

National Oceanic and Atmospheric Administration	NOAA Administrative Order 212-16	
NOAA ADMINISTRATIVE ORDER SERIES	DATE OF ISSUANCE 10/15/2016	EFFECTIVE DATE 11/1/2016
SUBJECT POLICY ON NOAA OBSERVING SYSTEMS PORTFOLIO MANAGEMENT		

SECTION 1. PURPOSE AND BACKGROUND.

.01 The purpose of this National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) is to establish policies, responsibilities, and requirements that relate to managing NOAA’s portfolio of observing systems. The observing systems within the purview of this NAO are those deemed by NOAA Line Office (LO) Assistant Administrators (AAs) to have a major impact on the NOAA mission and therefore require leadership consultation. The scope of this NAO and the overall management of the NOAA observing systems portfolio are described in detail below. The guiding principles governing portfolio management are also conveyed, along with specific policies that highlight the mechanism designed to achieve the vision prescribed in this NAO. Finally, roles and responsibilities are defined to ensure proper execution of the terms of this NAO.

.02 American citizens, businesses, and communities rely on NOAA’s environmental intelligence to make decisions that impact lives and livelihoods. The foundation for NOAA’s work is its ability to accurately measure environmental parameters from the depths of the ocean to the surface of the sun. NOAA’s observing systems portfolio is composed of these measurements, their related instruments, platforms, associated data processing, products generation, and dissemination systems. Measurements are drawn from systems operated by NOAA or other federal agencies, international partners, academia, nongovernmental organizations, private industries, and community-based entities (citizens, organizations, etc.).

.03 Nearly one-half of NOAA’s annual budget is invested in acquiring and sustaining observing systems. The processes used to manage the observing systems portfolio (and associated budgets) are complex and dynamic. Ultimately, qualified scientists define the essential parameters that establish observing system requirements. They do so through regular interaction with users and providers of collected data, and through reviews of current and expected applications that depend on these measurements. The established requirements are then matched to available technologies, leading to the selection or development of instruments designed to collect specific measurements.

.04 The design, development, and eventual deployment of an observing system, along with the infusion of new technology to recapitalize or enhance performance, often requires complex planning, programming, and budgeting. While the overall process depends on the availability of accurate scientific measurements, it also relies on robust information technology systems that collect, process, disseminate, and display data.

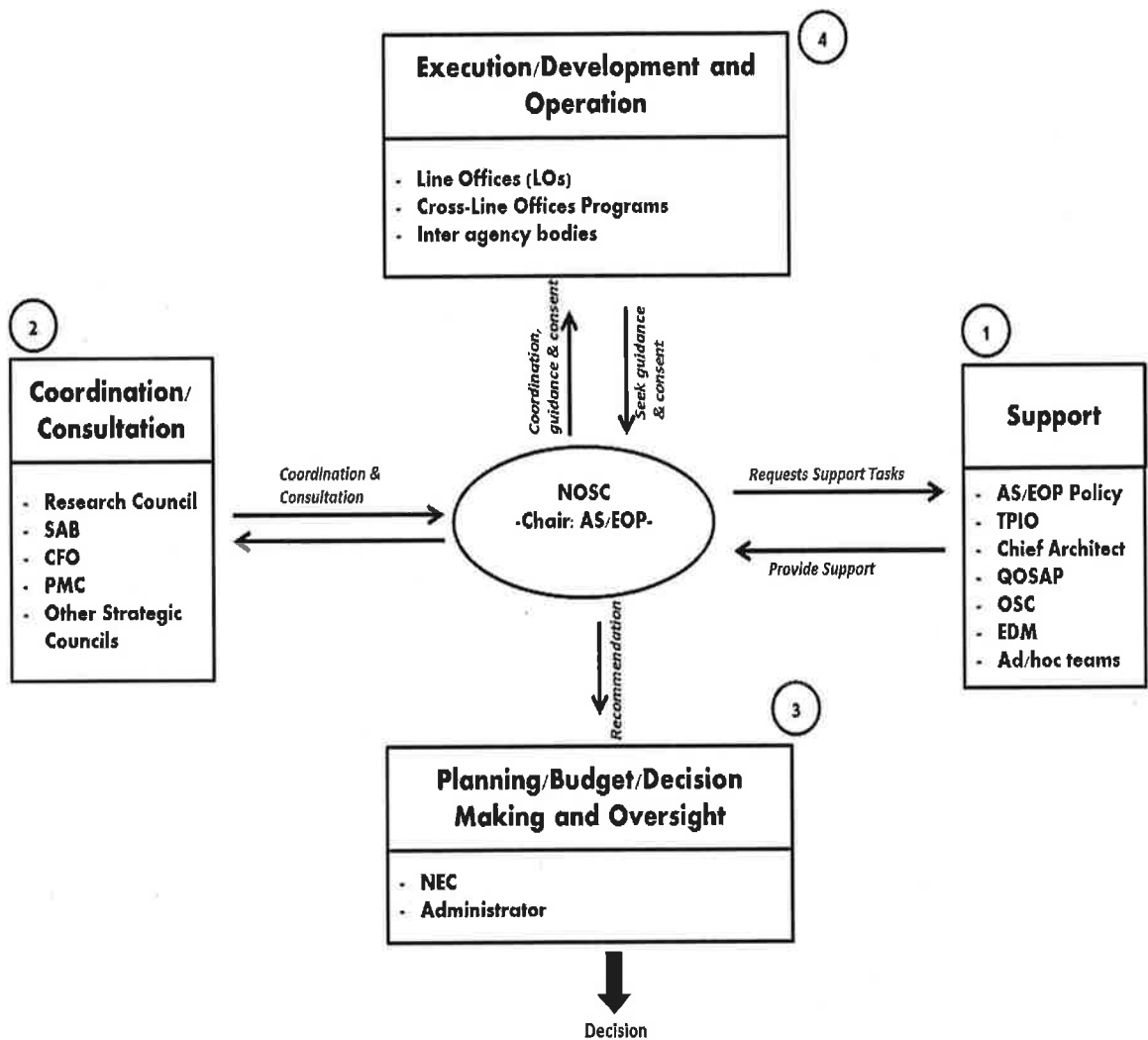
SECTION 2. SCOPE.

.01 This policy:

- a. Establishes the vision for NOAA's observing systems portfolio management process.
- b. Describes the general methodology for how NOAA manages observing systems throughout their life cycle, beginning with identifying the required scientific parameters, developing and deploying instruments and platforms, monitoring their status and health, and concluding with their retirement.
- c. Describes the roles and responsibilities for observing systems portfolio management within NOAA.

.02. The NOAA Observing Systems Portfolio Management Process:

- a. The management of NOAA's observing systems portfolio requires that rigorous standards be met at every stage of the process. All associated considerations for the research, design, development, deployment, and exploitation of observing systems must be tracked to ensure coordination (of different observing systems and between LOs), cost-effectiveness, affordability, cross-organizational awareness, and the leveraging of observing assets, and to account for mission requirements and strategic considerations. This process is described below and in the diagram: Overview of NOAA's observing systems portfolio management process (Figure 1).



b. This process is coordinated by the NOAA Observing Systems Council (NOSC), which is chaired by the Assistant Secretary for Environmental Observation and Prediction (AS/EOP). The steps numbered in figure 1 are described below.

c. Support: NOSC is supported by a variety of expert teams. The Technology, Planning, and Integration for Observation division (TPIO) plays a key role, with its Director essentially serving as the integrated observing systems architect for NOAA. Other teams, councils, and programs that support NOSC include the Observing Systems Committee (OSC), the Environmental Data Management Committee (EDMC), and the Quantitative Observing

System Assessment Program (QOSAP). NOSC may also form ad hoc teams for specific purposes as needed.

- d. **Coordination/Consultation:** NOSC recommendations are generally coordinated with the Chief Financial Officer (CFO) and other operating councils, such as the Program Management Council (PMC). NOSC's chair also engages NOAA's Science Advisory Board (SAB) for strategic updates about overall observing systems portfolio management. The operating councils and the SAB operate under their own charters and/or terms of reference.
- e. **Planning, Budgeting, Decision Making, and Oversight:** NOSC provides critical strategic recommendations to the NOAA Executive Council (NEC) and to the NOAA Administrator, for matters related to the NOAA observing systems portfolio.
- f. **Execution/Development and Operation:** NOSC provides consent and guidance to the LOs and NOAA programs, including cross-LO programs and those with a federal interagency framework, such as the Integrated Ocean Observing System. NOSC provides guidance and consent regarding the prioritization, design, development, acquisition, upgrading, lifecycle, performance monitoring, and retiring of the major observing systems portfolio components. NOAA LOs shall consult with NOSC on matters that impact the major NOAA observing systems portfolio components.

SECTION 3. DEFINITIONS.

.01 **Observing System:** One or more sensing element that directly or indirectly collects biological, physical, chemical, and/or socioeconomic observations of the Earth and space. Sensing elements may be deployed as individual sensors or in constellations and may include instrumentation or manual observations. Observing systems platforms can be mobile or fixed and may be located in atmospheric, freshwater, marine, space, or terrestrial environments.

.02 **Observing Systems Portfolio:** The collection of NOAA observing systems programs, projects, and/or operations managed as a group. The components of a portfolio are not necessarily interdependent but are managed collectively to achieve strategic objectives.

.03 **Integrated Portfolio Management:** NOAA takes an integrated approach to managing its observing systems portfolio. This approach involves the alignment of management and investment decisions with NOAA strategies, the balancing of conflicting demands between programs and projects, the allocation of resources based on NOAA priorities and capacity, and the direction of activities to achieve identified corporate benefits.

.04 **User Observation Requirements:** The documented and validated user needs for environmental parameters, with their associated attributes. These needs are required to produce specific products and services to meet mission objectives. User observation requirements are captured independently from observing technologies. Therefore, they may be addressed by a variety of current or expected observing capabilities and allow flexibility to be remapped to new technologies as they evolve.

.05 **NOAA Observing System Integrated Analysis (NOSIA)**: Analytic framework and model built to analyze capability, cost, overall impact, and value of observing system architectures.

.06 **Observing System Experiments (OSE)**: Data-denial experiments in which the actual quantitative scientific value of one or more existing observing system is determined by studying the impact of the removal (or addition) of the subject observation from the observing system. Such experiments provide critical information for decision makers in planning for modifications to an existing observing system.

.07 **Observing System Simulation Experiments (OSSE)**: Simulation-based experiments in which the modeled quantitative scientific value of one or more proposed or new observing system is estimated. OSSEs enable trade-offs in observing system design by assessing the scientific value of different observing systems configurations. They are also used to prepare for the operational utilization of a new observing system.

SECTION 4. GUIDING PRINCIPLES.

These principles will guide the entire process of managing the NOAA observing systems portfolio through definition, development, design, acquisition, and deployment.

.01 **Vision**: NOAA's vision is to achieve and sustain an observing systems portfolio that is mission-effective, integrated, adaptable, and affordable.

.02 **Superior Service and Reputation**: NOAA will design its observing systems capabilities to meet or exceed the requirements for current and future missions, and to maintain its standing as a preeminent leader in the operational global environmental observation enterprise.

.03 **Adaptability**: NOAA's observing systems portfolio should be capable of adapting, as rapidly as possible, to a variety of measurements and data sources.

.04 **Cost Effectiveness, Affordability, and Sustainability**: NOAA will develop and sustain an optimal observing systems portfolio through cost-effective means, including the leveraging of domestic and international partnerships, and a strict adherence to its allocated budget.

.05 **Integration**: NOAA manages the portfolio within and across observing system domains (atmosphere, ocean, space, land, and cryosphere), coordinates with NOAA LOs, operational programs, and account for observing systems from national and international partners. Successful integration allows for more holistic decisions about priorities and associated investments.

.06 **Global Context and Commitments**: NOAA will uphold its commitments to domestic and international partnerships and ensure access to the global observations needed to generate accurate forecasts, warnings, and other services.

.07 **In-House Expertise**: NOAA must retain the in-house expertise necessary to support well-managed and integrated observing systems.

.08 Well Governed, Understood, and Trusted: NOAA strives to manage the integrated observing systems portfolio so that NOAA employees, key decision makers, Congress, and external entities see that our management system is efficient, transparent, and unbiased.

SECTION 5. POLICY.

This section includes holistic policy statements that relate to the observing systems portfolio and specific observing systems portfolio management directives. The implementation of these policies will be fully described in separate procedural directives.

.01 NOAA LOs and programs engaged in observing systems portfolio design, technology, development, execution, and operation shall seek guidance and consent from NOSC to ensure coordination and adherence to policies in this order.

.02 NOAA shall use an integrated management approach to inform decisions about its observing systems portfolio and to prioritize and optimize the performance of the portfolio. To implement this requirement, NOAA, through the leadership of NOSC, shall coordinate and facilitate the alignment of NOAA's observing systems portfolio with strategic goals and objectives.

.03 Observing systems necessary to support Primary Mission Essential Functions (PMEFs) under the National Continuity Policy Implementation Plan shall be sustained as top agency priorities.

.04 Observing systems portfolio management processes shall optimize NOAA's ability to adapt to new technology where appropriate and effective.

.05 Observing systems portfolio management processes shall include the ability to monitor the relative health of the portfolio's individual components. This will assist NOSC and NOAA leadership with investment decisions. The overall goal is to balance the relative health of segments of the portfolio in accordance with the operational impact of those systems.

.06 Observing systems portfolio management processes should include periodic reviews and updates of key information used to support analyses and assessments, such as user observation requirements, observing systems architecture inventory, mission impacts, and cost information.

.07 The TPIO Director shall serve as the integrated observing systems architect for NOAA, to inform decisions and ensure the continuity of NOAA observing systems portfolio management.

.08 In its annual planning, budgeting, and execution process, NOAA shall evaluate proposed observing systems portfolio investments by conducting assessments of system health and alignment with NOAA priorities.

SECTION 6. GOVERNANCE AND RESPONSIBILITIES.

.01 The Under Secretary (UNSEC) of Commerce for Oceans and Atmosphere directs NOAA in achieving its mission, and in the case of the observing systems portfolio, UNSEC approves LOs' budget submissions and determines whether a major observing system project may proceed to the next phase of its development. Recommendations provided by NOSC and other strategic councils play an important role in this process.

.02 AS/EOP is responsible for the execution of this NAO in consultation with NOSC. AS/EOP sets the agenda for NOSC activities, in consultation with the vice chairs and principals. On a regular basis, AS/EOP will provide a strategic guidance memorandum to UNSEC on strategic issues and/or recommend priorities regarding the observing systems portfolio, so that NOAA leadership may make informed management and investment decisions.

.03 NEC establishes NOAA policy, priorities, resource requirements, and future direction for the agency's observing systems portfolio as a whole, as specified in the NOAA business operations manual.

.04 PMC assists NOAA in meeting the Federal requirements for major project reviews. The council is chaired by NOAA's Deputy Under Secretary for Operations and oversees selected NOAA projects to provide accurate, reliable data from integrated environmental observations. Its oversight includes regular assessments of performance and acquisition milestones.

.05 LO AAs will consult with NOSC and seek guidance and consent for matters related to observing systems. LOs also work with TPIO to produce analyses of impacts on NOAA products and services for observing systems investments proposed in annual budget submissions. They propose investments and manage their programs' observing systems to fulfill mandated missions in accordance with federal planning and budgeting guidelines. LO AAs participate or delegate authority to personnel to participate in NOSC meetings to represent their LOs in dialogues and decisions concerning NOAA's observing systems portfolio.

.06 The Office of the Chief Financial Officer (OCFO) works with NOSC to provide strategic recommendations to UNSEC on observing systems investments.

.07 NOSC is the principal advisory body to UNSEC and the focal point for the agency's observing systems activities. NOSC coordinates NOAA's observing systems portfolio and data-management activities. In all cases, NOSC will provide strategic guidance to LOs regarding the observing systems portfolio. NOSC proposes priorities and investment strategies for observation-related initiatives, identifies programs that might benefit most from integration, and coordinates NOAA's objectives for accurate, reliable data from integrated environmental observations. As a strategic advisory body to NOAA leadership, NOSC supports NOAA senior leadership with assessments and advice during key points of the annual strategic planning and budget-formulation process. NOSC provides information concerning the overall health and outlook of NOAA's observing systems portfolio as well as information relating to issues of concern at the strategic level. NOSC, consistent with its terms of reference will:

- a. Maintain cognizance over NOAA environmental observation and data-management systems, observation-related technological innovation, and technological advancement activities while coordinating NOAA participation in national and international Earth and space observation efforts.
- b. Annually, or as needed, during the planning and budget-formulation process:

- i. Provide oversight and guidance as appropriate to facilitate the development of NOAA's investment strategy. The investment strategy must support high-level strategic guidance issued by the Department of Commerce (e.g., the NOAA Annual Guidance Memorandum), NOAA and relevant LOs and Staff Offices (SOs), as well as the principles articulated in this NAO.
 - ii. Work with NOAA's CFO to provide early strategic input to the Annual Guidance Memorandum on observing systems and environmental data issues.
 - iii. Work with LO AAs to analyze the impacts of budget proposals on products, services, and mission requirements.
 - iv. Recommend to NOAA senior leadership a prioritized acquisition of appropriate environmental observation and data-management systems to meet NOAA requirements.
 - v. Monitor the performance and overall health of NOAA's observing systems and their associated risks to develop fully informed investment recommendations.
- c. Respond or provide input on responses to information requests, audits, and studies about NOAA's observing systems portfolio, particularly for those which impact all of NOAA or multiple LOs.
 - d. Assess environmental observation and data-management systems architecture alternatives based on analyses and recommendations provided by LOs, TPIO, QOSAP, and other committees, teams, and/or work groups, in order to formulate recommendations.
 - e. Identify emerging technologies for Earth and space observation, and develop recommendations to help NOAA infuse new technology into the observing systems portfolio. Collaborate with the Research and Ocean and Coastal Councils in these efforts, as appropriate.
 - f. Develop procedural directives, guides, or handbooks associated with this NAO.
 - g. Establish subordinate committees, standing and ad hoc working groups as needed to accomplish tasks. NOSC structure is established in a terms of reference document that is updated regularly.
 - h. Provide guidance and review of QOSAP activities, including the identification of priorities to conduct analysis experiments, particularly in concert with TPIO assessments.

- i. Consult with SAB on long and short-range strategies for research, education, and the application of science to resource management, environmental assessment, and prediction.

.08 OSC is a standing committee of NOSC. OSC provides ongoing holistic assessment and analysis of NOAA's observing systems portfolio, and specific recommendations to NOSC for changes to the configuration of NOAA's observing systems and overall portfolio to maximize the benefit to NOAA and its constituents.

.09 EDMC is a standing committee of NOSC. EDMC coordinates the development of NOAA's environmental data-management strategy and policy to provide guidance and promote consistent implementation across NOAA on behalf of NOSC and the Chief Information Officer (CIO) Council.

.10 TPIO is a technical division that provides corporate analytical capabilities to directly support NOSC and AS/EOP in the implementation of observing systems portfolio management. TPIO will also:

- a. Work closely with LOs to maintain and update the authoritative database of observation user requirements and observing systems capabilities, and refine mission impact and portfolio analysis capabilities.
- b. Annually, or as needed during the planning and budgeting process, provide LO AAs with impact analyses on NOAA products and services for any potential LO observing systems proposals.
- c. Annually, or as needed during the planning and budgeting process, support NOSC leadership in assessing and prioritizing all proposed environmental observing systems investments.
- d. Conduct analyses as needed, to provide NOAA leadership and NOSC with insights on the collective health of NOAA's observing systems architecture and its impacts on products and services.
- e. Adapt, develop, and improve techniques, processes, and analytical tools (such as NOSIA) to enable integrated analysis of the value, impacts, and choices of NOAA observing systems.
- f. Support interagency collaborations on Earth and space observing systems user requirements and product and service impact assessments.
- g. Conduct outreach and communication to ensure NOAA personnel, stakeholders, and the public are aware of and understand the available information and how it can be used to inform decisions.

- h. Facilitate NOAA's understanding of emerging technologies and how they may best serve NOAA's observation and environmental data management needs.
- i. Coordinate with QOSAP to maintain an integrated assessment capability that serves NOAA's integrated portfolio management system.

.11 QOSAP comprises representatives from LOs and provides support to help NOSC formulate recommendations related to the observing systems portfolio by coordinating OSE and OSSE activities across NOAA. QOSAP ensures that all OSE and OSSE used for decision making are credible and realistic. QOSAP will:

- a. Coordinate with TPIO to maintain an integrated assessment capability that serves NOAA's integrated portfolio-management system.
- b. Maintain an inventory of all OSEs and OSSEs conducted across NOAA LOs in conjunction with LO representatives.
- c. Provide OSE and OSSE expert advice to potential NOAA users.
- d. Coordinate with all LO representatives and their subject matter experts, in order to develop, conduct, and expand OSE and OSSE as suggested by NOSC.

SECTION 7. AUTHORITIES AND REFERENCES.

.01 The following statutes and authorities apply to this NAO:

- a. 15 USC § 313;
- b. 49 USC § 44720;
- c. The Supplemental Appropriations Act of 1962, Pub. L. No. 87-332;
- d. 15 USC § 1532;
- e. 33 USC § 706;
- f. 33 USC § 883a-c.

.02 In addition, the following references apply to this NAO:


- a. Office of Management and Budget (OMB) Circular A-11, Preparation, Submission, and Execution of the Budget;
- b. NOAA Acquisition Handbook, as authorized by NAO 208-1;

- c. NAO 216-105, Transition of Research to Application;
- d. NOAA Business Operations Manual (2016);
- e. NAO 212-15, Management of Environmental Data and Information;
- f. National Plan for Civil Earth Observations (2014).

SECTION 8. EFFECT ON OTHER ISSUANCES.

.01 UNSEC signs because there is no delegation of authority for this NAO.

An electronic copy of this Order will be posted in place of the superseded Order on the NOAA Office of the Chief Administrative Officer website under the NOAA Administrative Issuances Section. <http://www.corporateservices.noaa.gov/~ocao/index.html>



Under Secretary of Commerce
for Oceans and Atmosphere

Office of Primary Interest:
Office of the Assistant Secretary for Environment Prediction and Prediction (AS/EOP)