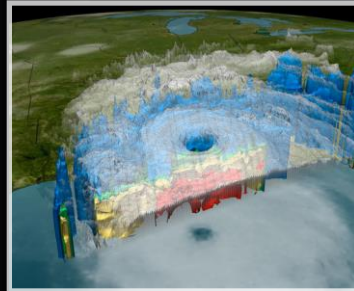
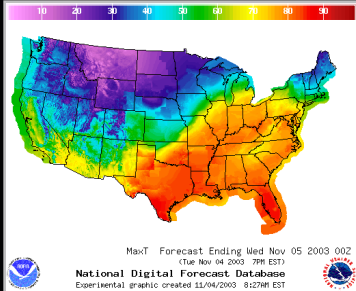
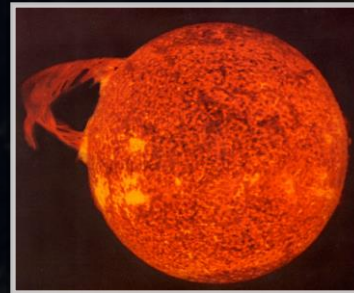
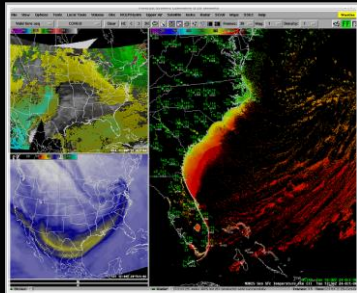


National Weather Service Office of Dissemination Building a Weather-Ready Nation NWS Partners and Family of Services Meeting



Luis Cano, Director, National Weather Service

Office of Dissemination

August 3, 2015 – NWS Partners



Outline

- NWS Budget Restructure & HQ Reorganization
- Office of Dissemination Overview
- Challenges and Responses
- NWS Telecommunication Gateway (NWSTG) Re-Architecture Project and Family of Services (FOS) Program

New Budget Structure & HQ Reorganization



Transparency and Enhanced Service Delivery

On April 1, 2015 the approved NWS budget portfolio structure and HQ reorganization was put in place

Observations

- A focused effort on sustaining & integrating all observations supporting the NWS mission and ensuring continuous situational awareness.

Central Processing

- Fully integrating the central and distributed computing system from central computer to AWIPS/AHPS

AFS

- Working toward “fully integrated field structure” providing consistent products & services
- Supports local/national IDSS, outreach, & social science integration (*nature of work will change*)

Dissemination

- Better managed, reliable, centralized, and more responsive network, especially during high impact events.

STI

- Accelerates numerical model advances, supports forecaster training/development
- Provides a centralized development environment to enable Research to Operations (R2O) & a visible “catcher’s mitt” for the rest of the research community interested in the R2O process (e.g., CSTAR, SOO/DOH ...)

Facilities

- Make sustaining all of the NWS facilities a fundamental part of the NWS mission execution

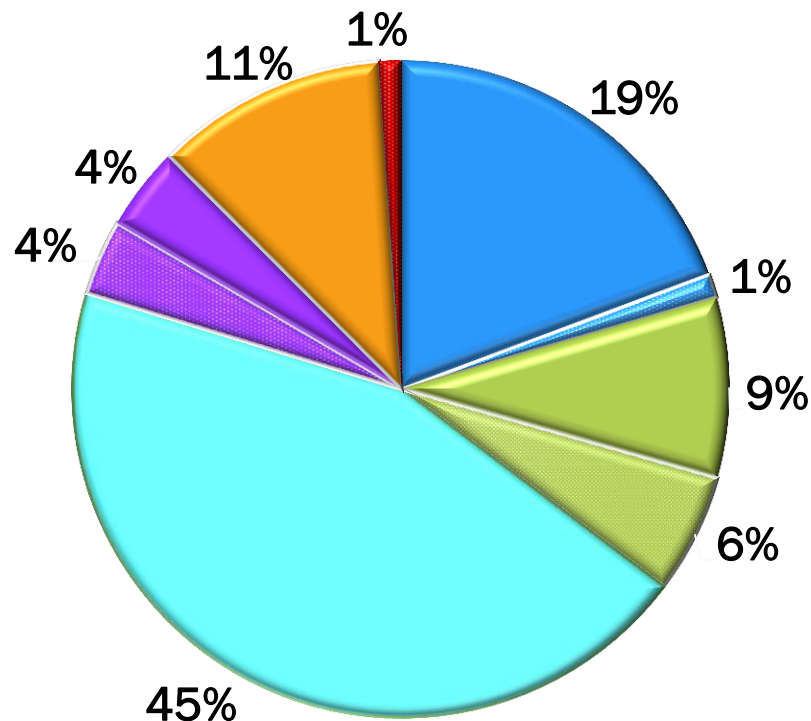


NWS Budget Composition by Portfolio

Consolidated and Further Continuing Appropriations Act, 2015

PPA	Funds*	Full Time Employees (FTE)
Observations ORF	210,777	804
Observations PAC	12,300	-
Central Processing ORF	96,617	232
Central Processing PAC	64,000	22
Analyze, Forecast and Support ORF	483,060	3,010
Dissemination ORF	40,099	82
Dissemination PAC	45,000	-
Science and Technology Integration ORF	123,600	488
Facilities PAC	12,000	-
TOTAL	1,087,453	4,638

Funds Breakdown



- Observations ORF
- Observations PAC
- Central Processing ORF
- Central Processing PAC
- Analyze, Forecast and Support ORF
- Dissemination ORF
- Dissemination PAC
- Science and Technology Integration ORF
- Facilities PAC

* In thousands of dollars



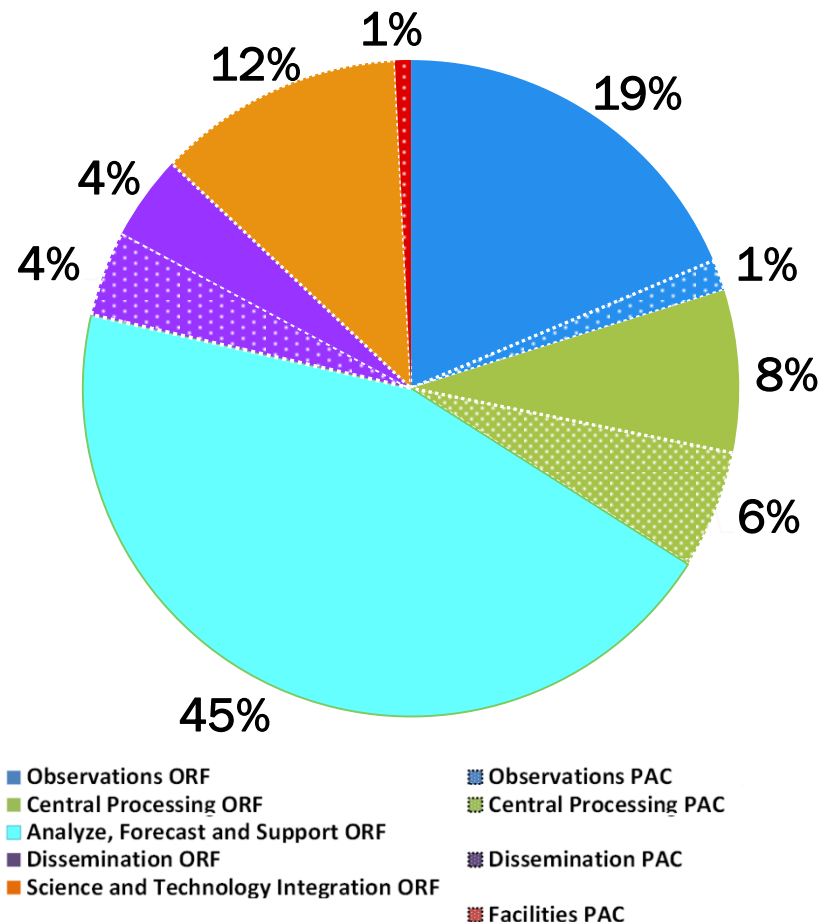


FY2016 NWS President's Budget Request Composition by Portfolio

PPA	Funds*	Full Time Employees (FTE)
Observations ORF	204,876	804
Observations PAC	16,720	-
Central Processing ORF	87,902	134
Central Processing PAC	64,261	22
Analyze, Forecast and Support ORF	489,845	3,010
Dissemination ORF	46,743	82
Dissemination PAC	45,684	-
Science and Technology Integration ORF	134,197	488
Facilities PAC	8,650	-
TOTAL	1,098,878	4,540

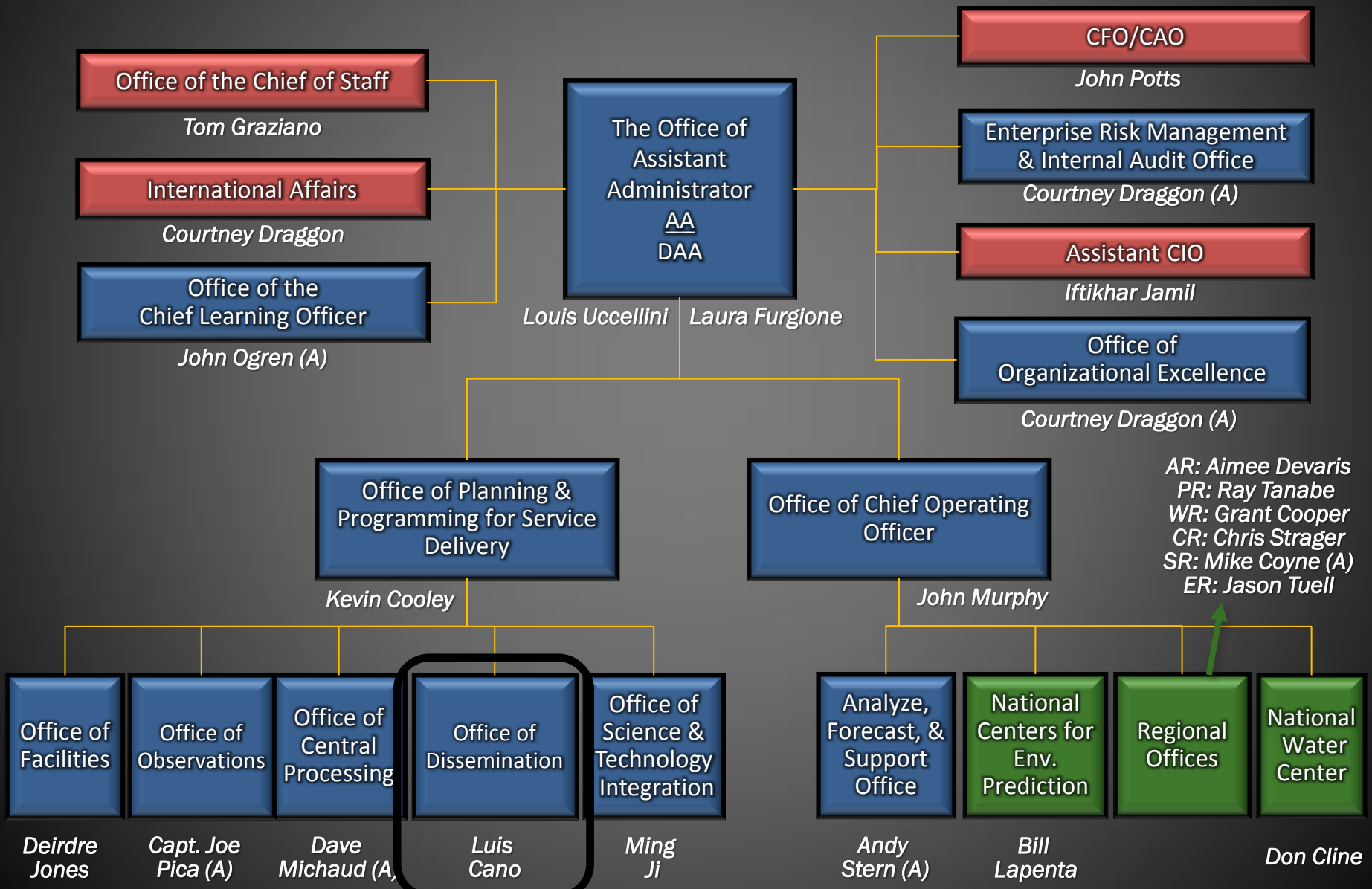
* In thousands of dollars

Funds Breakdown



HQ Organization

New HQ Office
Field Office
Existing HQ Office



Office of Dissemination Overview



Office of Dissemination Mission

Mission: To help build a Weather-Ready Nation and optimize the delivery of scalable and agile dissemination capabilities organized around dissemination infrastructure, networks and other warning-delivery services



Three things NWS Dissemination Portfolio is doing while maintaining a strategy to maximize effectiveness while minimizing cost:

1. Fixing and maintaining NWS operational dissemination services
2. Delivering near-term incremental capability and reliability upgrades/improvements
3. Planning and executing long-term upgrades to provide end-to-end high capacity and resilient dissemination services



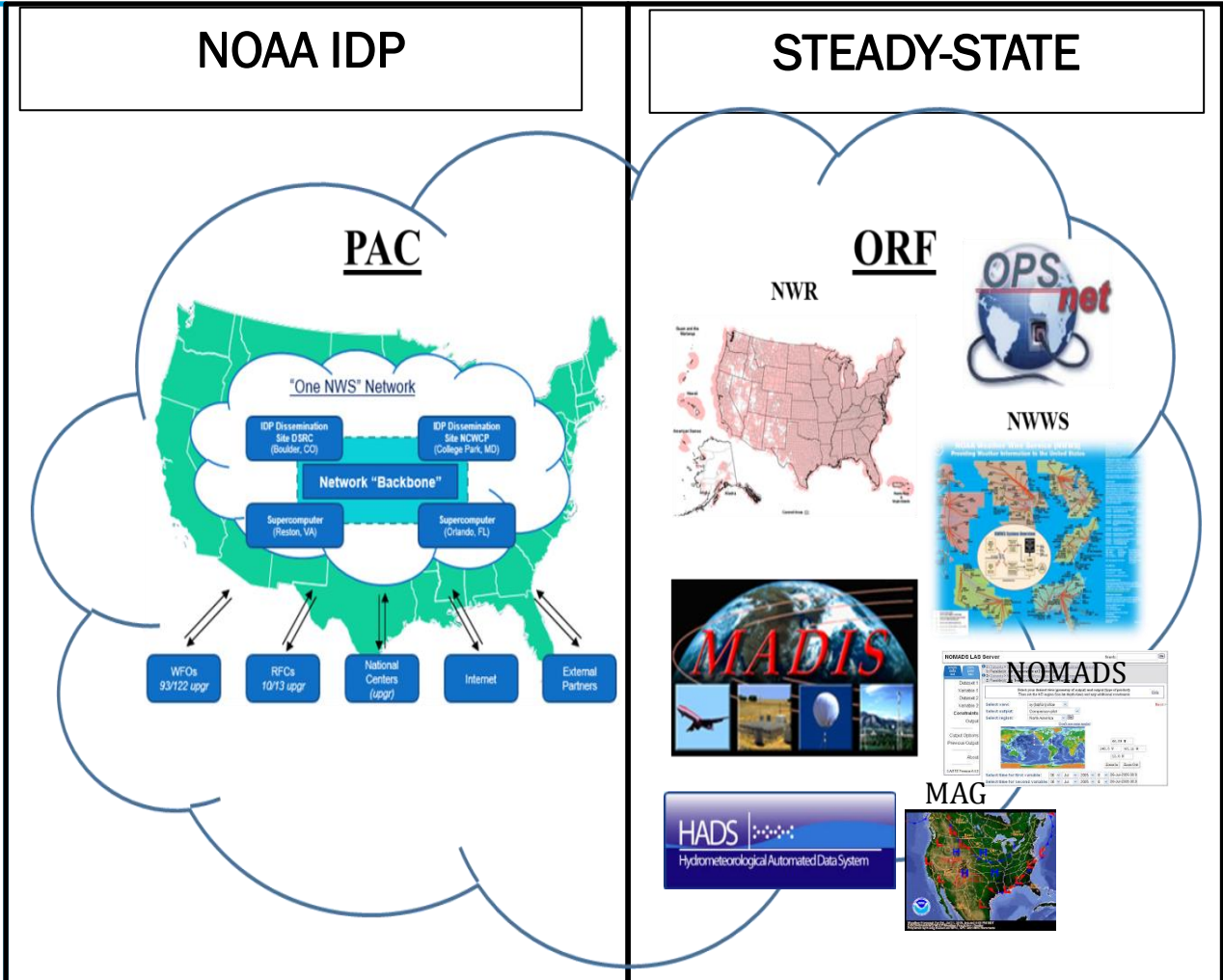
NWS Office of Dissemination NOAA IDP & Steady State

Office of Dissemination
Service Areas

Service 1:
Dissemination IT
Infrastructure and
Virtualized Application
Services

Service 2: Terrestrial
and Satellite
Networking Services

Service 3: Weather
Information
Distribution Services





NWS Office of Dissemination Services

Service #1: Dissemination IT Infrastructure and Virtualized Application Services

Provide a scalable, robust, secure and shared dissemination IT infrastructure

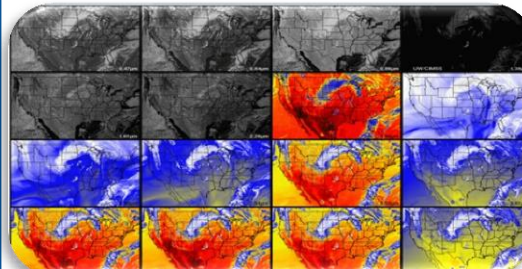
- Stand-up IDP Virtualized Infrastructure
 - ✓ College Park, MD
 - Boulder, CO
- Onboard dissemination systems onto IDP Core College Park, MD and Boulder, CO
 - ✓ NOMADS
 - ✓ MAG
 - ✓ FTPPRD
 - ✓ MRMS
 - ✓ MADIS
 - ✓ VLAB
 - ✓ www.weather.gov
 - NWSTG Re-Architecture
 - MRMS/RIDGEII
 - Enterprise GIS
 - Impact Catalog
 - Space Weather Processing
 - nowCOAST
 - NextGen



Service #2: Terrestrial and Satellite Networking Services

Provide networking capacity and resilience

- ✓ Upgrade SBN (NOAAPort) from 30 to 60+Mbps
- Implement GOES-R Rebroadcast/Himawari downlink antennas and ingest systems at eight NWS locations
- Stand up One-NWS Network
 - ✓ NWS Dissemination Network Single Point of Failures audit
 - ✓ CONUS Internet Capacity Upgrades at NWS Weather Forecast Offices
- OCONUS Network Capacity and Resilience Upgrades
- Mitigate network single points of failure up to approved funding levels
- Merge FISMA network systems
- Build out One-NWS Network
- Decommission NWS Regional Networks



Service #3: Weather Information Distribution Services

Provide robust distribution services to help protect life and property

Streamline NWS Dissemination Systems

- Audit NWS dissemination systems
- Upgrade mission critical dissemination systems
- Decommission non-mission critical dissemination systems

Sustain and Improve NWR services

- Upgrade transmitters to solid state
- Upgrade analog telecommunications
- Plan, develop and implement long-term Roadmap using new NWS governance structures for transformational change

Improve operational NWS Field Office Websites resilience & capacity

- ✓ Operationalize NOAA Weather Wire Service (NWS) enterprise solution



Office of Dissemination Challenges and Responses

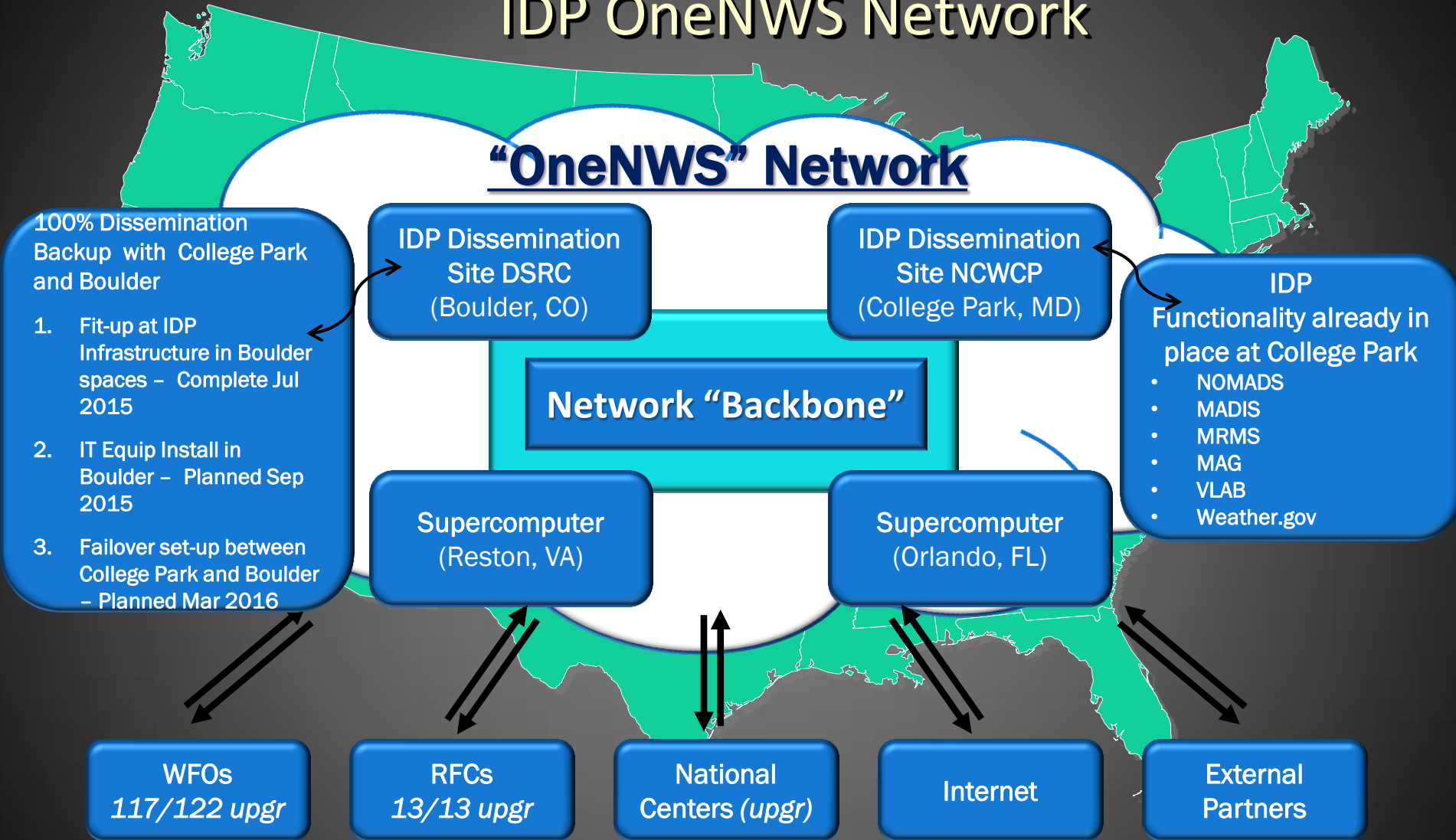


Office of Dissemination

Challenge #1 – Dissemination Weaknesses

- Dissemination weaknesses created through the years as individual efforts built stovepipes across the NWS enterprise
- These weaknesses resulted in telecommunications, Web sites and other system outages with near-national impacts during severe weather events
- These outages elevated to Congressional levels and highlighted the urgent need for organizational change and the development of a reliable and scalable NWS dissemination infrastructure to sustain 24 hours/7 days a week (24/7) mission operations

Challenge #1 Response – IDP OneNWS Network



The future OneNWS network will consolidate all operational networks (OPSnet, Regional, etc.) under a single managed network.



Challenge #1 Response – IDP scalable, robust, secure, and 7x24x365 operational virtualized infrastructure

- ✓ NOAA Center for Weather and Climate Prediction (NCWCP), College Park, MD operational
- Standing up David Skaggs Research Center (DSRC), Boulder, CO to deliver 100% Dissemination backup capability:
 - ✓ Fit-up at IDP Infrastructure in Boulder, CO spaces- Completed July 2015
 - IT Equipment Installation- Scheduled completion September 2015
 - Failover Set-up- Scheduled completion March 2016





Challenge #1 Response – IDP migrating NWS and NOAA dissemination software systems to IDP infrastructure

- Strategy is to aggregate and consolidate dissemination software systems onto IDP dissemination infrastructure (infrastructure, networking, etc.)
- Sets framework for dissemination services for now and future using virtualization techniques and rigorous onboarding & support disciplines
- Facilitates Research-to-Operations (R2O) and Operations-to-Operations (O2O - operational legacy systems) providing an “on-ramp” to onboard dissemination software systems into operations

Research-to-Operations (R2O):

- ✓ MULTI-RADAR/MULTI-SENSOR SYSTEM (MRMS)
- ✓ Meteorological Assimilation Data Ingest System (MADIS)
- ✓ Virtual Laboratory (Vlab)
 - NOAA’s Next Generation Air Transportation System (NextGen)
 - Impact Catalog
 - MRMS/RIDGEII

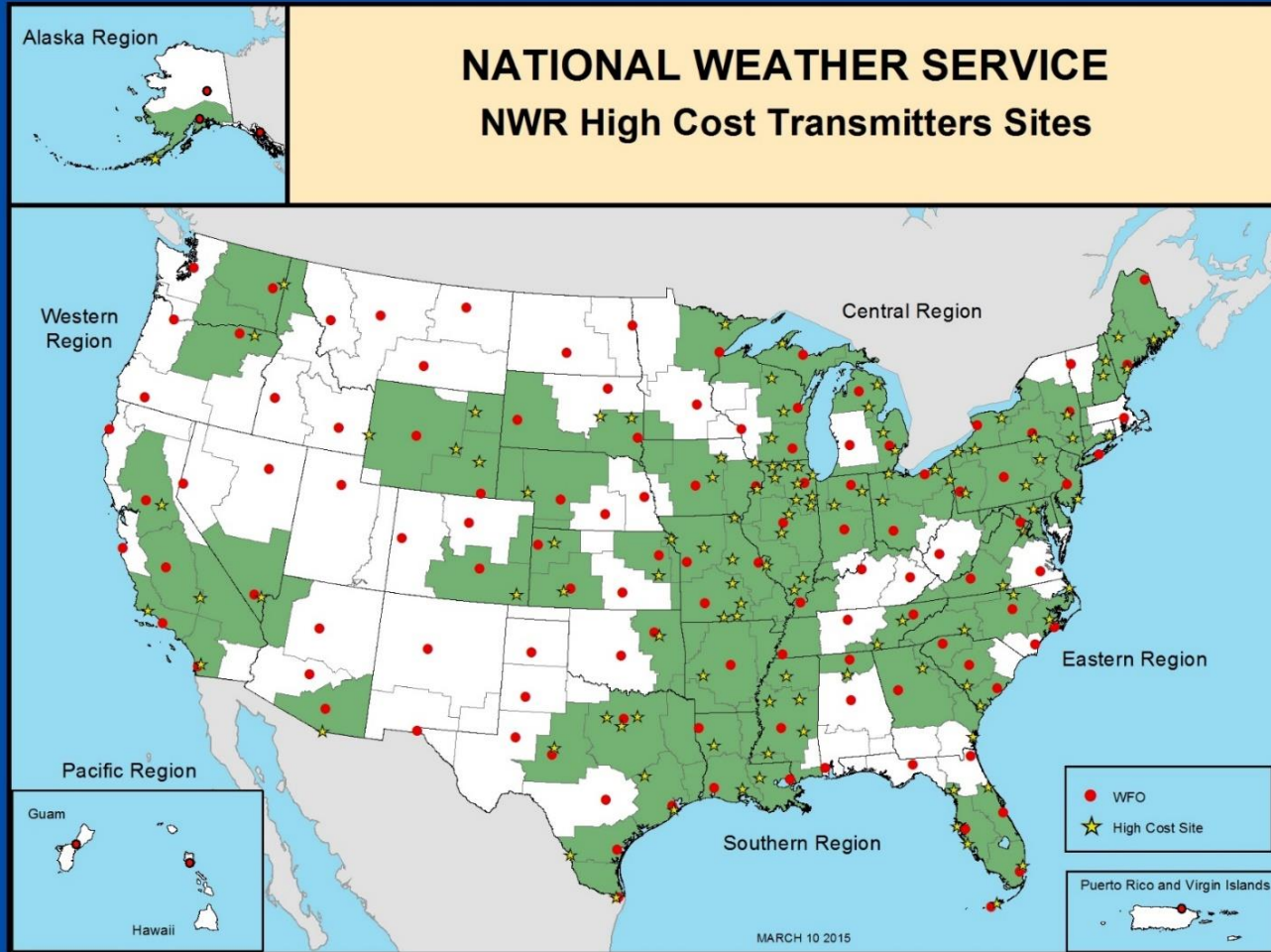
Operations to Operations (O2O):

- ✓ NOAA Operational Model Archive and Distribution (NOMAD)
- ✓ Model Analysis Guidance (MAG)
- ✓ File Transfer Protocol Production (FTPPRD – for NCEP Model Data)
- ✓ Weather.gov
 - Space Weather Processing
 - NWSTG Re-Architecture
 - nowCOAST GIS web portal



NWS Office of Dissemination

Challenge #2 - NOAA Weather Radio unsustainable budget





Challenge #2 Response – Leverage new NWS governance structure for transformational change

- Idea is to transform the NOAA Weather Radio All Hazards (NWR) service
 - NWR provides watches and warnings to the public and helps to save lives on a daily and weekly basis
 - NWR is a multi-mission program serving a variety of users and markets using broadcast Radio Frequency technology
 - NWR supports the commercial broadcast industry as a source to activate the Emergency Alert System (EAS)
 - NWR services is incorporated into cars, motorcycles, tractors and a variety of other mobile platforms (e.g., cell phones); schools, daycares and other similar facilities use NWR to help keep people safe
 - Common to receive email testimony when warnings via NWR helped save lives
- Though NWR has been highly successful over the last six decades, the NWR is unsustainable in its current model
 - Costs escalating about 7% per year; most of the escalation is with leases and utilities

A key driver is to improve services at lower cost

**NWS Telecommunication Gateway
(NWSTG) Re-Architecture Project and
Family of Services (FOS) Program**



Overview of Legacy NWS Telecommunication Gateway

- NWSTG is a 7/24 national hub for collection and distribution of extensive range of weather data and products
- Current NWSTG has the following issues
 - Limited backup capability: 74% backup operational capability that could result in more than 90% loss in weather observations and degraded forecast accuracy
 - Limited capacity and infrastructure: Inadequate capacity to accommodate projected increases of satellite, model and radar data
- Re-alignment project addressed issues with end of life hardware with current NWSTG
- IDP NWSTG Re-architecture Project will provide:
 - 100% backup capability
 - Accommodate for projected increases in satellite (e.g., GOES-R), model and radar data
 - Leverage IDP dissemination infrastructure – Private Cloud to re-architect on a scalable, virtual, reliable and flexible infrastructure



NWSTG Re-alignment & Re-architecture Background

- FY11-13 NWSTG Re-alignment addressed immediate reliability and security issues
- FY13-17 NWSTG Re-architecture is a long-term modernization effort which includes streamlining NWS and NOAA dissemination services

Challenges

- **Aging and Unsupported Infrastructure**
 - e.g. GCOM Servers, IBM Power5
- **Limited Backup Capability**
 - e.g. Unable to collect and process data to and from outside entities
- **Increase in future data volume**
 - e.g. Increased climate & satellite model data
 - e.g. Implementation of new models with higher resolution

Corrective Actions

- **Technology Re-Alignment***
 - Funded
 - FY11 - FY13
- **Technology Re-Architecture****
 - FY13 - FY16

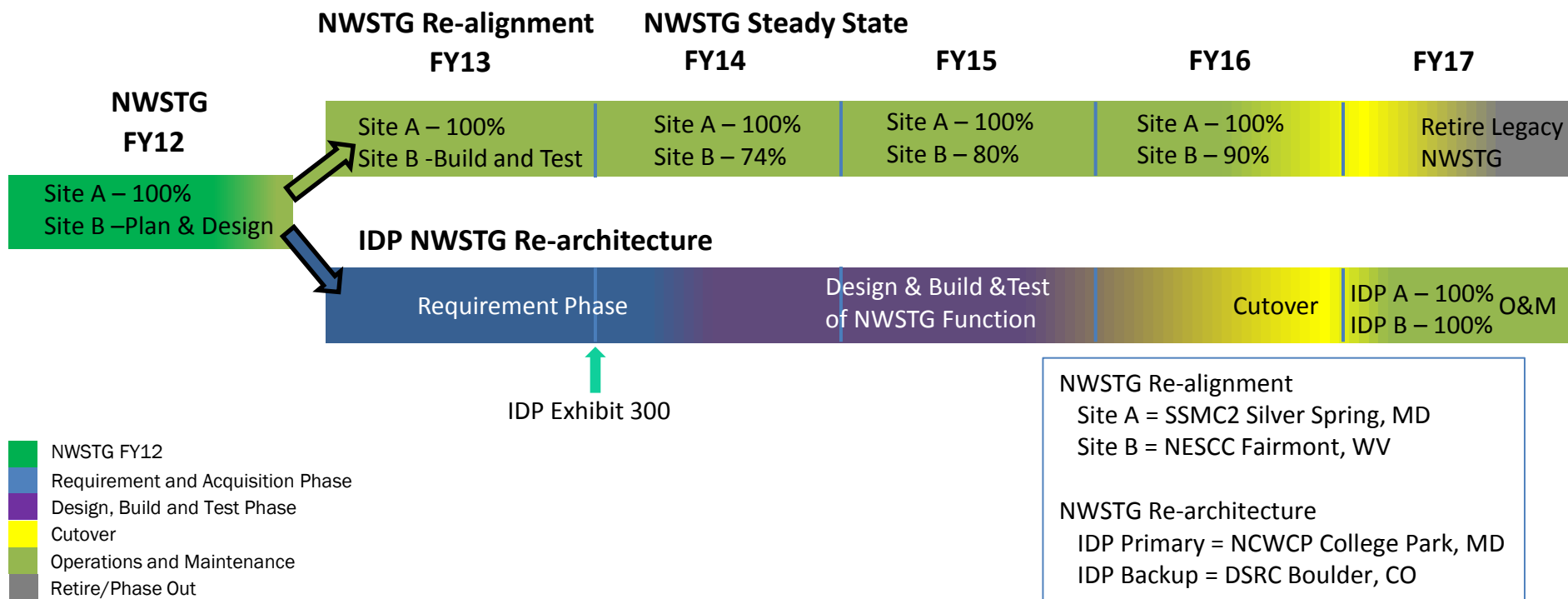
* Re-Alignment = Re-Fresh (Completed November 2013)

** Re-Architecture = Re-Engineering (Planned completion December 2016)



NWSTG Re-alignment and Re-architecture High Level Schedule

- NWS split the Re-alignment project and Re-architecture projects:
 - ✓ Re-alignment project (Steady State)
 - IDP Re-architecture project (Development, Modernization and Enhancement)





Legacy NWSSTG Functions & Programs

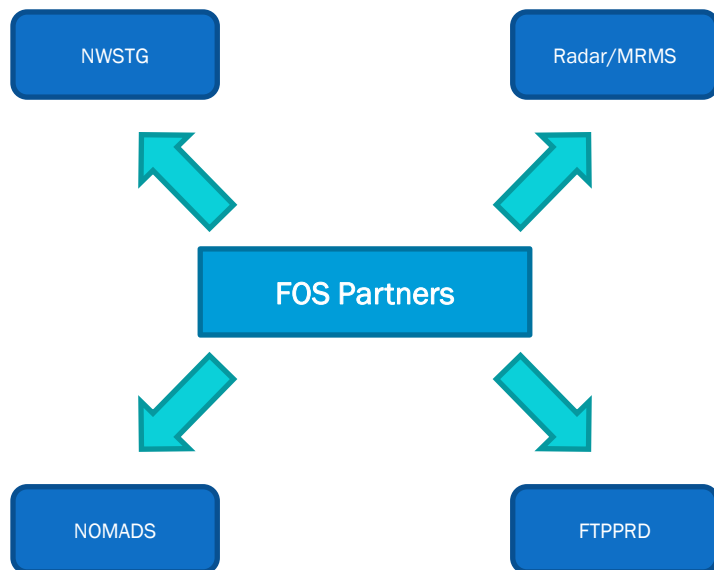
- NWSSTG Re-architecture Project transitioning legacy NWSSTG functions to IDP dissemination infrastructure
- NWS plans decommission Family of Services (FOS) program
- Using IDP, services to FOS will continue and improve at no cost
- FOS partners are important to NWS and will continue after transition

FTP Secure (FTPS)
Secure FTP (SFTP)
TGGATE (Username and Password)
TGDATA
National Law Enforcement Telecommunications System (NLETS)
Telecommunications Gateway Data (TGData) / FTP & HTTP
IDP Core Switching
BUFR Migration Tool (BMT)
HazCollect - External
HazCollect - Legacy
ASOS Operations and Monitoring Center (AOMC)
National Data Buoy Center (NDBC)
Family of Services (FOS) Decommissioning
SOCKET Internal Protocol
Snow Telemetry (SNOTEL)
Radar 2
Radar 3
FTPMail
Secure FTP Push
Unsecure FTP Push
Email Data Input System (EDIS) / Mail and Web
Common Message Handling Protocol (CMHP)/FAA
Global Information System Center (GISC)
Global Maritime Distress Safety System (GMDSS)
Space Weather Prediction Center (SWPC)
Fleet Numerical Meteorology and Oceanography Center (FNMOC)



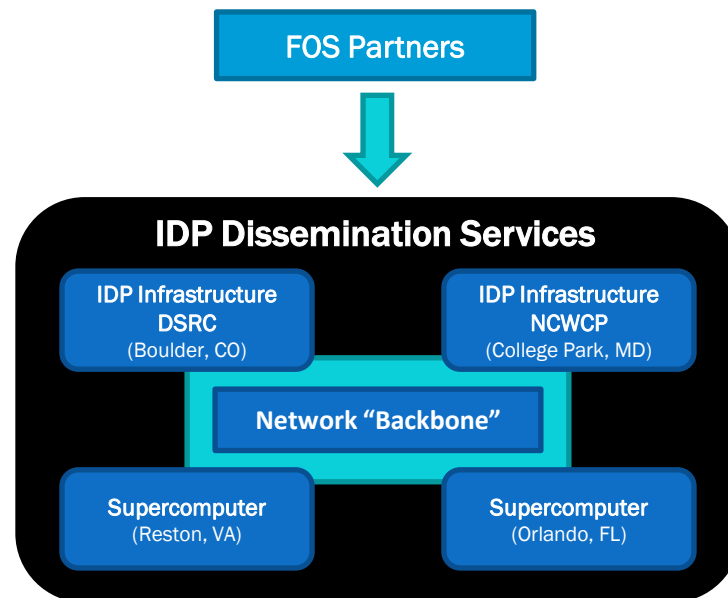
National Weather Service Family of Services (FOS) Program Proposed Termination

Current State – Multiple Sources



- FOS Partners currently access multiple sources to retrieve limited suite of NWS data and products.
- Dedicated servers funded by FOS Partners provide access to limited NWS data during high-demand periods and severe weather events.
- External partners costs include administrative and program services, dedicated circuit, and hardware.
- Individual data sources do not have full back-up capabilities.

Future State – IDP



- FOS Partners will be able to access all current and future NWS data from a single source.
- NWS will continue to manage FOS Customer relationships and provide 24x7 support to ensure data needs are met.
- Full backup capabilities during high-demand periods and severe weather events.
- IDP Dissemination Services provided free of charge to all partners including FOS partners.



Family of Services (FOS) Program Continued NWS Partnership Now and Into the Future

- Remain valued partners
- Maintain a working relationship with NWS Dissemination, IT, and Operations staff
- Have access to monitoring support services on a 24x7 basis
- NWS remains dedicated to providing high level of customer service to all of our valued partners

FOS Closeout POC:

Robert Bunge

Robert.bunge@noaa.gov

301-427-9608

THANK YOU!

