



# U.S. Department of Commerce Learning Agenda 2022 – 2026



**Innovation, Equity, and Resilience**  
Strengthening American Competitiveness in the 21st Century

*Companion to the 2022 – 2026 Strategic Plan*

# Overview

## What is a Learning Agenda?

The Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act) statutorily mandates Federal evidence-building activities. The intention is to bring the best possible information and analysis to decision making. The Evidence Act's provisions modify what is required in agency strategic plans. A new strategic plan is developed in the first year of the four-year presidential cycle and is published in February of the second year. Beginning in fiscal year (FY) 2022, a learning agenda must now be published with the strategic plan. This new companion document is a systematic plan for identifying and addressing policy questions relevant to the programs, policies, and regulations of the agency. It identifies short and long-term strategic questions (i.e., questions about how, how well and how should programs, policies, and regulations function) and operational questions (i.e., questions that inform or assess agency's operations like human resources, grant-making, and internal processes).

Learning Agendas address Administration priorities and information needs, as well as long-standing challenges and future priorities that may emerge. The questions being asked drive the choice of research method(s), and all types of evidence—program evaluation, performance measurement, policy analysis, and foundational factfinding—are employed to answer questions on the Learning Agenda.

## Document Structure

The organization of this Learning Agenda parallels the organization of the Department of Commerce FY 2022–2026 Strategic Plan. Broad goal areas are followed by more specific strategic objectives. For the respective strategic objectives, this Learning Agenda provides questions that will be researched to support achieving the strategic objective. For each of the questions some background is provided on why the question

is important, as well as a brief description of the approach to developing the evidence or evaluation prescribed, and some additional details on the lead unit for the work and challenges likely to be encountered in answering the question(s).

In many cases, the details provided on a project are notional. This is a five-year Agenda and the questions and methodology for the research will be refined when a project is initiated by the expert(s) engaged to do the work. Further, this plan will be revisited annually to make updates and revisions. Events, White House direction, and findings from the ongoing research may require evidence/evaluation on different topics and priorities may change.

## How the Learning Agenda Was Developed

This Learning Agenda was developed as part of the process of developing the Department Strategic Plan. A working group with representatives from every bureau and the Secretary's Office of Policy and Strategic Planning (OPSP) was led by the Deputy Performance Improvement Officer and the Evaluation Officer. This team developed an initial outline of draft Department goals and strategic objectives. That outline was revised by the Office of the Deputy Secretary with OPSP. Teams were created for each of the resulting strategic objectives, with an executive lead and members from the bureaus that will contribute to achieving the objective. The teams were asked to collaborate with the bureau Evaluation Leads to develop Learning Agenda questions that, if answered, would significantly help the Department achieve the strategic objective assigned to the team.

The questions were reviewed by OPSP. Bureau Evaluations Leads were asked to coordinate completion of templates for each of the questions OPSP approved. The templates required the information listed in Office of Management and Budget (OMB) Memorandum 19-23 Appendix B which provides instructions for department Learning Agendas. The completed

templates were compiled into a draft Learning Agenda that was sent to OMB for review. This document is the result of that process and final reviews and revisions from OPSP and the Office of the Deputy Secretary and the Office of the Secretary.

## Stakeholder Engagement

Stakeholder involvement improves the products and services provided to the public and improved this Learning Agenda (see OMB 21-27). Internal stakeholders were involved in the development of Learning Agenda questions through the tiered system of working groups and teams used to develop the strategic plan. Staff who participated in working groups and teams consulted with subject matter experts in their bureaus on strategies and Learning Agenda questions.

External stakeholders provided extensive input on priorities and preferences to the Secretary, Deputy Secretary, and bureau leadership in meetings and site visits across the Nation. The Economic Development Administration, the Minority Business Development Agency, and the Census Bureau held virtual and community based “listening sessions” to understand the needs and issues relevant to different communities and demographics.

Emphasis has been placed on providing opportunity for input to historically underserved communities and populations. This is consistent with Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. It is also central to the mission of the Department of Commerce to create economic opportunity for all Americans. To support diversity, equity, and inclusion (DEI) in Department programming, the Department Evaluation Officer and bureau Evaluations Leads participated in a listening session on questions in the Learning Agenda that pertain to DEI. Senior staff of major organizations representing minority communities, women, the disabled, and LGBT+ groups participated. They offered exceptional insights on topics that should be researched to improve service delivery.

The listening session participants were informed of a Federal Register Notice that was published on December 3, 2021, inviting public comment on how the Department should engage with communities and experts as the Learning Agenda is executed. This broad outreach was continued in mid-December when Commerce hosted a public event called The Opportunity Project Summit: Open Innovation for All. The event was virtual, free, and open to the public. Program stakeholders were encouraged to participate. The summit focused on the *Expand Opportunity and Discovery Through Data Goal* area of the strategic plan and Learning Agenda, and created dialogue with companies and universities, including minority-serving institutions.

## Going Forward

The Administration and Department leadership emphasize dialogue with stakeholders as essential to improving programs and service delivery. Therefore, this Learning Agenda includes several projects that use qualitative research to gather stakeholder input through surveys, interviews, workshops, and focus groups. This work will create a foundation for research on the impact of efforts to be responsive to the community needs and service gaps that are identified.

Upon publication of this Learning Agenda in 2022, ideas, suggestions, and possible collaborations will be offered by academics, activists, businesses, and nonprofits. It is the Department’s intention to use this dialogue to improve the Learning Agenda and operations. Publishing this first Department of Commerce Learning Agenda is an important step toward government that is more evidence based and community centered.

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# Strategic Goal 1

## Drive U.S. Innovation and Global Competitiveness





# Strategic Objective 1.1

## Revitalize U.S. manufacturing and strengthen domestic supply chains



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

To what extent do Commerce’s existing partnerships with other agencies, industry, communities, nonprofits, and academia affect manufacturing, including the environmental sustainability of manufacturing? What partnership factors are associated with strengthening manufacturing?

#### Lead Bureau/Unit

National Institute of Standards and Technology (NIST)

#### Background

The manufacturing sector is the sixth-largest employer in the United States, representing 11 percent of gross domestic product (GDP) and contributing \$2.3 trillion to the economy. However, the COVID-19 crisis has underscored the risk of fragile supply chains and diminished domestic manufacturing. To respond to this challenge, Commerce will employ several strategies to strengthen domestic manufacturing and understand the effectiveness of current approaches. NIST is the lead Department bureau for providing technical assistance to domestic manufacturers and therefore, will lead the research.

#### Activities to Address Question(s)

Foundational factfinding will provide information on the nature of existing partnerships (i.e., what organizations are partners? how do the partnerships work? etc.) and how these partnerships relate to domestic manufacturing sustainability and expansion. Literature reviews, focus groups with partners in the manufacturing sector, and analysis of existing data on trends in manufacturing will add insight into the effectiveness of partnerships and the

factors that enhance effectiveness. Partnerships under review will include those within Manufacturing USA, the Hollings Manufacturing Extension Partnership program, technology transfer programs (such as NIST on a Chip), workforce development programs, and cybersecurity education.

#### Timing of Activities

The work will begin in FY 2022 with focus groups and run through FY 2026.

#### Potential Data, Tools, Methods, and Analytic Approaches

The approaches to answering this question will include both qualitative and quantitative methods. Qualitative methods include focus groups and interviews. The quantitative work will be carried out using in-house staff and a third-party contractor who will study industry trends and the influence of affiliations on the trends.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Given the confounding variables, developing a causal relationship between partnerships and manufacturing sustainability and expansion will be challenging.

#### How Results Will Be Used

Results will identify which partnerships may have positive associations with manufacturing and the factors that led to positive outcomes. This information will be used to identify future partnerships and which manufacturing sectors may be the most promising for partnerships.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What Minority Business Development Agency (MBDA) interventions most effectively increase minority business enterprise (MBE) participation, innovation, and competitiveness in manufacturing? What interventions increase MBEs' ability to participate, innovate, and compete in manufacturing?

### Lead Bureau/Unit

MBDA, Office of Policy Analysis and Development (OPAD)

### Background

Strengthening domestic manufacturing is central to the Administration's domestic policy and is a Department strategic objective; as is ensuring that the benefits of Federal programs reach historically underserved communities (Executive Order 13985). A baseline is needed to establish their current level of activity in manufacturing and the characteristics of the firms, and to assess progress in advancing manufacturing among underserved populations. As the sole Federal agency dedicated to supporting minority businesses, MBDA will lead this research.

### Activities to Address Question(s)

MBDA is collaborating with the Census Bureau (Census) on the research design. An Intergovernmental Personnel agreement will be used to engage an academic expert in the work. Census data and administrative data will quantify the level and trends in minority and other underserved populations in manufacturing. The data will also identify differences in the characteristics of firms in minority/non-minority groupings, support a dashboard and visualizations, as well as identify areas for further research.

### Timing of Activities

This project is in the FY 2023 Evaluation Plan.

### Potential Data, Tools, Methods, and Analytic Approaches

The study will establish statistical benchmarks among firms of similar characteristics. The assessment will compare data on industry and firm-specific characteristics (e.g., the value of capital assets, number of employees, firm age, financial condition, demographics, locations, size, export destinations, and industry presence). Data from MBDA client records, the Small Business Administration, the International Trade Administration, NIST, and the Federal Reserve will provide comparative analysis using a wider universe of firms. MBDA will study the data for minority manufacturing characteristics, types of assistance provided, international market challenges, regional factors, and the level of specialization in industry sectors.

### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge is the availability of information on race and ethnicity, which can be overcome by using imputation algorithms. Sample-selection bias may require two-step estimators or similar techniques.

### How Results Will Be Used

This research will help identify the operational needs of minority manufacturers, to guide MBDA programs and possibly overall Federal actions taken. The analysis will also inform additional research on minority manufacturers' growth needs, risk factors, innovation, technology, workforce needs, and opportunities for targeted government assistance leading to manufacturing success. Ultimately, the research will help provide more equitable access to manufacturing opportunities.

# Strategic Objective 1.2

## Accelerate the development, commercialization, and deployment of critical and emerging technologies



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What types of partnerships or enhancements to service delivery would strengthen the impact of measurement science research and standards development on U.S. industry in the fields of artificial intelligence (AI), quantum science, advanced manufacturing, engineering biology, and advanced communications?

#### Lead Bureau/Unit

National Institute of Standards and Technology (NIST)

#### Background

Science and technology are rapidly evolving, and new capabilities are being integrated across the economy, including manufacturing, transportation systems, critical infrastructure, and health care. While these innovations contribute to the U.S. economy and quality of life, they have many associated interoperability, security, usability, performance, and resiliency challenges. Commerce will address these challenges through measurement science and technology research, the creation of technical standards, establishment of testbeds, and joint partnerships. NIST will gather evidence on how to increase the effectiveness of this work in dialogue with business owners and leaders.

#### Activities to Address Question(s)

The question will be researched using workshops, focus groups, and independent assessments of existing partnerships and programs such as the Quantum Economic

Development Consortium, the “Digital NIST” pilot, and the development of the Department Standards Strategy. The workshops are structured facilitated meetings of stakeholders designed to reach and document consensus on key aspects of the research question.

#### Timing of Activities

Work will continue in FY 2022 and end in FY 2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

The research will be qualitative using focus groups and interviews.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

The advantages of approaches may differ across products, sectors, and firm size. This challenge will be addressed using stakeholder engagement and by segmenting findings.

#### How Results Will Be Used

The work will be used to inform the modernization of NIST measurement service programs and initiate new partnerships in critical and emerging technologies.

# Strategic Objective 1.3

## Increase international cooperation and commerce



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

How effective are SelectUSA services in bringing foreign direct investment (FDI) into communities and in supporting different industries?

#### Lead Bureau/Unit

Global Markets (GM) business unit of International Trade Administration (ITA)

#### Background

SelectUSA identifies and assists U.S. communities with the potential for attracting job supporting FDI to the United States. Specifically, ITA's SelectUSA program provides data and research products, organizes investment promotion events, and conducts one-on-one client counseling in promising markets. These efforts are designed to demonstrate U.S. competitiveness and value for high-impact international business investment. Information will be compiled and analyzed on the effectiveness of past approaches and alternatives in attracting FDI deals to identify ways to increase the return on investment of these efforts.

#### Activities to Address Question(s)

Data on GM interventions and client verified outcomes will be mapped with community demographics to identify patterns.

#### Timing of Activities

Research will be conducted in FY 2022–2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

Geocoded data will be segmented across industry and socioeconomic groups. Spatial analysis will determine key trends.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Data quality on the types and levels of interventions may be challenging. A review of missing data elements and outliers will address the problem. The lack of a standard definition for a disadvantaged community and lagged data publication at the county level are also challenges. ITA developed a definition of an underserved community for FDI attraction as "a U.S. county or tribal area where the unemployment rate is greater than the upper bound of one standard deviation from the median of all U.S. counties."

#### How Results Will Be Used

Information on the impact of past SelectUSA work will be used to design future interventions.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

- Do U.S. exporters that have been assisted by ITA's GM program outperform U.S. exporters that have not been assisted by GM?
- How much and what type of export assistance have been extended to underserved communities?<sup>1</sup> Does the data indicate any patterns in what approaches are most successful in assisting these businesses to export?

### Lead Bureau/Unit

GM unit in ITA

### Background

For robust growth in gross domestic product (GDP), the United States must increase efforts to promote exports. Exporting provides clear economic benefits to U.S. businesses, workers, and communities. However, compared to other industrialized nations, U.S. firms under export. Therefore, the Department is expanding efforts to help U.S. firms export, including digital services. ITA will collaborate with the Minority Business Development Agency to expand its reach to more businesses, especially those that belong to underserved communities. To support the effectiveness of these efforts, ITA will be evaluating the impact of prior export assistance work.

### Activities to Address Question(s)

The work will be conducted in collaboration with the Census Bureau (Census), Center for Economic Studies. The export levels, revenues, and job creation of firms assisted by GM will be compared to firms with similar demographics that ITA has not assisted. ITA files on firms assisted and how, will be linked to Census data on firm exports, revenues

and employment levels, and demographic information. The analysis will be done at the Census Bureau and findings provided to ITA. This evaluation will be similar to an earlier analysis done by the Census Bureau for ITA, Statistics on ITA's GM program.

### Timing of Activities

Activities scheduled for FY 2022–2023.

### Potential Data, Tools, Methods, and Analytic Approaches

The research will use a quasi-experimental design with statistical controls comparing ITA clients to non-users. Survey research will be used to assess the quality of technical assistance. Data sources will include two Census datasets, the Business Register, and the Longitudinal Foreign Trade Transactions Database.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The Internal Revenue Service (IRS) must approve the use of Census data that includes IRS data. A similar study was done in 2015 and, the IRS approved the project.

### How Results Will Be Used

The findings will provide insight into variables that affect export success, e.g., small versus large companies, part of an underserved community, industry. The analysis will also provide insight into which types of assistance have the most impact for businesses in different demographic groups. The information will be used to identify best practices and increase the economic impact of ITA services.

<sup>1</sup> As defined by President Biden's Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government. Per Executive Order 13985, "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.; including minority-owned businesses; "persons who live in rural areas" or rural U.S. businesses; "persons otherwise adversely affected by persistent poverty or inequality" (such as women-owned businesses); and members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; and persons with disabilities.

# Strategic Objective 1.4

## Protect national security interests and enforce trade rules



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

Are the export controls that have been implemented on emerging technologies effective?

#### Lead Bureau/Unit

Bureau of Industry and Security (BIS)

#### Background

Through consultation with industry, academia, research institutions, technical advisory committees (TAC), other U.S. Government agencies, and allied governments, BIS is increasing its efforts to identify emerging technologies essential to national security, and implement and enforce appropriate export controls for these technologies. As part of this effort, BIS will gather evidence on the impact of new controls on the development of technologies in the United States and consider additional expertise that may be needed to identify and regulate emerging technologies effectively.

#### Activities to Address Question(s)

Processes for communication to industry and research and development (R&D) institutions and notices of inquiry will be reviewed. BIS will work with government agencies that conduct or fund research relevant to emerging technologies as well as TACs, identify proposed new controls for public comment, and develop new controls through the multilateral export control regimes.

#### Timing of Activities

BIS works continuously with its TACs, especially the Emerging Technology TAC, to gain insight into the implemented controls' effectiveness on emerging technologies and to develop improved strategies.

#### Potential Data, Tools, Methods, and Analytic Approaches

Qualitative approaches include consultation with advisory committees and organizations and agencies that lead technology development. Notices for public comment will be published. Processes will be reviewed and re-engineered based on expert advice on effectiveness.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

More staff capacity is needed to develop and execute assessments effectively. BIS will collaborate with agencies with technical expertise that are not traditionally involved with export controls, and work with the traditional export control agencies that support the National Security Council-led emerging technology "sprint groups" to vet inputs provided by the public and the TACs.

#### How Results Will Be Used

Results will be used to improve methodologies to identify and control emerging technologies, thereby enhancing support of U.S. industry developing emerging technologies by minimizing bureaucracy and protecting the national security.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

Is the export control system adaptable to the changing security environment, including the new threats?

### Lead Bureau/Unit

BIS

### Background

U.S. technologies should not be misappropriated in ways that harm U.S. national security or foreign policy. Through the administration and enforcement of export controls and participation in the Committee on Foreign Investment in the United States, the Department guards against threats, including the unauthorized use of U.S. technology for purposes contrary to U.S. interests. BIS utilizes multiple methods to enhance the administration of export controls. This includes implementing changes from the multilateral export control regimes in an expeditious manner and gathering evidence to gain additional insight into the Bureau's adaptability to new threats as they emerge.

### Activities to Address Question(s)

BIS will track performance metrics, including its average processing time for license applications and commodity classification requests. This information will be used to develop evidence on adaptability. BIS will also request input from its TACs. Staff will research resources that identify emerging technologies and activities of concern.

### Timing of Activities

Data will be analyzed annually.

### Potential Data, Tools, Methods, and Analytic Approaches

The approach will include monitoring performance metrics; review of data and literature on new products; and review of open source and classified information on potential threats, industry developments, and trends. Datasets on exports will be reviewed for patterns that suggest technologies of concern are being exported to nations that pose a threat to the United States.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The statistics readily available to measure adaptability are incomplete in the sense that they apply to the Department's defensive actions and not to the capabilities of the entities involved in activities contrary to U.S. national security. BIS will work with the intelligence community to maintain high levels of awareness and knowledge of U.S. adversaries' plans and activities.

### How Results Will Be Used

The results will be used to measure and increase the adaptability of Commerce's export control system.

# Strategic Objective 1.5

## Promote accessible, strong, and effective intellectual property rights to advance innovation, creativity, and entrepreneurship



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What regional economic conditions influence women's choices to seek and obtain patent protection? What approaches can improve the accuracy of attributing gender or other demographic identifiers needed to assess if underserved populations are participating in the intellectual property (IP) (i.e., Patent) system?

#### Lead Bureau/Unit

Office of the Chief Economist, U.S. Patent and Trademark Office (USPTO)

#### Background

All Americans—regardless of race, gender, geography, or economic conditions—should have the opportunity to innovate and reap the rewards from innovation through entrepreneurship and commercialization. Patents protect inventors' right to financial rewards from their ideas. However, USPTO reports that in 2019 women made up only 17.3 percent of new entrants into the patent system, but women make up over half the population. More research and better data are needed to understand the factors that influence women and minorities to invent and seek patent protection.

#### Activities to Address Question(s)

A workshop of methodology experts will be held to exhibit and critique approaches for the attribution of demographic characteristics using administrative data

and statistical analysis. Alternative attribution approaches will be compared. Model development will be used to investigate location-specific factors influencing women's participation in the patent system.

#### Timing of Activities

Data and model development are in progress. Workshop will be in FY 2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

Econometric and statistical tools and data mapped geographically will be employed in the analysis.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Factors influencing a decision to seek a patent may be influenced by a complex array of factors, including awareness of the system, socioeconomic factors, employment agreements, and demographics of science, technology, engineering, and mathematics (STEM) graduates. Several models will be run to identify factors that can be influenced by public policy and outreach.

#### How Results Will Be Used

Results will inform outreach and educational programming on the patent system.





## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

How can effectiveness and efficiency of the patent examination process be improved?

### Lead Bureau/Unit

Patents Organization of USPTO

### Background

Strong IP systems fuel investments in research and innovation, spur new businesses, protect consumers from counterfeit goods, and promote economic competitiveness. To unleash the full potential of the U.S. economy and build back better, the Department must make continued strides to ensure equitable and affordable access to the benefits of IP protection. The Department must also resolve and deliver IP rights timely, while ensuring granted protections are clear and valid and curb abusive behaviors within the IP system. Toward those ends, USPTO will review its process for examining patent applications and identify actions (including use of new technology) to streamline the process and make it easier for applicants to access and use.

### Activities to Address Question(s)

An examiner ideation workshop will be used to identify potential examination inefficiencies; empirical approaches using cycle time data will be used to verify or refute examiner hypotheses about patterns and causes of delay; a lab will be set up to test and refine proposed process improvements.

### Timing of Activities

The ideation workshops took place in FY 2021; testing lab set up will be in FY 2022; and implementation of priority findings will be over four years.

### Potential Data, Tools, Methods, and Analytic Approaches

Approaches will include tools and methods for Lean Six-Sigma process improvement projects, including focus groups, process mapping, data collection on cycle time and error rate, and lab testing of alternative improvements.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Revising labor agreements in line with process changes will be a challenge. The solution will be building a compelling business case for new processes and standards.

### How Results Will Be Used

Results will inform new processes that improve the timeliness and quality of patent examination practices.

# Strategic Objective 1.6

## Improve the Nation’s cybersecurity and protect Federal Government networks



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What incentives or policies will facilitate industry’s adoption of cybersecurity standards, guidelines, and best practices?

#### Lead Bureau/Unit

Information Technology Lab, National Institute of Standards and Technology (NIST)

#### Background

The Department will work with stakeholders worldwide to develop strong, trusted cybersecurity standards and guidelines. Open processes will bring together industry, government, and academia to develop workable approaches to practical security. NIST will develop resources in various formats to enhance their usability and accessibility, better suit the needs of small and medium businesses, and meet the varied needs of organizations in their unique contexts. However, adopting cybersecurity practices has costs in time and money; businesses, particularly in some sectors, operate on narrow profits margins. Evidence is needed on what government actions will support businesses in adopting cybersecurity measures.

#### Activities to Address Question(s)

NIST will hold structured facilitated workshops with representatives of different business sectors to explore how government policies or incentives can increase the uptake of cybersecurity practices. As options are developed, their viability may be further explored using survey research.

#### Timing of Activities

Depending on funding levels, initiation of research will begin in FY 2022 or FY 2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

The research will use qualitative methods, including interviews, focus groups, and survey research.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

The urgency of needed action presents a challenge. The short-term solution is the deployment of information on the implications of vulnerabilities.

#### How Results Will Be Used

Results can inform changes to NIST cybersecurity programs and potential legislation to increase industry adoption and utilization of cybersecurity.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What mechanisms are needed to improve collaboration and information sharing between the Federal Government and private sector on cybersecurity issues?

### Lead Bureau/Unit

Information Technology Lab, NIST

### Background

The Department will work with private companies of all sectors and sizes, as well as government and academia, to develop usable and effective domestic and global cybersecurity risk management practices. A new NIST effort, known as the National Initiative for Improving Cybersecurity in Supply Chains (NIICS), will emphasize tools, technologies, and guidance focused on the developers and providers of technology. The initiative will build on lessons learned from past cybersecurity risk management efforts and focus on supply chains involving smaller organizations that face unique challenges. To support the success of this effort, NIST will gather evidence on ways to better collaborate with the private sector on solving cybersecurity problems and communicate new developments and best practices.

### Activities to Address Question(s)

A review of best practices from the National Cybersecurity Center of Excellence (NCCoE) will inform further work. NIST will hold structured facilitated workshops with representatives of different business sectors to explore the challenges in cybersecurity for their business niche.

Workshops will discuss alternative approaches and innovations that may address the challenges. Discussions will also include approaches to keeping businesses informed on new developments in hacking and recommended counteractions. Promising approaches will be tested and assessed using survey research.

### Timing of Activities

NIST will convene workshops throughout FY 2022 with key stakeholders, including other agencies and partners.

### Potential Data, Tools, Methods, and Analytic Approaches

Initially, the research will use qualitative methods, including interviews and focus groups. Discussions and a literature review will inform data gathering on the take-up of best practices and the barriers to using them.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Often private sector entities are reluctant to share information with the Federal Government about security issues for fear of highlighting weakness or opening themselves up to liability. As a result, NIST will gather anonymized data to encourage private sector participation.

### How Results Will Be Used

Results will inform steps the U.S. Government can take to enhance information sharing about cyber threats and risks and countermeasures.

# Strategic Objective 1.7

## Advance U.S. leadership in the global commercial space industry



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What Department of Commerce actions and initiatives would most effectively promote U.S. competitiveness in the commercial space industry?

#### Lead Bureau/Unit

National Oceanic and Atmospheric Administration (NOAA), Office of Space Commerce

#### Background

The U.S. commercial space industry pioneers innovative technologies that transform people's daily lives, gather critical climate and weather data, and help secure the Nation. Increasingly, space-based assets are critical components of the interconnected world and key to economic growth, national security, and competitiveness. The Department has the tools and expertise to ensure continued U.S. leadership in space, and the Office of Space Commerce is central to this effort.

#### Activities to Address Question(s)

The Department will leverage a cross-bureau team of space experts to collect data on the status and trends in the industry and develop performance indicators for measuring the competitiveness of the U.S. commercial space industry. This foundational information will help generate ideas for interventions and guide the implementation of new initiatives. The metrics will be used to track performance over time and assess alternative strategies.

#### Timing of Activities

Early FY 2022: Establish metrics and develop ideas.

FY 2022–2024: Implement new initiatives.

Annually: Track performance.

#### Potential Data, Tools, Methods, and Analytic Approaches

This effort will leverage the Bureau of Economic Analysis's annual publication of data on the Space Economy Satellite Account, results from the Bureau of Industry and Security's ongoing space industrial base assessment, as well as the International Trade Administration's advocacy and export promotion data and initiatives. It will also align with NOAA's advocacy, regulatory, and space situational awareness (SSA) missions.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Challenges will include projecting trends in an emerging industry.

#### How Results Will Be Used

Results will be used to assess the Department's effectiveness in promoting the U.S. commercial space industry's competitiveness, develop and support additional efforts in this area, and potentially discontinue ineffective lines of effort.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What Department of Commerce actions and initiatives are needed to promote long-term space safety and sustainability?

### Lead Bureau/Unit

NOAA, Office of Space Commerce

### Background

Space safety and sustainability are foundational to continued commercial space activity and exploration. Promoting safe and sustainable space operations also has the potential to increase investment in the U.S. space industry by mitigating risk to space-based assets and human spaceflight. SSA is a key component of space safety and sustainability, particularly given the increase in space-based assets and orbital debris. Cybersecurity is also central to the protection of space-based assets and activities. Cybersecurity measures and policies are ubiquitous in the design, development, delivery, and operation of components supporting U.S. space activities and strong standards are required.

### Activities to Address Question(s)

The Department will provide basic SSA services, contribute to relevant international standards, and develop space cybersecurity frameworks. The Department is developing an SSA data sharing platform called the Open-Architecture Data Repository (OADR) for civil and commercial use. The Department will continue to support the development of standards and best practices to promote long-standing safe and responsible behavior through the participation

in international standards setting bodies. The Department will continue stakeholder engagement and development of cybersecurity frameworks for space assets. Established criteria will assess the performance of these approaches and monitored metrics will identify unmet needs and performance gaps.

### Timing of Activities

Activities are ongoing and will continue through FY 2024. Tracking performance is an ongoing activity.

### Potential Data, Tools, Methods, and Analytic Approaches

Regarding SSA, the establishment of key milestones and performance against milestones. Collection of stakeholder feedback through formal channels (e.g., requests for information), workshops, and relevant conferences and events. Participation in international standards setting bodies and conversations.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Budget uncertainties are challenging. Plans will depend on budget outcomes and be adjusted accordingly.

### How Results Will Be Used

Results will be used to support programmatic, funding, and organizational decisions on the next steps and capabilities for the Department to fulfill its role as the lead civil agency for providing SSA services to the commercial space industry.

# Strategic Goal 2

## Foster Inclusive Capitalism and Equitable Economic Growth



# Strategic Objective 2.1

## Drive equitable, resilient, place-based economic development and job growth



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What types of Economic Development Administration (EDA) funded activities, including those funded by the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) and the American Rescue Plan (ARP Act) are associated with the strongest long-term economic advances, particularly for underserved communities and populations?

#### Lead Bureau/Unit

EDA

#### Background

Limited job opportunities, low labor force participation, and poverty remain in communities in the United States, even when national growth is strong. Additionally, many of these communities were disproportionately impacted by COVID-19. Supporting economic development in these areas will help jumpstart economic recovery and build more economically resilient communities. To achieve this, Commerce will employ several strategies, and research on the effectiveness of alternatives will inform future decisions on approaches. Part of EDA's mission is to prepare U.S. regions for growth and success in the worldwide economy, and the Bureau is best positioned to lead this research.

#### Activities to Address Question(s)

Evaluations will be conducted to measure the effectiveness of EDA programs on long-term economic development and reaching underserved communities. EDA is partnering with the Census Bureau (Census) to better understand how to measure and collect information on underserved communities and changes in local economies. EDA will collect data prior to program implementation to establish a baseline of economic indicators in regions and communities. Throughout program implementation, data will be tracked

to measure changes. Stakeholders and program participants will also be engaged throughout the process. One approach will be a grantee survey. Data before and after program implementation will be compared to measure community progress. The inclusion of information on other government interventions and investments in the analysis will provide insight into the particular impact of EDA programming on improving economic outcomes.

#### Timing of Activities

Data collection began in FY 2021 and will continue into FY 2026. EDA expects to identify research partners in FY 2022, with corresponding research occurring from FY 2022 and running through FY 2026.

#### Potential Data, Tools, Methods, and Analytic Approaches

The approaches to answer this question will include a mix of quantitative and qualitative analyses. Case studies will inform the analysis. Potential data will include EDA award data, modeled demographic data from Census, and grantee questionnaire responses. Additionally, EDA will conduct a literature review on related research and will collaborate with external researchers.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

During this process, several challenges are expected, including work on modeled data, grantee non-response to questionnaires, and modernization of EDA's data systems during the Learning Agenda timeframe. EDA will engage with the Census Bureau on modeled data early on and incorporate questionnaires into more easily accessible platforms (i.e., Qualtrics) to overcome these challenges. Continued engagement will also occur with Department stakeholders

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## Learning Agenda Question(s) (continued)

on the development of new grants management systems to ensure they meet EDA's data needs. Isolating the effect of EDA programming from that of other government programs is an expected methodological challenge that will be addressed primarily through collaboration with the academic community.

### How Results Will Be Used

Results will help inform approaches that are emphasized and scaled. Findings will be integrated into future program design for continued improvement.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

Given rapid changes in oceans due in part to climate change, how can the National Oceanic and Atmospheric Administration (NOAA) enhance fisheries management approaches to increase the sustainability and economic competitiveness of U.S. seafood?

### Lead Bureau/Unit

NOAA, National Marine Fisheries Service (NMFS)

### Background

The seafood industry and fisheries are key drivers of economic growth and employment. However, rapid changes in oceans are significantly impacting marine ecosystems. Through multiple initiatives, NOAA's NMFS promotes productive and sustainable fisheries and builds healthy ecosystems. The rapid change in the environment requires more and better data/evidence for decision making on trends and conditions.

### Activities to Address Question(s)

NOAA will increase survey days at sea on chartered fishing vessels and NOAA ships, and integrate advanced ocean sampling and data processing technologies. These technologies will include remote sensing, uncrewed systems, analytical tools, and cloud-based platforms to increase the geographic extent and resolution of species distribution shifts. NOAA will also integrate more climate and environmental data to support fisheries management, accounting for ecosystem changes.

### Timing of Activities

Development of capacity to account for climate change will extend over four years; technological advances (e.g., uncrewed systems, 'Omics, artificial intelligence (AI), machine learning (ML)) are being developed. Survey expansion and integrating effects of climate change into fisheries management strategies will also extend past FY 2026.

### Potential Data, Tools, Methods, and Analytic Approaches

NOAA vessel days at sea will be increased to collect relevant data. Additional data will be collected using unmanned hardware and survey charters.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The underlying science of fish biological response to climate change and ocean acidification is ongoing but not yet robust. Continued science/data analysis and integration will address this challenge.

### How Results Will Be Used

Results will enable the eight U.S. Regional Fishery Management Councils to incorporate climate-related science products into their highly collaborative, stakeholder-driven decision-making processes. NOAA will conduct necessary environmental analyses and process management to fully serve the fishermen and fishing-dependent communities who rely on the Nation's sustainable fishery resources.





## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What techniques will raise awareness of the New Blue Economy? Which new statistics, once developed, will most accurately measure and demonstrate the value of the New Blue Economy?

### Lead Bureau/Unit

NOAA, National Ocean Service (NOS) and Performance, Risk and Social Science Office (PRSSO)

### Background

Expanding opportunity for more Americans is central to the Department of Commerce's mission, and as the Nation continues to build back better, this mission is more critical than ever. The Department will use established programs and employ new public investments to promote place-based growth in communities across the country. NOAA has a leading role in implementing numerous initiatives to support the growth of Blue Economy sectors and coastal communities and will lead enabling research. The New Blue Economy refers to the value of the ocean's data and information to address emerging societal challenges. NOAA data and information is essential to "evidence-based decision making" locally and nationally.

### Activities to Address Question(s)

NOAA is conducting a market analysis on the Ocean Enterprise to raise visibility and awareness of the New Blue Economy and better understand the linkages between NOAA investments and the quality and quantity of ocean observations. NOAA is also collaborating with the Bureau of Economic Analysis to measure the contributions of the

marine dependent sectors to the National Economy, i.e., the Marine Economy Satellite Account (MESA). Data collection and statistical reporting is ongoing. Additionally, NOAA provides the *Economics: National Ocean Watch* (ENOW) dataset, which collects and reports state and county-level data for six sectors that are dependent on the ocean economy. Stakeholders will be consulted through interviews and advisory committees on what additional data/statistics are needed to understand and grow the Blue Economy.

### Timing of Activities

MESA statistics to be released in 2022.

### Potential Data, Tools, Methods, and Analytic Approaches

Data for the Ocean Enterprise report is an inventory of businesses based on a representative sample survey. MESA and ENOW use the National Account Framework, input-output (I/O) model, government (Census Bureau, Bureau of Labor Statistics, U.S. Coast Guard, Department of Defense, Department of Energy) and private sector data.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Need to further develop the MESA Blue Technology sector statistics. With stakeholder input, options will be explored for investment in sector research and data collection.

### How Results Will Be Used

The information will be used for policy analysis nationally and locally. Further investments will be influenced by findings.

## Strategic Objective 2.2

# Build sustainable, employer-driven career pathways to meet employers' need for talent and to connect Americans to quality jobs



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What are the most effective and promising approaches to partnering with businesses to identify skill gaps and train workers to fill them?

#### Lead Bureau/Unit

Economic Development Administration (EDA)

#### Background

Global competitiveness and a healthy democracy require that all Americans have an opportunity to participate in the 21st century economy. Expanding opportunity for more Americans is central to the Department's mission, especially as the Nation continues to build back better. EDA is addressing this challenge through several programs to support businesses and workers, notably skills training systems and programs developed in collaboration with businesses. To support maximizing the benefit of these efforts, EDA will monitor and study the relative effectiveness of different approaches.

#### Activities to Address Question(s)

Foundational factfinding will provide information on the nature and current approaches of existing partnerships and how these partnerships help businesses identify and fill skill gaps. Literature reviews and subject matter expert interviews will provide insights into current evidence of effective partnerships and partnership approaches. This foundational information will inform the design of an impact evaluation using a quasi-experimental design.

#### Timing of Activities

Literature review began in FY 2021, and new material will be incorporated throughout the Learning Agenda timeframe. Evaluation will begin in the later half of the timeframe for the FY 2022–2026 Strategic Plan to allow time for program implementation and data collection.

#### Potential Data, Tools, Methods, and Analytic Approaches

A mix method approach will use qualitative and quantitative data to answer this research question. Qualitative data will include review of journal articles, publications, and reports as well as subject matter expert interviews. The impact evaluation will use quantitative data. EDA will explore options to collect additional data on program activities and the use of administrative data.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

There may be limited research on related topics. There may also be challenges around accessing and collecting relevant data because of privacy considerations. EDA may partner with academics or another bureau (e.g., the Census Bureau) to overcome these challenges.

#### How Results Will Be Used

Results from research and evaluation activities will inform selected approaches in partnering with businesses to improve their ability to identify and fill skill gaps in their workforce. These results will inform future program activities and design to better meet business needs.

## Strategic Objective 2.3

# Advance entrepreneurship and high-growth small and medium-sized enterprises



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

How effective are Department efforts to enable entrepreneurs to design and scale companies around new technologies? How can these efforts be improved?

#### Lead Bureau/Unit

Economic Development Administration (EDA)

#### Background

The vitality of U.S. economic recovery and growth are driven by innovations that spur entrepreneurship and strengthen domestic industries. The Department of Commerce plays an important role in fostering the growth of inclusive entrepreneurial ecosystems that are aligned with their regional technology and innovation initiatives. EDA provides multiple programs and resources to facilitate technology commercialization and entrepreneur support. As such, EDA is well positioned to lead this research.

#### Activities to Address Question(s)

Foundational factfinding will assess the strengths and weakness of existing programs and how they enable entrepreneurs to use new technologies to design and scale companies. Literature reviews and existing internal and external data on project performance will provide further insight and evidence as to what programs have been effective for entrepreneurs. New data may be collected on program activities and metrics identified or developed to gauge progress. Additionally, methodology and analysis will be informed by a research partner or partners. EDA will undergo a selection process to identify partners who have expertise in this area.

#### Timing of Activities

Project development will be in FY 2022. Partner selection and data collection will be in FY 2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

A mix method approach will use qualitative and quantitative data to answer this research question. Qualitative data will include review of journal articles, publications, and reports. Quantitative analysis will use information reported to EDA on project performance. The analysis may also include administrative and statistical data on employment.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Anticipated challenges include limitations in accessing relevant data and selecting a research partner with the proper experience in this area. Outreach to identify new research partners with new and specific expertise will address this challenge.

#### How Results Will Be Used

Results will inform what programs and activities are most likely to support entrepreneurs in using new technologies to create and scale companies. The findings will be used to upgrade the programming of EDA's Office of Innovation and Entrepreneurship.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What are the most effective approaches to increase capital availability to minority businesses?

### Lead Bureau/Unit

Minority Business Development Agency (MBDA),  
Office of Policy Analysis and Development (OPAD)

### Background

The Department of Commerce plays an important role in fostering the growth of inclusive entrepreneurial ecosystems. Minority business enterprises (MBE) are critical to the national and local economies, but access to capital remains a significant barrier to their growth. MBDA leads Federal Government efforts to promote the growth and global competitiveness of MBEs. Through Business Centers, programs, and initiatives, MBDA is addressing this problem of access to capital. Additionally, there will be ongoing research to assess the relative effectiveness of alternative approaches to the problem.

### Activities to Address Question(s)

Foundational factfinding will provide insight into the advantages and disadvantages of models, approaches, and alternative financing for MBEs. Literature review, a meta-analysis of existing evidence, case studies, and interviews, will indicate what approaches have proven successful in improving access. This review will include models and approaches conducted by the government and financial institutions (i.e., banks, fintech, and nonprofit entities). MBDA will also use data from other agencies (e.g., Small Business Administration) to identify what factors are related to improved access. Additionally, MBDA is collaborating with the Census Opportunity Project to crowd source ideas and is exploring joint projects with the Consumer Financial Protection Board (CFPB) and the Federal Reserve.

### Timing of Activities

The Census Opportunity Project and analysis of results are expected to run in FY 2022. In-depth research on models and impact will run through FY 2023.

### Potential Data, Tools, Methods, and Analytic Approaches

Approaches to answering this question will include both qualitative and quantitative data. Qualitative data will include a review of academic literature, evaluations, reports, and subject matter expert interviews as well as case studies. Quantitative data will include Census data and administrative and financial data from other agencies (i.e., CFPB, Federal Reserve, Community Development Financial Institutions and Small Business Administration). Modeling and analysis may be conducted on the data to identify the factors and characteristics that are positively related to increased access to capital for MBEs.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Limited access to capital for MBEs is likely a result of many factors within a system. It is a challenge for programs or initiatives to correctly identify and mitigate these many influences. One potential solution is to use research findings to inform and collaborate with the private sector. This collaboration and increased awareness may lead to programs that better target multiple challenges and biases.

### How Results Will Be Used

Results will be used to improve advocacy and awareness among private and public stakeholders. Findings will also inform the development and design of programs to better address the needs of MBEs.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

Did Revolving Loan Fund (RLF) projects, funded via the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), result in additional lending, and did additional lending lead to positive outcomes for recipients?

### Lead Bureau/Unit

Performance Research and National Technical Assistance Division of EDA

### Background

The Department makes investments to enhance the capacity of regions to advance local entrepreneurs and foster industry innovation. One of the numerous Department programs that supports innovation and entrepreneurship is EDA's RLF. The RLF allows grantees to provide capital to incubate or accelerate new and growing businesses that can provide high-quality jobs. The RLF program has also been used as a tool to assist businesses in continuing to operate and recover from the impact of the COVID-19 quarantine. This research will provide information on the effectiveness of the program in supporting business survival and recovery.

### Activities to Address Question(s)

As awards are provided, data will be collected and reviewed on the RLF program, including the number of recipients, geographic information on recipients, and disbursement amounts. Data collection will also include information on loans provided by specific RLF recipient organizations. This data will be analyzed to determine the level of lending that

resulted, the characteristics of businesses assisted, the status of businesses that received the loans (i.e., closed, open, expanded), and how the loans were used (e.g., protective equipment, online presence). Outcome measures of loans will be developed to support further evaluation of the program.

### Timing of Activities

Awards and resulting loans will be ongoing through FY 2022. Data collection will be concurrent. Preliminary results relating to early award will be available in FY 2023.

### Potential Data, Tools, Methods, and Analytic Approaches

EDA will collect and analyze quantitative data of the RLF to measure the RLF performance. Research may also include qualitative data, such as case studies. The evaluation will be conducted by a third-party contractor or academic collaborator.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Capturing detailed data by RLF recipient organizations on resulting loans will require new information technology (IT) capabilities. To address this challenge EDA will roll out a reporting portal for those entities to report information consistently and securely.

### How Results Will Be Used

Findings will be used to improve the performance of the RLF and similar programs.

## Strategic Objective 2.4

# Expand affordable, high-quality broadband to every American



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

How many U.S. residents have received broadband or improved or more affordable service as a result of Federal broadband support programs and the Universal Service Fund Programs?

#### Lead Bureau/Unit

National Telecommunications and Information Administration (NTIA)

#### Background

Broadband is an engine for opportunity in the modern economy and a necessary foundation for inclusive growth. Yet many Americans—especially those living in rural areas, tribal reservations, and minority neighborhoods—do not have access to quality, affordable broadband. The Department of Commerce will drive broadband expansion and adoption across the Nation using strategies to support broadband infrastructure, planning, digital inclusion, and technology. NTIA is leading the coordination of varied programs across the Federal Government to invest in advancing the Nation’s broadband capabilities. The Department will be assessing the output of these efforts.

#### Activities to Address Question(s)

NTIA will collect and analyze data associated with the annual ACCESS Broadband Report (new per the Consolidated Appropriations Act, 2021). Data will include cross-agency spending on Federal broadband support programs across the country. These data and administrative data will be used to determine how investments have affected the number of U.S. residents connected and local economic conditions. Additional activities will include reporting from new grant programs on key broadband deployment and access metrics.

#### Timing of Activities

ACCESS Broadband Report data collection and reporting will be conducted annually. NTIA’s Consolidated Appropriations Act, 2021 grant program biannual awardee reporting (during the awardee period of performance) is likely to start during summer 2022 and continue through the end of period of performance (two to five years post award). Programmatic results/metrics/data from new NTIA grant programs will lag 18 to 24 months from award given reality of timelines for deployment of broadband infrastructure.

#### Potential Data, Tools, Methods, and Analytic Approaches

Analysis will use a mix method approach. This will include comparative case studies of grant-funded projects and input-output analysis of the short and long-term economic impacts of Federal broadband funding based on recipient budgetary spending and programmatic outcomes, e.g., homes passed or improved with broadband infrastructure. The economic impact analysis of areas with Federal broadband infrastructure investment will focus on changes in gross domestic product (GDP), unemployment rate, change in the number of jobs, change in the number of small businesses, changes in household income, changes in life expectancy, and changes in graduation rates. The baseline development for homes passed and cost will leverage analytics of commercially available broadband subscription cost data to measure any national aggregate changes in broadband costs (e.g., cost/Mbit) over time. Analysis will also leverage the Federal Communications Commission (FCC) (and other) benchmark data on the number of locations/households without broadband infrastructure to measure the gap that needs to be closed.

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## Learning Agenda Question(s) *(continued)*

### Broadband Specific Data Sources:

- NTIA grant-funded recipient budget and programmatic reporting
- NTIA grant-funded recipient project case studies
- NTIA's National Broadband Availability Map
- NTIA Internet Use Survey
- Data collected from other Federal agencies to support the annual ACCESS Broadband Report
- USA Spending Data from Federal agencies funding broadband efforts
- Census Bureau: 2018 Computer and Internet Use in the United States (released in 2021)
- New FCC Broadband Location Maps (anticipated in Summer 2022)
- FCC: January 2021 Fourteenth Broadband Deployment Report
- Pew Research: April 2021: Internet/Broadband Fact Sheet
- FCC: 2021 Urban Rate Survey Data
- Broadband cost metrics, sources include BroadbandNow datasets

### Anticipated Agency-Specific Challenges and Proposed Solutions

One potential challenge is getting standardized data from other Federal agencies to align to metrics being analyzed. There is an inherent time lag in NTIA awardee reporting of achieved outcomes (e.g., homes with available broadband infrastructure), given the time involved with deploying broadband infrastructure and getting households connected. More accurate data on the gap of households/locations without access broadband will not be available from the FCC until summer 2022 at the earliest, and current FCC data undercounts the gap. Solutions will be explored as data is collected.

### How Results Will Be Used

Results will be used to enumerate the effect of Federal (and NTIA) funding on broadband capabilities across the United States and measure the impact of Federal (and NTIA) funding in closing the gap of households/locations without broadband.



## Strategic Goal 3

# Address the Climate Crisis Through Mitigation, Adaptation, and Resilience Efforts





# Strategic Objective 3.1

## Increase the impact of climate data and services for decisionmakers through enhanced service delivery and improved weather, water, and climate forecasts



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What new and sustained observations, data, and capabilities would be most beneficial to support emergency managers and generally protect the economy and save lives?

#### Lead Bureau/Unit

National Oceanic and Atmospheric Administration (NOAA),  
Oceanic and Atmospheric Research (OAR)

#### Background

Measuring and predicting climate change impacts are fundamental to NOAA's mission. NOAA's world-class observations of the ocean, atmosphere, and space provide timely, actionable data to make vital decisions that affect all sectors of the U.S. economy on a local and global scale. The next generation of climate prediction tools will rely upon NOAA's ability to advance innovative observing technologies such as satellites, artificial intelligence (AI), and uncrewed systems. They will increase computing power and cloud hosting to process unprecedented amounts of environmental data and develop revolutionary coupled models to capture the complexity of the earth system. High resolution models at variable timescales will be used to provide timely and geographically precise forecasts that can be targeted to the communities most in need. To stay ahead of the impending dangers climate change poses, NOAA will increase investments in observational and research infrastructure and capabilities, and translate weather and climate models into more accurate and actionable forecasts.

#### Activities to Address Question(s)

NOAA will assess project performance year-on-year reviewing the accuracy and completeness of data and user ability to correctly interpret and act on the information.

Users will be interviewed to identify information gaps and approaches to improving delivery of the information and investments in the observations and research activities that would most effectively improve weather and climate models.

#### Timing of Activities

These activities will continue over the next five fiscal years according to the Infrastructure Investment and Jobs Act.

#### Potential Data, Tools, Methods, and Analytic Approaches

NOAA will coordinate with other agencies to identify best practices and improve the data acquisition process. NOAA will also deploy long-term planned observational infrastructure. Once observations are operational and fed into model forecasts, improved accuracy will be determined by statistical analysis and scientific review. Focus groups with decisionmakers will provide the gauge for determining if forecasts are actionable.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Project management will be challenging but not beyond NOAA's capabilities based on past evolution of the forecasting system.

#### How Results Will Be Used

Results will influence future decisions on investments in observational and research infrastructure. Investments that result in more accurate and actionable forecasts will accelerate the transition of research on climate, space weather, and coastal and ocean prediction into climate science breakthroughs to protect life, property, and the economy.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What new tools, strategies, and techniques would most effectively improve communication of NOAA's weather and climate forecasts to vulnerable populations?

### Lead Bureau/Unit

NOAA, National Weather Service (NWS)

### Background

Climate and weather information is only as powerful as the actions it motivates and informs. To this end, the Department of Commerce provides decisionmakers across the private and public sectors with critical, actionable data to inform their decisions. The increased frequency of extreme weather requires forecasting improvements and enhancing service delivery, including extending the flood-mapping service to the entire Nation. NOAA is undertaking the research needed to provide more detailed and usable forecast information and tailor communication on weather and climate vulnerabilities to differing needs of local governments and communities.

### Activities to Address Question(s)

Activities will include focus groups, an assessment of patterns of previous damages and vulnerabilities, and documentation of end users' needs to identify new observations, tools, datasets, and capabilities that will enhance forecasts. Enhancements will be tested to assess their effectiveness before being scaled to additional locations and regions.

### Timing of Activities

Research on format, timeframe, and audience for critical communications is currently in progress. Review of data, observation, and tools needed will extend over four years.

### Potential Data, Tools, Methods, and Analytic Approaches

The qualitative approach will include interviews with local officials in different roles and survey information on current use of data and tools and information gaps. NOAA's science community and data science community will collaborate on the development of new data and tools for delivering information.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The principal challenge will be anticipating the unique needs of individual communities. Involving local weather forecast offices and conducting assessments of local user needs will address this challenge.

### How Results Will Be Used

Results will influence what new analysis tools are developed, what sustained observations and data will be provided, and the design of communication protocols.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

How effectively is NOAA delivering Impact-Based Decision Support Services (IDSS) to public safety officials and partners, especially in communities that are particularly vulnerable to climate hazards? Do NOAA indicators ensure the information or support is accurate and adequate for the level of decisions made by public safety officials and partners?

### Lead Bureau/Unit

NOAA, NWS

### Background

Ninety-eight (98) percent of all presidentially declared disasters are related to weather, leading to approximately 500 deaths per year and nearly \$15 billion in damage. Emergency managers tell NOAA that NWS's IDSS has provided impact-based forecasts, supported their life-saving work, and was communicated through trusted relationships. That quality of service should be available to all communities. Therefore, NOAA is assessing consistency in the quality of IDSS implementation.

### Activities to Address Question(s)

NOAA's NWS will conduct two surveys of customers, an Annual Core Partner survey that covers the full breadth of NOAA's NWS services provided and an Episodic Core Partner survey on specific weather, water, and climate events. NOAA's NWS will conduct a follow-on to the FY 2021 Service Equity Assessment to identify the necessary people, technology, and expertise to reach historically underserved and socially vulnerable communities better.

### Timing of Activities

Customer surveys and equity assessments began in FY 2021 and will continue over the next four years.

### Potential Data, Tools, Methods, and Analytic Approaches

Several customer and partner surveys and assessments will be conducted. They will assess fidelity to the IDSS system. Process maps and guidance may be clarified or modified based on findings, and training modules created.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Assessing IDSS consistency among partners and forecast offices is challenging given that localities have different structures for roles and responsibilities. Developing a methodology that specifically measures the impact to vulnerable communities will require survey expertise from the Census Bureau and survey testing in diverse communities.

### How Results Will Be Used

Feedback from partners via surveys and assessments will be used to improve products and services.



## Strategic Objective 3.2

# Strengthen coastal resilience and advance conservation and restoration of lands and waters for current and future generations



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What approaches have proven most effective in helping coastal communities and ecosystems prepare for and recover from extreme weather events, climate hazards, and changing ocean conditions?

#### Lead Bureau/Unit

National Oceanic and Atmospheric Administration (NOAA),  
National Ocean Service (NOS)

#### Background

If current trends continue, \$66 to \$106 billion dollars of existing U.S. coastal property could be below sea level by 2050. Furthermore, the United States could see a 1 percent reduction in its gross domestic product (GDP) by 2100 due to coastal flooding. Given these projections, NOAA will address the increasing demand for the science and services needed to enhance coastal resilience to climate change. The natural and economic resilience of oceans and coasts will be advanced using state-of-the-art risk-based tools and actionable information, strengthening on-the-ground partnerships, and improving place-based conservation efforts. To deliver on these goals, NOAA must understand the effectiveness of various approaches in supporting coastal resilience and preparedness for both extreme events and gradually changing environmental conditions.

#### Activities to Address Question(s)

Data on how and how often datasets and tools are used will be reviewed to understand patterns on how communities are accessing NOAA's NOS information. Surveys may be conducted to understand whether products are easily usable and useful. Coastal program performance metrics and research will be reviewed to understand the effectiveness and cost-benefit of resilience approaches. NOAA's NOS will

review post-training evaluations and how the increased skills and information have been applied.

#### Timing of Activities

Infrastructure assessments are ongoing; database enhancements are planned for FY 2022–2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

NOAA will assess the effectiveness of natural infrastructure approaches to make coastal communities more resilient to changing conditions. A natural infrastructure database already exists but is being enhanced using a more robust suite of the current literature regarding effectiveness and approaches, as well as approaches to finance resilience activities. As new approaches are implemented, they will be tested for efficacy. Findings will be used to develop policy changes that are evidence based.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge will be understanding the needs of underserved communities and ensuring equitable access to NOAA's NOS resources, products, and services. The challenge will be addressed using surveys and direct engagement with communities and organizations advocating for inclusion, equity, and climate justice. Web analytics and vulnerability indices will also be used.

#### How Results Will Be Used

Results will influence modifications to existing NOAA's NOS tools, development of new tools, and information that is shared with state and local partners to justify investments in natural infrastructure or other resilience tools and policies.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

Do the models and tools that are currently available for communities to prepare for coastal inundation at seasonal, annual, and multiyear timescales meet community needs? What new models and tools should be developed to address unmet needs?

### Lead Bureau/Unit

NOAA, NOS

### Background

If current trends continue, \$66 to \$106 billion dollars of existing U.S. coastal property could be below sea level by 2050. Furthermore, the United States could see a 1 percent reduction in its GDP by 2100 due to coastal flooding. Given these projections, NOAA will address the increasing demand for the science and services needed to enhance coastal resilience to climate change. The natural and economic resilience of oceans and coasts will be advanced using state-of-the-art risk-based tools and actionable information, strengthening on-the-ground partnerships, and improving place-based conservation efforts. To understand and prepare for the future, NOAA must identify what additional modeling capabilities and tools will be needed for communities to prepare for various scenarios of coastal inundation.

### Activities to Address Question(s)

NOAA is establishing an implementation plan for its strategy for advancing models and tools for coastal inundation at climate timescales. As the strategy is implemented in phases, new models and tools will be assessed for quality and contribution.

### Timing of Activities

The implementation plan for the existing strategy will be developed through FY 2022.

Integration of research-to-operations will be ongoing for several years.

### Potential Data, Tools, Methods, and Analytic Approaches

Interagency coordination will be required for planning, developing the models, and implementation. Established methodologies for weather and climate modeling will be used and refined.

### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge will be establishing a process of continuous user engagement to guide tool development and improvement. The challenge will be addressed by ensuring that the NOAA Service Delivery Framework is central to user engagement design and is prioritized in funding discussions.

### How Results Will Be Used

Results will improve the quality of data provided to communities to support climate resilience and adaptation.



## Strategic Objective 3.3

# Accelerate development and deployment of clean technologies



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

- What could be key sources of U.S. competitive advantage?
- How can regional forums be an opportunity for clean technology standards?

#### Lead Bureau/Unit

International Trade Administration (ITA),  
Industry and Analysis Division

#### Background

Promoting the development and deployment of clean technologies will accelerate global decarbonization and position the U.S. industry for future success in a net-zero economy. The Department will advance the transition to net-zero emissions by supporting clean technology industries necessary to achieve global climate targets and U.S. competitiveness goals. In the near-term, the U.S. Clean Tech Export Competitiveness Strategy (CTECS) will seek to increase global market access for U.S. clean tech exporters, provide more targeted market intelligence to these companies, and grow greenfield foreign direct investment (FDI) in U.S. clean tech. In the medium-term, the CTECS will seek to position nascent and emerging U.S. clean tech market segments to compete globally. Market research will be needed to achieve both near and medium-term ends.

#### Activities to Address Question(s)

Market research and review of existing data will be conducted to project trends and identify factors that will contribute to success/dominance in the market. Internal targets will be identified that could help measure U.S. clean tech client engagement to grow U.S. exports and inward FDI.

#### Timing of Activities

Research will be conducted in FY 2022–2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

Modeling will be used to develop projections under differing assumptions. Interviews will be conducted to probe current manufacturing capacity. Research will identify emerging technology that could enhance the United States' competitive position.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Anticipating technological breakthroughs and the timing of commercialization of breakthroughs is difficult but Federally-funded research and an incentive system may truncate the timeframe.

#### How Results Will Be Used

Results will be provided to U.S. manufacturers to support manufacturing and commercialization strategies.

# Strategic Objective 3.4

## Embed climate considerations across Department programs



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What are the gaps in publicly available data, tools, and services that are needed for communities to develop climate and environmental assessments required for Economic Development Administration (EDA) grant applications?

#### Lead Bureau/Unit

Office of the Undersecretary for Economic Affairs (OUSEA) with advisory support from EDA and National Oceanic and Atmospheric Administration (NOAA)

#### Background

The Department is incorporating climate considerations, including mitigation, adaptation, and resilience measures, into all relevant aspects of its policies and programs. In particular, climate considerations will be factored into the grant-making process. In the recent 2021 Department of Commerce Climate Action Plan, Commerce committed to “Further embed climate considerations into EDA’s grant making, through investment priorities, grant criteria, application evaluation, and economic development planning.” This means that EDA will require all grant applicants that propose infrastructure projects to consider impacts from climate change in project design. However, not all communities have the same access to data and resources needed to develop these climate assessments. This learning question seeks to identify what gaps exist in publicly available data needed to develop these assessments during the grant application process.

#### Activities to Address Question(s)

Foundational factfinding will provide information on difficulties grant applicants have in obtaining the necessary information for climate assessments. Literature reviews, focus groups with partners and state and local governments, and analysis of existing data will add insight into the challenges

associated with the development of climate assessments. Development of descriptive statistics based on identified challenges will point to (1) areas for targeted new datasets and tools, and (2) promotion or improved usability of existing datasets and tools. Additional activities to address highlighted challenges will be identified and pursued after the factfinding phase.

#### Timing of Activities

The work will begin in FY 2022 with focus groups and will address gaps as they are found.

#### Potential Data, Tools, Methods, and Analytic Approaches

The approaches to answering this question will include both qualitative and quantitative methods. On the qualitative side, focus groups and interviews will be conducted. On the quantitative side, descriptive statistics will be developed based on the gaps that are identified in the focus groups.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge will be ensuring that diverse underserved communities are reached. To address this Commerce will work with partners in cooperative institutes and extension programs to identify underserved and struggling communities and their specific data needs.

#### How Results Will Be Used

Results will first identify if gaps exist in the availability and usability of data needed for climate assessments in the grant application process. If gaps exist, new datasets, tools, and services will be developed and made widely available to ensure that all communities can develop climate assessments needed to be eligible for EDA funding.

# Strategic Goal 4

## Expand Opportunity and Discovery Through Data





# Strategic Objective 4.1

## Implement evidence-based decision making within the Department of Commerce to increase program and policy impact



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What challenges hinder the availability and usability of statistical, administrative, and scientific data for evidence building? Which actions would have the highest impact in overcoming these challenges?

#### Lead Bureau/Unit

Office of the Chief Data Officer (OCDO), Evaluation Officer, Commerce Data Governance Board (CDGB)

#### Background

The Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act) and White House circulars and memoranda direct the Federal Government to make decisions using the best available evidence. The complex issues and challenges facing the American people must be met with facts, competence, and urgency. Doing so requires the timely use of information arrived at through rigorous analysis that is governed by principles of scientific integrity and inclusion. These challenges require that datasets be more readily available and usable for research, analysis, and evaluation to provide timely information to policymakers.

#### Activities to Address Question(s)

Interviews will be conducted with internal experts on analytics and evaluation, and current and potential users of Department data. Staff will research enabling technology and case studies. Novice users attempting to access data will be observed to develop more intuitive web access.

#### Timing of Activities

Research will be conducted in FY 2022–2023. The implementation schedule will depend on findings.

#### Potential Data, Tools, Methods, and Analytic Approaches

The research will include foundational factfinding, analytics, process review, data on page views and downloads, and testing alternative technologies.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Access problems may be caused by dataset format, platform, and metadata differences. These differences may take significant time and resources to correct. There are legal constraints regarding access to data. The solution will be to establish priorities for improvements that provide better access (within legal limits) to the most useful data.

#### How Results Will Be Used

Findings will provide easier access to and analysis of data, and will facilitate linking datasets. Ultimately, the work will support data-based decision making.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What datasets are available/needed to track the impact of Department programs on historically underserved communities/populations?

### Lead Bureau/Unit

OCDO and the Evaluation Officer in collaboration with the Census Bureau (Census)

### Background

The Evidence Act and White House circulars and memoranda direct the Federal Government to make decisions using the best available evidence. Released on January 20, 2021, Executive Order 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, directs Federal agencies to evaluate whether their policies produce racially inequitable results when implemented, and make the necessary changes to ensure underserved communities are properly supported. Data are needed for these assessments and to track if actions to increase equity are achieving their objectives. Federal datasets are available to measure community resilience to natural and economic disasters, but available data may not provide the detail and currency needed to track conditions in small, underserved geographies. Useful data may be available at the state level, at academic institutions, or with nonprofits. Research will be done to identify useful existing data and to develop strategies for refining available data to better meet assessment needs.

### Activities to Address Question(s)

A literature search will be conducted and Census experts and organizations representing underserved communities will be consulted.

### Timing of Activities

In FY 2021, the Census Bureau began collaborating with the Economic Development Administration on data needs, and Census has created a website dedicated to “equity data.” A Federal Equity Data Committee has been convened. Additional research focused on the Department of Commerce evaluation needs will be conducted in FY 2022.

### Potential Data, Tools, Methods, and Analytic Approaches

Approaches will include foundational factfinding and literature review, possible use of an algorithm that identifies datasets used in research (see Coleridge Initiative), and surveys of evaluation staff on data needs.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Some useful data may not be consistently available for all areas. The frequency of data updates may be a barrier to tracking economic recovery in small geographic areas. Use of private sector generated data may help to address the problem.

### How Results Will Be Used

Results will be used to help monitor and support recovery in areas with economies that have been the most profoundly affected by the COVID-19 quarantine.

## Strategic Objective 4.2

# Modernize economic and demographic statistics to better meet business, policymaker, and community needs



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

- What refinements and new statistics would support more equitable management of the economy?
- How reliable are early estimates of key economic indicators and what actions can improve reliability?

#### Lead Bureau/Unit

Office of the Chief Economist,  
Bureau of Economic Analysis (BEA)

#### Background

To navigate a dynamic economy, U.S. communities increasingly require detailed, timely, and user-friendly data and statistics to support policy making and decision making. Additionally, the COVID-19 pandemic demonstrated a need for high-frequency and user-friendly economic indicators to enable decisionmakers to quickly assess the effects of changing circumstances and sudden events. Therefore, the Department is developing new economic indicators and approaches to increasing the accuracy of early releases of existing indicators.

#### Activities to Address Question(s)

Research includes improving indicators of income distribution and economic activity, and improved statistical techniques. All new indicators and methods must be consistent with national accounting principles and the Office of Management and Budget Statistical Policy Directives.

#### Timing of Activities

Refinements to income distribution statistics have been in progress and will continue through FY 2022–2023. Work on increased accuracy of early releases of economic indicators is ongoing.

#### Potential Data, Tools, Methods, and Analytic Approaches

The work is done through advanced statistical methodologies and research and testing of data that is available through the private sector.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

There are challenges inherent in using data sources developed for other purposes for statistics. Data must be adjusted to fit national accounting principles and be publicly available and regularly produced. The challenge is met through research and collaboration with the academic and statistical community.

#### How Results Will Be Used

Results will be used to help manage the economy.



## Strategic Objective 4.3

# Improve Commerce data usability and advance ethical, responsible, and equitable data practices



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

What barriers exist to collecting information from underserved communities?

#### Lead Bureau/Unit

Office of Privacy and Open Government

A multibureau Paperwork Reduction Act Equity Workgroup has been established.

#### Background

The American public and businesses rely on the Department of Commerce as a trusted source of data. The timely delivery of quality, equitable, ethical, and secure data products and services is necessary to sustain that trust. The Department will provide leadership in raising the standard for responsible data practices. By first addressing equity in data collection, Commerce will advance the ethical, responsible, and equitable practices in the first step of the data lifecycle.

#### Activities to Address Question(s)

In collaboration with experts on the Federal paperwork reduction requirements, approaches will be tested to increase feedback from underserved communities. One alternative will be the development of a comprehensive question bank for all bureaus to use to develop survey instruments. The standard questions, vetted by survey experts, would be used to collect, analyze, and interpret information gathered to identify gaps in the equitable delivery of services and gain insight into the accessibility of information to the underserved. Data will be collected and reviewed to assess the quality of information gathered using the questions to inform revisions.

#### Timing of Activities

An approach has been developed and is under review by a Department Paperwork Reduction Act expert. The approach will be submitted for public comment in FY 2022 as a next step.

#### Potential Data, Tools, Methods, and Analytic Approaches

In addition to survey instruments, other approaches to identifying needed improvements will be used. They may include electronic social media, observation of user struggles with data entry, focus groups, and in-person interviews. All improvements will be tested before they are scaled.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge will be developing and testing new approaches to gathering information currently needed as new and expanded programming are designed. The solution will be to request input on programming through several media channels.

#### How Results Will Be Used

Approaches to gathering data will be refined. The information gathered will be used to develop policies and programs that deliver resources and benefits more equitably. By addressing equity in data collection, Commerce will advance the ethical, responsible, and equitable practices in the first step of the data lifecycle.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What fundamental areas of research and standards, if targeted by the National Institute of Standards and Technology (NIST) and its stakeholders, will further develop the foundation for trustworthy artificial intelligence (AI)?

### Lead Bureau/Unit

Information Technology Laboratory of NIST

### Background

The American public and businesses rely on the Department of Commerce as a trusted source of data. The timely delivery of quality, equitable, ethical, and secure data products and services is necessary to sustain that trust. The Department provides leadership in raising the standard for responsible data practices. As a leader in data practices, NIST has done and will continue extensive work on AI integrity. Trustworthy AI will increase public confidence in the Department and empower communities to use data to drive positive change.

### Activities to Address Question(s)

Standards development will include engagement with a community of experts through workshops, solicitation of comments, requests for information, and dissemination of publications, datasets, and frameworks.

### Timing of Activities

These activities are ongoing.

### Potential Data, Tools, Methods, and Analytic Approaches

Literature reviews and foundational factfinding, including expert opinion, are used as a means of identifying risks of bias and why bias occurs. As possible standards are developed to address bias, tests assess their effectiveness.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Challenges include long lead times to establish the necessary partnerships with industry who need solutions in real time. Recruiting talent in areas of AI, mathematics, statistics, and computer science is challenging, but will be addressed through NIST's extensive network of relationships in the data science community.

### How Results Will Be Used

NIST will gather and share needs, strategies, roadmaps, terminology, use cases, and best practices in support of reliable, robust, and trustworthy AI in government operations.





## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What emerging technologies effectively enhance data sharing while preserving privacy and confidentiality?

### Lead Bureau/Unit

Census Bureau (Census)

### Background

The Department of Commerce is referred to as “America’s Data Agency” because it collects, stores, and analyzes vital scientific data and data on the Nation’s economy, population, and environment. To continue to provide this leadership and make data more usable for research, efforts are ongoing to modernize data ecosystems (i.e., data collection approach, data storage and configuration, and tools for data linking and analytics). Through this process, the Census Bureau will identify which emerging technologies effectively enhance data sharing while preserving privacy and confidentiality.

### Activities to Address Question(s)

Conduct research on emerging technologies, landscape/possibilities, and develop prototypes to test.

### Timing of Activities

Research is being conducted, pilot scoping is in progress, and prototype(s) are to be built in accordance with resourcing.

### Potential Data, Tools, Methods, and Analytic Approaches

Tools and methods will include literature reviews, user interviews, landscape analysis (i.e., products and services available), technical prototyping using agile methodologies, and policy analysis.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Reducing the burden of data sharing and making Census data more accessible while protecting privacy is a formidable challenge. Emerging technologies may provide part of the solution (e.g., Secure Multi-Party Computation).

### How Results Will Be Used

Results will produce findings on potential emerging technologies that can be incorporated in operations.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What skills and training techniques are most effective in preparing the Commerce workforce for current and emerging data challenges?

### Lead Bureau/Unit

Commerce Data Governance Board (CDGB) Maturity Assessment and Data Skills (MADSkills) Working Group—representatives from each bureau with a volunteer chair from one bureau (currently International Trade Administration (ITA)) and support from the Office of the Chief Data Officer (OCDO) in the Office of the Undersecretary for Economic Affairs (OUSEA)

### Background

The Department of Commerce is referred to as “America’s Data Agency” because it collects, stores, and analyzes vital scientific data and data on the Nation’s economy, population, and environment. These functions are central to the work of the Census Bureau, the Bureau of Economic Analysis, NIST, and the National Oceanic and Atmospheric Administration (NOAA). However, all Department bureaus manage and use datasets. Data analytics has become central to the work of all Department bureaus. To optimize data management across all programs, Commerce and each of its bureaus will implement sustainable data governance and stewardship policies and practices to manage data more effectively from data collection to dissemination. To support data-based decision making, data analytics will be incorporated into more functions. This will require building a workforce that is highly data literate. To build this workforce, Commerce must identify the skills needed and the most effective training techniques to prepare the workforce for current and emerging data challenges.

### Activities to Address Question(s)

- Develop Departmentwide personas (e.g., Data Analyst, Data Scientist) linked to necessary sets of data skills
- Pilot data skills training options for all personas

- Create capacity and access to Commerce-wide data skills training
- Conduct data skills assessments to measure effect of initiatives
- Survey/interview supervisors and learners on utility of training and lessons learned
- Research, share, and support good data management and data stewardship practices.

### Timing of Activities

Personas and associated skill needs have been developed; the first training package pilot test took place October to November FY 2022. Additional training options are being explored. Following selection of a training approach(s), skills assessments approaches will be piloted to determine the best method. Research on best data management and stewardship practices and data skill needs will be ongoing.

### Potential Data, Tools, Methods, and Analytic Approaches

Methods and approaches will include foundational factfinding, focus groups (through working group and Learning Officer Council), pilot projects, policy analysis, process review, and evaluation of trainings.

### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge is that each bureau has its unique mission with unique skill sets required of its employees. It will be difficult to identify a single training approach for data skills and acumen for the entire Department. The solution is to identify a best fit to provide as an option at the Commerce level, but allow for bureau autonomy in deciding the end approach for data skills and acumen training.

### How Results Will Be Used

Results will help Commerce identify and deploy the best training approaches to meet Commerce employee needs.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What barriers exist to using climate-related data by underserved and at-risk communities and which, if addressed, would have the highest impact? What practices and techniques would effectively expand environmental and climate data equity and usability?

### Lead Bureau/Unit

NOAA, Office of the Chief Information Officer (OCIO) with support from all NOAA Line Offices and National Centers for Environmental Information (NCEI) in NOAA's National Environmental Satellite, Data, and Information Service (NESDIS).

### Background

The Department of Commerce aspires to improve data availability and usability for the American people. As the Nation's lead climate and statistical agency, Commerce provides the authoritative climate science, demographic data, and geospatial mapping services required to address climate change and growing income inequality. To address equity challenges and effectively deliver climate data to all Americans, Commerce will identify barriers for underserved communities to use climate-related data and will develop techniques to address them.

### Activities to Address Question(s)

The approach to identifying barriers will include customer focus groups, and outreach and engagement with local data users and potential data users. Internal processes will be reviewed to identify improvements that would reduce

the time between dataset identification to availability and utilization. Pilots and projects will explore best practices for data cataloging (both within and external to NOAA), data discovery and access, as well as ensuring all NOAA data is AI and machine learning (ML) ready.

### Timing of Activities

These activities are ongoing, iterative, and agile over the next five years. Feedback from early studies and pilots are expected in FY 2022. Identification and assessment of best data practices used across sectors and then implementation of recommendations is long term.

### Potential Data, Tools, Methods, and Analytic Approaches

The approach will include customer focus groups, process/practice analysis, analysis of pilot project results, performance measurement of community utilization of climate related data, and surveys to collect customer feedback.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The challenge is identifying underserved and at-risk communities. The solution is aligning this activity with others in Commerce that are identifying underserved and at-risk communities.

### How Results Will Be Used

Results will influence recommendations for making data more usable and available for all communities.





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## Strategic Goal 5

### Provide 21st Century Service with 21st Century Capabilities



# Strategic Objective 5.1

## Effectively implement new Department of Commerce authorities and investments



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

- What grant disbursement processing procedures could be streamlined to reduce bottlenecks and overall processing times?
- How can data collection and analysis processes better inform whether a grant recipient is progressing toward the success criteria established in the award?

#### Lead Bureau/Unit

Office of Acquisition Management (OAM), Commerce Infrastructure Coordination Office

#### Background

Managing funds with integrity and delivering results for the American people is a fundamental responsibility of the Department. To achieve this, Commerce should process grant funding efficiently and collect and assess program data to verify if programs are cost effective and making progress toward desired outcomes. The Department will assess processes and further integrate its systematic approach for performance management into all new and expanded programs. These efforts will enable a more efficient grant disbursement process and effective use of program data. OAM will lead research on best practices for streamlining processing procedures. The Commerce Infrastructure Coordination Office will lead research on alternative performance metrics, and data collection and analysis of grant recipient progress.

#### Activities to Address Question(s)

An analysis of current grant processes will include a review of grant disbursement and award data to identify inefficiencies and opportunities to reduce reporting burden and improve technological capabilities. Interviews with

program staff and grant recipients will provide further insights into challenges in process efficiency and consistent measurement of project impact. A literature review and case studies will examine potential alternative approaches. Additionally, an examination of existing bureau processes and performance metrics will identify which approaches have proven successful and provide opportunities to scale.

#### Timing of Activities

The research will be conducted in FY 2022–2023.

#### Potential Data, Tools, Methods, and Analytic Approaches

This analysis will include quantitative and qualitative data. Quantitative data will include grant disbursement, cycle time, and award data. Qualitative data will consist of interviews with program staff and grant recipients. A literature review and case studies will help identify alternative approaches. Additionally, a cost-benefit analysis will examine the feasibility of implementing and scaling new processes.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

An anticipated challenge is identifying approaches that work well for different programs and bureaus. The solution is to establish frameworks and processes that are flexible and can accommodate different program requirements.

#### How Results Will Be Used

Results will establish a more streamlined grants management and data collection process and improved data for grant monitoring.

## Strategic Objective 5.2

# Optimize workforce and diversity, equity, and inclusion practices



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

How effective are changes in the recruitment and hiring process in reducing the cycle time for hiring and improving the quality of candidates on certification lists?

#### Lead Bureau/Unit

Enterprise Services, Office of Human Resources Management (OHRM)

#### Background

The competition to attract and retain top talent has become fierce. Toward these ends, the Department is committed to improving the hiring process, reducing the time required to recruit and hire highly qualified staff. Enterprise Services provides recruitment and hiring services for the Department and manages the technology that supports the process. In collaboration with OHRM, they will analyze how process improvements have affected service and candidate quality.

#### Activities to Address Question(s)

Analysis of cycle time, candidate quality, and vacancies (number and duration) will provide baseline information on the recruitment and hiring process. This analysis will identify inefficiencies that cause hiring delays, negatively impact candidate quality, and increase vacancy backlogs. As needed, revision of metrics and dashboards will provide information on process performance. Additionally, regular review of performance metrics will inform continuous improvement and maintain advances from previous process improvements.

#### Timing of Activities

Changes will be implemented in FY 2022–2023, and assessment will be conducted in FY 2024.

#### Potential Data, Tools, Methods, and Analytic Approaches

This analysis will use quantitative human resource data, including the average number of days to hire, a candidate quality index, and vacancy backlog. Approaches to answering the question will include customer experience mapping and process management.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Challenges include navigating complex compliance-focused hiring systems as well as standardizing systems across the Department. The solution is to develop and test innovations in collaboration with the Office of Personnel Management to provide a clear benefit to the bureaus.

#### How Results Will Be Used

Results will reduce cycle time, improve candidate quality, and reduce vacancy backlogs.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

How could the Department's leadership development programs be more effective in supporting succession planning?

### Lead Bureau/Unit

OHRM, Office of Civil Rights

### Background

The future of work requires new and evolving skills sets. The Department will ensure employees can collaborate, build knowledge, strengthen skills, and use evolving technologies and methods to excel in new mission areas and forms of work. The Department will share and collaborate across bureau talent pools to broaden employees' experiences and knowledge base. Leadership development programs will enable bureaus to increase knowledge sharing and build a learning network. Empowering the workforce will allow Commerce to excel as its mission expands and evolves.

### Activities to Address Question(s)

A cross-functional team will conduct an organizational assessment to evaluate existing leadership development and training programs. The team will also develop data on the number of staff who participated in programs and their demographics. Analysis will examine the career progression of staff who have completed leadership programs and identify challenges and opportunities for improvement in current approaches.

### Timing of Activities

Research will begin in FY 2022.

### Potential Data, Tools, Methods, and Analytic Approaches

A review will examine current approaches to administering development programs, including dissemination of information on the programs, steps in the application protocols, selection criteria, and tracking the impact on career advancement and diversity and inclusion.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Anticipated challenges include navigation of the complex Federal hiring and promotion authorities, correctly identifying occupations that lack diversity, the availability of data on developmental programs, and linking data from multiple sources. The solution is to collaborate with staff with expertise on human resources (HR) and HR dataset options.

### How Results Will Be Used

Results will enhance leadership development and succession planning.



## Strategic Objective 5.3

### Equitably deliver exceptional customer experience



#### Learning Agenda Question(s)

##### Priority Question(s) to Be Answered

What are the most significant barriers to providing business assistance to underserved communities and populations? How can they be removed?

##### Lead Bureau/Unit

Senior Advisor for Delivery and Chief Diversity Officer in collaboration with the Performance Office

##### Background

The Department provides many critical business services to U.S.-based companies and entrepreneurs. These services should be available to businesses across the spectrum of size and sophistication. Therefore, the quality of customer experience should be central to service delivery, especially for businesses in underserved communities. The Department will undertake efforts focused on providing customers first-rate services and solutions that are easy to access, equitable, effective, and responsive for all.

##### Activities to Address Question(s)

Processes that have the most impact on service access will have priority for review. The Department will map current processes, collect data on error rates and the time required for process steps, apparent bottlenecks, and user satisfaction. The review will include interviews with underserved populations and analysis to identify pain points. A literature review will explore proven strategies to better meet customer needs. Analysis on customers' life experience will provide further insights into customer needs. The Senior Advisor for Delivery and Chief Diversity Officer, collaborating with the Performance Office, will track and collect data throughout implementation to measure the effect of

changes. The Department will share best practices across bureaus, particularly from the Department's High Impact Service Providers (HISP) (U.S. Patent and Trademark Office and the Census Bureau) so all bureaus will benefit from their extensive experience with service and information delivery.

##### Timing of Activities

Research will begin in FY 2022 and continue into FY 2023.

##### Potential Data, Tools, Methods, and Analytic Approaches

The approach will use qualitative methods, including interviews and a literature review. Tools used will include process mapping and data analysis. Additionally, data collection on customers' key life experiences will provide information on how Federal services support or negatively impact those experiences. Performance measurement will monitor processes to sustain improved performance.

##### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge is to achieve simplified processes while maintaining controls needed for good stewardship of resources. As a solution, the Department will recommend rule changes when rules don't add value, create standardization, and implement best practices that have been fully vetted by legal counsel and experts on internal controls.

##### How Results Will Be Used

Results will improve service to underserved communities and all communities.



## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

How can bureau customer relationship management (CRM) systems be integrated with other key customer data and be used to track cycle time for service and the quality of customer experience?

### Lead Bureau/Unit

Commerce Data Governance Board (CDGB), Senior Advisory for Delivery, and the Performance Office in collaboration with bureau staff

### Background

The Department provides services to communities and businesses through the Economic Development Administration, Minority Business Development Agency, International Trade Administration, Census Bureau, etc. However, with service tracked in CRM siloes, one bureau does not necessarily know what service another bureau provided to an organization. As a result, the Office of the Secretary may interact with an entity without full information of prior interactions with the Department resulting in lost opportunities for orchestrating service and fully understanding customer needs. Integrating the CRMs would address the problem and provide a system to track the experience of individual customers when they interact with any bureau. CRMs could also help track the time lapse before a request for service is fulfilled and customer satisfaction ratings.

### Activities to Address Question(s)

The Department will explore the feasibility of integrating CRMs with other agencies, private sector CRM uses,

and vendors. If CRM system integration is feasible, the Department will incrementally test and implement the approach. Ideally, the integrated CRM system will ultimately collect and track data continually to understand customer experience and track response time to customer requests.

### Timing of Activities

Project design will be conducted in FY 2022; project research in FY 2023; and change execution in FY 2024.

### Potential Data, Tools, Methods, and Analytic Approaches

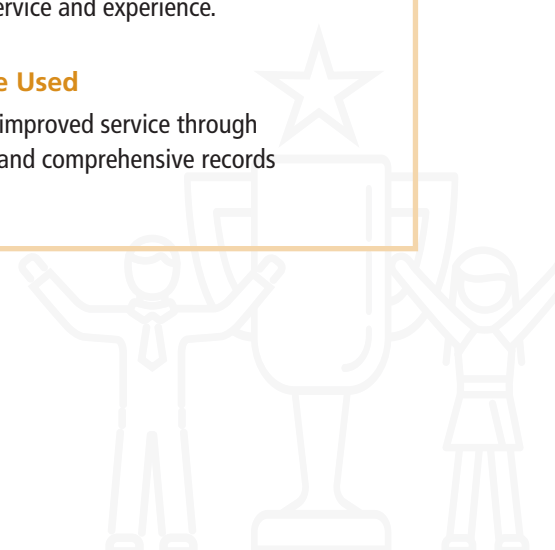
The review will include interviews and collaboration with technical experts and users on CRM integration. Consultations with mission and technical staff will also explore including standard customer satisfaction measures and cycle time measures in CRMs, regardless of the feasibility of system integration.

### Anticipated Agency-Specific Challenges and Proposed Solutions

Challenges will include negotiating the inclusion of standard service quality measures in bureau CRMs and the time and expense associated with integrating systems. However, most, but not all, bureau CRMs are hosted on the same application. The solution is to create focus on the Administration's priority of improved customer service and experience.

### How Results Will Be Used

Results will be used for improved service through service quality tracking and comprehensive records on services provided.





## Learning Agenda Question(s)

### Priority Question(s) to Be Answered

What customer and human-centered design approaches should be used to routinely assess and improve the design and navigation of Department websites?

### Lead Bureau/Unit

Web Advisory Council, Performance Office

### Background

The Department is the front door for Federal business services. For many people, websites are the key to the front door. To make that door easy to open, the quality of customer web experience should be central to service delivery. The Department will establish overarching customer experience standards and guidelines to assist bureaus using web information and tools for planning, analysis, and decision making. This will ensure a customer-centric, structured approach.

### Activities to Address Question(s)

A 360-degree assessment of customer website experiences will identify potential areas of improvement for how services are delivered. Assessments will address current and prospective customer experience with the support of technology and human resources analytics. The assessments will also collect and analyze customers' feedback, along with insights from Department and public sources on quality website design.

### Timing of Activities

Project design and research will be conducted in FY 2022–2023, and implementation will be ongoing.

### Potential Data, Tools, Methods, and Analytic Approaches

Assessments will use machine generated customer experience data (e.g., search topics, click patterns) and customer survey data requesting observations on accessibility and experience with websites and Department contact centers.

### Anticipated Agency-Specific Challenges and Proposed Solutions

The collection and development of accurate customer service data is a challenge. The data is collected through different channels and comprehensive analysis requires centralized data collection and development.

### How Results Will Be Used

Improvements will lead to enhanced customer service and service delivery.



## Strategic Objective 5.4

# Make Department facilities and operations more sustainable and efficient



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

- What actions are needed to achieve electricity use free of carbon pollution by 2030?
- What actions are needed to achieve net-zero emission buildings by 2045?

#### Lead Bureau/Unit

Commerce Office of Facilities and Environmental Quality (OFEQ)

#### Background

The Department must reduce the carbon footprint of its facilities and equipment to address the climate crisis. Strategies include converting Department vehicles to electric vehicles, procuring sustainable products and services, and increasing energy and water efficiencies in facilities. OFEQ provides facility support and infrastructure management, and leads these activities in collaboration with the General Services Administration (GSA) on facilities. A recent Executive Order has raised the bar for Green Federal Operations. The order sets specific deadlines for agencies: by 2030, net annual electricity use must be free of carbon pollution. By 2035, agencies must stop purchasing emission vehicles. By 2045, all Federal buildings must be net-zero emission buildings. The Department must conduct extensive research and planning to meet these standards, particularly for monument buildings (like the Commerce Herbert Clark Hoover Building) built in the 1930s.

#### Activities to Address Question(s)

Foundational factfinding will assess the Department's current state of water and energy consumption and the projected effect of planned building renovations. Close

collaboration with GSA and experts on heating, ventilation, and air conditioning (HVAC) and energy conservations will assess options and inform action plans. Cost-benefit analysis will help determine the feasibility of implementing alternatives. The Department will track metrics before and after conservation project implementations to measure improvements.

#### Timing of Activities

Research will begin in FY 2022.

#### Potential Data, Tools, Methods, and Analytic Approaches

Assessments will include quantitative and qualitative data. Quantitative data will include financial data, emission data, levels of renewable and nonrenewable energy use, and engineering services. Qualitative data will include input from building occupants. Approaches to answering the questions include foundational factfinding to create a baseline and identify inefficiencies, cost-benefit analysis to determine feasible approaches, and performance measurement to track improvements.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

Challenges include up-front expense for change and building renovation that is in progress as well as availability of electric vehicles and other necessary equipment. Assessment of solutions will follow the lead of GSA.

#### How Results Will Be Used

Project improvements will reduce the Department's carbon footprint.

# Strategic Objective 5.5

## Modernize mission support processes and infrastructure



### Learning Agenda Question(s)

#### Priority Question(s) to Be Answered

- What systems can be established to quickly identify and correct process problems that cause service delays outside of standards?
- What mission support activities can be further streamlined to reduce the burden on mission delivery staff time? How can processes be leaned without compromising value-add requirements?

#### Lead Bureau/Unit

Performance Office, Evaluation Officer, Enterprise Risk Staff, and Enterprise Services

#### Background

Efficient internal processes and information technology (IT) infrastructure enable the Department to provide essential services, foster advancement, and decrease costs. Modern technology and “lean” reliable processes are essential to government performance and building public trust. To increase the efficiency and accuracy of core processes, the Department will employ industry standard, productivity, and process analysis tools. These productivity tools will automate repetitive tasks, reduce duplication of effort and infrastructure, and standardize processes.

#### Activities to Address Question(s)

Interviews of staff will identify pain points in service delivery. Data collection will include the level of effort and time required for high-volume tasks and service needs. Benchmarking services at other agencies will identify opportunities for improvement and best practices and approaches that can accelerate improvement at

Commerce. A literature review will explore the availability of technologies to enable greater efficiencies. The Department will establish priorities for improvement based on their potential impact on staff productivity and effectiveness.

#### Timing of Activities

One significant process is scheduled per fiscal year.

#### Potential Data, Tools, Methods, and Analytic Approaches

This analysis will include quantitative and qualitative data. Quantitative data will include employee ratings for internal service quality, the number of re-engineered workflows, and cycle time for service requests. Qualitative data will include interviews to assess existing processes and literature reviews. Approaches to answer these questions include a cost-benefit analysis to determine feasibility as well as advantages and disadvantages of change. Dashboards of performance metrics will monitor if service standards for cycle time and quality are maintained and will trigger corrective action when needed.

#### Anticipated Agency-Specific Challenges and Proposed Solutions

A challenge is to effectively engage staff who provide a service in the improvement process. One solution is to establish improvement teams and ensure these staff are included.

#### How Results Will Be Used

Enhancements will improve the delivery of mission support services.





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