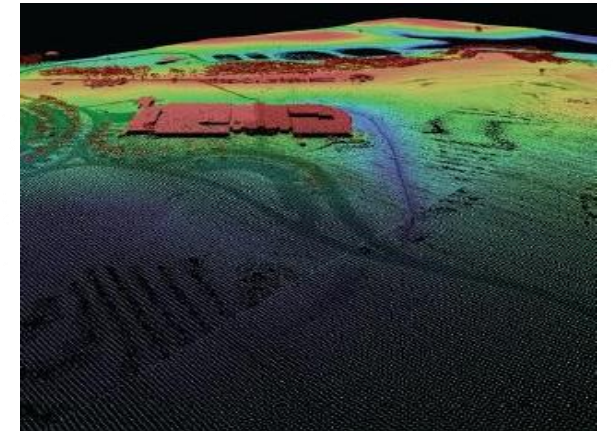
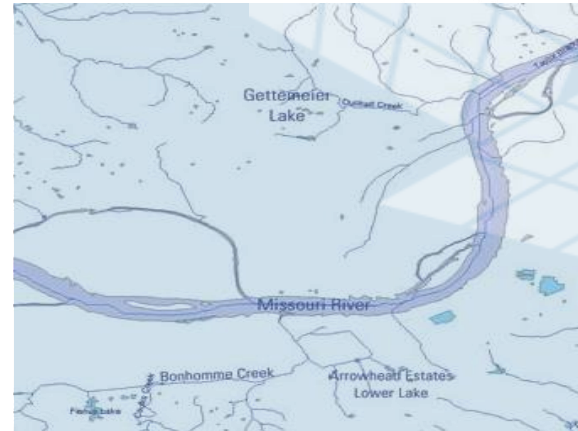
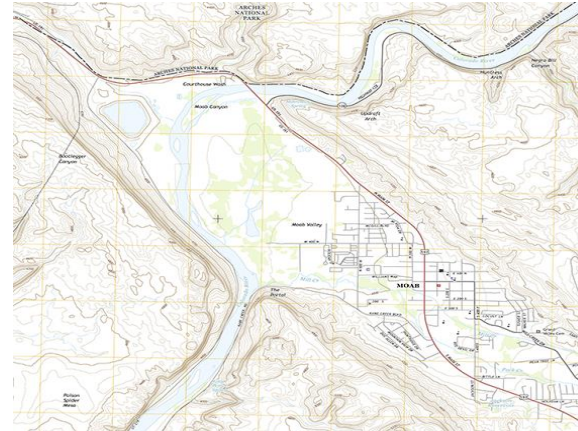




# 3D Elevation Program (3DEP) Status and Future

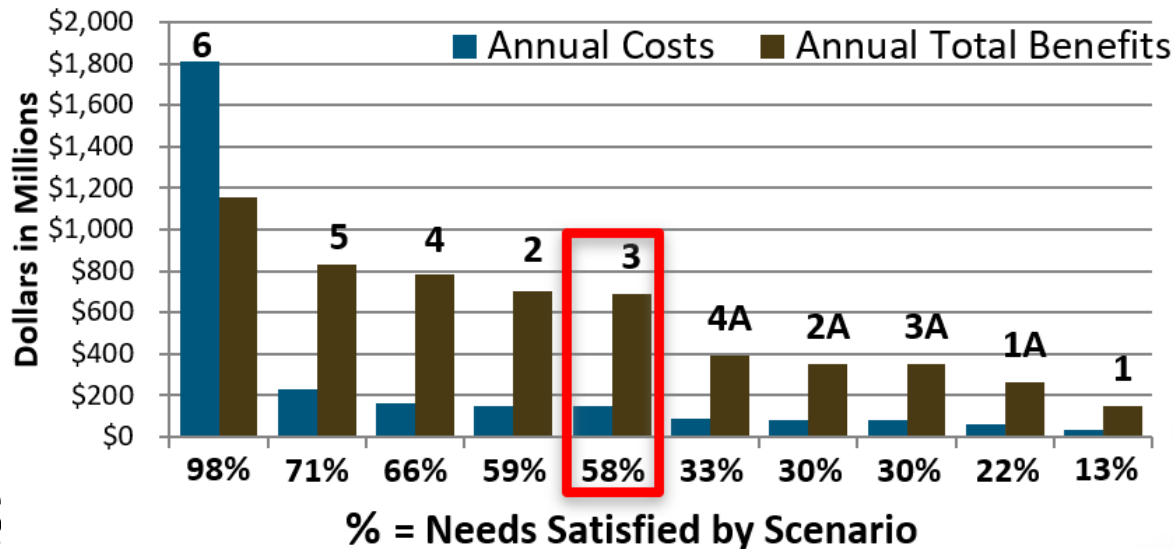
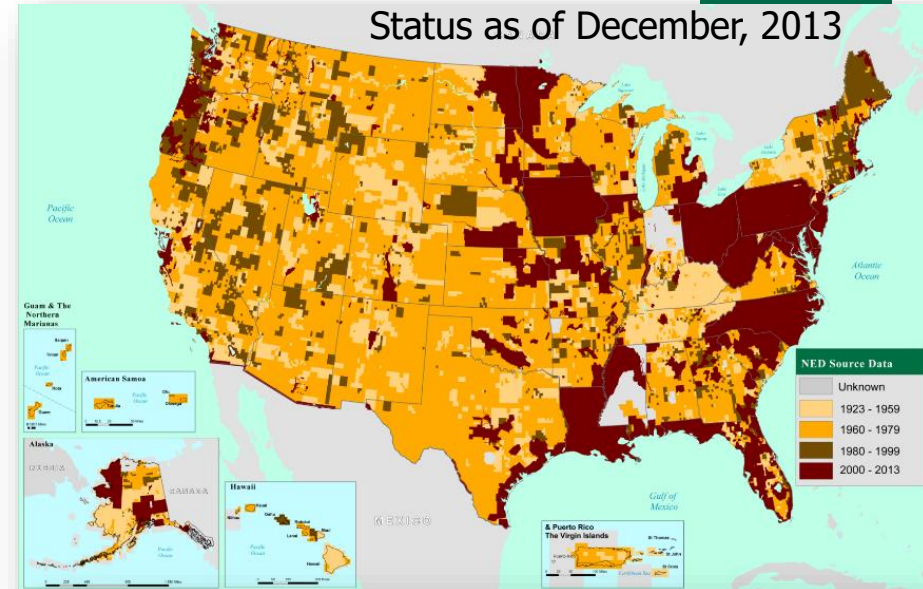


Kevin T. Gallagher  
Associate Director, Core Science Systems  
May 1, 2019

# Looking Back - Defining the Nation's Elevation Strategy

## National Enhanced Elevation Assessment (NEEA)

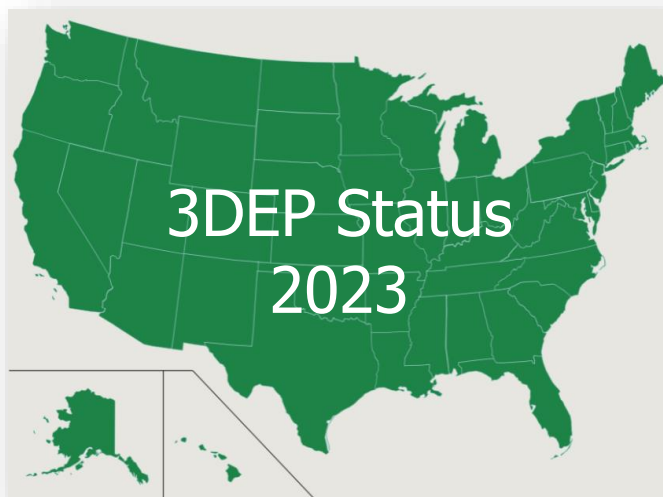
- Prior to 3DEP the National Elevation Dataset provided a patchwork of data collected over nearly a century using evolving technologies, from DEMs processed from hand-drawn contours to QL3 lidar, with data as old as the 1920s in some locations
- NEEA documented requirements and benefits of 34 Federal agencies, all 50 states, local, Tribal and private entities to define next generation of elevation data
- USGS evaluated 10 program scenarios and recommended **uniform coverage of higher quality data**



Rank	Business Use	Annual Benefits	
		Conservative	Potential
1	Flood Risk Management	\$295M	\$502M
2	Infrastructure and Construction Management	\$206M	\$942M
3	Natural Resources Conservation	\$159M	\$335M
4	Agriculture and Precision Farming	\$122M	\$2,011M
5	Water Supply and Quality	\$85M	\$156M
6	Wildfire Management, Planning and Response	\$76M	\$159M
7	Geologic Resource Assessment and Hazard Mitigation	\$52M	\$1,067M
8	Forest Resources Management	\$44M	\$62M
9	River and Stream Resource Management	\$38M	\$87M
10	Aviation Navigation and Safety	\$35M	\$56M
:			
20	Land Navigation and Safety	\$0.2M	\$7,125M
<b>Total for all Business Uses (1 - 27)</b>		<b>\$1.2B</b>	<b>\$13B</b>

# + 3D Elevation Program (3DEP) Goal

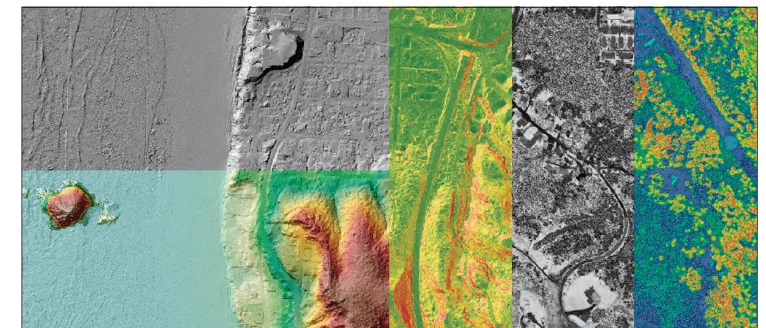
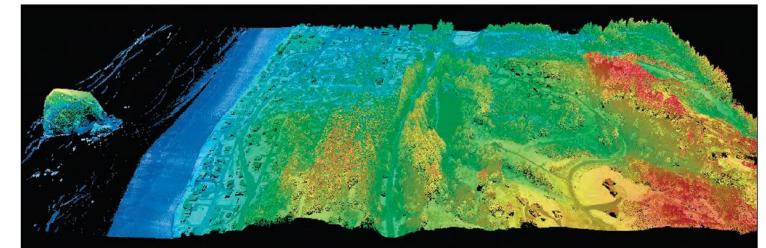
- Complete acquisition of nationwide lidar (IfSAR in AK) in 8 years to provide the **first-ever national baseline of consistent high-resolution elevation data – both bare earth and 3D point clouds – collected in a timeframe of less than a decade**
- Address Federal, state and other mission-critical requirements
- Realize ROI 5:1 and potential to generate \$13 billion/year
- Leverage the capability and capacity of private mapping firms
- Achieve a 25% cost efficiency gain
- Completely refresh national data holdings



Plan vetted across the community and published in the 2014 3DEP Call for Action



## The 3D Elevation Program Initiative—A Call for Action



Circular 1399

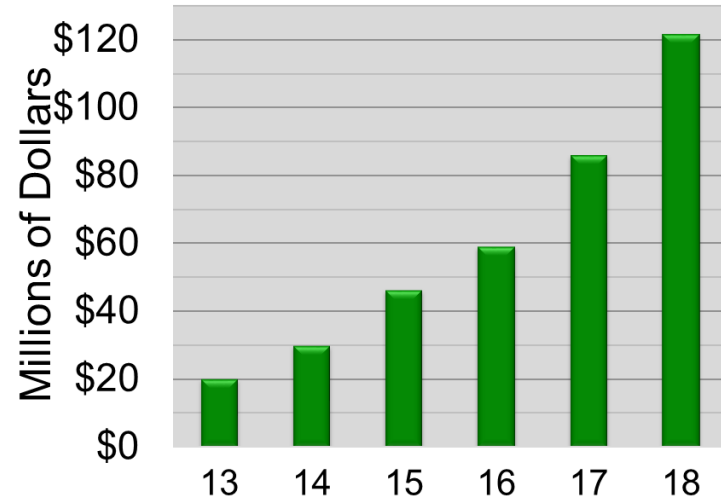
U.S. Department of the Interior  
U.S. Geological Survey



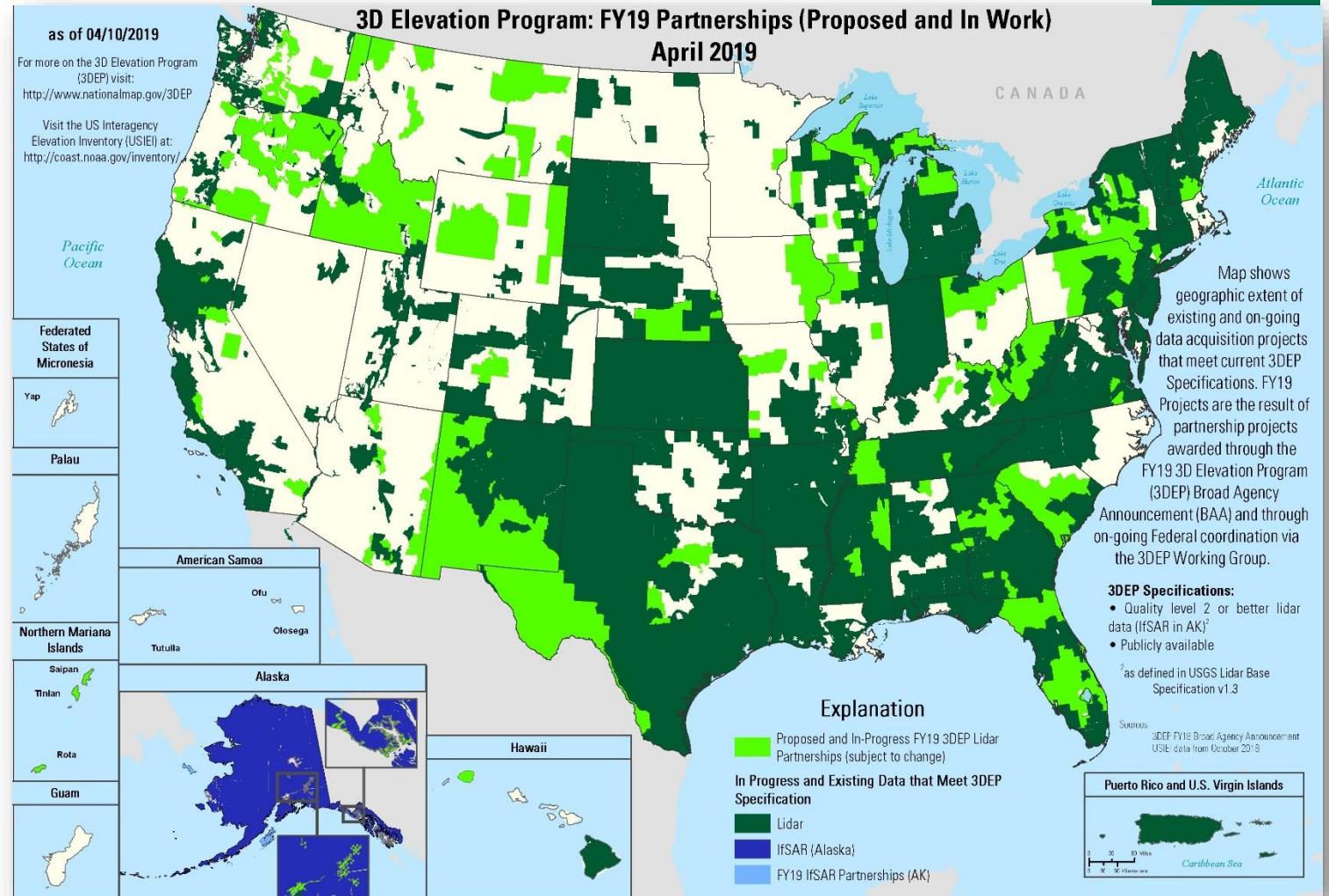
# 3DEP Status Including FY18 Partnerships

## Data are available or in progress for 53% of the Nation

\*includes lidar and AK IfSAR

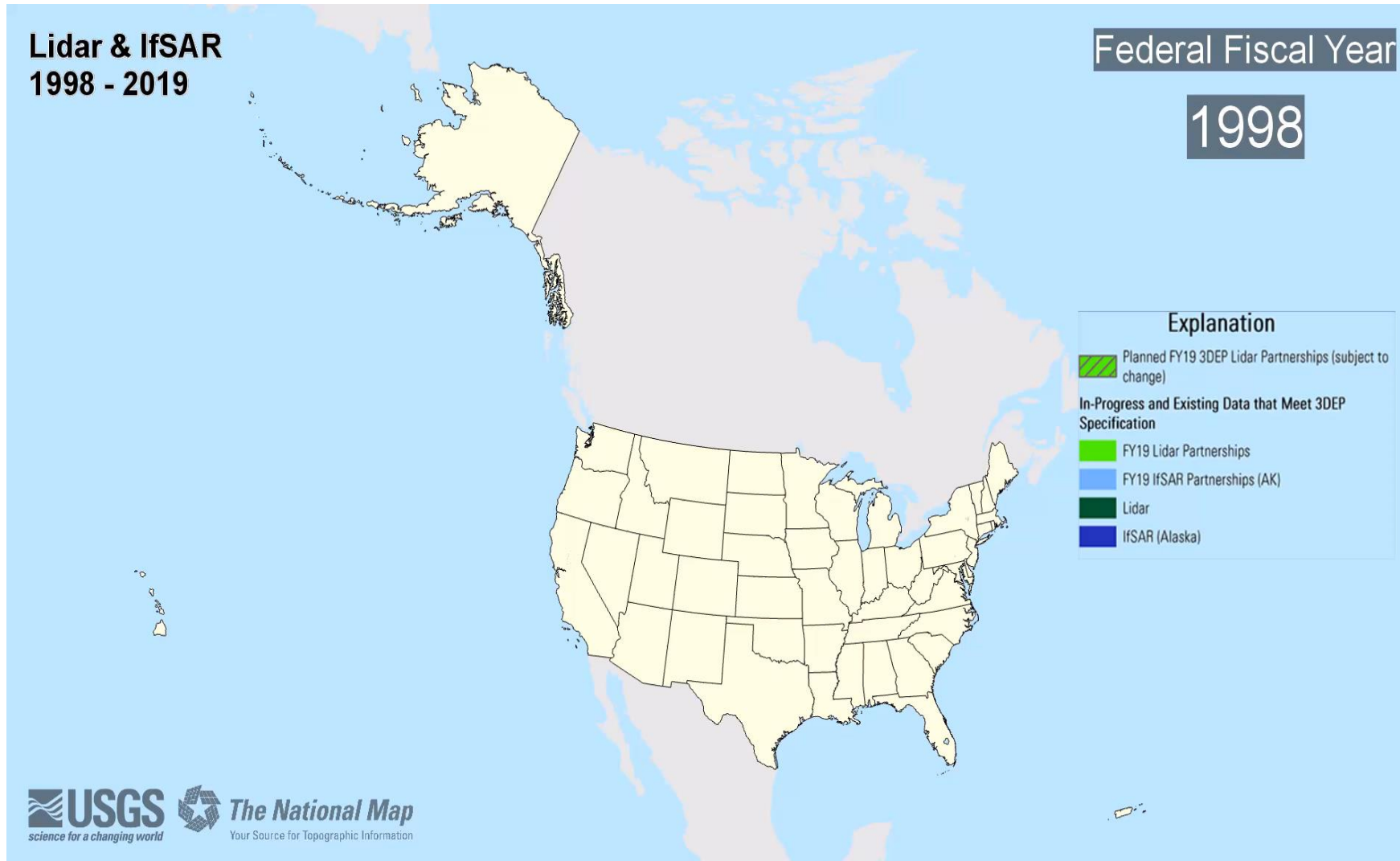


Data acquisition investments by all partners, by fiscal year



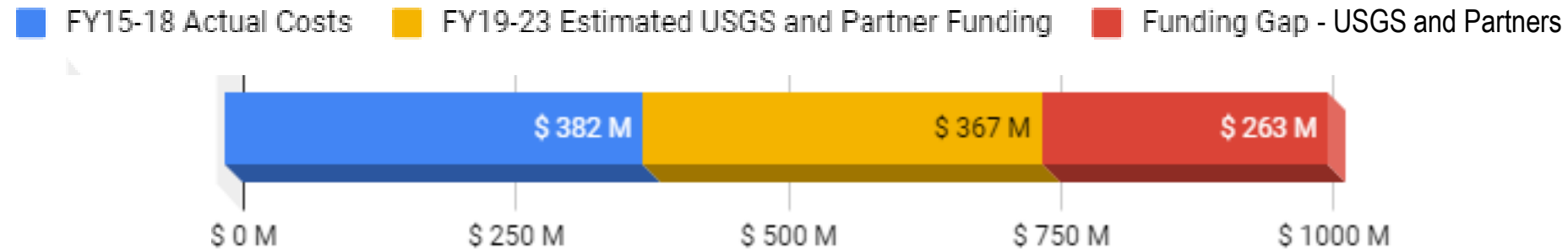


# Growth of Lidar Acquisition



# 3DEP Goal to Complete Acquisition by 2023

## Estimated Funding Gap



- To estimate the **funding gap for completing nationwide 3DEP data coverage by 2023**, three different partnership scenarios (1:4, 1:2 and 1:1 with Federal lands at 1:1 for all scenarios) were considered and the average is reflected in the bar graph
- Partner funding has been harder to raise for the western U.S. due to smaller tax bases and the presence of large areas of Federal lands, so we anticipate that completion of remaining areas will be at the lower ratios
- The estimate includes MANY assumptions and is being refined as we learn more

**Congress of the United States**  
**Washington, DC 20515**

March 28, 2019

The Honorable Nita Lowey  
 Chairwoman  
 Committee on Appropriations  
 H-307, The Capitol  
 Washington, DC 20515

The Honorable Betty McCollum  
 Chairwoman  
 Subcommittee on Interior and Environment  
 and Related Agencies  
 B-308 Rayburn HOB  
 Washington, DC 20515

The Honorable Kay Granger  
 Ranking Member  
 Committee on Appropriations  
 1016 Longworth HOB  
 Washington, DC 20515

The Honorable David Joyce  
 Ranking Member  
 Subcommittee on Interior and Environment  
 and Related Agencies  
 1016 Longworth HOB  
 Washington, DC 20515

Dear Chairwomen Lowey and McCollum and Ranking Members Granger and Joyce,

We write to respectfully request that you provide robust funding for the 3D Elevation Program, or 3DEP, administered by the U.S. Geological Survey (USGS), in the FY 2020 Department of the Interior, Environment, and Related Agencies Appropriations Act.

3DEP will satisfy the growing demand for consistent, high-quality topographic data and a wide range of other three-dimensional representations of the Nation's natural and constructed features. The USGS has identified more than 600 applications that would benefit from enhanced elevation data. Data procured from 3DEP can be applied to flood risk management; infrastructure; water resources; aviation safety; telecommunications; homeland security; emergency response; precision agriculture; energy; pipeline safety; and other areas. 3DEP will promote economic growth, facilitate resource development and management while enhancing environmental protection, assist with infrastructure improvement, and generally enhance the quality of life of all Americans. In addition, lidar data from 3DEP helps provide the USGS Natural Hazards Program with the best available scientific information and tools to reduce the threat of injuries, fatalities, and economic loss from a variety of natural disasters such as landslides, sinkholes, earthquakes and volcanoes.

The USGS, with involvement from the private sector and other stakeholders, conducted a National Enhanced Elevation Assessment (NEEA), to determine and document the need for national elevation data within government and private markets. The results indicated that enhanced elevation data could have the potential to generate \$13 billion in annual benefits, at a benefit-to-cost ratio of 4.7 to 1. The USGS has previously recommended that \$146 Million will enable USGS to achieve nationwide coverage of the United States on an 8-year cycle, as originally conceived in the USGS plan for 3DEP.

We are committed to working with my colleagues on both sides of the aisle to do everything we can to maximize the benefits for my constituents and for citizens across the country from the more

than 600 public applications and business uses of enhanced elevation data. Thank you for your attention to this request.

Sincerely,



Scott Tipton  
 Member of Congress



Jason Crow  
 Member of Congress



Bruce Westerman  
 Member of Congress



Donald M. Payne, Jr.  
 Member of Congress



Jimmie Panetta  
 Member of Congress



Sean Casten  
 Member of Congress



Kim Schriber  
 Member of Congress



Suzan K. DelBene  
 Member of Congress



Doug Lamborn  
 Member of Congress



Darren Soto  
 Member of Congress



Raju Krishnamoorthi  
 Member of Congress



Bill Foster  
 Member of Congress



Deb Haaland  
 Member of Congress



G.K. Butterfield  
 Member of Congress



Cindy Axne  
 Member of Congress



Steven Horsford  
 Member of Congress



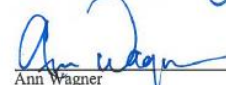
Earl Blumenauer  
 Member of Congress



Jim Costa  
 Member of Congress



Alex X. Mooney  
 Member of Congress



Ann Wagner  
 Member of Congress



John Curtis  
 Member of Congress



Tony Cardenas  
 Member of Congress



Mike Johnson  
 Member of Congress



Paul Gosar, D.D.S.  
 Member of Congress



Tom McClintock  
 Member of Congress



Joseph D. Morelle  
 Member of Congress



Peter King  
 Member of Congress



Vicente Gonzalez  
 Member of Congress



Peter DeFazio  
 Member of Congress



Mark DeSaulnier  
 Member of Congress



Jackie Speier  
 Member of Congress



Don Young  
 Member of Congress



Diana DeGette  
 Member of Congress



Jesus G. "Chuy" Garcia  
 Member of Congress



Rashida Haib  
 Member of Congress



Andy Biggs  
 Member of Congress



Doug LaMalfa  
 Member of Congress



Rick Crawford  
 Member of Congress

**Thank You**  
**3DEP Coalition!**

April 22, 2019

The Honorable Lisa Murkowski  
Chairman  
U.S. Senate Committee on Appropriations  
Subcommittee on Interior, Environment,  
and Related Agencies  
131 Dirksen Senate Office Building  
Washington, D.C. 20510

The Honorable Tom Udall  
Ranking Member  
U.S. Senate Committee on Appropriations  
Subcommittee on Interior, Environment,  
and Related Agencies  
125 Hart Senate Office Building  
Washington, D.C. 20510

Dear Chairman Murkowski and Ranking Member Udall,

As you prepare the Fiscal Year 2020 Interior, Environment, and Related Agencies Appropriations bill, we ask that you provide robust funding for the 3D Elevation Program, or 3DEP, administered by the U.S. Geological Survey (USGS).


3DEP will satisfy the growing demand for consistent, high-quality topographic data and a wide range of other three-dimensional representations of the Nation's natural and constructed features. The USGS has identified more than 600 applications that would benefit from enhanced elevation data. Data procured from 3DEP can be applied to flood risk management; infrastructure; water resources; aviation safety; telecommunications; homeland security; emergency response; precision agriculture; energy; pipeline safety; and other areas. 3DEP will promote economic growth, facilitate resource development and management while enhancing environmental protection, assist with infrastructure improvement, and generally enhance the quality of life of all Americans. In addition, lidar data from 3DEP helps provide the USGS Natural Hazards Program with the best available scientific information and tools to reduce the threat of injuries, fatalities, and economic loss from a variety of disasters caused by natural hazards such as landslides, sinkholes, earthquakes and volcanoes.

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We urge you to provide robust funding for the 3D Elevation Program. Thank you for considering our request.

Sincerely,

  
Maria Cantwell  
United States Senator

  
Cory Gardner  
United States Senator

  
Tammy Baldwin  
United States Senator

  
Dianne Feinstein  
United States Senator

  
Sheldon Whitehouse  
United States Senator

  
Bernard Sanders  
United States Senator

  
Martin Heinrich  
United States Senator

  
Richard Blumenthal  
United States Senator

  
Sherrod Brown  
United States Senator


  
Ron Wyden  
United States Senator

  
Gary C. Peters  
United States Senator

  
Charles E. Grassley  
United States Senator

  
Kyrsten Sinema  
United States Senator

  
Margaret Wood Hassan  
United States Senator

  
Robert P. Casey, Jr.  
United States Senator

  
Martha McSally  
United States Senator



**Thank  
You  
3DEP  
Coalition!**



# + 3DEP Coalition

# Thank You 3DEP Coalition!

## Letter to the Interior Subcommittees requesting \$146M

Alliance of Crop, Soil, and Environmental Science Societies  
American Bankers Association  
American Council of Engineering Companies  
American Geosciences Institute  
American Institute of Professional Geologists  
American Petroleum Institute  
American Property Casualty Insurance Association  
American Public Works Association  
American Society for Horticultural Science  
American Society of Agronomy  
American Society of Civil Engineers  
American Society of Farm Managers and Rural Appraisers  
American Water Resources Association  
American Water Works Association  
Association of American State Geologists  
Association of Environmental & Engineering Geologists  
Association of State Floodplain Managers  
Crop Science Society of America  
Insurance Institute for Business & Home Safety  
International Association of Emergency Managers

International Code Council  
Interstate Council on Water Policy  
Irrigation Association  
Land Improvement Contractors of America  
National Agricultural Aviation Association  
National Apartment Association  
National Association of Development Organizations  
National Association of Realtors  
National Association of Tower Erectors  
National EMS Pilots Association  
National Flood Association  
National Ground Water Association  
National Multifamily Housing Council  
National Society of Professional Surveyors  
National States Geographic Information Council  
National Wildlife Federation  
Rural & Agriculture Council of America  
Society for Range Management  
Soil and Water Conservation Society  
Soil Science Society of America



# S. 529 National Landslide Reduction Act

## Senate Commerce Committee

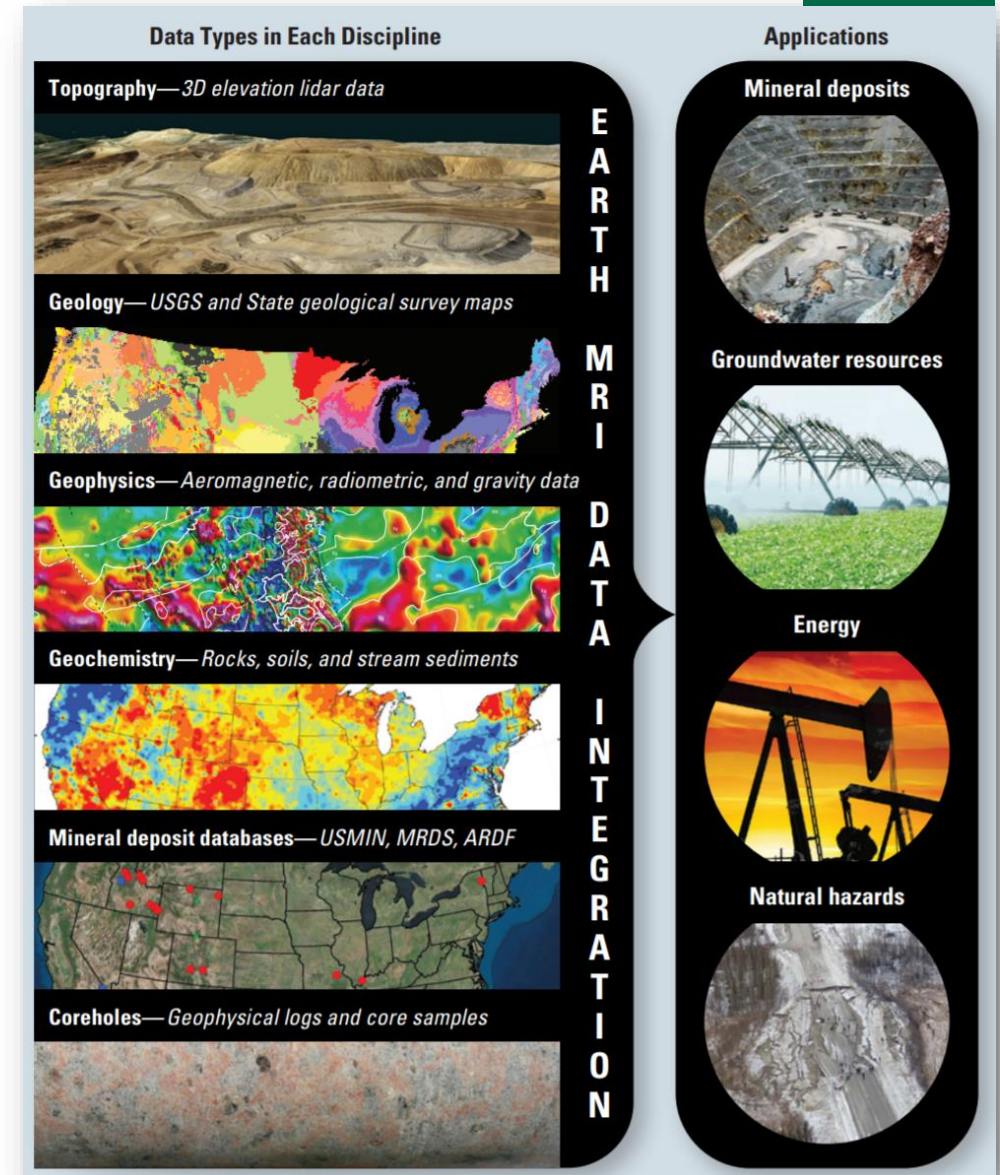
- Would authorize a national landslides hazards program and a national 3DEP program
- The head of each Federal department and agency involved in the acquisition, production, distribution, or application of 3D elevation data shall—implement policies and procedures for data acquisition and sharing that are consistent with standards and guidelines developed under the 3D Elevation Program; Ensure that any 3D elevation data acquired with Federal grant funding— (I) meets 3D Elevation Program standards; and (II) is included in the national holdings of those data.
- Establishes the 3D Elevation Federal Interagency Coordinating Committee composed of:
  - (A) The Secretary, who shall serve as 11 Chairperson of the Committee
  - (B) The Secretary of Agriculture
  - (C) The Secretary of Commerce
  - (D) The Secretary of Homeland Security
  - (E) The Director of the National Science Foundation
  - (F) The Director of the Office of Science and Technology Policy
  - (G) The Director of the Office of Management and Budget
  - (H) The head of any other Federal department or agency, at the request of the Secretary
- Establish a subcommittee under National Geospatial Advisory Committee to report and provide recommendations on effectiveness of program and assessment of trends

# + Earth Mapping Resources Initiative (Earth MRI)

Goal to improve knowledge of the Nation's geologic framework and to identify areas of potential undiscovered critical mineral resources to decrease our reliance on foreign mineral sources

Leverage existing programs to collect data on the highest priority regions:

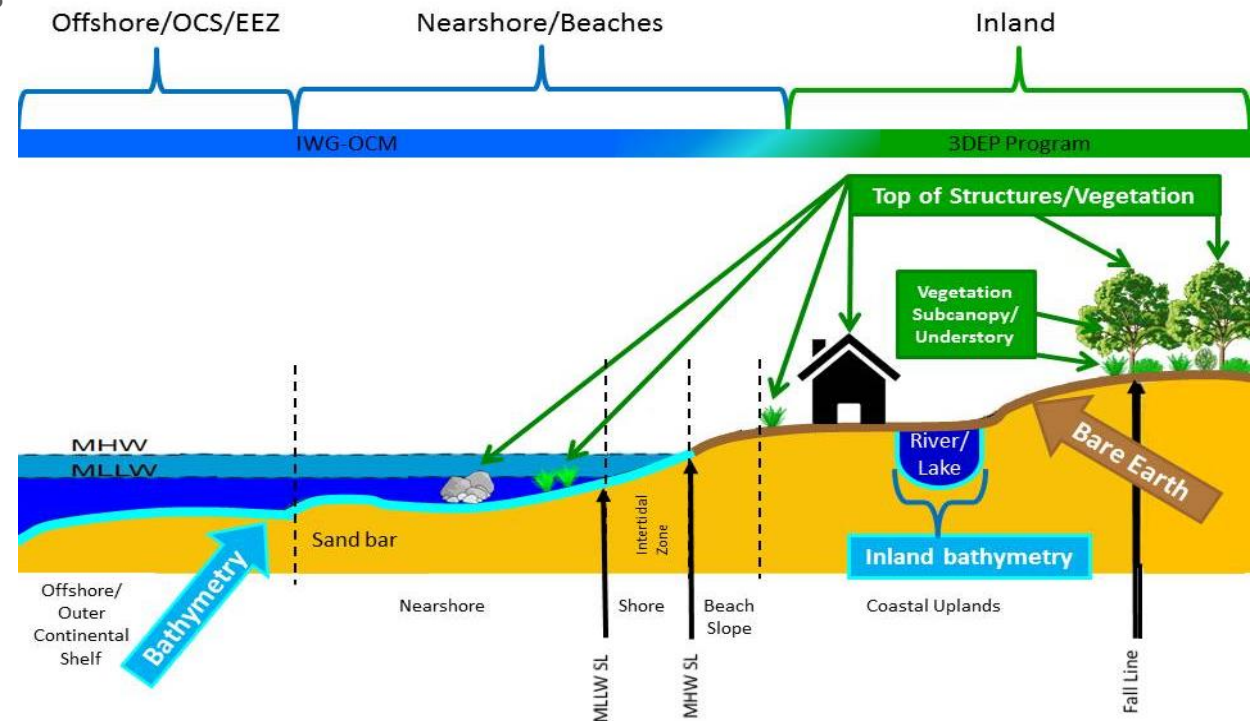
- Cooperative agreements with State geological surveys for new geologic mapping and data preservation
- Contracts with private industry to conduct geophysical and lidar surveys
- 3DEP partnerships under the Broad Agency Announcement
- In FY19, focus on areas potentially containing rare earth element mineral deposits



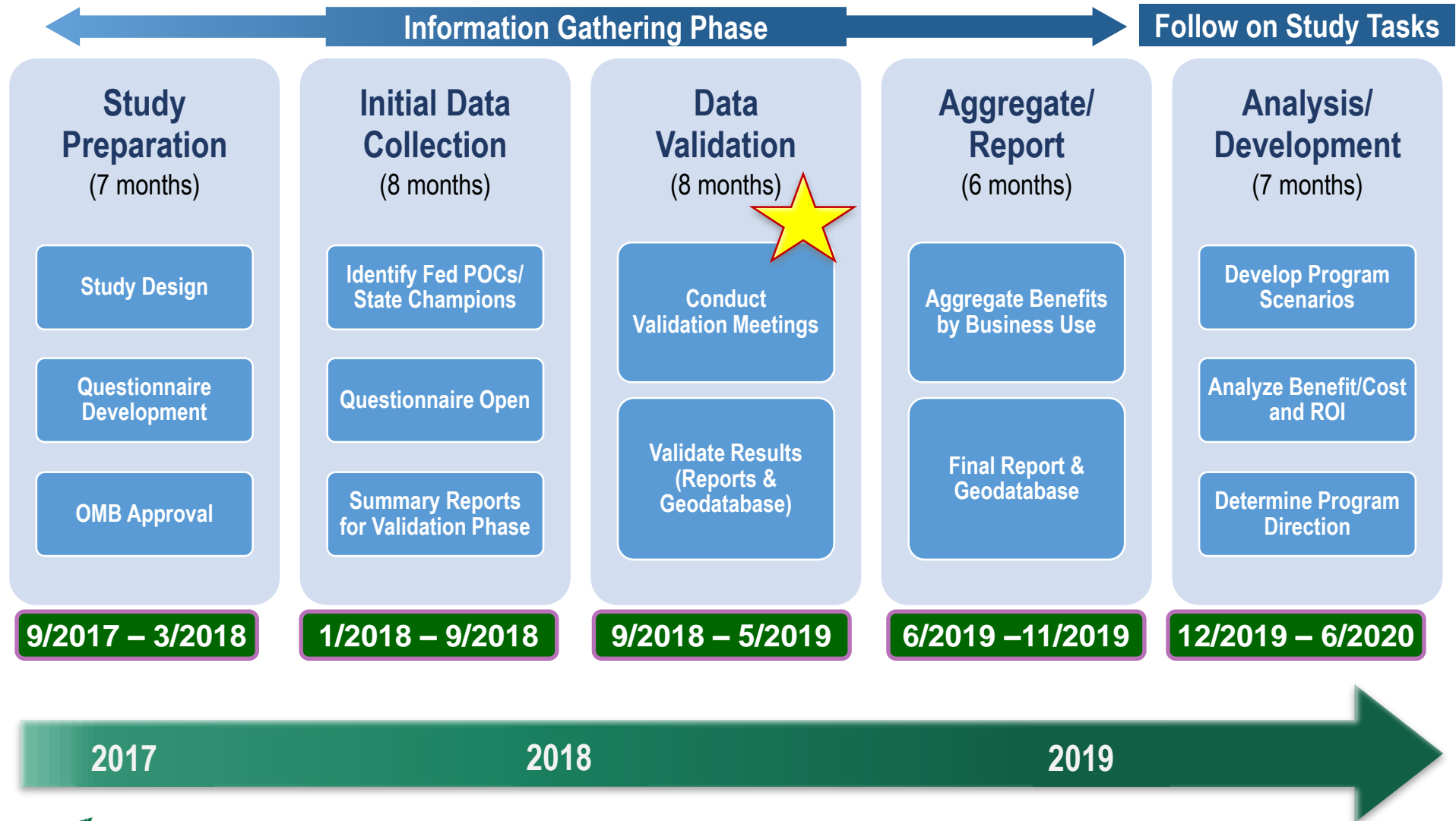
# + 3DEP Future Generation Just Around the Corner

## 3D Nation Elevation Requirements and Benefits Study

- Working with NOAA to understand inland, nearshore and offshore bathymetric data requirements and benefits
- Plan for the next round of 3DEP when the first-ever national baseline of consistent high-resolution data is in place – what is needed for monitoring, change detection and other new applications?
- Gather technology-agnostic user information to be able to assess new technologies against requirements and identify the tradeoffs between different approaches
- Results will lead to a completely new approach regarding QLs, refresh frequency by geography, products offered, and other changes

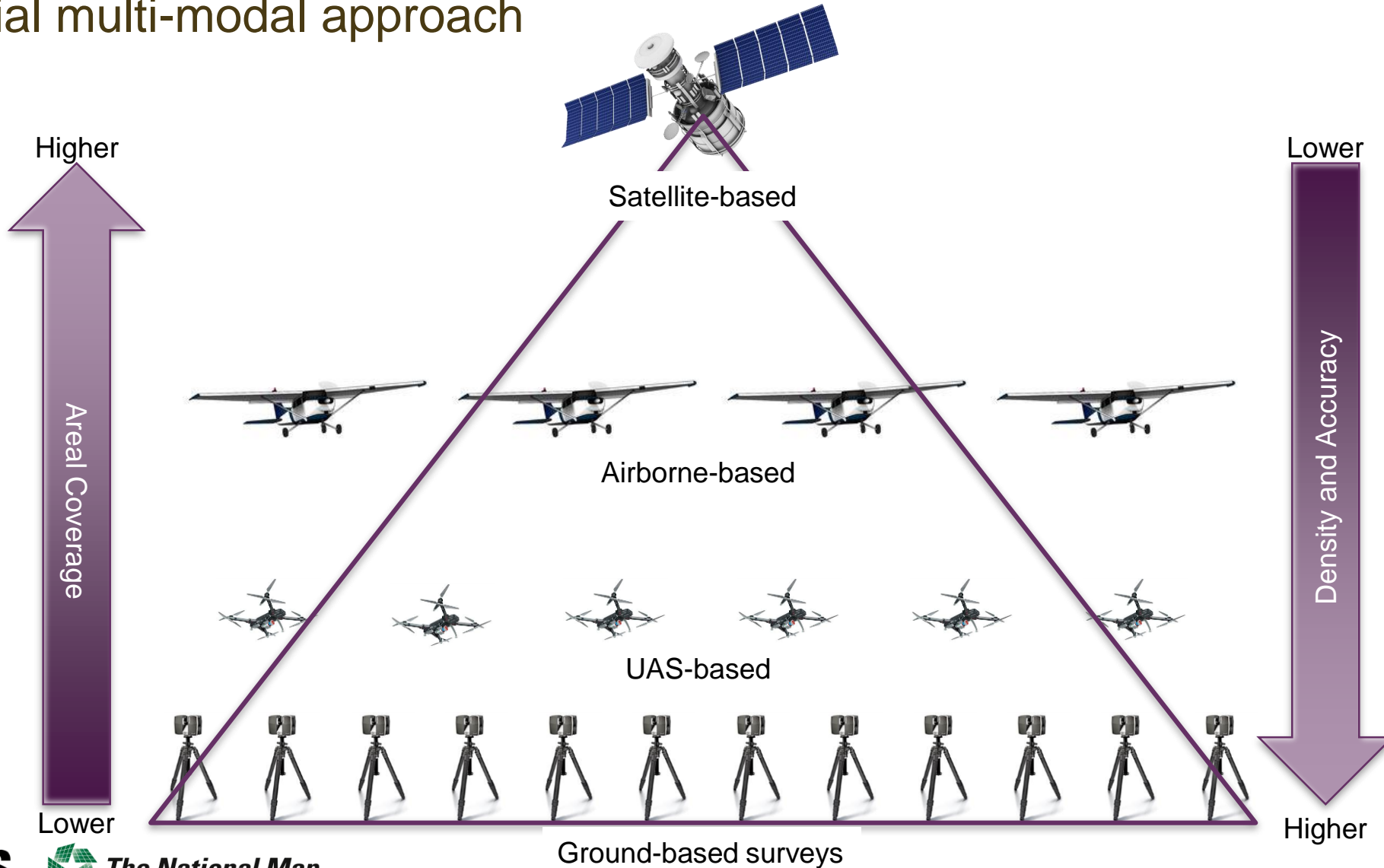


# + Study Phases and Timeline



# + 3DEP Future Generation Just Around the Corner

## Potential multi-modal approach



# THANK YOU!

