CWSU core partners
- **Alignment of correct responsibilities to AWC, CWSUs and WFOs**
  - Correct office to provide, review TAFs in future
  - Collaborate with AWC and WFOs on warnings that go beyond single CWA

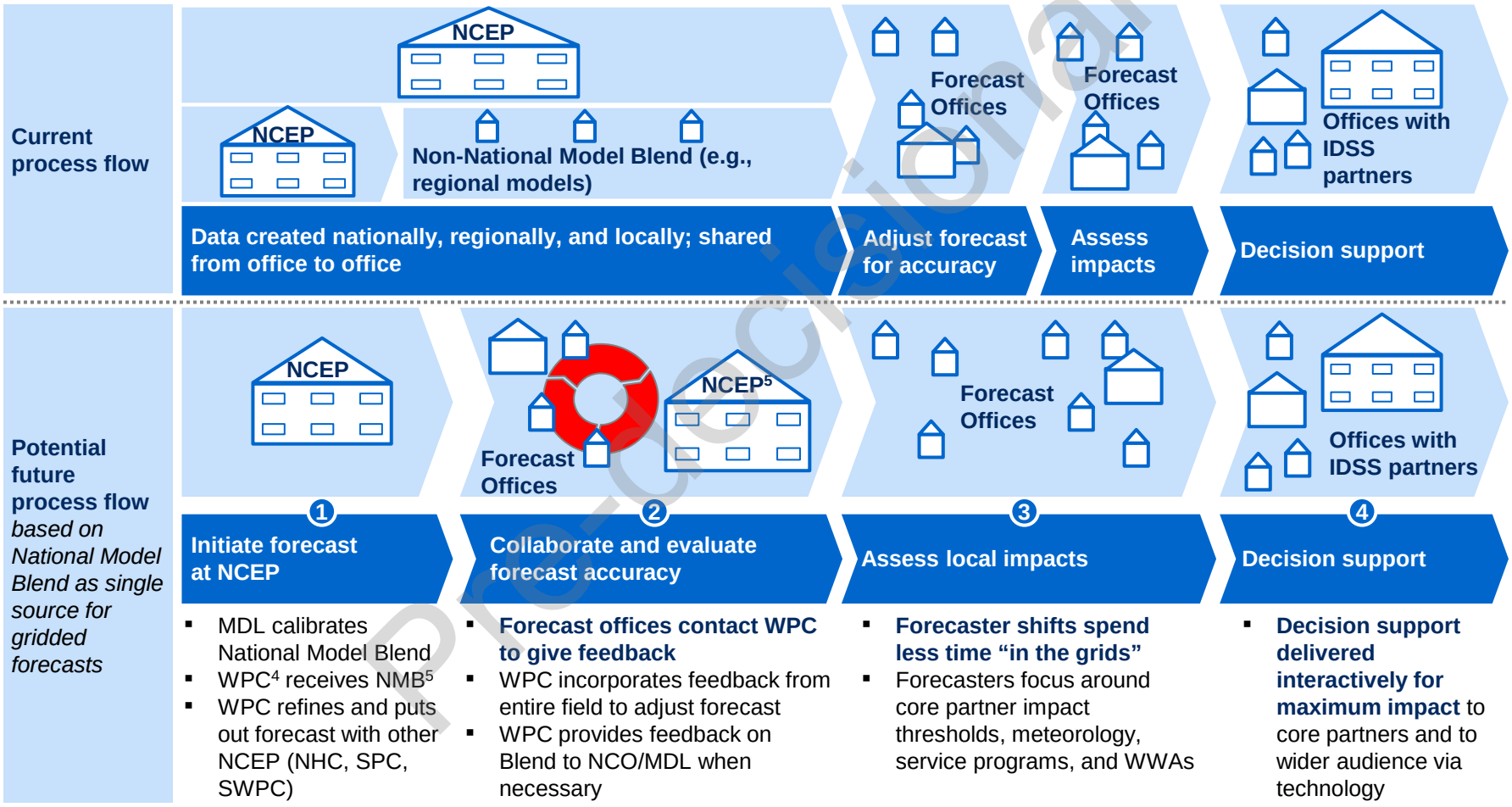
Aviation weather program is working to answer questions related to evolving the aviation program

- **How can aviation weather program create product and service consistency?**
  - What changes will occur to NWS forecast and monitoring capabilities (in terms of equipment and tools)?
  - What is the correct common operational flow for AWC, WFOs, and CWSUs?
- **How can NWS evolve the aviation program's organizational structure, aligning it with FAA operational complexity and emerging service needs?**
- **How can CWSUs and WFOs further collaboration on forecast production and IDSS needs?**

SOURCE: NWS interviews

A fully integrated field structure and collaborative process flow could allow local focus on core partner needs and NWS-wide excellence in meteorological science

Description of change in process flow for forecasts between NCEP and forecast offices

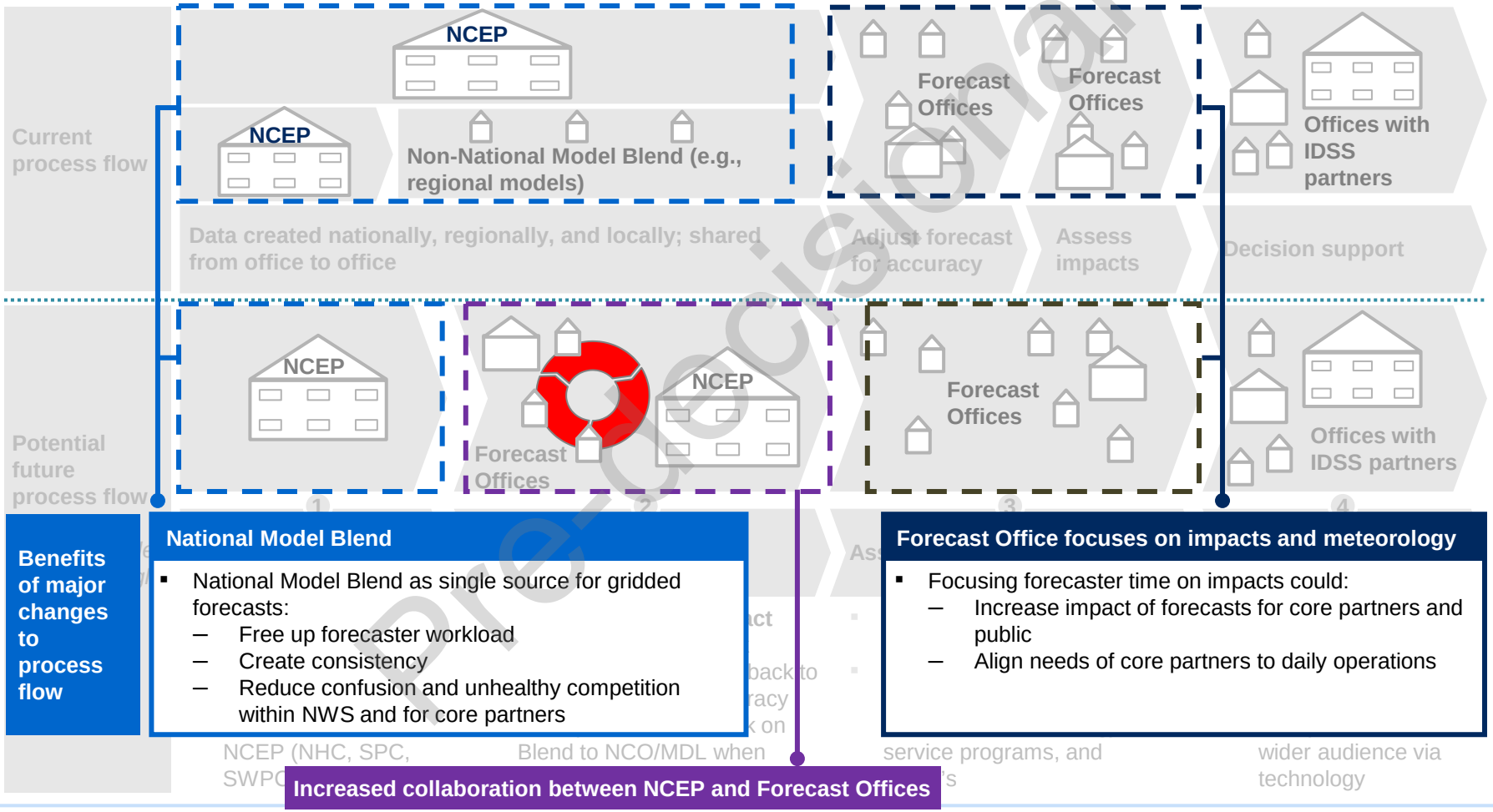


1 Forecast offices includes all office performing forecast duties, including WFOs, CWSUs, ROCs, and certain NCEP; 2 MDL refers to Meteorological Development Laboratory, which developed and manages National Model Blend; 3 NCO refers to NCEP Central Operations ; 4 WPC refers to Weather Prediction Center; 4 National Model Blend 5 Includes all NCEP in collaborative process

SOURCE: NWS interviews

Benefits of potential future process flow include improving consistency and increasing the understanding of forecast impacts for core partners

Description of change in process flow for forecasts between NCEP and forecast offices



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SOURCE: NWS interviews

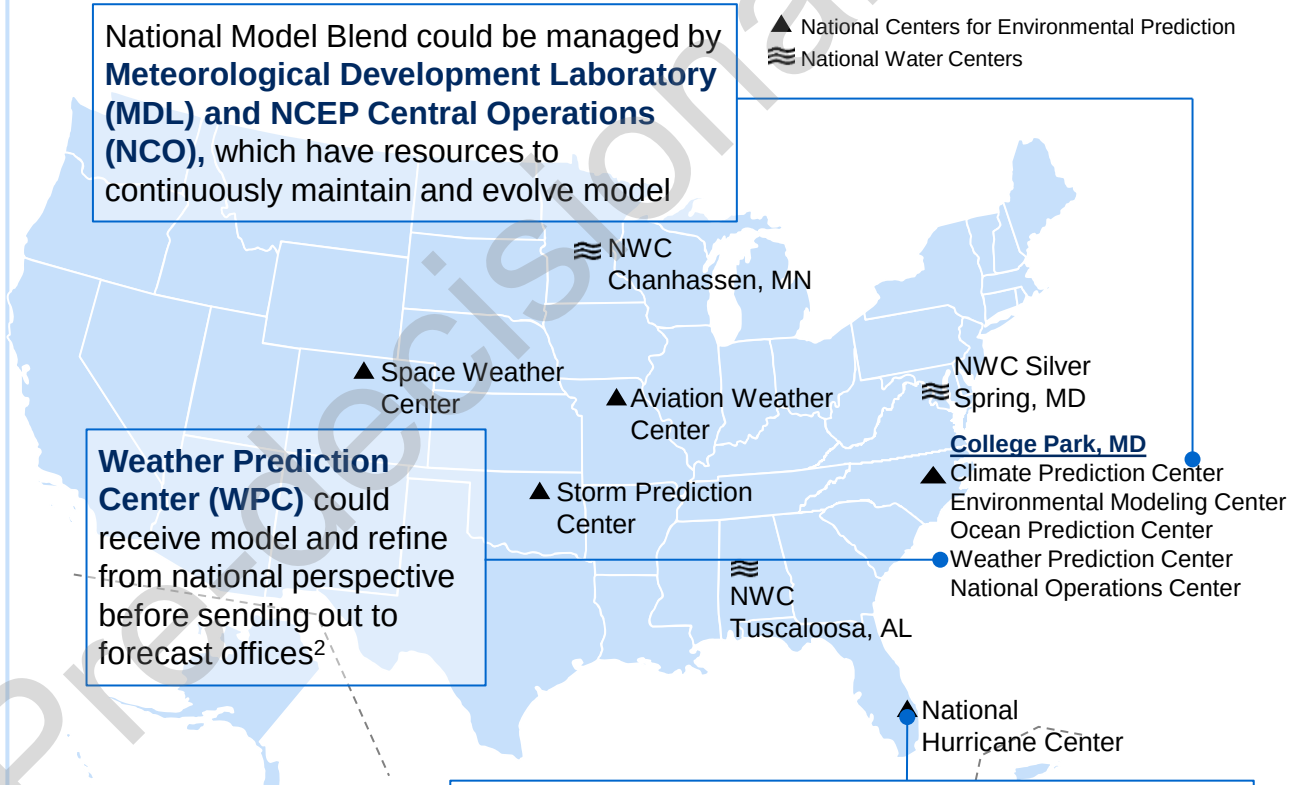
Given technological changes on the horizon, NCEP's national perspective provides a foundation for collaborative forecasting process

Potential technological changes and impact

- **National Model Blend** could be created and disseminated from one location
- **National Model Blend** (even for meso-scale) **could be run regularly** (e.g., every other hour) to incorporate most up-to-date data;
- **Probabilistic forecasting** on horizon with additional technological strides necessary
- Changes could make **"in the grids"[1] forecasting less impactful** for core partners and public

NCEP national scale provides foundation for collaborative process flow for models

National Model Blend could be managed by **Meteorological Development Laboratory (MDL) and NCEP Central Operations (NCO),** which have resources to continuously maintain and evolve model



Weather Prediction Center (WPC) could receive model and refine from national perspective before sending out to forecast offices[2]

Collaboration between NCEP critical as many NCEP have specialized forecast knowledge (e.g., NHC, SPC, AWC, etc.)

1 "In the grids" references the NWS used term that refers to forecast activities adjusting gridded forecasts
2 Forecast offices includes all office performing forecast duties, including WFOs, CWSUs, ROCs, and certain NCEP

SOURCE: NWS interviews

Weather Prediction Center (WPC) could facilitate feedback loop to strengthen model from local and national perspectives

Potential feedback loop using Weather Prediction Center (WPC) as collaborator between forecast offices and HQ

WPC provides feedback to NCO and MDL

WPC receives feedback from forecast offices

Meteorological Development Laboratory (MDL)

- **Collaborate to provide best model data** at regular but manageable intervals (e.g., every other hour)
- **Regularly re-assess & strengthen model**

Weather Prediction Center (WPC)

- **Refine** model output based on national perspective
- **Send data** to forecast offices and operational desks (e.g., ROCs, NHC, SPC, AWC)
- **Receive feedback** on additional modifications
- **Finalize national data and provide guidance** on local consistency
- **Provide feedback** to MDL on potential refinements

Forecast Offices (e.g., WFO, CWSU, RFC, ROC)

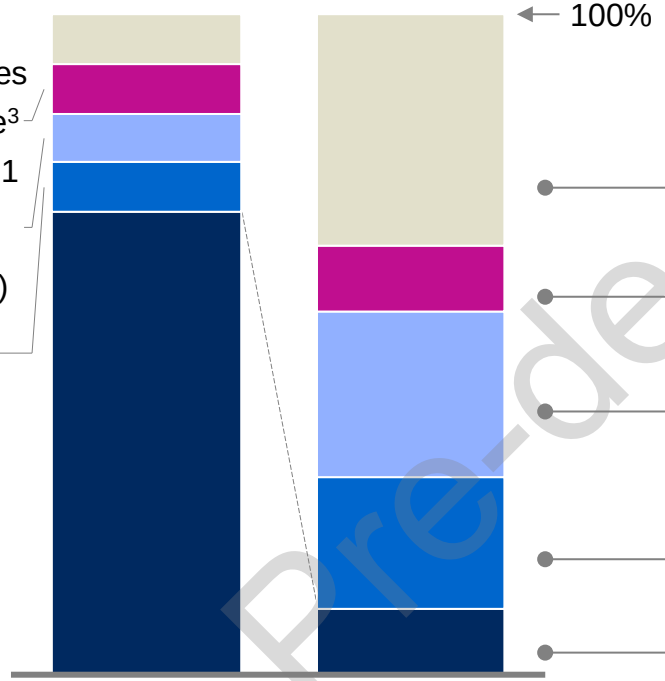
- **Receive forecast data** from WPC
- **Catalog any major changes** necessary to make in short term (Day 0-1) or extended term outlooks
- **Provide feedback** to WPC on large-scale changes necessary
- **Receive updated model** from WPC and use without additional manipulation

SOURCE: NWS interviews

Forecast offices could shift time away from gridded forecast adjustments and focus time on impacts and other responsibilities

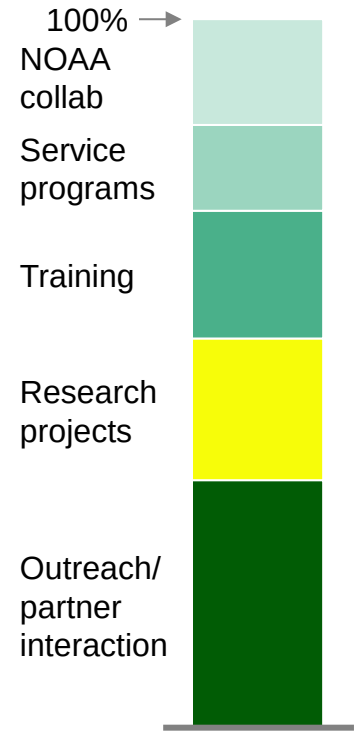
Illustrative breakdown in typical WFO workload from current to proposed state

WFO[1] workload breakdown
% workload



- **Other responsibilities** include[2]:
  - NOAA collaboration
  - Service programs
  - Training
  - Independent research projects
  - Outreach/partner interaction
- **Infrastructure[3]** critical to maintain
- Additional time for **forecasting impacts and dissemination** for better preparedness
- Situational awareness **expanding** during shifts
- "In the grid" forecast adjustments **as necessary**

Example breakdown of other responsibilities:



1 Illustrative of what WFOs are tasked with currently; does not account for operational variation at WFOs that have adapted their shift structure to other operational models 2 Not an exhaustive list of other responsibilities 3 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

OWA Phase 3: Fully Integrated Field Structure

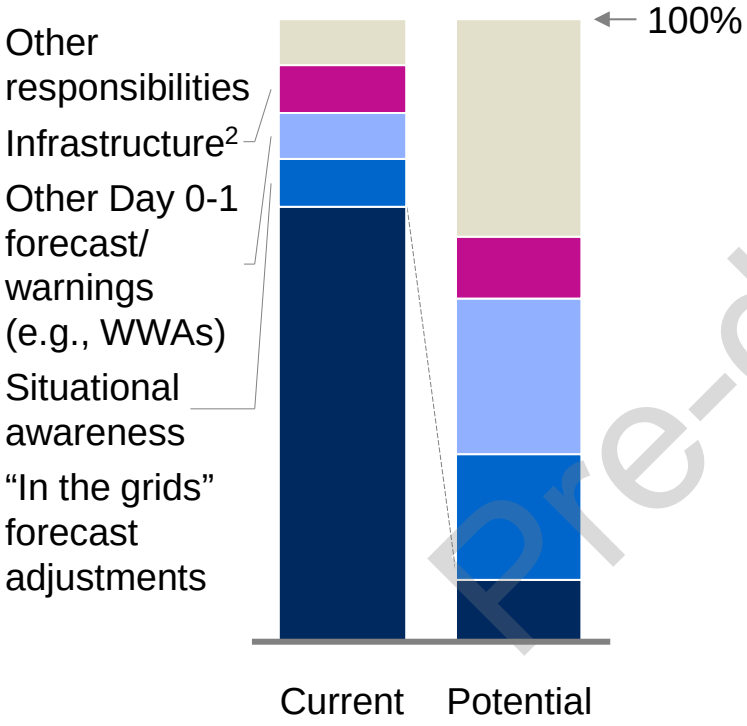
Input (Key Decision Points)

- Does the proposed forecast process flow reflect an effective way for NWS to evolve in the future?
- **Are the concepts of "focus" and "flexibility" effective ways to address workload variability using strategic resourcing in the field?**
- What additional next steps are needed to advance the fully integrated field structure discussion?
- What additional ideas could OWA pursue to strengthen roles and skills and support change to fully integrated field structure?

NWS could strategically resource newly available time to address NWS-wide workload variability over time and across locations

Newly available time at WFOs could be thought of as a collective resource across all field offices

WFO[1] potential workload
% workload



NWS could address its systematic workload variability by strategically resourcing this time

Strategic resourcing allows NWS WFOs to:

1 Focus

- **What it looks like:** NWS allocates resources as needed to address mission critical local responsibilities and solve workload imbalances
- **Solves challenge of workload variability location to location**

2 Flex

- **What it looks like:** Deployable forecasting workforce, like IMETs, shared between offices during severe weather events
- **Solves challenge of workload variability during weather events**

1 Illustrative of what WFOs are tasked with currently; does not account for operational variation at WFOs that have adapted their shift structure to other operational models; 2 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

1 WFOs already exist that have "focused" additional capacity on a specific type of work, to better serve their communities

Example offices with locally-focused purposes and additionally aligned FTE

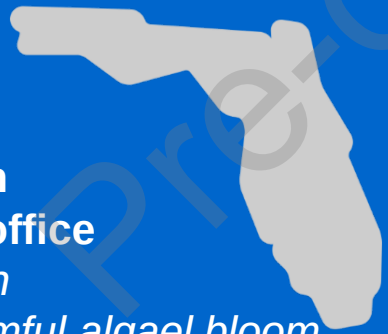
New Orleans

Core partner-focused IDSS
Additional forecasters to embed with core partners in city

Chicago

Golden Triangle Initiative (GTI)
Aviation mets and service desk at CWSU/WFO

Tampa



Partner with NOAA line office
Partners with NOS on harmful algael bloom

Honolulu

Central Pacific Hurricane Center (CPHC)
Additional staffing focused on Pacific ocean hurricanes

SOURCE: NWS interviews

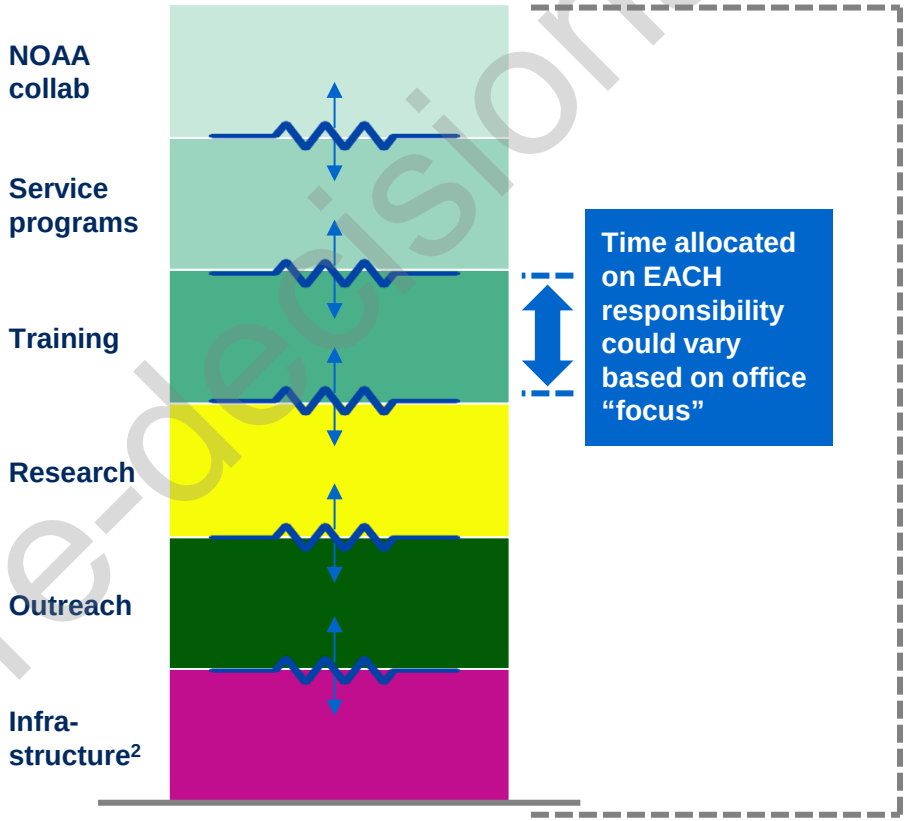
1 NWS leadership could decide the "focus" of offices across field in order to match workforce to local resource needs (1/2)

Forecast offices continue forecast and IDSS responsibilities . . .

WFO[1] workload breakdown
% workload

. . . AND focus on mission critical responsibilities using additional freed capacity to focus on the unique local needs of their area

Breakdown of infrastructure and all other responsibilities, % remaining workload



1 Illustrative of what WFOs are tasked with currently; does not account for operational variation at WFOs that have adapted their shift structure to other operational models; 2 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

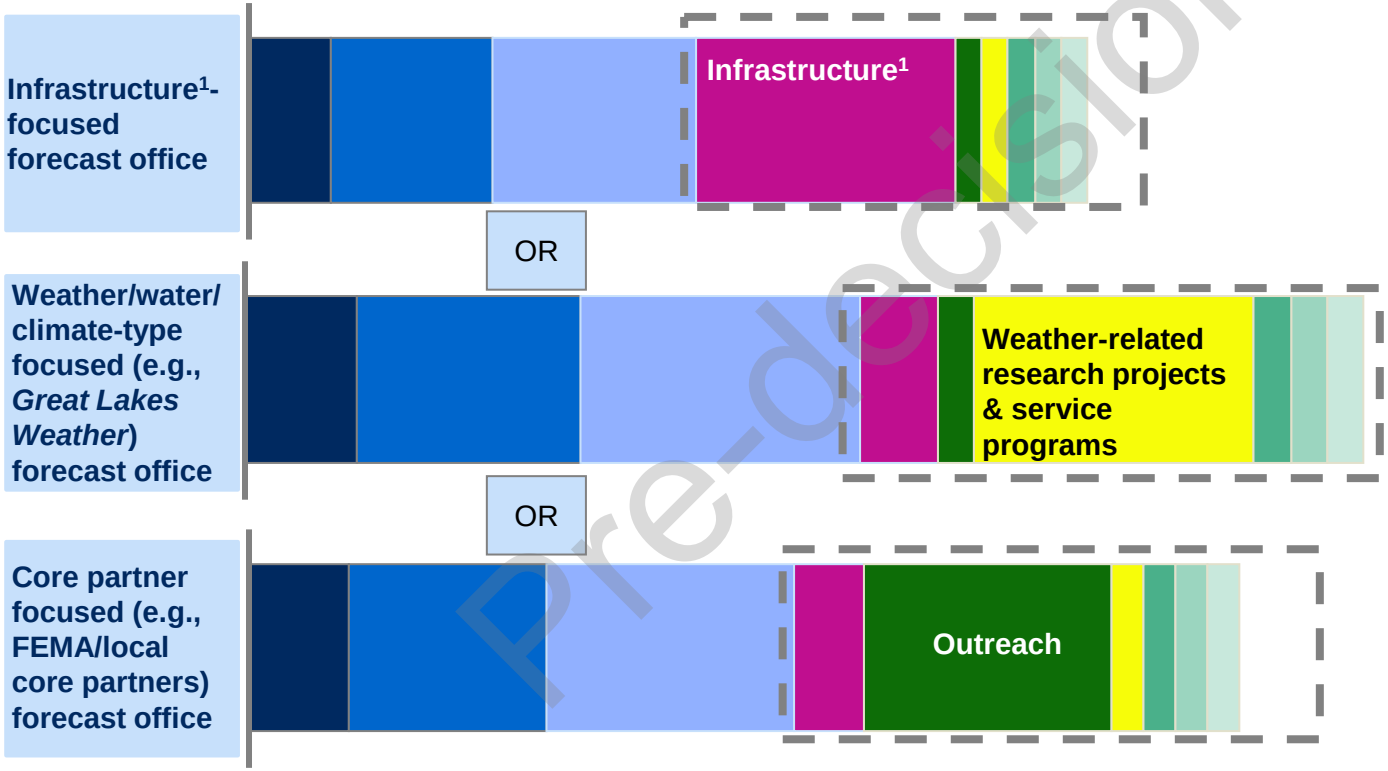
1 NWS leadership could decide the "focus" of offices across field in order to match workforce to local resource needs (2/2)

NWS leadership could decide local forecast office "focus"

All offices continue core Forecast, warning, and IDSS responsibilities

Focus on one type of workload but still complete other necessary responsibilities

Other mission critical responsibilities



Rationale for office focus

- Infrastructure[1] critical to NWS
- Emphasize local infrastructural support and innovation for remote locations, offices with unique obs, dissemination or tech needs, or large AORs
- Local knowledge of climate and weather types can complement NSPs/NCEP
- Weather-type focused offices focus on innovating around meteorology
- Deep relationship with core partners better served by focus local core partner impacts
- Could focus on community of core partners or particularly key core partners

1 Infrastructure includes observations network, dissemination, AWIPS, QA/QC data, and observations network maintenance

SOURCE: NWS interviews

2 Examples also exist within NWS of a "flexible," or deployable, workforce used as surge capacity during events

IMETs: A "flexible" model providing value to core partners

Flexible deployment model

- **Staffed at "home" office but able to be "deployed"** to other WFOs when necessary
- **Have responsibilities in home office** that are shifted when "deployed"

Program requirements

- Though they are "**shared**," most IMETs are located in regions where there are fire weather
- **Additional training necessary** for all IMETs

Benefits

- **Provides needed core partner support** during high-impact events
- **Provides organizational solution** to sharp increases in workload demand during fire events

Example of collaboration

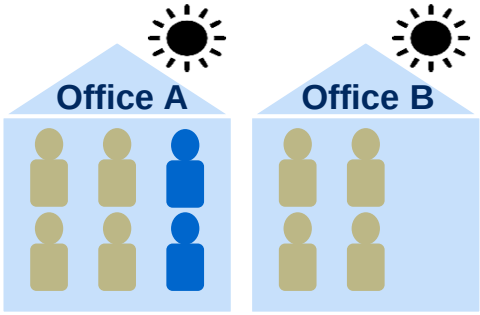
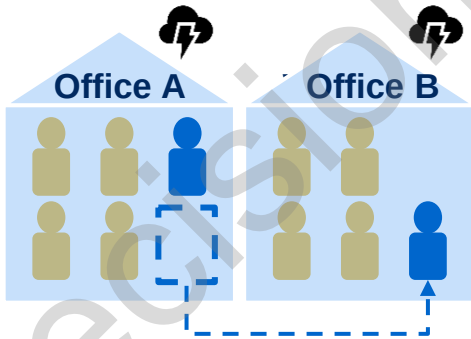
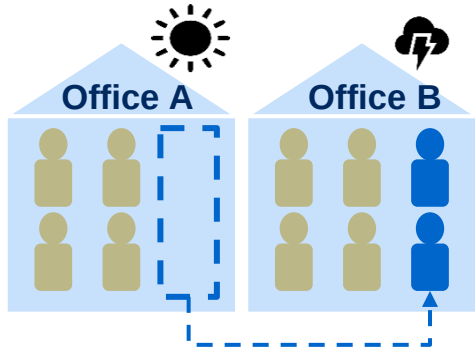
- IMETs are a successful example of **across-WFO and across-region collaboration**

SOURCE: NWS interviews

2 NWS could expand this idea and utilize a flexible (e.g., deployable or virtual) staffing pool to satisfy high demand for staff during severe weather events

Deployment of staffing pool during severe weather events between two offices (e.g., WFO, ROC, region)

= deployable/virtual

	No severe weather	Severe weather event	
	At Office A or Office B	At Office A and Office B	Only at Office B
Example structure			
Described deploy-ment	▪ Deployable forecasters sit at Office A (could be ROC, WFO, etc.) and have other responsibilities when there is no severe weather event	▪ When there is severe weather at both offices, forecasters are "shared" ▪ Deployment based on need per office	▪ When Office B has a severe weather event, forecasters are deployed to fulfill workload demand
Potential impacts to consider	▪ System still implies that Office A and Office B would need to be relatively proximate to each other and have similar weather	▪ Deployable forecasters do not "belong" to either Office A or Office B ▪ To reduce conflict deployment determined by RD, not WFO-level leadership	▪ All deployable forecasters could be deployed *if necessary* ▪ NWS could also investigate efficacy of other types of remote support for offices

SOURCE: NWS interviews

Regions and ROCs could play a critical role to ensure consistency and collaboration across offices, and surge capacity within region

Institutional attention to maintaining consistency and collaboration critical

- **As offices "Focus" time on local needs, CONSISTENCY could become more of a challenge** for NWS leadership to address
- **As offices "Flex" forecasters between each other, COLLABORATION critical** to ensure all forecasters can provide excellent services whether or not they are deployed; ROCs or regions could provide location to SURGE from

- **Regions and ROCs could provide the structure from which to ensure both consistency and collaboration**, both within regions and across regions
- **To do so, NWS could ensure the right regional/ROC alignment to a new field blueprint**

NWS could consider changes to ROCs and regions

No change	▪ 6 regions total ▪ 1 Regional Operating Center (ROC) to each region ▪ Regions maintained based on current structure
Regions and ROCs changed	▪ Additional regions and ROCs to match needs of organizational field structure ▪ Could be aligned to new field structure (e.g., based on span of control)
Current regions remain; ROCs change	▪ Administrative regions remain the same ▪ ROCs change and aligned to "blueprint"; ▪ Could potentially be more ROCs than regions

SOURCE: NWS interviews

Additional regions could also alleviate span of control[1] challenges and provide opportunities for forecast offices to focus on core partners

Regional directors act as …		Ideal span of control, FTE	MIC/HIC/OIC[2] per regions, #	Regions, #	Δ from current, # regions
Supervisor	▪ Highly involved in day to day of offices	▪ 8-10	▪ 9-10	▪ 18-19	▪ ~+12
Facilitator	▪ Manages both region-wide and local larger issues	▪ 11-15	▪ 12-14	▪ 18-19	▪ ~+7
Coordinator (low bound)	▪ Coordinates relatively independent supervisors	▪ 15-20	▪ 16-18	▪ 10-11	▪ ~+4
Coordinator (higher bound)	▪ Coordinates relatively independent supervisors	▪ 20-25	▪ 19-22	▪ 8-9	▪ ~+2

Based on all examples, potential increases in the number of regions could benefit NWS by reducing a currently large span of control, especially across CONUS. Additionally, this assumes OCONUS remains 2 distinct regions

1 Based on MICs/HICs/OICs in region and under assumption that CWSUs do not answer directly to RD regional staff also not counted towards span of control
2 Pacific, Alaska region remain consistent as each 1 independently managed region

SOURCE: NWS interviews

ROCs could be expanded to cover every region; alternately, current ROCs could function in collaboration with original and new regions

NWS could consider ROCs and regional HQs separately

Current plan for ROCs	▪ 1 ROC to each region ▪ 6 regions total ▪ Additional regional HQ added would require change to ROCs as well
ROCs stood up based on regional HQ location	▪ **Scenario 1**: Additional ROCs to match new regional HQs ▪ Would have additional costs but would increase customer service to regional core partners
ROCs stood up based on core partners	▪ **Scenario 2**: ROCs aligned to core partners and not aligned 1:1 with regional HQ ▪ More streamlined and potentially efficient

Scenario 2: NWS could align ROCs to core partners, NOAA, etc.

- Potentially align with NOAA weather regions

- Potentially align IDSS delivery with FEMA regions

- Potentially align with state EOCs or EM offices

- Continue to align based on needs requiring data observations, network maintenance, and other forecast and IDSS needs

SOURCE: NWS interviews

NWS leadership could apply the ideas of "focus" and "flex" to decide future alignment of NWS workforce to workload

Summary of change: "focus" and "flex" could help NWS leadership align workforce supply to workload demand

NWS leadership could take two steps to create new integrated field structure blueprint

A From a national view, reconcile the integrated field structure at the WFO level:

- **Correct alignment of responsibilities to each office** (e.g., WFOs vs. ROCs vs. CWSUs vs. RFCs vs. NCEP)
- Use "focus of offices" to **adequately align workforce supply to mission critical workload demand**
- Align "home bases" of **deployable "flex" forecasters** (e.g., at ROCs, or at certain WFOs) based on needs of local core partners and local area

B Align regions and ROCS with the new blueprint for integrated field structure:

- NWS could decide the correct number and size of regional HQ based on span of control and management needs
- NWS could decide correct number and size of ROCs based on operational and IDSS needs

SOURCE: NWS interviews

OWA Phase 3: Fully Integrated Field Structure

Input (Key Decision Points)

- Does the proposed forecast process flow reflect an effective way for NWS to evolve in the future?
- Are the concepts of “focus” and “flexibility” effective ways to address workload variability using strategic resourcing in the field?
- **What additional next steps are needed to advance the fully integrated field structure discussion?**
- What additional ideas could OWA pursue to strengthen roles and skills and support change to fully integrated field structure?

To summarize, NWS could continue to evolve by making key functional and organizational changes

From-To change to move towards a fully integrated field structure

	Current State	Future state
Enablers of change	▪ Multiple sources for gridded forecasts that vary by region, office, locale	▪ National Model Blend single resource for gridded forecasts
	▪ All forecast offices focus time on gridded forecasts	▪ Offices focus on core partner impacts and meteorology
Forecast and warning process flow	▪ Offices are officially "cookie cutter" in terms of responsibilities, with few exceptions	▪ NWS leadership decides office focus; this focus is supported by overall field eco-system
	▪ Offices are all staffed the same during fair weather and severe weather events	▪ Flexible, deployable forecasters support severe weather events across offices
Fully integrated field structure	▪ Field structure is organized based on geography (radar placement) for WFOs	▪ WFO allocates workforce based on workload demand "focus" and "flex" office needs
	▪ Regions and ROCs are aligned to current WFO footprint	▪ NWS decides on how to best align regions and ROCs to new blueprint for field

SOURCE: NWS interviews

There are several potential risks associated with the fully integrated field structure

Risks to success of potential new process flow	Potential mitigation strategies
▪ National Model Blend accepted as single source for gridded forecasts across National Weather Service, for both national and local forecasts ▪ Cultural shift at WFOs out of the grids is successful	▪ Provide public data on National Model Blend to gain objective perspective on its effectiveness; ▪ Create cultural movement around importance of impacts over statistical precision
▪ Shift towards ensemble models and related probabilistic forecasting could require additional training, research and potential overhaul of National Digital Forecast Database (NDFD)	▪ Assess needs of staff in terms of training in partnership with NOAA's FACETS program ▪ Provide build-up of NDFD to support full utilization and use of ensemble models
▪ If IDSS responsibilities are not correctly aligned; movement towards a more collaborative model creates confusion or degrades IDSS service provision	▪ Create clear decision process for aligning core partners with offices who could best serve their interests at local, regional and national level
▪ Skills decay of forecasters spending less time in grids could lead to less effective IDSS provision and forecasting when necessary (e.g., during severe weather event)	▪ Prevent skills decay by instituting programs such as the current CWSU/WFO rotation; rotations serve dual purpose of keeping forecasters aligned with core partner needs
▪ Forecast offices could need to be well aligned and responsive to needs of stakeholders in order to focus on impacts based forecasting	▪ Increase opportunities for training at NWS for both forecast and IDSS/new skills for staff ▪ Create culture around NWS success and flexibility in forecast offices

SOURCE: NWS interviews

Next steps to move NWS towards an evolved fully integrated field structure

Next steps for fully integrated field structure

- **Set organizational design parameters** for "blueprint" (*example parameters on right side of page*)
- **Develop blueprint to engage leaders** on fully integrated field structure
- **Develop process maps** to support fully integrated field structure idea
- Develop roadmap to **test and evaluate** fully integrated field structure during FY17
- Develop **communications and stakeholder engagement** plan and supporting materials on the fully integrated field structure

Example parameters

- Organizational design will assume no office closures
- Organization design will be headcount neutral, based on attrition and hiring rate projections
- Design assumes headcount could be shifted between offices
- Design assumes CWAs/AORs could potentially shift; regions could change

NWS could also decide what next steps are good opportunities for internal (e.g., NWSEO) and external stakeholder engagement

SOURCE: NWS interviews

NWS could establish time horizons for full OWA project with the goal of evolving to better support a "Weather Ready Nation"

Goal: NWS evolves to better support a "Weather-Ready Nation"

	Now . . .	. . . Next . . .	. . . Then . . .	. . . Finally
Fully integrated field structure	▪ Established path forward on future forecast process flow and plan for fully integrated field structure ▪ Clarified policy to support IDSS for "deep relationships" with core partners	▪ Complete rollout and training around IDSS philosophy ▪ Evaluate success of National Model Blend ▪ Shift time spent to out of the grids ▪ Create "blueprint" for future fully integrated field and regions ▪ Test office "focus" and "flex" in field	▪ Evaluate office "focus" and potentially roll out ▪ Evaluate "flex" severe weather model on a regional scale ▪ *Test regional alignment around new "focus" of offices*	▪ Roll out successful changes to other offices ▪ Adjust roles and skills training to support flexibility and collaboration
Actionable ideas	▪ Addressed organizational health, including role clarity, open and trusting, and capturing external ideas ▪ Identified set of actionable ideas	▪ Enact actionable ideas through NWS governance process, with supporting communications and engagement, training and policies	▪ Continue enabling practices and supporting actionable ideas ▪ Continue additional training and policy needs to maintain organizational health	▪ Assess success and continue rollout of actionable ideas, with supporting policy, training and structures ▪ Continue rollout of additional actionable ideas

OWA Phase 3: Fully Integrated Field Structure

Input (Key Decision Points)

- Does the proposed forecast process flow reflect an effective way for NWS to evolve in the future?
- Are the concepts of “focus” and “flexibility” effective ways to address workload variability using strategic resourcing in the field?
- What additional next steps are needed to advance the fully integrated field structure discussion?
- **What additional ideas could OWA pursue to strengthen roles and skills and support change to fully integrated field structure?**

By focusing on the correct skills and roles, NWS could ensure success of fully integrated field structure

Potential skills and roles to support new forecast process flow

✓ Critical to step of process flow

Critical skills	Initiate forecast	Collaborate on forecast accuracy	Assess local impacts	Decision support	Reason for reinforcement
Forecast acumen	✓	✓	✓	✓	▪ Mitigate forecast skills decay as focus shifts to impacts ▪ Critical to IDSS
Collaboration within NWS	✓	✓	✓		▪ Gap identified in phase 1; ▪ Phase 3 interviews identified as critical
Customer service focus			✓	✓	▪ Gap identified in Phase 1 ▪ Critical to IDSS

SOURCE: NWS interviews

OWA has highlighted opportunities for NWS to strengthen and support this set of critical skills

Opportunities NWS can create a fully integrated field structure in terms of skills and roles mix

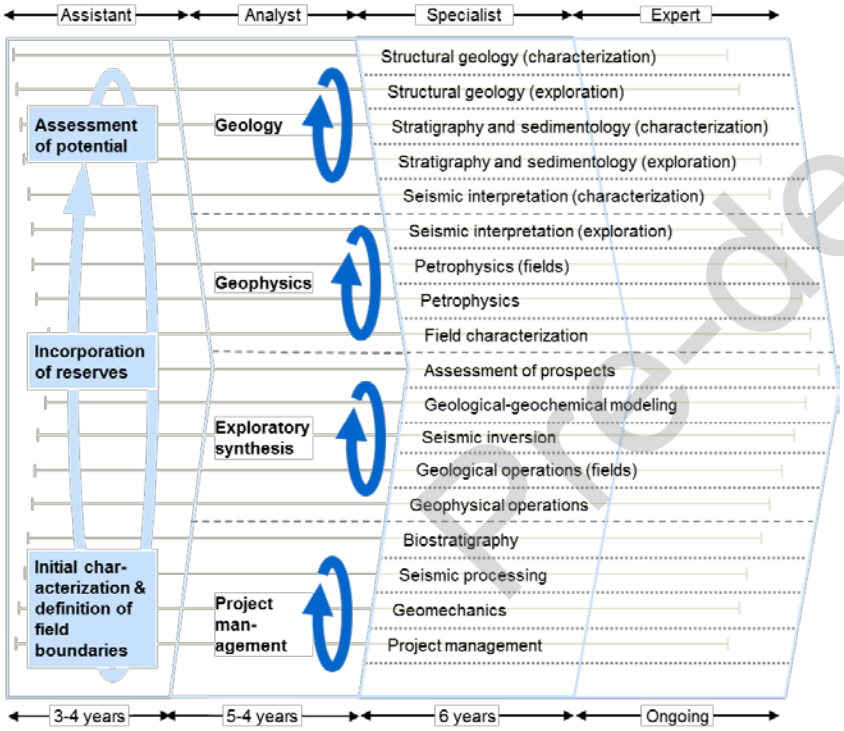
Critical Skill	Opportunity	Status
Forecast acumen	▪ Existing NWS trainings	▪ Continued training offerings
	▪ Aligning met career path	▪ OWA Actionable idea
	▪ NWS 101 trainings	▪ OWA Actionable idea
	1 Internal rotation program	▪ To be discussed today
Collaboration within NWS	▪ Aligning Tsunami Warning Centers	▪ OWA Actionable idea
	▪ Aligning NSPs to integrated field	▪ OWA Actionable idea
	▪ MIC/HIC council	▪ OWA Actionable idea
	2 NSPs as knowledge sharing communities	▪ To be discussed today
	3 Hybrid communication team	▪ To be discussed today
	4 National social science center	▪ To be discussed today
Customer service focus	▪ IDSS policy roll-out	▪ OWA Actionable idea
	▪ IDSS trainings	▪ OWA Actionable idea
	5 Field rotation program	▪ To be discussed today

SOURCE: NWS interviews

1a NWS could rotate forecasters through NCEP and service desks like illustrated best practices

Scientifit industry case study: scientists rotate through each part of their operational process

- All staff start their careers by rotating through the three stages of their operations (*far left light blue rotation*)
- During the analyst stage, rotation takes place through functions within one of the four branches of functional areas (*middle rotation)*
- Subsequently, focus is placed on a specific area of specialization



NWS could also tier rotations of new forecasters throughout their careers

1 **Rotation through portfolios:** All staff start their careers by rotating through the three stages of their operations (*far left light blue rotation*)

2 **Functional focus of rotation within own office**: During the analyst stage, rotation takes place through functions within one of the four branches of functional areas (*middle rotation)*

3 **Specialization:** Forecasters maintain knowledge of all types of weather, but focus time and effort in one aspect of NWS responsibilities:

- CWSU and Aviation Weather (e.g., aviation mets)
- IDSS delivery (e.g., IMETs, new positions in social sciences)
- Hydrology or oceanography (Service Hydrologist or RFC positions)
- Other types of weather, modeling, service delivery, or research

SOURCE: External case study and NWS interviews

1b Alternately, NWS could focus on geographical or office based rotations like a best practice rotational program

Advanced industry rotation program

Individual rotation	Optional rotations
5 months in field	
	1 week rotation to production
3 months international rotation	
	2 week rotation to sales
5 months in field	
	1 week rotation to service
3 months international rotation	

Potential NWS rotation program

Individual rotations	Optional rotations
3-5 months local office	
1-2 months at regional office	
	1 month rotation to HQ or NCEP
3-5 months local office	
1-2 months NCEP/regional office	

Considerations

- Rotation could provide extensive opportunity for collaboration
- Shorter rotations at region could provide opportunities to focus on training
- Because of extensive travel, costs could be relatively high
- **Rotation program could be recommended for managers in training**

SOURCE: External case study and NWS interviews

2 NWS could also use National Service Programs as cross-cutting knowledge sharing to increase ease of collaboration

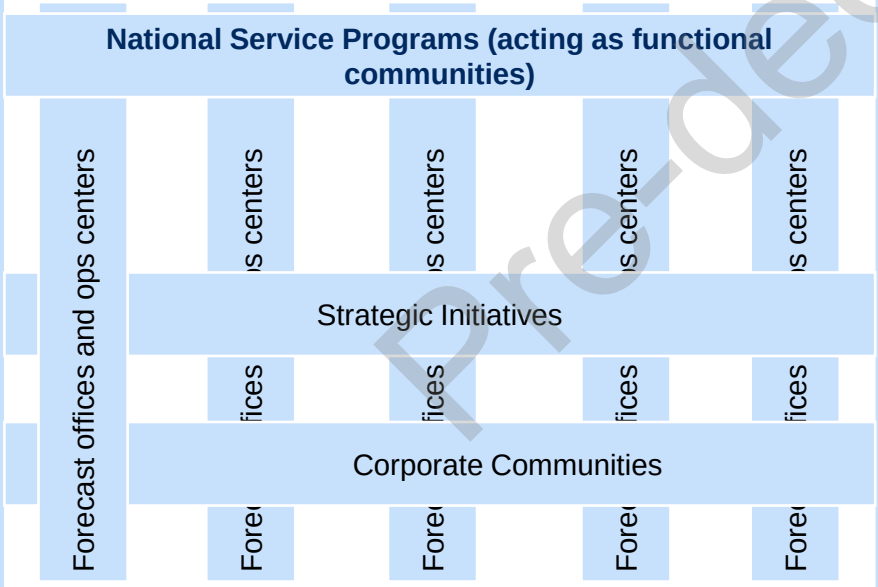
Fluor case study

Goals

- Promote knowledge sharing culture
- Support research and generation of new knowledge
- Commit to processes to continuously review and improve knowledge

Structure of knowledge communities

- Functional communities shared knowledge; led by global leader with highest authority in that discipline
- Business lines (like field offices) and corporate offices (HR) aligned below
- Initiatives led throughout business; overseen by communities



Critical elements in NWS

- Sponsorship for portfolio leadership
- Supporting technology
- Supporting organization

Types of communities

National Service Programs = Functional communities

- Built on platform of functional excellence networks representing every function in a project
- Each led by global leader who is highest authority in that function/discipline

Forecast offices (including NCEP) = business line

- Communities organized by the 5 key business industries

Corporate communities = Admin, IT, HR

- Cut across business lines and revolve around support functions e.g., HR, IT, finance
- Provide communities of sharing for all NWS staff

Strategic initiatives = NWS- or NOAA-wide initiatives

- Designed on as-needed basis to address pressing strategic corporate initiatives
- Rolled into other committees once main purpose served
  e.g., next generation technology needs

SOURCE: External case studies; NWS Interviews

3 Movement from a centralized to hybrid communications model with additional comms support in regions could increase collaboration

Potential changes to communications structure based on needs of NWS

	Decentralized	Hybrid	Centralized
Description	▪ Every WFO, RFC, NCEP, CWSU or "locale" has own communications staff	▪ Every regional HQ or ROC and NCEP has Comms staff, which is led from HQ	▪ HQ has main comms department that works for all of NWS
Pros	▪ Since communication activities are run out of the field, they often achieve greatest impact	▪ Balances HQ-national/field emphasis according to need	▪ Allows for high degree of coordination
Cons	▪ Less ability to ensure focused communications ▪ WFOs may have less of a concern for overall corporate image ▪ Possible duplication of effort	▪ Could mean responsibilities are less clear	▪ Communications may not focus precisely on issues most critical to the businesses
Usage	▪ Used by organizations with multiple independent offices addressing different markets (demographic, product, geography)	▪ Tends to be applied in organizations wanting to retain accountability and rapidly improve communications effectiveness	▪ Tends to be used when office dedicated to delivering a consistent corporate message OR seeking greater alignment across field toward a common corporate direction

NWS could be supported by any of the above models of internal communications; hybrid communications might be preferable during periods of change as it can balance HQ to field perspectives and rapidly improve effectiveness

SOURCE: NWS interviews

4 A national social science center could create consistency and foster innovation sharing across different offices

Elevated social science

- Enterprise-wide recognition program for employees promoting social science
- Could manage an awards program where forecasters and others are nominated by colleagues for IDSS impact and relationships with community and core partners
- Winners recognized NWS-wide

Create and manage product templates

- Senior-level executive recognition of outstanding contribution to communities and core partners
- High-level visibility and publicity for social science based research project with emphasis on core partner impact

Roles and responsibilities of Social Science Center

Increase communication

- Part of Center dedicated to social science-related communication with core partners
- Social science research posted online and updated regularly; motivates “Wikipedia”-like use where users frequently post comments and articles
- Core team works closely with offices in the field to craft newsletters on what NWS has been excelling at
- Works with HQ to communicate with core partners

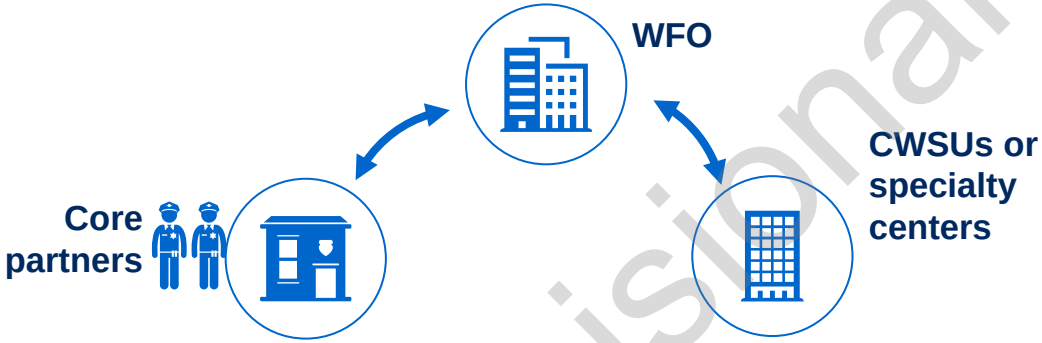
Provide training and career path

- “Social science” University is a formal, accredited system offering courses on ‘Introduction to social science’, ‘SME Workshop’, Manager training’, etc.
- Employees educated on career paths with social science aspects at NWS
- All new employees are trained in social science tools in NWS 101 on their first day and entry-level employees are paired with knowledge mentors to accelerate learning

SOURCE: External case studies; NWS Interviews

5 A rotation program into the field, like already occurs at CWSUs, could increase trust between NWS & core partners

Best practice: CWSU forecast rotation through field



1 Forecasters sent out from WFO to embed with core partners or to sit at co-located forecast desks (e.g., CWSU)

2 Forecasters sent out from WFO to embed with core partners or to sit at co-located forecast desks (e.g., CWSU)

3 Forecasters sent out from WFO to embed with core partners or to sit at co-located forecast desks (e.g., CWSU)

CWSU relationships with core partners (both terminals and Air Traffic Control) are strong as co-location and embedding opportunities support deep, reciprocal relationships

SOURCE: NWS Interviews

Executive Summary of Phase 3 Deliverable

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluating impact-based decision support services (IDSS), understanding the NWS current state and gaps, developing options and alternatives, and testing and evaluating options to move forward

Methodology: During Phase 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO have been engaged through workshops, site visits and interviews

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Actionable ideas: Several ideas were refined across the workforce, organizational structure, and IDSS operating model, including:

- **Workforce**: progression model for GS 5 – 12, onboarding course for new hires, orientation course for new MICs/ HICs, and greater supervisory authority for other roles in the field
- **Organizational structure**: roles of the National Service Programs with respect to the integrated field, better alignment of the Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner prioritization criteria and office review

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

This slide has been redacted because it contains confidential and/or pre-decisional information.

A progression model – that includes training, experience & performance – could inform GS advancement & create great forecasters

Deep-dive on following page

Components	Requirements	How requirements would be chosen	Examples (illustrative and non-exhaustive)	Additional considerations
Training	▪ Completion of a certain number of **training hours** (yet to be determined) would be required prior to each grade advancement	▪ Employees, with their supervisor, would create **an Individual Development Plan (IDP) that includes mandatory and elective training** based on career paths	▪ Radar & applications ▪ MCS/COMET winter weather ▪ IDSS bootcamp ▪ Climate variability and change ▪ Budget training ▪ Project management	▪ The menu of options **must include a wide range of trainings** so that the total # or required training hours can be met in a year
Experience	▪ Completion of a certain number of **experience hours** (yet to be determined) would be required prior to each grade advancement	▪ Experience opportunities, similar to trainings, would be **included in an employee's IDP** ▪ Experience may be in the form of **skills demonstration**	▪ FAM visits ▪ Focal point lead ▪ Conference presentation ▪ WES simulation ▪ Visiting faculty in Kansas City	▪ Experiences should **align with an employee's professional goals**, as outlined in their IDP
Performance	▪ Reception of **satisfactory scores or above** on annual performance reviews would be required to advance a grade	▪ Performance reviews would be **completed by an employee's supervisor** and signed off by their 2nd line supervisor	▪ Pass on the Pass / Fail performance review ▪ 3 or above on the 5-Tier performance review	▪ Performance reviews could be aligned with the skills and behaviors necessary to support forecasting, WRN, IDSS, and / or OHI priorities

In addition to creating a progression model, the NWS could modify its performance tools to align with a competency model

A competency model consists of:

- **Competencies** that are clear, easy to recall and align with the mission
- **Behaviors** that align with those competencies
- **Rubrics** that describe what various levels of that behavior looks like

Competencies → **Behaviors** → **Application in a Performance Evaluation**

The sample competency model below is based on the skills identified by MICs as important to IDSS ILLUSTRATIVE

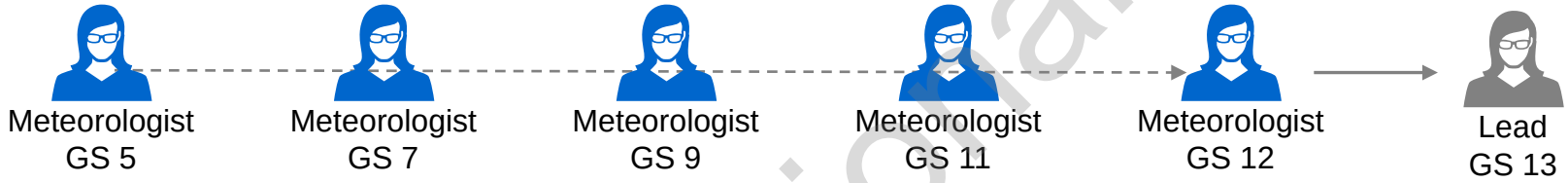
People leadership	▪ Leveraging diversity ▪ Teamwork ▪ Coordination
Problem solving	▪ Creative thinking ▪ Judgment/decision-making
Meteorological expertise	▪ Applying weather science ▪ Data collection
Analytic capabilities	▪ Analytics and stats ▪ Computer and IT tech ▪ Quality focus
Communication skills	▪ Customer service ▪ Partnering ▪ Written & oral communication

Ex. Coordination

1. **Entry**: Focuses on individual work
2. **Developing**: Consults others in product development
3. **Strong**: Involves numerous people in thought process and product development
4. **Very Strong:** Coordinates with colleagues within WFO and some outside resources
5. **Distinctive**: Coordinates with colleagues within WFO, other NWS offices and external stakeholders

The progression model would facilitate moving to a single Met progression from GS 5 – 12

Description of Investment



- **Create a single career progression from GS 5-12.** The proposed investment would combine the Intern and Journeyman position into one "Meteorologist" position, so Mets follow one career progression from GS 5-12
- **Base grade advancement on time in grade and a progression model.** Advancement between grades would be based on time in grade and successful completion of the three parts of the NWS progression model: training, experience and performance
- **Still require a competitive hiring action for Leads**. A competitive hiring action would still be required for Lead meteorologists, due to the level or responsibility expected of the position and precedence set by other agencies
- **Align with other government agencies.** WFMO reports that GS 5-12 progressions are common elsewhere in federal government and in fact RFC Hydrologists already follow a GS 5-12 progression

The competency model would facilitate moving to a single Met progression from GS 5 – 12

Benefits to the NWS

Protect life & property

- **Improves skills and abilities**. Tying grade advancement to progression model will help ensure that employees have the skills and abilities to be excellent forecasters and provide excellent IDSS

Serve core partners

- **Creates deeper core partner relationships**. Reducing the number of changes of station will lead to deeper and longer lasting relationships with core partners

Improve org. health

- **Boosts morale**. Elimination of the "Intern" title will help flatten WFOs org structures and boost employee morale
- **Increases shift flexibility**. Currently Interns are in a different shift rotation from other forecasters – the change would allow the creation of a single shift rotation allowing MICs greater flexibility in scheduling

Steward gov. resources

- **Saves money**. The anticipated reduction in permanent changes of station will save money
- **Reduces periods of vacancy**. Removal of a hiring action between interns and journeymen will reduce periods of vacancy

While there are many risks and issues to be considered, most can be planned for and mitigated

Risks

Risks of implementation

- **Fewer gates**. Removes gate at journeyman position where low performers can be filtered out
- **Less diverse work experience**. Changes of station will decrease, leading to less diverse regional and forecasting experience
- **Increased costs**. May increase personnel costs depending on future ratio of GS 5-11 vs GS 12s

Potential mitigation strategies

- A competency model that provides objective and defendable criteria provides an improved assessment of skills/abilities w/ higher bar during probationary period
- A voluntary reassignment process could be used by employees who wish to relocate. Or, additional detail/rotation programs could be implemented
- The option will reduce PCS costs and increase efficiency since there will be fewer general forecaster vacancies overall

Risks of inaction

- **Wasted talent**. Traditional "intern" responsibilities will continue to disappear, meaning talent will be underutilized
- **Increased attrition**. Attrition will rise as employees increasing decide to leave the NWS rather than move location

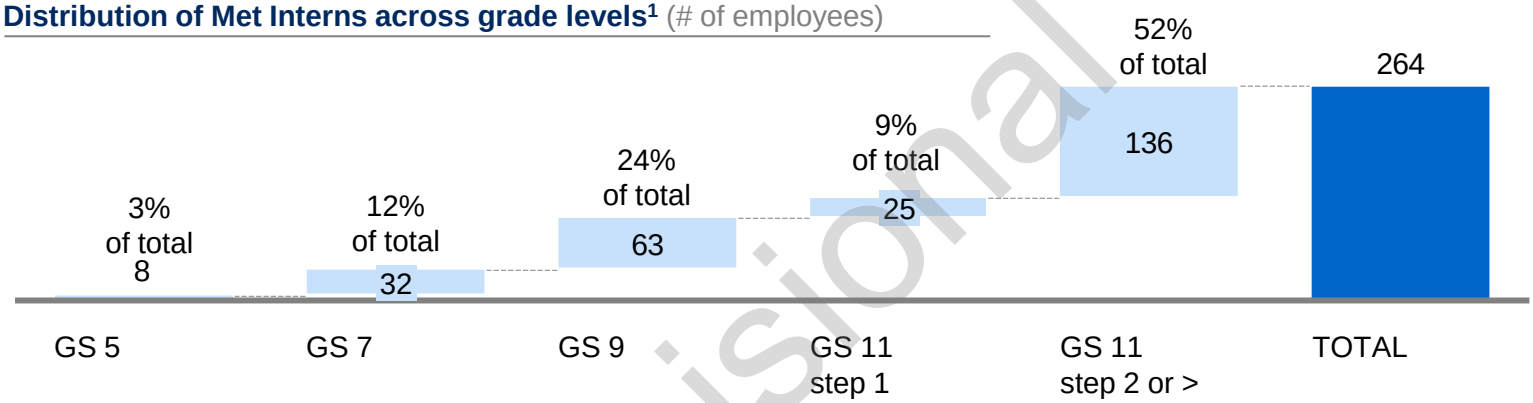
Counter arguments & alternative options

- Intern duties could be reassigned through position descriptions
- There is not significant evidence that employees choose to leave the NWS due to a required permanent change of station (PCS)

Due to reduced costs associated with permanent changes of station (PCS), moving to a GS 5–12 progression saves money

Estimated Cost

Distribution of Met Interns across grade levels[1] (# of employees)



Cost increase to move to GS 5 -12	
# of interns eligible or GS 12 based on time in grade[1]	136
Avg difference btwn GS11 & GS12[2]	**X** $16,225
Cost increase per year	**= $2.2 M**

Cost decrease due to PCS elimination	
# of PCS for internal 1340-GS-12[3] promotions per year	31
Avg cost of PCS[4]	**X** $125k
Cost (decrease) per year	**= ($3.9M)**

Net Savings per year	$3.9M	– $2.2M	= $1.7M

This calculation assumes that the distribution of "interns" will remain the same. 52% (~136 employees) will be eligible for GS 12 based on time in grade on any given year, and the number who become newly eligible each year will roughly equal those who leave the grade for other opportunities

1 Based on the NWS table of organization 6/08/15
2. The average difference btwn a NWS GS 11 and GS 12 is $16,225
3. Based on the avg. number of internal 1340-GS-12 hires between FY11-FY15; actual # of PCS may be lower if promoted on station
4. Based on Central Region budget for PCS

Source: NWS table of organization 6/08/15, WFMO employee data

There are limited IT implications, but a number of teams will have to consider a variety of issues

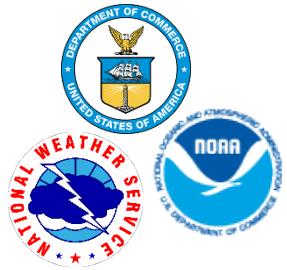
IT Implic-ations	▪ **Limited IT Implications**. Depending on the final structure of the Individual Development Plans (IDPs) and 5-Tier Performance reviews, both may best be supported through enterprise-wide web-based platforms
Teams	▪ **Labor Management Relations**. The LMR team will lead negotiations of the GS 5-12 progression and associated development model ▪ **Development Model Team**. A team will need to determine what training and experience must / should be completed at each grade level ▪ **Competency Model Team**. A team will need to develop the NWS Competency Model for 1340 Mets and align it to performance tools ▪ **Broader Application Team.** A team will need to determine how the development model and competency model can be applied to other positions
KPIs	▪ **NWSEO negotiations.** Much will depend on negotiations with NWSEO ▪ **PCS Costs.** PCS Costs for 1340-GS-21 promotions should drop significantly ▪ **Manager Skill Assessment.** With the adoption of a development model, MIC skill assessment of forecasters should climb relative to the OWA Phase 1 assessment

The new onboarding process could include 3 parts: 1) local office training, 2) an in-residence NWS 101 & 3) role specific training

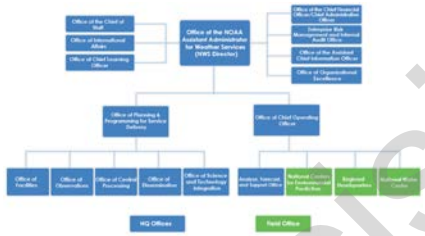
Description of Investment

1 **Local office training could include online and on the job training**

2 **An in-residence NWS 101 training could include:**



Gov 101 – an overview of DOC, NOAA and NWS role within the larger organization



NWS org. structure – an overview of the NWS' budget, governance, requirements and policy processes

NWS mission & culture – an introduction to NWS' mission, history, vision (including IDSS) and culture

Team building – an introduction to team work, collaboration and communication at the NWS

- **All hires new to the NWS would participate**[1]. A diverse class of varying seniority and job functions from different offices will help lead to sharing of ideas and a more open and trusting environment
- **Training could be offered 4 times per year for one-week or more.** On average ~133 new NWS employees are hired per year, which would allow for class sizes of ~33 people per quarter
- **Lecturers could be drawn from across the organization.** Experienced / seasoned staff could be drawn from across the organization to speak to their specialty or lead breakout groups, potentially fulfilling one of their own IDP goals

3 **Role specific training could include in-residence, online, and/or on the job training; in addition strength assessments could be administered, which would inform individual dev. plans (IDP)**

1 Materials developed for NWS 101 could be made available to all employees through web modules and/or incorporated into other trainings

A uniform onboarding course for all new NWS employees would help advance the NWS mission and improve organizational health

Benefits to the NWS

Protect life & property

- **Mission focused**. Employees will know the mission, understand their role in protecting life and property, and be better prepared to help achieve a WRN from day one

Serve core partners

- **IDSS centered**. Uniform, introductory training on IDSS will help new employees understand the purpose of IDSS through serving core partners

Improve org. health

- **Team orientated**. Emphasis on team building and collaboration will help create a positive working culture
- **Organizationally integrated**. Employees will see how their work fits into the nationwide organization, which will help lead to an integrated field structure
- **Professionally connected**.[1] New employees will have the chance to build a cross-agency network right away

Steward gov. resources

- **Ready to succeed**. Onboard training will help to make new employees advance on the learning curve more quickly so that they can be more productive
- **Career orientated.** With a perspective of the entire organization and professional development opportunities available throughout their career, employees will be able to more easily envision their potential future career path

1 Follow-up calls could be conducted among cohorts to maintain professional relationships, provide additional training and receive feedback on the effectiveness NWS 101

The risks associated with implementation can be mitigated, though funding remains a significant hurdle

Risks

Risks of implementation

- **Lack of Funds.** Funds may not always be available to offer the course within the first few months of an employee's tenure
- **Lack of Commitment**. The course could be discounted by new and/or current employees as an unnecessary use of time / resources
- **Lack of Focus**. The course could become a grab-bag of topics that are top of mind for the organization and lose sight of the introductory focus

Potential mitigation strategies

- Information could be made available online, Regions could adopt nationally developed training materials, and/or the course could be offered semi-annually
- Teach and reinforce the idea that in-residence training is an honor and a privilege; reinforce it by including senior leadership as guest speakers
- Maintain focus on introductory nature of the course and regularly review sessions through participant surveys and self-assessments

Risks of inaction

- **OHI results remain low.** OHI results, such as role clarity and shared vision may remain low
- **An integrated field is not achieved**. The field remains segmented, with many inconsistencies, impairing the ability to achieve an integrated field
- **Culture is imparted on the midnight-shift**. Culture at the NWS continues to be established office by office, shift by shift

Counter arguments & alternative options

- More highly structured onboarding procedures could be established at the regional and local level
- To create an integrated field, more immediate success may be achieved by focusing on more tenured employees
- Culture could be addressed through regional or local programs

During the past 5 years, on average the NWS has hired 133 new employees per year

Estimated Cost

Annual cost for NWS 101 for 133 new employees	
Number of weeks	**Total cost**
1-week of onboard training ($2782 / student)	**$370k**
2-weeks of onboard training ($4220 / student)	**$561k**
4-weeks of onboard training ($6737 / student)	**$896k**

- Does not include training development or productivity lost
- Does not include pre-work or role-specific training cost either

SOURCE: NWS Chief Learning Officer's Office & NWS table of organization 6/08/15

There are limited IT implications, but there is significant work to be done to develop the course and relevant materials

IT Implications	▪ **Limited IT Implications**. Part 1) local office training and part 3) skill specific training may require the creation of new online training modules
Teams	▪ **Learning Objectives Team**. A team will need to determine the learning objectives of NWS 101 under the four proposed buckets: GOV 101, NWS org structure, NWS mission and culture and team building ▪ **Course Development Team**. A team will need to develop the lesson plans and materials to achieve the desired learning objectives
KPIs	▪ **Employee Pre and Post evaluations.** New employees could be surveyed both before and after NWS 101 ▪ **OHI Scores.** OHI scores, particularly around role clarity, shared vision, and talent development should go up ▪ **Manager Skill Assessment.** MIC skill assessment of new forecasters should climb relative to the OWA Phase 1 assessment

An orientation course specific to MICs & HICs would help improve leadership skills of immediate supervisors for 60% of the workforce

Description of Investment

- **Create a course specific to MICs and HICs**. Collectively MICs and HICs oversee 60% of the NWS workforce, but there is not a course specifically designed to address the challenges of leading a field office

- **Focus on leadership, field integration and strategy.** The course should build on previous supervision and management courses. It would focus on organizational leadership – including strategy and collaboration among the entire integrated field (similar to Executive Leadership Seminar (ELS) training)

- **Provide second-line supervisor training. ***If WCMs and SOOs become supervisors, MICs will also need second-line supervisor training

- **Address administrative duties as necessary.** While the focus should remain on skills that benefit from in-person training, certain administrative skills will need to be addressed as well

- **Offer the course on a semi-annual basis.** During the past five years, on average ~12 MICs and HICs have been hired per year. A semi-annual training would result in a class size of only 6, which could be kept small or supplemented by current MICs/HICs who have not benefited from the course

A focus on leadership, field integration and strategy will help protect life and property and achieve a Weather Ready Nation

Benefits to the NWS

Protect life & property

- **Better organizational leaders**. Focusing on leadership will help MIC/HICs to advance their offices' mission to protect life and property and create a Weather Ready Nation (i.e., big picture thinking)

Serve core partners

- **Greater integration**. Focusing on field integration will help MIC/HICs better understand their role within the larger organization and thus better serve their core partners

Improve org. health

- **Greater commitment**. Focusing on strategy will allow MIC/HICs to better communicate the NWS vision to their staff, allowing them to better see how their work contributes to larger goals
- **Better people leaders**. Staff benefit from having supervisors who have had multiple layers of leadership training

Steward gov. resources

- **Greater perspective**. Greater understanding of strategic initiatives may help MIC/HICs become better stewards of limited resources
- **Stronger leadership pipeline**. The leadership pipeline for SES positions is further

While the course would be valuable on its own, it would be most effective if it builds on already existing leadership & mngt courses

Risks

Risks of implementation

- **Unnecessary**. The course may just replicate already offered training (Management and Supervision or Field Operations Management)
- **Lack of funds / staff.** The course may strain already limited training dollars

Potential mitigation strategies

- Management & Supervision focuses on leading people while this course is focused on leading organizations. Align all management / leadership courses to build on each another as an employees' responsibility increases (e.g. second-line supervisor). Regularly review the course through participant surveys and self-assessments
- Require pre-work prior to attendance so in-residence time is maximized. Utilize experienced MIC/HICs as visiting instructors to reduce strain on instructors

Risks of inaction

- **OHI results remain low.** OHI results, such open and trusting, may remain low
- **An integrated field is not achieved**. Communication between national, regional, and field offices fail to improve
- **May limit external hires**. Potential external MIC/HIC candidates may shy away due to lack of training
- **Fail to develop future SES candidates**

Counter arguments & alternative options

- Other less costly measures could be identified to improve OHI results, such as regional leadership training
- Webinars, teleconferences, offices visits and the MIC/HIC council could suffice
- Develop online courses for new MIC/HIC; regions continue and expand their orientation for new MIC/HIC
- Provide alternative opportunities, such as serving on national teams; attending NOAA or private company leadership courses

During the past 5 years, on average the NWS has hired 12 new MIC/HICs per year

Estimated Cost

Annual cost for MIC/HIC orientation for 12 employees	
Number of weeks	**Total cost**
1-week of onboard training ($2782 / student)	**$33k**
2-weeks of onboard training ($4220 / student)	**$51k**
4-weeks of onboard training ($6737 / student)	**$81k**

- If there was interest in expanding the training to MIC/HICs hired within the past two years (26 total), a one-week course would total $72k
- These estimates do not include training development or productivity lost

SOURCE: NWS Chief Learning Officer's Office & NWS table of organization 6/08/15

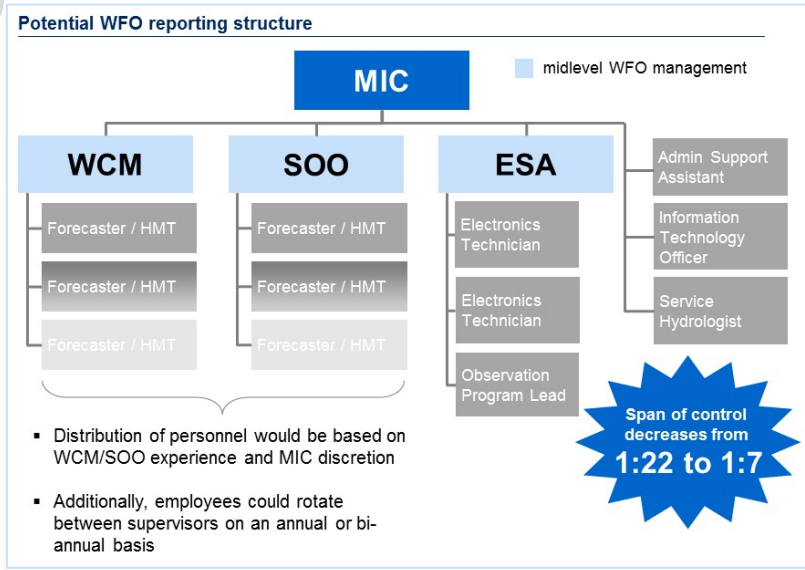
There are limited IT implications, but there is significant work to be done to develop the course and relevant materials

IT Implic-ations	▪ **Limited IT Implications**. The course may require the creation of new online training modules
Teams	▪ **Learning Objectives Team**. A team will need to determine the learning objectives of the orientation course related to leadership, field integration, strategy and administrative duties ▪ **Course Development Team**. A team will need to develop the lesson plans and materials to achieve the desired learning objectives
KPIs	▪ **Employee Pre and Post evaluations.** New employees could be surveyed both before and after NWS 101 ▪ **OHI Scores.** OHI scores, particularly around role clarity, shared vision, and talent development should go up ▪ **Manager Skill Assessment.** MIC skill assessment of new forecasters should climb relative to the OWA Phase 1 assessment

Giving supervisory authority to WCMs & SOOs would reduce the span of control in WFOs & facilitate closer supervisee relationships

Description of Investment

- **Give supervisory authority to WCMs and SOOs[1].** Giving supervisory authority to WCMs and SOOs, who are already part of the management team, would reduce the span of control in an WFO from approximately 1:22 to 1:7
- **Provide WCMs and SOOs with Management & Supervision training**. Some WCM/SOOs have already had Management & Supervision training, but many will need it. Currently, the training is a two-week in-residence course. If the idea is adopted, the course may need to be shortened, offered online, and/or provided locally at the WFO or Regional level
- **Set expectation that WCM/SOOs will play an active role in employee development**. Within their supervisory role, establish that WCMs and SOOs will be active mentors to their supervisees. The idea would also facilitate the creation of a co-developed Individual Development Plan (IDP) between a manager and employee, leading to improved employee development
- **Distribute personnel based on interest, WCM/SOO experience and MIC discretion.** Which personnel report to whom could be decided at the local level. New supervisors could be given only a few supervisees to start and/or staff could be aligned under a WCM or SOO based on their desired career trajectory
- **Facilitate transition to "whole office" concept.** Allowing WCM/SOOs to assign work would facilitate moving to an "whole office" concept



1 . A next step would be to determine if supervisory authority should also be given to DOHs and SCHs in RFCs

Staff would receive more attention, WCM/SOOs would gain leadership experience and MICs would receive needed help

Benefits to the NWS

Protect life & property

- **More coaches.** Optimized span of control will allow supervisors to devote more attention to development needs, which will better enable mission fulfillment

Serve core partners

- **More focused leaders**. Reduced span of control for MICs will allow to focus more on strategy, including IDSS and serving core partners
- **More IDSS focused employees**. Revised work assignments may lead to more people in an office serving core partners

Improve org. health

- **Increased morale**. Increased focus on development needs may improve staff morale
- **Stronger leaders**. Employees will gain supervisory experience earlier in their careers, leading to more experienced senior managers

Steward gov. resources

- **Stronger leadership pipeline**. In an organization where almost all leadership is “grown” internally, additional leadership training and opportunities will benefit the entire organization in time

The risks associated with the change can be mitigated, and they are outweighed by the risks of inaction

Risks

Risks of implementation

- **Resistance**. Those already in the position may not desire supervisory responsibility
- **Distraction**. Training and/or outreach may suffer with addition of new responsibilities
- **Limited talent pool.** There might not be enough employees within the organization ready to take on supervisory duty

Potential mitigation strategies

- Offer training, opportunity to apply for another position or the ability to go back into a forecaster job if desired
- Time spent "in grids" could diminish, allowing forecasters to perform more IDSS or sci/tech development as part of the "whole office" concept. MICs may assume more IDSS responsibilities
- Increase external hiring of leadership talent to fill the potential gap

Risks of inaction

- **OHI results remain low.** OHI results, specifically around leadership, may remain low
- **Level-5 & IDP adoption fails.** Meaningful adoption of level-5 performance reviews and individual development plans (IDPs) would be difficult with 22 direct reports

Counter arguments & alternative options

- Leadership training focused on MICs/HICs may have a greater impact
- Postpone level-5 & IDP adoption and/or remove other responsibilities (such as admin) from MICs so they can focus on supervision

The one-time training costs associated with the change are relatively large, but the recurring annual costs are only ~$56k

Estimated Cost

Annual cost to provide all WCM/SOOs in-residence Mngt & Supervision		
# of current WCM/SOOs		224
Cost per student for 2-week in-residence course	X	$4,220
Estimated one-time training cost	=	**$945k**

- **One-time cost overestimates the number of WCM/SOOs who need training**. The estimate assumes that not one WCM/SOO has already taken Mngt & Supervision
- **One-time costs could be further mitigated**. Costs could be decreased by limiting the class to one-week or providing the training at a regional level

Annual cost to provide new WCM/SOOs in-residence Mngt & Supervision		
Average # of new WCM/SOOs hired per year		13
Cost per student for 2-week in-residence course	X	$4,220
Estimated annual recurring training cost	=	**$55k**

SOURCE: NWS Chief Learning Officer's Office & NWS table of organization 6/08/15

There are no IT implications, but there is significant work to be done to test and evaluate the proposal

IT Implic-ations

- **No additional IT Implications**.

Teams

- **Supervision / Mentorship Team**. A team will need to determine what measurable expectations and goals can be set for WCMs / SOOs and their supervisees to help facilitate the new working relationships
- **Test and Evaluate Team**. A team will need to determine how to test and evaluate the proposal

KPIs

- **Employee Pre and Post evaluations.** WCMs / SOOs and their supervisees could be surveyed before, during and after the testing period
- **OHI Scores.** OHI scores, particularly around supportive leadership and people performance reviews should go up

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Role clarity between NSPs and integrated field can be achieved by drawing dividing lines along key, shared functions

Noteworthy change from current state

Guiding principles:

- **The National Service Programs (NSPs)** focus on strategy, planning and policy – providing support to and serving the field, acting as a check and balance against desired requirements & budget constraints, & raising issues to the Mission Delivery Council when appropriate
- **The integrated field offices** are operationally focused on mission delivery – providing products and services, such as analyses, forecasts (IDSS), forecast warnings, observations and infrastructure

Functions	National Service Programs (NSPs)[1]	Integrated Field
Strategy	▪ Coordinates strategy with the field	▪ Proposes strategic objectives
Requirements	▪ Aggregates needs & proposed reqs. from internal & external partners & stakeholders, to conduct evidenced-based trade-off analysis, serving as an impartial broker	▪ Proposes needs and requirements based on input from core partners
Planning	▪ Leads NSP long-term planning (e.g., 3-years), with a focus on their entire service program	▪ Focuses primarily on execution year, and collaborates with NSPs to develop 3-year plans
Budget	▪ Advises AFSO director on mission critical needs of programs with input from the entire field	▪ Advises respective directors (e.g., RDs, NCEP Director) on budget needs
Policy	▪ Proposes and develops national policy based on requirements	▪ Implements and enforces policy which is based on requirements
Accountability	▪ Held accountable by AFSO director, who reports to the COO	▪ Held accountable by respective directors, who collaborate with the AFSO & report to the COO
Knowledge sharing	▪ Provides forum for feedback loop regarding policy & planning for the entire field	▪ Provides technical and operational expertise – including best practices
Organizational perspective	▪ Provides high-level view of entire field and across the NSPs	▪ Provides technical and operational expertise – including core partner knowledge

1 The OWC recommends that next steps include examining imbalance between different NSPs and appropriate GS level for NSP leads

Having achieved alignment on role clarity among NWS leadership, the next step is to educate the rest of the organization

IT Implic-ations

- **No additional IT implications.**

Teams

- **CSE Team.** The CSE team will be needed to communicate the efforts to establish role clarity to the entire organization

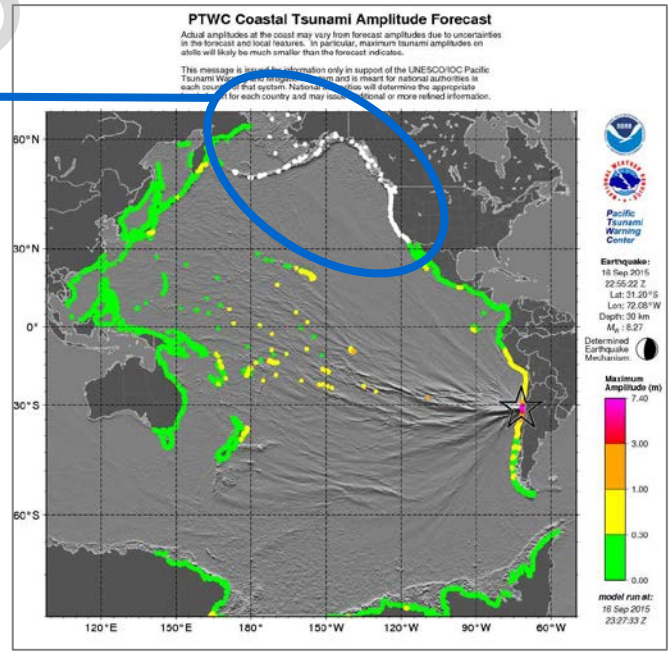
KPIs

- **OHI Scores.** OHI scores, particularly around role clarity should go up

Currently a single seismic event leads to two tsunami forecasts that may not be consistent with one another

Challenge

- **1 event = 2 forecasts from 2 centers**
- The forecast you receive is dependent on your location, not your need as a core partner
- For example, the PTWC whites-out the West Coast of the United States so that they will not conflict with forecasts from the NTWC, which is troublesome for core partners with trans-pacific interests



Ideal

- **1 event = 1 forecast**
- The forecast is timely, accurate and actionable
- It is tailored to core partners' needs

SOURCE: Site interviews

To address this challenge, there are both actionable ideas and long-term paths that the NWS could pursue

Action-able ideas

- **Integrate IT (in progress)**. Move to a single IT operating system (TOPS) utilizing AWIPS 2, which would also allow consolidation into tsunami.gov and single ensemble "guidance" maps[1]
- **Define "operational watch**." Define work requirements for a 2 by 24 by 7 watch and determine if both centers need to follow the same model
- **Give the full picture**. Allow the PTWC to show its forecast on the U.S. West Coast and inform core partners of difference between guidance and forecasting[1]
- **Define the Caribbean basin as one AOR (in progress)**. Make one center responsible for issuing forecasts for the entire Caribbean basin
- **Increase collaboration**. Improve collaboration between the centers through formal structures, such as joint table-top exercises and personnel rotation
- **Continue to focus on IDSS**. Develop requirements, policies, and products that are consistent and focus on core partners' needs

Long-term paths

- **Rotate.** Rotate between "hot" and "warm" status at the two centers, where the "hot" center issues forecasts and the "warm" center provide back-up and focuses on training and outreach

OR

- **Consolidate.** Physically consolidate the Pacific and National Tsunami centers into one center (if politically tenable)

OR

- **Specialize.** Have one center serve as the lead tsunami forecast center and the other specialize in training, education, outreach and research

1 The OWC suggested that IT integration could allow an ensemble to be created to provide a single "guidance" map

The six actionable ideas are intended to improve service to core-partners regardless of the long-term path chosen

Ideas	Pros	Challenges and concerns	Next steps
Integrate IT (in progress)	▪ Will help seamlessly reconcile inconsistencies between the centers' two forecasts ▪ Will facilitate moving from 3 tsunami websites to one	▪ Requires resource allocation (already budgeted) ▪ Core partners will need to be informed of the website consolidation	▪ TOPS is currently under development and will begin systems acceptance testing in July 2016
AND			
Define operational	▪ Provides continuity and consistency that will result in better IDSS delivery ▪ Will facilitate either long-term option	▪ Change may need to be negotiated ▪ Change may not be welcomed by employees	▪ Identify pros and cons of different op. definitions ▪ Determine if new definition will need to be negotiated
AND			
Give the full picture	▪ Provides full picture for international core partners & those with trans-pacific interests	▪ Will need to educate core partners on the two models and their relative advantages	▪ Develop a stakeholder engagement plan
AND			
Define Carib-bean as 1 AOR (in progress)	▪ Reduces confusion between islands in very close proximity as to which forecast to use ▪ Creates consistency in the area	▪ Would have to inform core partners of change ▪ Would have to make better use of international coordination bodies	▪ Develop a stakeholder engagement plan
AND			
Increase collaboration	▪ Will facilitate either long-term option due to increased familiarity ▪ Provides opportunity to further increase consistency for core partners	▪ Remote collaboration will require time and effort ▪ In person collaboration, such as rotations, will require financial resources	▪ Identify opportunities for remote collaboration (e.g., simulations) and consider trial TDY exchange
AND			
Continue to focus on IDSS	▪ May lead to greater consistency for core partners ▪ Aligns TWCs with the rest of the NWS	▪ Will require increased coordination between the two centers	▪ Have TWCs identify core partners, identify overlap, an determine how best to create "deep relationships"

SOURCE: Core team interviews

There are both pros and cons associated with the three long-term paths: consolidate, rotate, or specialize

Long-term paths	Pros	Challenges and concerns
Rotate: Rotate between "hot" and "warm status between PTWC and the NTWC	▪ **One forecast**. One forecast would be issued for each tsunami event ▪ **More training and outreach.** Would allow for increased emphasis on training and outreach	▪ **Different forecasting methods**. Alternative methods of forecasting would need to be reconciled ▪ **Rotating POC**. Core partners would need to be comfortable calling staff in both offices ▪ **Tech investments needed**. A single source of info (e.g., webpage, hotline) would need to be created ▪ **Staffing challenges**. Staffing challenges at NTWC are not addressed
OR		
Consolidate: Consolidate the two tsunami centers into one NWS Tsunami Center	▪ **One forecast**. One forecast would be issued for each tsunami event ▪ **Saves resources**. More efficient use of resources ▪ **Reduces hiring burden**. New center could be located in area with greater workforce availability	▪ **Political uncertainty**. May not be politically tenable ▪ **Removes backup**. Would require redundant systems to be established, such as at the National Earthquake Info Center in California
OR		
Specialize: One serves as forecast lead & the other specializes in ed., outreach & research	▪ **One forecast**. One forecast would be issued for each tsunami event ▪ **More training and outreach**. Would allow for increased emphasis on training and outreach	▪ **Lower morale**. Could lead to dissatisfaction among workforce ▪ **Wasted resources**. Could be viewed by OMB as a less efficient use of resources ▪ **Staffing challenges**. Staffing challenges at NTWC are not addressed

NEXT STEP: Conduct fresh analysis of current political landscape to determine which options are palatable

There are significant IT implications, but they are already underway and they will facilitate many of the other actionable ideas

IT Implic-ations	▪ **Significant IT Implications**. TOPS is a significant IT initiative that will facilitate Tsunami center interoperability, which is already underway. TOPS may allow the creation of ensemble guidance maps and a single website as well
Teams	▪ **Implementation Team**. A team will need continue to push the actionable ideas forward
KPIs	▪ **Core customer satisfaction measures.** The suggested changes are meant to improve service for core partners – a measure of their satisfaction / or change in satisfaction as actionable items are implemented would be useful

The MIC/HIC Council will serve as a resource & advisory body, focusing on grass-root ideas to increase consistency & efficiency

Purpose: The MIC/HIC Council will **listen** to their peers, **collaborate** with one another to elevate best practices & issues of concern, **advise** the MDC[1] and AFSO on grassroots ideas of efficiencies & effectiveness, and **share** what they learn with their peers

Focus of the Council	The MIC/HIC Council will	Rationale
 **Listen**	▪ **Listen** to their peers and collect input from the MICs and HICs in their respective regions (potentially via email, attendance at other regional MIC/HIC meetings and/or surveys)	▪ Address the disconnect between the field and senior management that was identified in Phase 1 ▪ Identify opportunities to realize efficiencies and improve effectiveness from a grass-root level
 **Collaborate**	▪ **Collaborate** and prioritize best practices and issues of concern (could be administrative, operational and/or planning)	▪ Provide a forum to identify best practices and cross-regional issues that are still outstanding
 **Advise**	▪ **Advise** the appropriate governing body on issues identified at the grass-root level ▪ **Serve** as a resource & advisory body on operations, administrative & planning matters	▪ Identify best practices & regional opportunities for improved consistency for the COO ▪ Provide a structured method to discuss forecasting needs & proposed requirements with NSP leads
 **Share**	▪ **Share** what they discuss and learn with their peers (potentially via a bi-monthly email newsletter)	▪ Create a more open and trusting environment ▪ Give MIC/HICs greater access and involvement in governance processes

1 Mission Delivery Council (MDC)

SOURCE: Core team workshop and SME interviews

The Council would initially consist of 10 members during an initial trial period of ~1 year

Organizing Principles	Explanation	
Membership	10 members	▪ 6 WFO MICs, an HIC, a CSWU MIC, and representatives from NCEP and NWC will serve on the Council for a term of one year
Selection	Selected volunteers	▪ MICs will be chosen from each region at random from a group of volunteers. A similar process will be followed for CWSUs, RFCs, NCEP and NWC. After the initial year, half of the members will rotate off, allowing for continuity, and the remaining half of the original members will rotate out six-months later
Governance	Advisory Council	▪ The Council could be chartered under an appropriate governing body. Leadership of the Council would be selected internally among its members, but leaders may not be SES
Meeting frequency	6 per year	▪ The Council will convene 6 times a year, primarily via tele-conference. Members may be asked to represent the Council at individual meetings such as the MDC, Fall Strategy Meeting or other conferences
Communication	6 “news-letters”	▪ The Council will produce a “newsletter” for the entire integrated field that includes progress updates and highlights from each Council meeting, supplemented by updates from other key meetings

ILLUSTRATIVE

Examples of Measurements of Success

- **Listen:** # of individual input responses collected from the field
- **Advise:** Bi-annual (plus) discussions with appropriate governance council
- **Collaborate:** Annual identification of Council priorities and goals
- **Share:** # of views / participants of “newsletters”

Below is an illustrative example of how the MIC/HIC council might raise an issue identified in the field to the MDC

ILLUSTRATIVE EXAMPLE

Listen

Collaborate

Advise

Share

1. MICs in adjoining regions identify an inconsistency that affects core partners that straddle regional boundaries

2. The Council determines how wide spread the issue is, does some leg work, and determines if the issue should be prioritized for the MDC

3. The Council presents the inconsistency to the MDC (which includes all RDs, the AFS, NCEP, & NWC director, and the COO) or another appropriate governing body

4. The Council shares the highlights, decision and reasoning from the meeting through a "newsletter"

Examples of listening venues

- Council members represent the mngt. in their region
- Peer-initiated surveys
- Council members attend one-another's MIC/HIC conferences
- A Council representative is invited to the Fall strategy meeting

Examples of collaboration

- The Council meets via tele-conference 6 or more times a year
- Council members serve as a resource to all levels of the agency
- Council members help individuals in the region develop proposals for the MDC

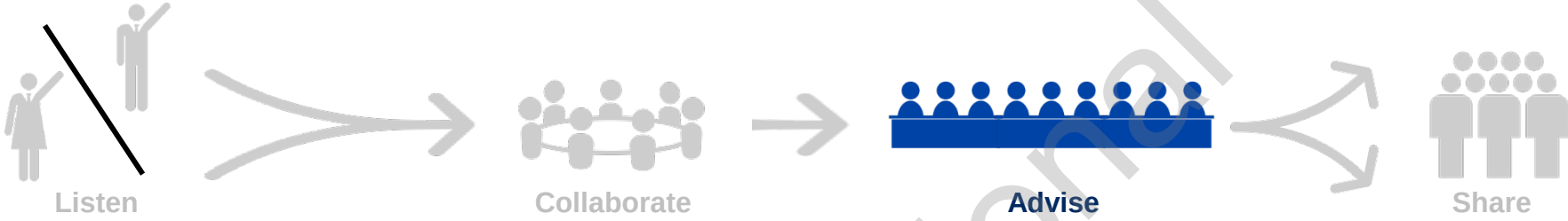
Examples of advisory capacity

- The Council advises the appropriate governing body (e.g. MDC, PIC)
- The Council may meet with program leads to raise concerns around existing requirements, policies or budget

Examples of information sharing

- The Council issues a "newsletter' for the entire integrated field
- The Council facilitates open webinars with the integrated field
- A Council member sends an email to all MIC/HICs after attending a Fall Strategy meeting

There are options as to where the Council could fit into the new corporate governance process



NWS corporate governance councils			
Mission Delivery Council	Enterprise Risk Council	Portfolio Integration Council	Executive Council

- **OOE recommends that the Council be chartered within the governance process and not outside it**, so that neither the newly formed governance process nor the newly formed council is undermined
- **OOE recommends that the Council be charted either under the Mission Delivery Council (MDC) or the Executive Council (EC).** Alignment with the MDC would make sense since all members of the council will be operational leaders from the field, but alignment under the EC would allow the Council to have equal footing with all of the other councils
- **Regardless, the OOE believes that the Council should still be able to advise the other councils when appropriate**. For example, the Council would advise the Portfolio Integration Council (PIC) on funding requests for newly validated requirements
- **After a trial year, the Council could report to the Assistant Administrator on how the newly formed governance process is working** and their individual progress

There are limited IT implications and relatively little additional work required before standing up the Council

IT Implic-ations	▪ **Limited IT implications.** The council may meet virtually and possibly review core partner categorization remotely
Teams	▪ **Implementation team.** A small team will need to draft the Council charter and select the initial charter members
KPIs	▪ **OHI Scores.** OHI scores, particularly around open and trusting, capturing external ideas and consultative leadership should go up ▪ **Council specific indicators.** The Council could measure its own progress through the # of individual input responses collected from the field (listen), annual identification of Council priorities and goals (collaborate), bi-annual (plus) discussions with appropriate governance council (advise), # of views / participants of “newsletters” (share)

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Phase 1 findings indicated that external stakeholders praised NWS, but many are confused about the scope of IDSS

Dimension	Representative quotes from external stakeholders
Trust	*"In an emergency, **trust is the most important part** of our relationship. I count on NWS, I know the person behind the forecast."*
	*"I trust my partners at NWS and **I know them** – the tone of their voice, the way they report out to us. And they know me."*
Accessibility	*"They're on Twitter, on social media, and in my email every morning; **I always know what I'm up against** when I start my day."*
	*"I have never worked with an agency that is **so accessible**. They are remarkably proactive and in many ways – email, phone, social media."*
Accuracy	*"It's not like the other weather brands. **I go by what the Weather Service tells me; not by anyone else."***
	***"The technology has improved so tremendously**; we can't see private companies keeping up with the products NWS has now."*
Relevance	*"It's our livelihood; **we're a weather-dependent economy** on our the best days."*
	*"During a severe weather event, NWS helps us ensure **there's not going to be a large loss of life."***

Confusion about scope of IDSS

*"We have to know what the NWS can do for us, but **we also have to know what they can't do, or we'll ask them to do everything**, and, God help them, they'll try and give it to us"*

*"It's challenging for the private sector to know where they should play a role, how they can play a role **when what the NWS does varies from event to event**"*

SOURCE: Site interviews

There is variation in how the official definition of IDSS is being interpreted and what is provided, how, to whom, and when

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

	Less expansive		More expansive	
What	Communicate through **standard products** that address stakeholder needs	*"We focus on ensuring our website has all of our products."*	Create **information** for specific stakeholders	*"After issuing products, we will follow up to key stakeholders with more specific information."*
How	Provide a **narrow set of services** to events (e.g., only conference calls)	*"We don't do IDSS because we don't have the resources to dedicate to it."*	Provide a **broad range of services** (e.g., deploy staff to a sporting event)	*"We would like to deploy meteorologists to graduation ceremonies."*
Who	**Define core partners** as emergency managers, govt. officials, and media	*"We focus on government entities top-down because they can deploy resources."*	**Include an extended set of partners** (e.g., schools, event operators, the public)	*"Our schools signed up for NWS Chat to discuss overnight weather in the winter."*
When	Perform **episodic IDSS** in response to severe weather (e.g., storm briefings)	*"We developed a flexible model to provide IDSS during severe events."*	Perform **recurring IDSS** (e.g., in fair weather) for ongoing effective and informed decisions making	*"We help our partners make decisions every single day."*

1 From the NWS Weather-Ready Nation Strategic Roadmap

SOURCE: HQ and site interviews, June-July 2015

The Organizational Health Index (OHI) survey shows NWS could improve across practices, including three with importance to IDSS

Effective IDSS

OHI practice[1]	Definition	Importance to IDSS
Role clarity	▪ Driving accountability by creating a clear structure, roles, and responsibilities and communicating them effectively	▪ Helps offices and NWS overall align on who is doing what, when they are doing it, and what good results look like
Open and trusting	▪ Encouraging and role modeling transparency, honesty, and candid, open dialogue across all levels	▪ Enables NWS continue to evolve by creating an environment where people can discuss strengths and gaps
Capturing external ideas	▪ Identifying, evaluating and sharing ideas and best practices from outside the organization	▪ Positions NWS to have an external, customer / core partner orientation that ensures relevance of products and services

1 All 3 practices were in the bottom quartile relative to the benchmark sample set

SOURCE: National Weather Service, June 2015 (n=2,162); Benchmark (n=1,259,322, no. surveys=737)

To respond to Phase 1 findings, three ideas were developed for an IDSS operating model philosophy and one was prioritized

Prioritized philosophy

	Philosophy 1: "Core competency"	Philosophy 2: "Broad reach"	Philosophy 3: "Deep relationships"
What	▪ Communicating by **standard products** that address stakeholder needs	▪ Communicating by **standard products** that address stakeholder needs	▪ Creating **information** for specific stakeholders
When	▪ Supporting **episodic IDSS**, including products and interpretation/data	▪ Supporting **episodic IDSS**, including products and interpretation/data	▪ Performing **recurring IDSS** for mitigation, preparation, response, and recovery in addition to support for episodic events
Who	▪ **Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media	▪ Growing stakeholder network beyond existing core partners and **disseminating weather data to as many people as possible**	▪ **Defining IDSS core partners** as emergency managers, govt. officials, and a subset of the media (with general service to others on request)
How	▪ Providing a **narrow set of services** (e.g., conference calls)	▪ Providing a **narrow set of services** (e.g., conference calls)	▪ Providing a **broad range of services** (e.g., embedding)

Based on input from NWS employees through the OHI and subsequent development, the philosophy continues to be refined

IDSS operating model philosophy development

- **NWS employee input through OHI survey** that received NWSEO support and had ~50% participation
- Additional input through site visits and interviews

- **IDSS operating model philosophy ideas developed**
- Integrated OWA project core team provided input
- Input collected through NWS insider
- SMEs, SES across NWS offices, OWC members, and others engaged

- **IDSS operating model philosophy ideas refined, prioritizing the "Deep relationships" philosophy[1]**
- Input now being sought from internal and external stakeholders through discussions, webinars, toolkits, FAQs, and other means
- Series of ideas being pursued including revising policies and training to improve guidance on IDSS

1 IT-based outreach (e.g., webinars), core partner amplification, and surge capacity will enable broader reach

To achieve a "deep relationships" IDSS operating model, a consistent "core service level" could be established

	From	To
What	▪ Similar products are disseminated by different entities within NWS depending on the event, and NWS is not capturing best practices to share across the organization	▪ Core partners know what standard products are offered by different NWS offices; additional products are provided to core partners and then those improved products are spread throughout the organization
When	▪ Offices make decisions about whether to provide recurring or episodic IDSS services without a framework of prioritization criteria	▪ Core and non-core partners have more clarity on when NWS will provide recurring or episodic IDSS; NWS is able to predict and track IDSS events better
Who	▪ There is variation in who is provided IDSS services and how the definition of core partner is applied	▪ Offices define core partners[1] with similar criteria ensuring greater consistency of IDSS products and services
How	▪ There is a great deal of variability in how offices are structured to provide IDSS and what staff are responsible for IDSS	▪ Staff understand what will be expected during IDSS and are properly trained for it, improving the office's "situational awareness"

1 NWS will still serve non-core partners through such activities as IT-based outreach (e.g., webinars), core partner amplification, and surge capacity

A "core service level" would provide guidance on what IDSS is, when it is provided, who receives it, and how they receive it

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

	IDSS core service level from Phase 2	Proposed additional policy guidance
What	▪ Standard products will continue to be available ▪ Additional forecasts and interpretation to meet needs of core partners	▪ In addition to standard products and services, all offices must offer additional forecasts and interpretation developed through an **iterative process with the core partner** to meet **needs**
When	▪ Recurring IDSS (non-event specific) ▪ Episodic IDSS (event specific)	▪ All offices must be able to **provide ongoing recurring and episodic IDSS to a "deep relationships" core partner**
Who[2]	▪ Emergency Managers ▪ Media with dissemination capabilities ▪ Federal government with NWS nexus ▪ State/Local government with NWS nexus	▪ All offices will **create a list of core partners** according to the **current NWS Instruction definition**, and then **categorize that list based on new criteria**
How	▪ Stakeholder support through deployments/embedding ▪ Inbound communication requests from stakeholders ▪ Remote support to stakeholders	▪ All offices must be able to offer a variety of types of recurring or episodic IDSS to a "deep relationships" core partner including: – Episodic: e.g. **direct, individualized in-person (i.e. ability to deploy) or remote support; group decision support** – Recurring: e.g. **action planning sessions, co-trainings, and partner conferences**

1 From the NWS Weather-Ready Nation Strategic Roadmap
2 IT-based outreach (e.g., webinars), core partner amplification, and surge capacity will enable broader reach

Summary of “deep relationships” philosophy

“Deep relationships” philosophy

- **Who receives IDSS?:** Defining and focusing on a set of core partners who can be engaged to help amplify NWS’ message
- **What do they receive?:** Providing focused products to those partners and sharing best practices learned throughout the organization
- **When do they receive it?:** Providing both episodic and recurring IDSS
- **How do they receive it?:** Offering a framework for when a range of service options from remote support to part-time or full-time embedding will be provided

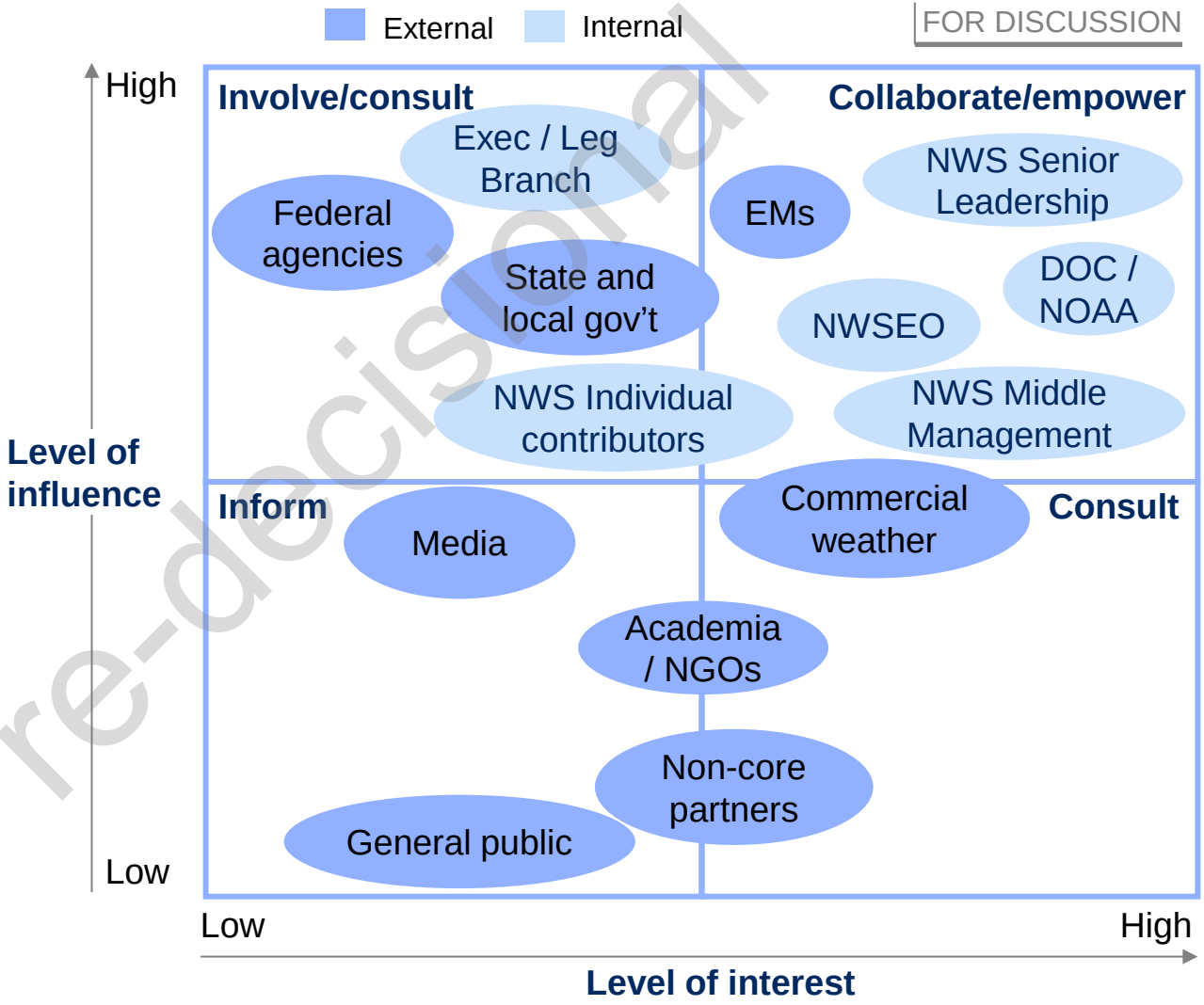
The core team has engaged stakeholders on the IDSS "deep relationships" philosophy

Going forward, internal stakeholders & EMs will need the highest level of engagement on the IDSS philosophy

FOR DISCUSSION

Process to determine correct engagement strategy for stakeholders

- Took initial list of stakeholders
- Evaluated how they should be engaged based on their:
  - **Level of influence:** how much of a role stakeholder will play on the adoption of the IDSS philosophy
  - **Level of interest:** level of sensitivity to and engagement on a new IDSS philosophy
- Created a tentative map based on initial team thoughts



SOURCE: NWS transformational change process

The influence model provides a framework for how NWS can continue to syndicate the "deep relationships" philosophy

FOR DISCUSSION

"I will provide more consistent IDSS and pursue "deep relationships" with core partners, if…"

"I see managers, peers and direct-reports embracing the new IDSS philosophy"

"I know why NWS is focusing on a "deep relationships" philosophy and I agree with the approach"

Role-modelling

- Office mentoring for offices needing a "lift"
- Peer mentoring for new hires
- Louis "fireside" chat
- Sharing best practices of "deep relationships" through MIC/HIC council
- All leadership site visits

Fostering understanding and conviction

- OWA travel to MIC meetings
- Webinars to all staff with FAQs
- Field and HQ sit-downs on status of integration
- Feedback teams
- Toolkit to facilitate discussions by managers and staff
- Office review

- IDSS training (communications including briefing, relationship building, product development)
- Rotation program with universities or core partners

Developing talent and skills

- Partner categorization criteria
- Office review
- Policy guidance on how and when to provide recurring/episodic IDSS
- Performance metrics

Reinforcing with formal mechanisms

"I have been trained in how to communicate and prioritize resources to be able to provide IDSS"

"The policy guidance and performance criteria reinforce that my success at NWS is tied to creating "deep relationships" with my core partners"

IDSS Philosophy syndication will not require additional IT support and will need to increasingly integrate with the CSE team

IT Implica-tions

- **No additional IT implications**

Teams

- **Integrate with CSE**: Philosophy syndication will increasingly require integration with CSE for development of presentation materials and talking points for ongoing engagement efforts

Key Perfor-mance Indicators

- **Level of engagement from field:** Measuring the quantity and quality of engagement from the field (e.g., # of dial-ins, FAQs, MIC meetings)
- **Satisfaction of core partners:** Measuring the quantity and qualify of engagement from core partners (e.g., # of conferences with NWS present, # of field offices holding meetings with EMs)

To provide a "core service level," NWS employees will need training to develop "deep relationships" with core partners

Official IDSS definition[1]: "The **provision of relevant information** and **interpretative services** to enable **core partners**' decisions when weather, water, or climate has a **direct impact** on the protection of lives and livelihoods"

IDSS core service level presented at 11/18 OWC

What	▪ In addition to standard products and services, all offices must offer additional forecasts and interpretation developed through an **iterative process with the core partner** to meet **needs**
When	▪ All offices must be able to **provide ongoing recurring and episodic IDSS to a "deep relationships" core partner**
Who[2]	▪ All offices will **create a list of core partners** according to the **current NWS Instruction definition**, and then **categorize that list based on new criteria**
How	▪ All offices must be able to offer a variety of types of recurring or episodic IDSS to a "deep relationships" core partner including: – Episodic: e.g. **direct, individualized in-person (i.e. ability to deploy) or remote support; group decision support** – Recurring: e.g. **action planning sessions, co-trainings, and partner conferences**

New training needs

"Deep relationships"	▪ Overview of IDSS and "deep relationships"
Commu-nications	▪ Oral communication, including briefings, presentation ▪ Written communication including emails and reports
Product Development	▪ Enhanced focus on iterative process of assessing needs and creating and testing individualized products
Relationship Building	▪ Customer service and support ▪ Needs assessment ▪ Deployment protocols ▪ After-action service evaluation

1 From the NWS Weather-Ready Nation Strategic Roadmap
2 IT-based outreach (e.g., webinars), core partner amplification, and surge capacity will enable broader reach

NWS already has IDSS training PCUs developed, but the focus "deep relationships" will likely require additional training

✓ Fully met ✓ Partially met Recommended Additions

New training needs		Addressed by IDSS training developed?	PCUs[1] developed & additional needs
"Deep relationships"	▪ Overview of IDSS and "deep relationships"	✓	▪ PCU 1: IDSS/ICS Foundation ▪ **Need focus on "deep relationships"**
Commu-nications	▪ Oral communication, including briefings, giving graphics presentations	✓	▪ PCU 3: Effective Communication ▪ PCU 6: Threat Assessment and Risk Communication ▪ **More training needed on briefing presentations and graphic**
	▪ Written communication, including emails and reports	✓	▪ PCU 3: Effective Communication
Product Development	▪ Product design and prototyping to individualize products for partners	✓	▪ **May be included in "Impacts Catalogue" training**
Relationship Building	▪ Customer service and support	✓	▪ PCU 2: Customer-focused Support
	▪ Needs assessment (including training with partners)	✓	▪ PCU 5: Partnership Building
	▪ Deployment protocols and working in an ICS	✓	▪ PCU 4: Operating within an ICS
	▪ After-action service evaluation	✓	▪ PCU 7: Service Evaluation

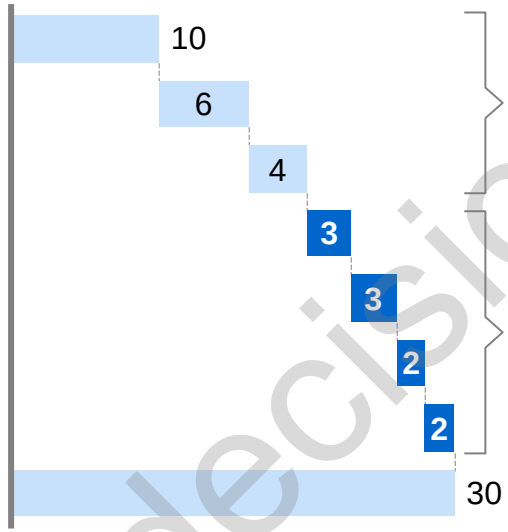
1 PCU - Professional Competency Units

Required PCUs would focus on IDSS and "deep relationships" overview and communications

Required for operational employees
"Deep relationships" add-on requirement
Optional

IDSS training developed and suggested additions (hours)

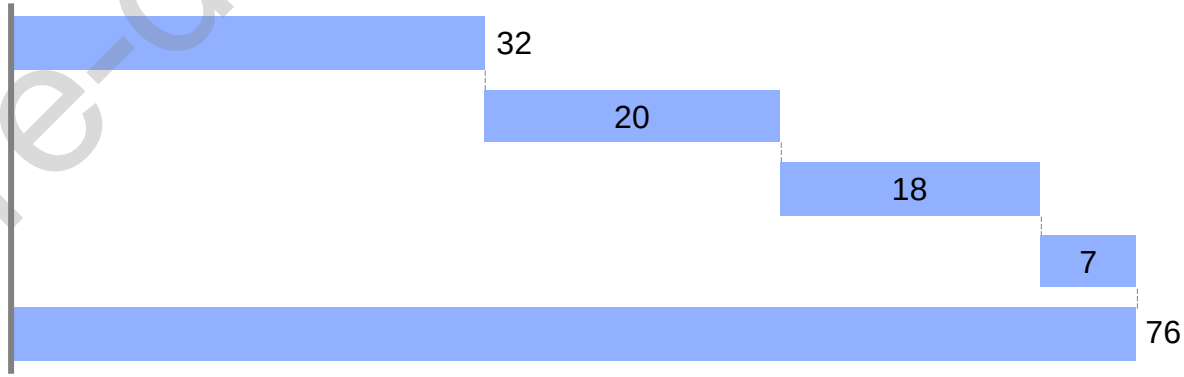
Baseline IDSS training with "deep relationships" add-on[1]



20 hours required to be completed by all operational employees[3] between January 2016 and October 2017

10 additional hours required to be completed by all operational employees by October 2017 or early 2018[4]

Optional deployment training



1 Hours listed for new, proposed training are rough estimates; 2 Likely would be conducted on-site at IDSS bootcamps or regional road shows
3 Approximate number of operational employees is 2,300: 15 per WFO, 10 per CWSU, RFC, and NCEP
4 Exact timing for development, roll-out, and required completion date for new courses is not yet certain

There are risks of both action and inaction to implementing the proposed IDSS training

	Risks of action	Risks of inaction	Mitigation strategies
Work-load	▪ Staff feel they have **too many responsibilities** for one role and are not sure what to focus on	▪ NWS misses an opportunity to **address Phase 1 findings around role clarity**	▪ Ensure **role responsibilities are clear; leverage IT** to help with IDSS and help minimize workload
Overall training	▪ Too much focus on IDSS might **lessen focus of training on more traditional**, NWS science-based training	▪ Without sufficient training, **IDSS quality may further degrade** and continue to be inconsistent	▪ Work with senior leadership to **ensure training is well-balanced**; incremental implementation
Transi-tion	▪ Job changes are **too dramatic** leading to retention issues	▪ Retention of employees **if they don't feel they are trained for the job** they are being asked to do	▪ Pair roll out of training with IDSS philosophy engagement strategy to **ensure employees understand and embrace rationale**

IDSS Training may have some IT implications and will need to further integrate with the broader, existing training initiatives

IT Implica-tions	▪ **Distance learning**: Some of the IDSS training may require distance learning modules to be created requiring virtual learning software to be developed and offered
Teams	▪ **Integrate with broader training team and CLO:** The core team will need to integrate with and potentially add members from the Chief Learning Officer's team to further develop the training and ensure "deep relationships" is fully integrated into the training modules
Key Perfor-mance Indicators	▪ **Number of employees trained**: Current plans require ~2,300 operational employees trained by the end of FY 17; additional non-operational employees may also receive training ▪ **Quality of IDSS delivered:** With additional training, core partners should begin reporting improved and more consistent IDSS ▪ **Organizational health:** Employees should report improved role clarity, a more open and trusting environment, and improved ability to capture external ideas

An IDSS "core service level" process could be paired with an office review mechanism was discussed

Focus of next section | PRELIMINARY FOR DISCUSSION

Proposed IDSS "core service level" process for an individual NWS office

1 List and categorize core partners	2 Develop plan	3 Act on the plan (pre-event)	4 Act on the plan (during an event)	5 Review and refine the plan	Return to step 1
▪ **Create a list** of core partners ▪ **Categorize using IDSS criteria** ▪ **Establish relationships**	▪ Conduct **partner needs assessment** and **develop IDSS plan** ▪ **Integrate** into an office-wide plan	▪ Provide **recurring** IDSS – e.g. table top exercises, scenario planning, and co-training	▪ Provide **episodic** IDSS – e.g. deployment or remote, direct or group support	▪ Conduct **after-action self-assessment** ▪ **Refine** the list of partners and revise plans	

Proposed IDSS office review to drive consistency and effectiveness

Office review process will assess and guide offices on each step of the IDSS "core service level" process

- Is the office's **identification and categorization of core partners** consistent and appropriate?
- Are the office's **engagement plans** comprehensive and properly integrated together?
- Does the office provide a **sufficient level of recurring IDSS** to develop "deep relationships"?
- Does the office provide **consistent and effective episodic IDSS** that meets its partners' needs?
- Does the office **conduct and incorporate lessons learned from self-assessments** after events?

Using partner categorization criteria, guidance can be given to offices while preserving local flexibility

Which stakeholders meet the existing core partner definition[1]?

- Directly **involved in the prep-aration, dissemination, or discussion** involving hazardous weather or other emergency information?

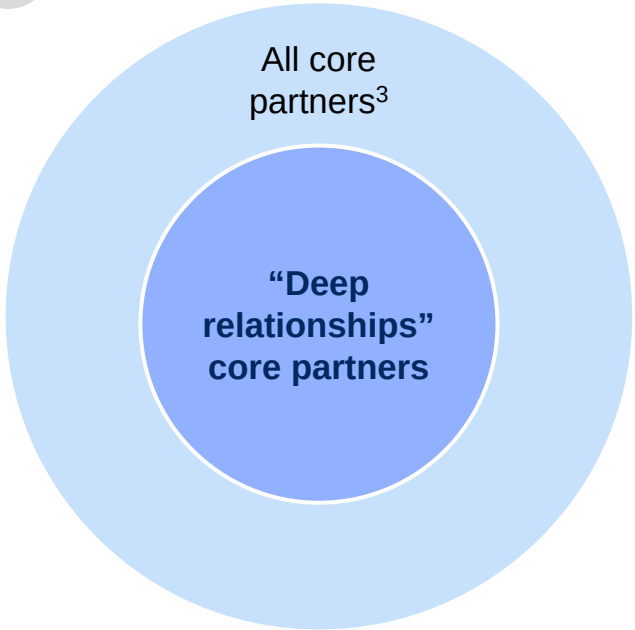
AND

- Is this core partner a **member of one of the following 3 groups**
  - Emergency management community
  - Government partners with NWS nexus
  - Members of electronic media that disseminate to a significant part of the population

Categorize using the following criteria[2]; ask, does this core partner …

- Need to be served based on **legal or national security** requirements?
- Exercise a **large degree of authority or influence** on public safety relative to other core partners?
- Serve a **particularly vulnerable population or entity** relative to other core partners?
- Act as a **force multiplier to help amplify NWS message** relative to other core partners?

"Deep relationships" core partners that rank high on the criteria, should be provided a "core service level"



1 The existing definition will be modified if necessary
2 In terms of the weighting of each criteria, all are weighted equally for categorizing as "deep relationships"
3 All core partners will still receive IDSS support; media will generally not be provided the same type of "core service level" as other core partners

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An IDSS "core service level" process could provide additional guidance for offices to develop "deep relationships"

Focus of next section

Proposed IDSS "core service level" process for an individual NWS office

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- Does the office **conduct and incorporate lessons learned from self-assessments** after events?

After categorizing core partners, step 1 of the "core service level" process is to establish relationships with those partners

Establish relation-ships

Categories	Example actions
Initial relationship building	▪ Adopt-a-partner program ▪ Cold calling those NWS thinks it can serve (before or during an event) ▪ Monthly/quarterly check-in calls ▪ Use existing core partners to create relationships with new partners ▪ Use activated EOC to introduce NWS to other partners
Create awareness of NWS IDSS	▪ Invite to NWS office tour ▪ Offer product road shows to demonstrate services NWS can provide ▪ Marketing 1-pager ▪ Share previous examples of how we provide services
Create programming	▪ Invite to co-training sessions held at NWS ▪ Invite to integrated warning team workshop ▪ Sign-up to become WRN Ambassador and/or StormReady
Attend relevant external programming	▪ Attend public safety oriented meetings ▪ Attend conferences or sector-relevant meetings

Note: Further guidance on how and when to utilize these tools or provide these services will be forthcoming

Step 2 is to conduct a partner needs assessment to determine what type of deep relationship will best meet a partner's needs

	Categories	Example actions
Partner Needs Assessment	Prompt input	▪ Provide questionnaires or surveys ▪ Interviews with core partners ▪ Hold small, regional focus groups ▪ Media workshop ▪ Provide them examples of current products and services to prompt feedback
	Meet them at events	▪ Temporarily embed to learn their operations ▪ Get presentation time at their conferences to dialogue on needs ▪ Ask for opportunities to present case studies on good NWS partner relationships so they know what is available
	External resources	▪ Review after-action assessments ▪ Read partners' Incident Action Plans and Multi-Jurisdictional Hazard Mitigation Plan ▪ Meet with other, outside experts who are familiar with partner response (social scientists, other academics, retired personnel)

Note: Further guidance on how and when to utilize these tools or provide these services will be forthcoming

Step 3 is to provide recurring IDSS, which includes being involved in core partners' planning and training exercises

Recurring IDSS

Categories	Example actions
Planning	▪ Partner on grant applications ▪ Provide input to incident action plans (IAPs) ▪ CSTAR partner research opportunities ▪ Ask to have a presence at partner meetings or monthly conference calls ▪ Participate in continuity of operations planning (COOP), specific event plans, and general mitigation planning ▪ Include non-core partners in planning to assess ability of core partners to serve as force multipliers
Training	▪ Train with partners either at their training or bring them to NWS trainings ▪ Office simulation of IDSS with partner in attendance to provide feedback ▪ Tabletop exercises ▪ Include non-core partners if possible to ensure message is amplified; encourage inclusion of non-core partners in some training

Note: Further guidance on how and when to utilize these tools or provide these services will be forthcoming

Step 4 requires providing episodic IDSS during events according to "tiers of service" guidance

Questions to ask before providing episodic IDSS

Episodic IDSS

Type of event	▪ Has there been a credible weather or homeland security threat? ▪ What is the number of people or value of property likely affected?
Resources	▪ What resources are available? How many other events are being supported? ▪ How many advance meetings with the core partner will be required? ▪ Are available staff trained?
Core partner needs	▪ What do the pre-existing plans with the core partner call for? ▪ How does the core partner typically like to receive information?

Answers to questions will help guide the tier of episodic IDSS to provide

Tier one	▪ Direct, interactive support ▪ Option between remote or in-person, deployable presence depending on partner needs and structure
Tier two	▪ Group, coordination support ▪ Examples: briefings or webinars provided to multiple partners at once

1 "Deep relationships" partners should always receive at least Tier 1 or 2 service; IDSS will still include broader services than mentioned in these two tiers including general products and organization or sector-specific products

Step 5 is to conduct an after-action review to determine how episodic IDSS was provided and how to improve it in the future

	Categories	Example actions
After-action review	**Self-assess-ment**	▪ Internal check of process to see if all steps were followed ▪ Quantify impacts and core partner response to each major NWS action ▪ Create other performance statistics to measure response ▪ Meet with integrated warning team (IWT) to discuss response
	External assess-ment	▪ Survey, email, or follow up phone call to partner ▪ Hold town hall meetings with partners after every few events to discuss NWS response ▪ Assess whether ecosystem as a whole and force multiplier through a quarterly survey of non-core partners from broader weather enterprise such as commercial weather, schools, hospitals ▪ Analyze media response for general coverage as well as any economic or physical damage assessments

Note: Further guidance on how and when to utilize these tools or provide these services will be forthcoming

NWS could use an office review process to help ensure all NWS offices provide consistent and effective IDSS

Focus of next section | PRELIMINARY FOR DISCUSSION

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Proposed IDSS office review to drive consistency and effectiveness

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- Does the office provide **consistent and effective episodic IDSS** that meets its partners' needs?
- Does the office **conduct and incorporate lessons learned from self-assessments** after events?

The structure of an office review depends on the purpose, who is responsible, the frequency, and the key assumptions

FOR DISCUSSION

Potential options	What is the purpose?	Who runs the review?	Frequency of review?	What are the key assumptions?
Option 1: Chain of command	▪ To **allow regions to provide oversight** of local offices to improve consistency and effectiveness of IDSS on **an ongoing basis**	▪ For **WFOs, ROCs, RFCs, and CWSUs, regional offices** would review ▪ For **NCEP, NCEP Director** would review	▪ **Frequently and on an ongoing basis** as part of standard reporting structure	▪ **Frequent review through the existing reporting structure** will best guide offices in providing a "core service level"
AND/OR				
Option 2: Evaluation office	▪ To **allow an independent body** focused on **service assessment** to audit consistency and effectiveness of IDSS	▪ **Centralized body**, such as a chartered group under the MDC or the Perf. & Eval. Group	▪ Given ~180 offices, review would likely **occur no more than 1x per year**	▪ **Independent review by service assessment** experts will best guide offices in providing a "core service level"
AND/OR				
Option 3: Peer-to-peer	▪ To allow field leaders from other regions or offices **share best practices** and coach underperforming offices	▪ **Group of field leaders** from MICs or regions (i.e. MIC/HIC council) would review different regions' practices	▪ Review would occur **no more than 1x per year, other steps may occur more frequently** (i.e. sharing best practices)	▪ **Field review focused on coaching** and sharing best practices will best guide offices in providing a "core service level"

Case study on federal agency's performance review structure and an example performance review agenda

ILLUSTRATIVE

Case study: federal agency with large field footprint

What is the purpose?	▪ **Discuss** top issue awareness ▪ **Review strategies** to address issues ▪ **Discuss execution** of those strategies and course of action going forward
What is the style of review?	▪ **Coach (rather than audit)** an office's issue identification and response ▪ Reviews held in **constructive environment** where feedback provides an opportunity for learning ▪ **Use metrics as data to support claims**, but they do not control the dialogue
Who is responsible for the review?	▪ **Senior executives are responsible** to review the field ▪ Attendance is open to leadership from other regions
How often is the review conducted?	▪ **Quarterly review** ▪ Headquarters conduct video calls with small groups of local offices
What are the key assumptions?	▪ **Local needs vary** requiring operational decisions to be made at the local level ▪ **Independence is key** due to dynamics of reporting structure ▪ **Collaboration** across field offices is **necessary** for achieving strategic goals

SAMPLE AGENDA FOR PERFORMANCE REVIEW

Participants: Senior HQ leadership

Length: 90 minute

Time	Topic	Activity
20 min.	Review office performance	▪ Review office's top issues ▪ Discuss current prioritization ▪ Review office strategy ▪ Discuss successes/superior performance and learnings ▪ Discuss gaps and understand causes of under-performance ▪ Problem-solve around potential barriers
1 hr.	Review 3 key issues in detail	▪ Open discussion between leadership and office
10 min.	Wrap-up	▪ Summarize next steps and timing ▪ Identify person responsible for each next step

Option Summary: each model has benefits and tradeoffs, and more than one model could be implemented

FOR DISCUSSION

Potential options	Pros	Cons
Option 1: Chain of command	▪ **Frequent contact** between region and field (ongoing rather than once a year) ▪ Works within the traditional reporting structure and could be a vehicle to **strengthen relationships between local offices and regions**	▪ Regions **may not provide independent enough review** ▪ Does not directly address Phase 1 finding on **disconnect between field and HQ** ▪ May not foster **linkages or sharing between regions**
AND/OR		
Option 2: Evaluation office	▪ Provides **independent, external review** from the existing reporting structure ▪ **Takes advantage of existing bodies** that already conduct performance reviews	▪ Existing review bodies may need significant **resources** to increase review capabilities ▪ **Infrequent** (no more than 1x per year) ▪ Likely **more auditing** than coaching
AND/OR		
Option 3: Peer-to-peer	▪ **Creates greater collaboration** among regions while still allowing for **independent review** ▪ **Focused more on coaching** and sharing "best practices" than other options	▪ **Sharing "best practices" and coaching may not be enough** to drive consistency or effectiveness ▪ Requires **establishment of a new body** rather than relying on existing structures in place

IDSS policy is still being developed, but will have some IT implications for data management and communications

IT Implica-tions

- **Office review:** Depending on the final proposal, office review may require remote communication tools and centralized databases to store information
- **Categorization criteria:** Offices will need to categorize partners using consistent templates and store them in centralized location
- **IDSS process:** Additional steps in the process may require IT, including how to integrate office-level plans by region and how to track IDSS events

Teams

- **No additional teams, but additional personnel**: OWA core team may require additional personnel to support policy development and integrating with IDSS training initiative

Key Perfor-mance Indicators

- **Quality of IDSS delivered:** With additional guidance from the policy and office review, core partners should begin reporting improved and more consistent IDSS
- **Organizational health:** Employees should report improved role clarity and improved ability to capture external ideas in subsequent surveys
- **Performance metrics:** Once data is collected, office review and NWS leadership should be able to develop additional KPIs to track IDSS delivery

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Executive Summary of Phase 3 Deliverable

Objectives of OWA: The overall objectives of the OWA include involving stakeholders throughout the project, evaluating impact-based decision support services (IDSS), understanding the NWS current state and gaps, developing options and alternatives, and testing and evaluating options to move forward

Methodology: During Phase 3, a variety of stakeholders, including core team members, SMEs, OWC Executive Champions, and NWSEO have been engaged through workshops, site visits and interviews

Fully integrated field structure: The technological, workforce, and cultural enablers for changes to the fully integrated field were established and provided the foundation for the future forecast process flow, which was agreed to by the OWC. Furthermore, these functional changes provide the opportunity to consider more strategic resourcing in field offices through "focus" and "flex" approaches

Actionable ideas: Several ideas were refined across the workforce, organizational structure, and IDSS operating model, including:

- **Workforce**: progression model for GS 5 – 12, onboarding course for new hires, orientation course for new MICs/ HICs, and greater supervisory authority for other roles in the field
- **Organizational structure**: roles of the National Service Programs with respect to the integrated field, better alignment of the Tsunami Centers, and field-manager level group to share ideas and collaborate
- **IDSS operating model**: "deep relationships" philosophy, IDSS and communications training, and a policy to create IDSS "core service level" including core partner prioritization criteria and office review

Next steps: The fully integrated field structure will be further developed, including the development of design parameters and a "blueprint" to apply to the field; in addition, actionable ideas will move towards being tested and evaluated

NWS could establish time horizons for full OWA project with the goal of evolving to better support a "Weather Ready Nation"

Goal: NWS evolves to better support a "Weather-Ready Nation"

	Now . . .	. . . Next . . .	. . . Then . . .	. . . Finally
Fully integrated field structure	▪ *Established path forward on future forecast process flow and plan for fully integrated field structure* ▪ *Clarified policy to support IDSS for "deep relationships" with core partners*	▪ *Complete rollout and training around IDSS philosophy* ▪ *Evaluate success of National Model Blend* ▪ *Shift time spent to out of the grids* ▪ *Create "blueprint" for future fully integrated field and regions* ▪ *Test office "focus" and "flex" in field*	▪ *Evaluate office "focus" and potentially roll out* ▪ *Evaluate "flex" severe weather model on a regional scale* ▪ *Test regional alignment around new "focus" of offices*	▪ *Roll out successful changes to other offices* ▪ *Adjust roles and skills training to support flexibility and collaboration*
Actionable ideas	▪ *Addressed organizational health, including role clarity, open and trusting, and capturing external ideas* ▪ *Identified set of actionable ideas*	▪ *Enact actionable ideas through NWS governance process, with supporting communications and engagement, training and policies*	▪ *Continue enabling practices and supporting actionable ideas* ▪ *Continue additional training and policy needs to maintain organizational health*	▪ *Assess success and continue rollout of actionable ideas, with supporting policy, training and structures* ▪ *Continue rollout of additional actionable ideas*

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Appendix

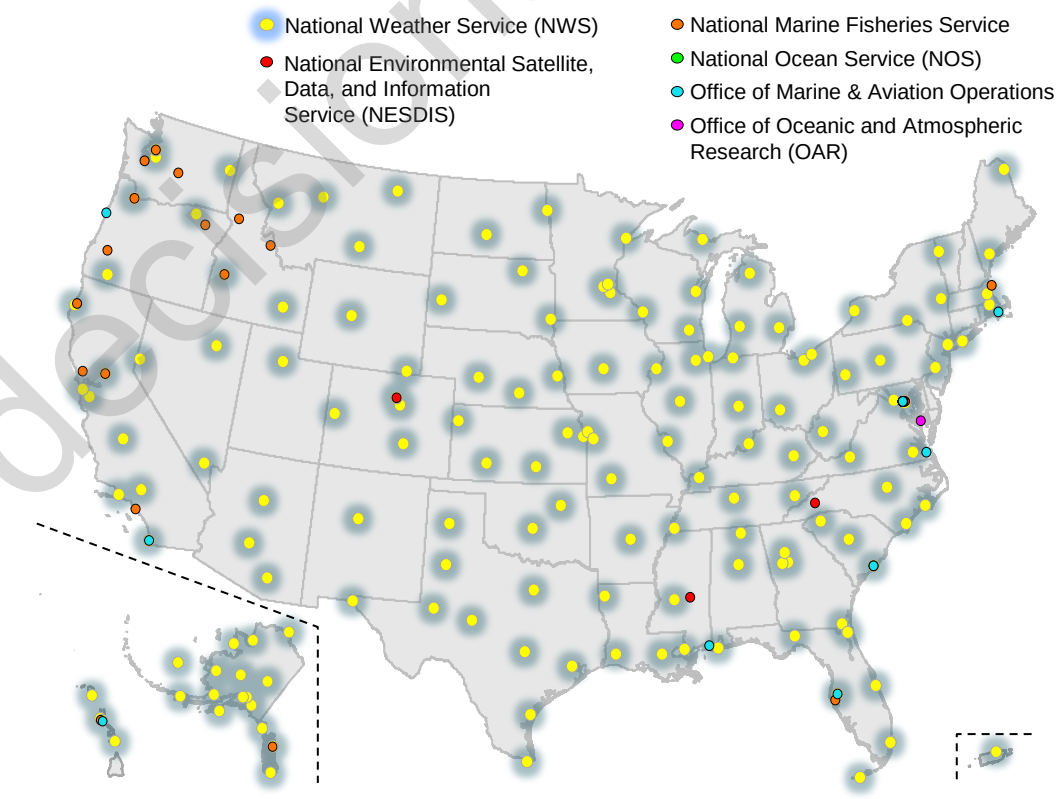
A local NWS presence is critical to build a "Weather-Ready Nation"

NWS local presence is critical for three main reasons:

1. **Creating or providing excellent local forecasts and warnings relies on "local knowledge"** based on current technology; in future, "local" could be defined differently
2. **Given deep relationships model, core partners currently best served from nearby forecast office**; understanding what core partners need and gaining their trust requires creation and maintenance of local relationships
3. **NWS continues to offer particular value as a service outlet for "NOAA in your neighborhood"** for most communities in the U.S.

Of all NOAA line offices, NWS has best footprint to act as a service outlet for all of NOAA to communities

Map of NOAA line offices[1] for all NOAA agencies



1 Map includes does not include other locations for NOAA that extend NOAA's reach, including OAR cooperative institutes, NOS additional locations, and other partnerships and locations for NOAA agencies

SOURCE: NWS interviews