



Commercial Weather Data Pilot Program

REPORT TO CONGRESS

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Congressional Direction

The Explanatory Statement accompanying the Consolidated Appropriations Act, 2016 (P.L. 114-113) included the following language: *Commercial Weather Data Pilot. - NOAA shall, through an open competitive process, seek to enter into at least one pilot contract to assess the potential viability of commercial weather data in its weather modeling and forecasting. This funding shall be used to purchase, evaluate, and calibrate available data, which meets the standards and specifications set by NOAA in its Commercial Data Policy. NOAA shall provide the Committees a report on how it plans to implement the commercial weather data pilot program not later than 60 days after the enactment of this Act.*

This report responds to the Committee's request to work with vendors and with the data.

Executive Summary

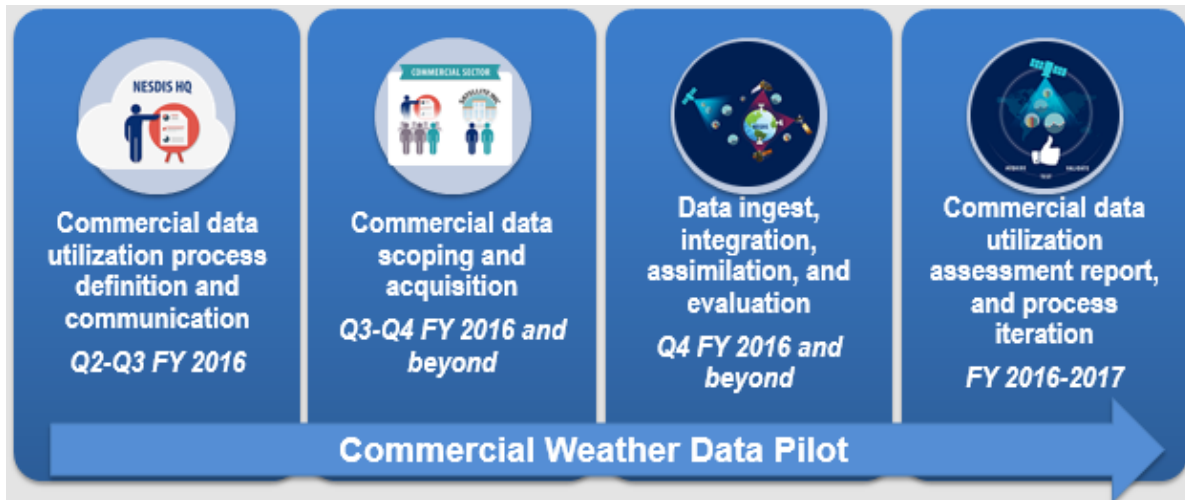
The report defines a process to complete the Commercial Weather Data Pilot (CWDP) efficiently and as thoroughly as possible given funds appropriated in FY 2016 and recognizing the evaluations authorized with the FY2016 appropriations will extend into FY 2017. Based on our belief that a thorough CWDP warrants more time, the National Oceanic and Atmospheric Administration (NOAA) has also requested additional funds for FY 2017 for the CWDP. As we describe below, we are still defining the solicitation, procurement, evaluation, and assessment steps to conduct the CWDP, and as a result we have not yet determined how the FY2016 funds will be distributed between procurements of data, engagement with the commercial entities, and the actual evaluation of the data. Our initial estimate, established for planning purposes, is that approximately 1/3 of these funds will be used to purchase data from commercial vendors, and approximately 2/3 will be used for evaluation. The funds distribution across all necessary functions will be refined as we complete the initial interactions with the commercial providers and as we define NOAA's assessment activities.

NOAA will implement the CWDP with the following four primary foci:

- I. Define the end-to-end implementation process for the CWDP;
- II. Scope and acquire the data for the CWDP;
- III. Ingest and process the data and analyze the outcome and impact of the resulting information; and finally
- IV. Issue a report documenting the results of the CWDP activity.

Some of the activities required to complete the CWDP can be conducted in parallel, including refinement of the engagement process, establishment of the evaluation and assessment team, and initiation of the procurement activities. However, there are steps that we must take sequentially, such as conducting the procurement and contractual arrangements with industry, delivery of the on-going data to NOAA, followed by the data evaluation, validation, and trial assimilation (see Table 1 for description of serial critical path activities and parallel activities). On January 8,

2016, NOAA issued its Commercial Space Policy, which sets a broad framework for use of commercial space-based approaches for the agency¹. NOAA will implement the CWDP consistent with the NOAA Commercial Space Policy and pursuant to the Federal Acquisition Regulations (FAR)².



Background

The process for taking raw data and converting it into useable data products and information involves many steps, and the active participation of a number of different subject matter experts (SMEs). NOAA has been developing and applying this process for many years, evolving and improving the integration and coordination of the necessary SMEs over time. NOAA has also been working both externally with the commercial sector, international partners, and interagency partners, and internally within the National Environmental Satellite, Data, and Information Service (NESDIS), the National Weather Service and other NOAA line offices to prepare for the future integration of commercial data into our integrated observing and product delivery systems.

In parallel with executing the CWDP, NESDIS will release the draft NESDIS Commercial Space Activities Assessment Process (CSAAP) for a 30-day public comment period. This draft will evolve based on public comments and lessons learned from the CWDP. Through this pilot project, we will complete the first demonstration of the end-to-end process, from defining implementation to documenting results of data evaluation.

The plan that follows draws from NOAA's experience base, while working to adapt it to the unique features associated with the commercial origin of the data.

¹ <http://www.space.commerce.gov/>

² <https://www.acquisition.gov/>

Execution of the NOAA Commercial Weather Data Pilot

I. Commercial Data Utilization Process Definition

1. *Establish a CWDP pilot project team and a plan (second quarter FY 2016)*
 - 1.1. NOAA will establish a team of SMEs in the areas of data type/source identification, acquisition, data evaluation, and budget. The team will identify and task the timeline and resources for the end-to-end activities required to successfully complete the CWDP.
 - 1.2. The plan will be executed per the FAR (e.g., including market research, data evaluation, etc.), commensurate with appropriate complexity and risk, and consistent with the standards and specifications set in NOAA's Commercial Space Policy.

2. *Establish the internal NOAA infrastructure and task the resources needed for the CWDP. (third quarter FY 2016)*
 - 2.1. NOAA will complete the necessary tasks for creating the infrastructure required to execute the CWDP. This includes:
 - 2.1.1. Constructing the required data infrastructure development and communications pathways;
 - 2.1.2. Establishing required information security protocols to ensure NOAA can consider candidate commercial data as a trusted data source for the CWDP;
 - 2.1.3. If required, arranging for archival and storage of pilot data through NOAA's National Centers for Environmental Information.

II. Commercial Data Scoping and Acquisition

3. *Select CWDP data type*
 - 3.1. Based on the findings of recent market research and FAR processes (e.g., Requests For Information [RFI]), NOAA has selected GNSS-RO as the most suitable data type for the CWDP.
 - 3.1.1. NOAA selected the initial observational data type for the CWDP based on the results from RFIs conducted in FY 2015 and prior;
 - 3.1.2. Subject to the initial outreach to the community and from comments to the CSAAP, NOAA may release a subsequent RFI for additional data types as part of the CWDP project.
 - 3.1.2.1. Additional data types, still a part of the CWDP activity, will be supported, to the extent possible, by any FY 2017 appropriations.

4. *Acquire pilot data (fourth quarter FY 2016 and beyond)*
 - 4.1. Through one or more open and competitive mechanisms, NOAA will acquire pilot data.
 - 4.1.1. Different vendors are expected to have candidate data that are at different levels of technical maturity. We will tailor the procurement activities to reach out to a full range of potentially viable vendors. This range will include pilot data from satellites already on-orbit, or from systems not yet deployed but in the advanced stages of instrument, satellite, and mission development.
 - 4.1.2. NOAA will engage individual vendors to discuss and clarify their responses. This engagement may continue throughout the pilot project as needed to maximize the efficiency and effectiveness of the evaluation.
 - 4.1.3. For missions not yet deployed on orbit, evaluating pre-launch data could aid NOAA in understanding and scoping the expectations for what the on-orbit data stream might look like. The evaluations provided by NOAA of pre-launch data may be useful to commercial entities as they finalize their flight activities.

III. Data Ingest, Integration, Assimilation, and Evaluation





5. *Ingest pilot data into NOAA systems (fourth quarter FY 2016 and early 2017)*
 - 5.1. NOAA will establish, as a demonstration, the necessary data access, formatting, and processing required to accept the vendor provided data.
 - 5.1.1. This includes implementing the infrastructure and security protocols discussed above in Section 3.
6. *Evaluate pilot data (fourth quarter FY 2016 and beyond)*
 - 6.1. NOAA will evaluate the pilot data provided, assessing their quality and value against the specifications established in the commercial contracts.
 - 6.1.1. SMEs from NOAA (e.g., from NOAA Joint Center for Satellite Data Assimilation) will evaluate data to ensure they are commensurate with similar observational systems, as applicable, and determine the potential impact and value of the pilot data.
 - 6.2. If multiple evaluations are conducted, this step will occur as appropriate throughout the CWDP project.

IV. Commercial Data Utilization Assessment and Process Iteration

7. *Document the results of the individual pilot data assessments*
 - 7.1. NOAA will document the results of pilot data procured and delivered.

- 7.2. NOAA will generate an initial assessment report no later than the end of the second quarter FY 2017.
 - 7.3. For data contracted for delivery past the end of FY 2016, completion of the data may extend into FY 2018 using FY 2016 / FY 2017 appropriated funds. This may apply either to the initial data, or to additional data collected through the CWDP.
8. *Initiate assessment for post-CWDP activities (FY 2016 - FY 2017)*
- 8.1. Following the initial evaluation of the commercial data engagement process NOAA will revisit the implementation approach and modify accordingly with any lessons learned.
 - 8.2. The lessons learned will also be incorporated into the next generation satellite observations architecture planning activities underway in NESDIS.
 - 8.2.1. The architecture activities will include consideration of any individual pilot data that have been found to meet the necessary quality factors for the measurement.
 - 8.3. NOAA will initiate activities for post-CWDP data evaluation.
 - 8.3.1. These activities will include assessment of ingest, processing and distribution of commercial data, other NOAA Line Office testing and integration into the NOAA data stream, and archival and access of the data as applicable.
 - 8.3.2. The assessment will also include full cost modeling that accounts for all system costs for the implementation, including vendor contracts, NOAA processing, assimilation, and integration costs, and operators' application and implementation costs.

Table 1: Critical Path and Parallel Activities

	CWDP Critical Path: Initial Data Acquisition And Evaluation	CWDP Internal Preparation Activities	Other supplemental CWDP activities	NESDIS Commercial Solutions Assessment Process
Q2 FY16	Select CWDP Data Type	Establish CWDP project team and plan		
Q3 FY16		Establish internal NOAA infrastructure and task resources		Release draft CSAAP 
Q4 FY16	Begin to Acquire Pilot Data  Ingest Pilot data into NOAA systems Evaluate Pilot data		[Pending additional funding, or TBR] Release RFI for additional Pilot data	Revise and release final CSAAP
Q1 FY17			Initiate assessment for post-CWDP activities [Pending additional funding] Acquire additional Pilot data	
FY17	 Document results			

Appendix A – Acronyms

CRADA	Cooperative Research and Development Agreement
CWDP	Commercial Weather Data Pilot
CSAAP	Commercial Space Activities Assessment Process
FAR	Federal Acquisition Regulations
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
RFI	Requests For Information
RFP	Request For Proposal
SME	Subject Matter Experts