



**NESDIS
Procedural
Requirement**

NPR 8010.01A
Effective Date: January 6, 2017
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NPR 8010.01A

NOAA/NESDIS



COMMERCIAL SPACE ACTIVITIES ASSESSMENT PROCESS January 2017



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National Environmental Satellite, Data, and Information Service [NESDIS]**



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1. EXECUTIVE SUMMARY

NESDIS seeks efficient solutions to address NOAA's need to measure key environmental phenomena from space. To meet these needs, NOAA integrates international, intergovernmental, and commercial capabilities, when practical, with NOAA's own satellites into its global satellite observing system. Commercial space services is one emerging sector offering potential solutions to achieving increasing portions of NOAA's required measurements. NPR 8010.01A outlines the process NESDIS will follow to implement the NOAA Commercial Space Policy ("NOAA Policy"). The purpose of NPR 8010.01A is to establish a process by which NESDIS will assess and pursue commercial opportunities to support NOAA's space-based observational information requirements.

2. BACKGROUND

The National Oceanic and Atmospheric Administration (NOAA) is a science-based services agency charged with understanding and predicting changes in Earth systems to provide critical *environmental intelligence* to the American public, decision makers, and our partners. NOAA's services are critical to the protection of lives, property, and the United States economy, underpinning core functions across the entire Federal government. NOAA's provision of *environmental intelligence* depends on observations from a variety of systems, including satellites, ships, ground, and *in situ* networks. NPR 8010.01A focuses on space-based observations, which are an important source of data for NOAA's numerical weather prediction models and other products across NOAA's mission areas.

In order to respond to an ever-growing demand for environmental information, NOAA continually strives for an observing enterprise that is flexible, responsive to evolving technologies, and economically sustainable, while upholding the international data sharing commitments on which the agency depends. When looking to meet observational requirements, NOAA considers four sources of space-based data: NOAA satellites, other U.S. government agency satellites, international partner satellites, and commercial satellites. This document focuses on how NOAA considers use of commercial satellites to meet agency mission requirements. NOAA is interested in commercially provided data that satisfy technical requirements at a lower cost than government alternatives.



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The NOAA Policy establishes broad principles for the use of commercial space-based approaches to meet NOAA’s observational requirements. As NOAA considers commercial capabilities, its guiding principles are:

- sustaining service quality,
- optimizing mission requirements,
- ensuring access to global observations,
- upholding national and international standards,
- ensuring a vibrant research enterprise, and
- exploring new partnerships.

In keeping with these principles, NOAA is interested in working to enhance its existing relationship with industry, to establish new relationships, and to explore new business models to understand how industry might complement data NOAA currently accesses and incorporates from other agencies and nations. NESDIS will build on its already active engagement with the commercial sector to thoroughly and systematically consider commercial solutions to meet both current and future space-based data needs. In addition to the formal engagement mechanisms identified in this document — the Requests for Information, for Quotation, and for Proposal — NOAA will continue to interact with NOAA’s commercial and user communities through open public engagements.

According to the National Research Council’s *Earth Science and Applications from Space* Decadal Survey, “Commercial sources should be viewed as an important and high-leverage adjunct to government-sponsored systems, not as a general replacement.”¹ This recommendation will guide NESDIS as it implements the actions outlined in this document. NOAA seeks to complement its government-owned assets and international partnerships with new commercially available space capabilities. NOAA seeks these commercial capabilities as valuable supplements to enrich the scope of NOAA’s observations with the goals of ensuring the continuity of critical data, enhancing resiliency, improving program schedules, pursuing potential cost savings, and promoting growth and innovation in U.S. industry. This NOAA/NESDIS Commercial Space Activities Assessment Process (“Process”) follows the principles contained in the NOAA Policy and outlines the process to allow NOAA to use these commercial capabilities as they continue to grow. NOAA will consider commercial purchase for presently unavailable

¹ “Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond,” National Research Council of the National Academies, The National Academies Press, 2007, p70.



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observations and for observations comparable to those obtained from existing government systems to provide redundancy or to fill regional or temporal gaps.

Section 4 provides the criteria NESDIS will use to evaluate commercial data. Data evaluation criteria reflect the primary characteristics of data NOAA needs to optimally support operational mission requirements. These criteria are comparable to criteria NOAA applies to its own observing systems, as well as any external sources of data.

Periodically, NOAA will issue a general Request for Information (RFI) to canvass the commercial sector for submissions of new, emerging or existing observing system capabilities that could meet NOAA's mission requirements. For particular data purchases, NOAA will issue focused RFIs and solicitations in the form of Requests for Proposal (RFPs) or Requests for Quotation (RFQs), complete with data specifications sought for that data purchase. Data specifications are quantitative thresholds within each criterion unique to individual observations. The NESDIS program requirements documents and previous RFIs posted at <http://www.space.commerce.gov/business-with-noaa/requirements/> provide examples of the types of specifications that will be made available in focused RFIs and solicitations.

NESDIS will implement the Process in accordance with the National Space Policy, the NOAA Policy and other applicable documents listed in Appendices A3, A4 and A5.

3. COMMERCIAL SPACE ACTIVITIES ASSESSMENT PROCESS

To ensure fair competition for all potential suppliers, the NESDIS process for conducting data assessments will be standardized and transparent. NOAA will continue to evaluate opportunities for improved efficiency and effectiveness and incorporate these into any future updates to this document (per the procedure identified in A8).

NOAA's disciplined requirements process provides rigorous definition of current and emerging measurement needs. This serves as the starting point for assessing the technical and acquisition architectures that meet the widest range of requirements with the best combinations of performance, reliability and cost. Before acquiring any commercial systems, services or data, NOAA must assess what commercial capabilities exist, how those capabilities may meet NOAA mission needs and fit into planned space-based architectures, and, for data purchases, evaluate the integrity and sustained viability of the data stream.



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In accordance with the NOAA Policy, the Office of Space Commerce will serve as the entry point for commercial space activity engagement with NOAA. Similarly, NESDIS designates the Office of System Architecture and Advanced Planning (OSAAP) as the NESDIS coordination point for space-based commercial sector engagement.

Pursuant to the NOAA Policy to seek opportunities to integrate commercial space systems or services, where appropriate, into approved future space segment architectures and capabilities, NESDIS will periodically conduct forward looking space-based observing system architecture studies that address observing system requirements and gaps in the established NESDIS satellite observing system. The studies will be informed through ongoing engagement with industry on emerging technologies and commercial capabilities, as well as internal assessments of program of record performance. The architecture assessments will determine the viability of commercial solutions to address NOAA observing system objectives. These assessments will be updated periodically, as determined by changes in observational objectives or evolving measurement and commercial capabilities, and synopses will be made available to the broad community of users and potential providers of NOAA data and observations. NESDIS will use these architecture studies to systematically consider appropriate use of commercial solutions, consistent with the National Space Policy, as part of NOAA's next-generation space-based observing system in 2030 and beyond.

While NESDIS will be considering commercial capabilities as part of the next-generation architecture studies, NESDIS will also immediately begin to implement the steps below to consider commercial capabilities to supplement NOAA's current space-based observing systems.

Subsections A-D below describe the process that NESDIS will follow, subject to the availability of appropriated funds, prior to and including entrance into any binding agreement for purchase of commercial data. In deciding to obtain data from the commercial sector, NESDIS will consider NOAA's mission requirements, NOAA's data policy and international data sharing commitments, and the cost of obtaining the data in a manner consistent with established principles and policies. While timelines for specific iterations of the steps below will vary depending on funding and scope, Table 1 provides examples of the expected length of time required to complete these activities. NOAA and NESDIS will continually seek to reduce the overall time to execute this process.



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- A.** Pursuant to the NOAA policy to periodically evaluate, identify, and publish NOAA mission requirements and capability gaps that offer appropriate opportunities for the purchase and use of commercial space capabilities and services, NESDIS will:
- Engage regularly with the NOAA Observing System Council (NOSC), the NOAA Technology Planning and Integration for Observations Office (TPIO) and the NESDIS Office of System Architecture and Advanced Planning (OSAAP) to review existing observing system capabilities and assess their impacts on NOAA mission objectives, and to perform analyses of gaps in our ability to meet requirements.
- B.** Pursuant to the NOAA policy to periodically solicit, identify, and evaluate commercially available space capabilities and services that could potentially address NOAA mission requirements, NESDIS will:
- Canvass the commercial sector periodically, typically every 2 to 3 years or as indicated by changing markets or technologies, by issuing general Requests for Information (RFIs) and/or other market research to understand existing and emerging commercial capabilities.
 - Through the NOAA Office of Space Commerce and NESDIS Office of System Architecture and Advanced Planning, accept unsolicited input from industry outside of RFI cycles.
 - Issue targeted RFIs focused on specific NOAA observational requirements as significant observational capability changes or gaps warrant.
 - Sponsor periodic meetings or workshops to facilitate communication among NESDIS, the scientific community and the private sector.
- C.** Pursuant to the NOAA policy to explore and, where appropriate, pursue demonstration projects to validate the viability of assimilating commercially provided environmental data and data products into NOAA meteorological models and add value to the forecast, NESDIS will:
- Issue one or more solicitations in the form of Requests for Proposal (RFPs) or Requests for Quotation (RFQs), in accordance with the Federal Acquisition Regulation, for NOAA to acquire and evaluate on-orbit observations from commercial sources, where industry has or will establish on-orbit capabilities that were identified by NOAA as promising option(s) through the RFI process. Any solicitation will include all necessary specifications per the criteria listed in Section 4 below.
 - NESDIS may also seek to acquire pre-launch test data from providers to facilitate the evaluation of on-orbit data.
 - Enter into one or more contracts to acquire, evaluate and test on-orbit commercial data.



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- Conduct data evaluation as appropriate and as defined in the solicitation and, based on the results of this evaluation and testing, determine whether and how to proceed to procuring on-orbit commercial data for operational use.

D. Subsequent to the identification of a promising demonstration project, NESDIS may:

- Issue one or more solicitations in the form of Requests for Proposal (RFPs) or Requests for Quotation (RFQs), in accordance with the Federal Acquisition Regulation, to purchase on-orbit observations from commercial sources, for NOAA to use these data operationally. Any solicitation will consider the viability of the provider’s long-term business plan that includes, for example, supply chain risk management and on-demand support. This is intended to ensure sustainability of these data while not discouraging small and startup enterprises.
- Enter into one or more procurements for the acquisition and operational ingest, processing, delivery, exploitation, and assimilation of the on-orbit commercial data into the NOAA data stream.

Expected timeline for Process activities	Duration of action	Cumulative time from RFI release to contract award
Develop and issue RFI	1 month	
RFI released plus Industry Day	1 month	1 month
Analyze RFI responses	1 month	2 months

Develop and issue solicitation for demonstration	3 months	5 months
Solicitation released, full and open competition	1-2 months	7 months
Analyze solicitation responses	1 month	8 months
Issue contract based on solicitation responses	1 month	9 months
Acquire and evaluate demonstration data	3-9 months	

Develop and issue solicitation for operational data	3-6 months	
Solicitation released, full and open competition	1-3 months	
Analyze solicitation responses	1-2 months	
Issue contract for operational data buy	1-2 months	

Table 1: Expected timeline for Process activities (timeline may vary depending on funding and scope)



4. DATA EVALUATION CRITERIA

NOAA will apply the same validation, data integrity, and security criteria to on-orbit commercial data and data products that it applies to data and data products obtained by other means. NESDIS will apply the broad data evaluation criteria below to on-orbit commercial data, assessing its value, cost effectiveness, and exploitability. Data specifications — the acceptable thresholds for each of these criteria — will be addressed through the procurement process for both demonstration and fully operational data use, with specifications identified in relevant solicitations. Where appropriate, data specifications will be consistent with and anchored by legacy systems, sensors, and requirements, which will form an evaluation baseline. Specifications will vary for each separate solicitation to meet individual NOAA requirements. NOAA will only pay for data that satisfy its evaluation criteria.

Category I: Value

- a. **Concept Legitimacy.** The concept for the application of the data type to the observing system requirement will be supportable through documented peer review in the scientific and/or engineering community, including solutions exploiting innovative concepts NOAA has not previously used.
- b. **Accuracy.** The data will have errors and statistical biases comparable to or better than similar data NOAA uses operationally, and the vendor will inform NOAA of these error characteristics.
- c. **Quality.** Data will comply with specified characteristics for coverage, resolution, location, temporal refresh, and signal-to-noise ratio.
- d. **Timeliness.** The data will be available to NOAA within operational latency requirements.
- e. **Reliability.** The data will be made available to NOAA within specified limits of regularity, and within enumerated tolerance levels for gaps and outages.
- f. **Validity.** The data will be tested, calibrated, verified, and validated to standards identified by NOAA.

Category II: Cost Effectiveness

- a. **Cost/Value Balance.** The method for acquisition, ingest, processing, delivery mode (e.g., ground antenna, secure data transfer via internet connection, etc.), and exploitation of the data will achieve a competitive cost to NOAA relative to the value of the data, compared to similar government-owned and international partner datasets over a comparable period of time. This includes the impacts of necessary modifications to NOAA systems to ingest, conduct additional processing as



needed to meet NOAA use requirements, and merge the new data set with other NOAA operational data sets and products.

- b. **Availability.** The vendor will make the data available to NOAA for testing in order to determine the likely cost/value balance and to facilitate making the greatest total return on its investment.
- c. **Sustainability.** The vendor will provide the data to NOAA over a sustained lifecycle of testing and operations, which assumes the viability of the provider's long-term business plan.
- d. **Support.** The vendor will be available for predetermined levels of support through the lifecycle of testing, integration and operations, commensurate with a high reliability operational capability.

Category III: Exploitability

- a. **Comprehensiveness.** The vendor will provide the data in an agreed-upon common format, complete with metadata, and with spectral response functions where applicable. The provider will prepare the data for seamless interfacing with existing NOAA capabilities for communication, computational power, assimilation and visualization of similar datasets.
- b. **Security.** The data will only be considered testable or usable when all applicable NOAA IT security requirements are met, as appropriate to the data type and delivery specifications, and the data comply with all NOAA information management policies.
- c. **Downstream Use.** Data rights will be consistent with NOAA intended use and relevant U.S. policies and international obligations (see Appendices A4 and A5).

NOAA uses a variety of data specifications — quantitative thresholds within each criterion unique to individual observations — for data determined to be of requisite value for fulfilling NOAA's observational requirements. These thresholds are subject to change over time as capabilities change or as NOAA improves understanding of the impact of the measurements on the overall observing system.

For examples of Quality (Category I-c), the temporal refresh rate on the Deep Space Climate Observatory (DSCOVR) Plasma-Magnetometer Faraday Cup is 0.5 to 2.5 seconds, whereas for the Geostationary Operational Environmental Satellite-R (GOES-R) Advanced Baseline Imager instrument the refresh rate for cloud and moisture imagery is 5 minutes over the Continental United States. DSCOVR's location requirement is to maintain an orbit at the Sun-Earth L1 point with maximum distance of 650,000 km from the sun-earth line and a goal of approximately 390,000 km, and a minimum distance sufficient to avoid solar radio interference with data reception.

For an example of Timeliness (Category I-d), Cross-track Infrared Sounder instrument Sensor Data Records for Joint Polar Satellite System (JPSS) missions require 87 minute latency for rapid dissemination



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of atmospheric soundings to the National Weather Service Environmental Modeling Center for timely assimilation into numerical weather prediction models.

For Reliability (Category I-e), the System Operational Availability requirement for Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC)-2 is that greater than or equal to 91.5% of all data collected in an orbit is downlinked in that orbit.

For Validity (Category I-f), as another example, some atmospheric sounding data need to be collected for four seasons before the necessary calibration can be accomplished, allowing smooth assimilation and integration into the NOAA data stream.

Thus, the specific threshold value for NOAA's procurement of space-based observational data from commercial sources will be determined for each observational type in the solicitation.

5. ADDITIONAL INFORMATION

For additional information please visit <http://www.space.commerce.gov/business-with-noaa>.



APPENDICES

A1. PURPOSE

The purpose of the National Environmental Satellite, Data, and Information Service (NESDIS) Procedural Requirement (NPR)-8010.01A is to establish a process by which NESDIS will assess and pursue commercial opportunities to support NOAA's space-based observational information requirements.

A2. APPLICABILITY

This NPR is applicable to NESDIS headquarters as well as all NESDIS programs and offices.

A3. AUTHORITY FOR NPR-8010.01A

The authority for this procedural requirement is provided by the following authorizations.

- a. 15 U.S.C. Section 313 which authorizes the Secretary of Commerce to carry out weather and meteorological reporting and forecasting responsibilities, as well as monitoring and recording climatic conditions
- b. 49 U.S.C. Section 44720 [Meteorological services] which authorizes the Secretary of Commerce to provide and support aviation meteorological services including research and establishment of a basic international meteorological reporting network
- c. 51 U.S.C. Section 50503 which authorizes the administrator of NOAA to enter into competitively awarded multiyear anchor tenancy contracts with termination liability for the purchase of a good or service, as long as certain specified criteria are met
- d. NOAA Commercial Space Policy, NOAA Administrative Order 217-109
- e. The Consolidated Appropriations Act of 2016 (Pub. L. 114-113) which directs NOAA to enter into at least one pilot contract to assess the potential viability of commercial weather data in its weather modeling and forecasting.

A4. OTHER APPLICABLE U.S. LAWS AND POLICIES

This procedural requirement will be executed in a manner consistent with the principles of the following national strategic guidelines, where applicable.

- a. National Plan for Civil Observations, July 2014
http://www.whitehouse.gov/sites/default/files/microsites/ostp/NSTC/national_plan_for_civil_earth_observations_-_july_2014.pdf
- b. Executive Order: Making Open and Machine Readable the New Default for Government Information, May 9, 2013



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- http://cdn.govexec.com/media/gbc/docs/pdfs_edit/050913jm1.pdf
- c. White House Memorandum on Open Data Policy—Managing Information, May 9, 2013
<http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>
- d. National Space Policy of the United States of America, June 28, 2010
http://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf
- e. Office of Management and Budget Circular No. A-130, Revised November 28, 2000
http://www.whitehouse.gov/omb/circulars_a130_a130trans4/
- f. Paperwork Reduction Act of 1995 (P. L. 104-13)
<http://www.gpo.gov/fdsys/pkg/PLAW-104publ13/content-detail.html>

A5. BACKGROUND AND REFERENCE DOCUMENTS

This procedural requirement is also issued with awareness of other national and international policies, agreements and cooperative arrangements. The following documents are listed for context only; any specific request for information or procurement released by NESDIS will identify all requirements applicable to the request.

- a. World Meteorological Organization [WMO] Resolution 40 of June 1995
http://www.wmo.int/pages/about/Resolution40_en.html
- b. Group on Earth Observations [GEO] Data Sharing Action Plan endorsed at GEO Plenary in November 2010
http://www.earthobservations.org/documents/geo_vii/07_GEOSS%20Data%20Sharing%20Action%20Plan%20Rev2.pdf
- c. National Continuity Policy, National Security Presidential Directive 51/Homeland Security Presidential Directive 20, April 2007
<http://www.fas.org/irp/offdocs/nspd/nspd-51.htm>
- d. National Continuity Policy Implementation Plan, Homeland Security Council, August 2007
<http://www.fema.gov/media-library-data/1384886826028-729844d3fd23ff85d94d52186c85748f/NCPIP.pdf>
- e. Acquisition of Space-based Scientific Data from Commercial Sources to Supplement NOAA's Weather and Climate Observation Requirements, Department of Commerce Report to Congress, 2010 Report to Congress [P.L. 111-117]
<http://www.space.commerce.gov/wp-content/uploads/2010-03-commercial-observations.pdf>
- f. NOAA Policy on Partnerships in the Provision of Environmental Information, January 2006
<http://www.noaa.gov/partnershippolicy/>

A6. MEASUREMENT/VERIFICATION



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The NESDIS Assistant Administrator (AA) will conduct periodic assessments to obtain feedback on the effectiveness of this NPR.

A7. UPDATES

With NESDIS AA oversight, the Office of System Architecture and Advanced Planning (OSAAP) is responsible for the coordination of updates to this document. The NESDIS AA will then convene a configuration control board to formally approve changes to this document.