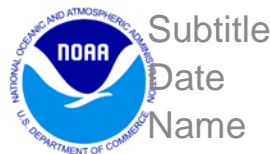


Mapping a 3D Nation: Requirements and Benefits Study Design Part 2

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Subtitle
Date
Name



Study Design

Overview

- Study sponsors
- Study context
- Study goals
- Study design process
- Study timeline

Study Sponsors



NOAA, Office of Coast Survey and
National Geodetic Survey



USGS



The National Map
Your Source for Topographic Information



Study Context

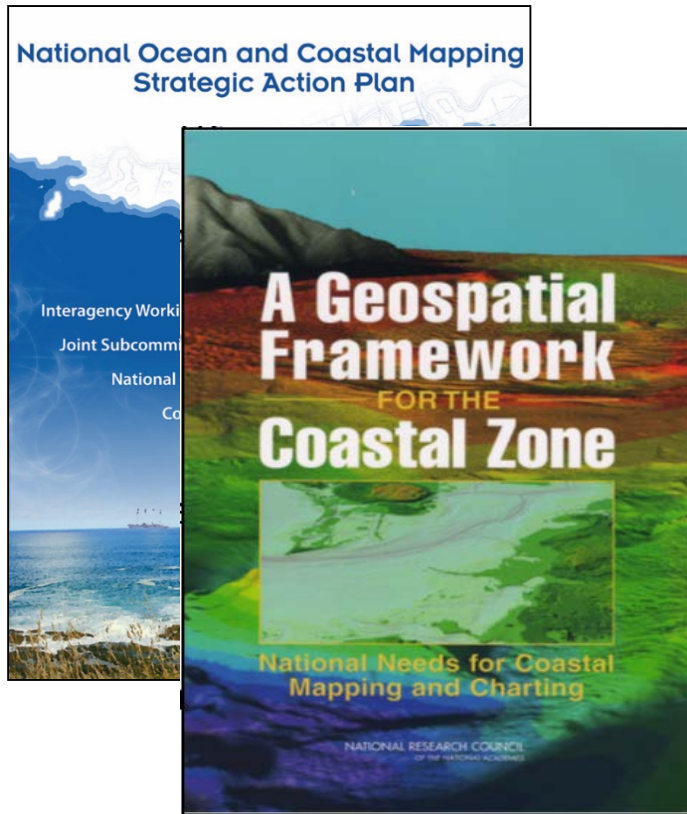
Background

- The National Enhanced Elevation Assessment (NEEA) ultimately resulted in the 3DEP program
- 3DEP is in the production phase of a planned 8-year program to deliver QL2 elevation data across the CONUS, HI, and territories, and IfSAR data for AK
- The National Coastal Mapping Strategy 1.0 calls for a NEEA-like study to understand the costs and benefits of comprehensive ocean and coastal mapping and its contribution to the 3D Nation vision of a seamless elevation dataset from mountains to oceans

The Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)

WHO:

NOAA
USGS
USACE
NAVO
BOEM
NSF
NGA
USCG
EPA
FEMA
NASA



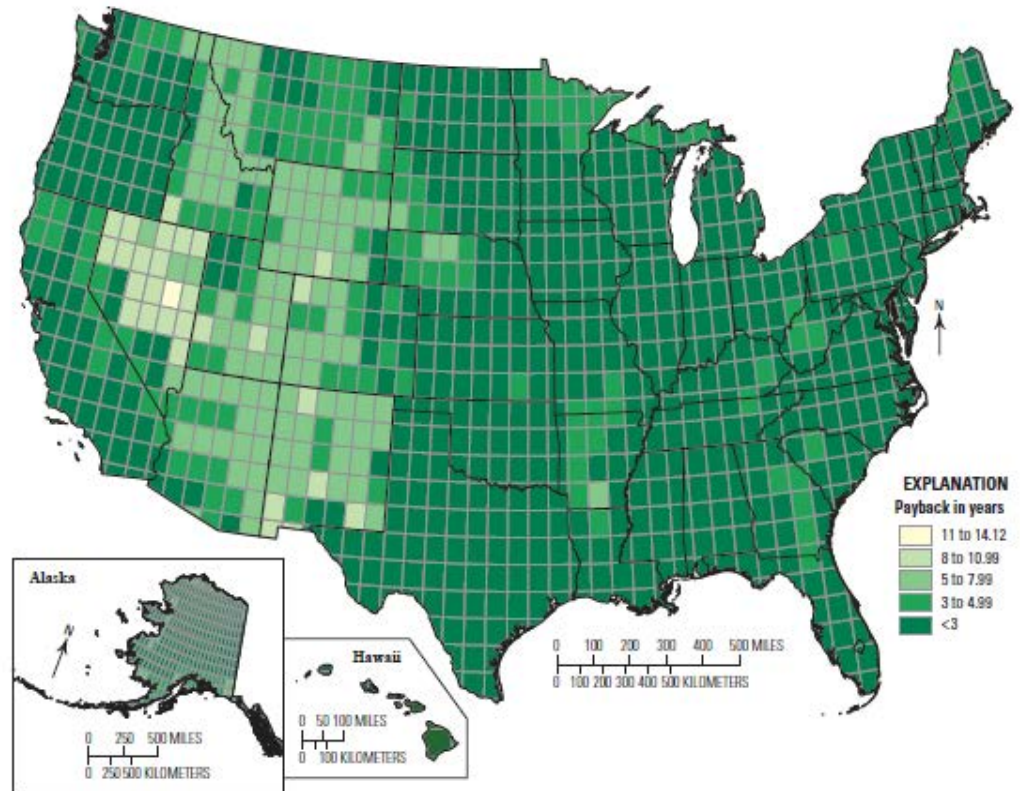
- Co-chaired by NOAA, USGS, and USACE
- Charged with facilitating “the coordination of ocean and coastal mapping activities and avoid[ing] duplicating mapping activities...”

*and other appropriate
Federal agencies
involved in ocean and
coastal mapping.*

National Coastal Mapping Strategy 1.0

Coastal Lidar Elevation for a 3D Nation

- Public comment period has now ended, in process of addressing feedback before final
- Implementing components underway

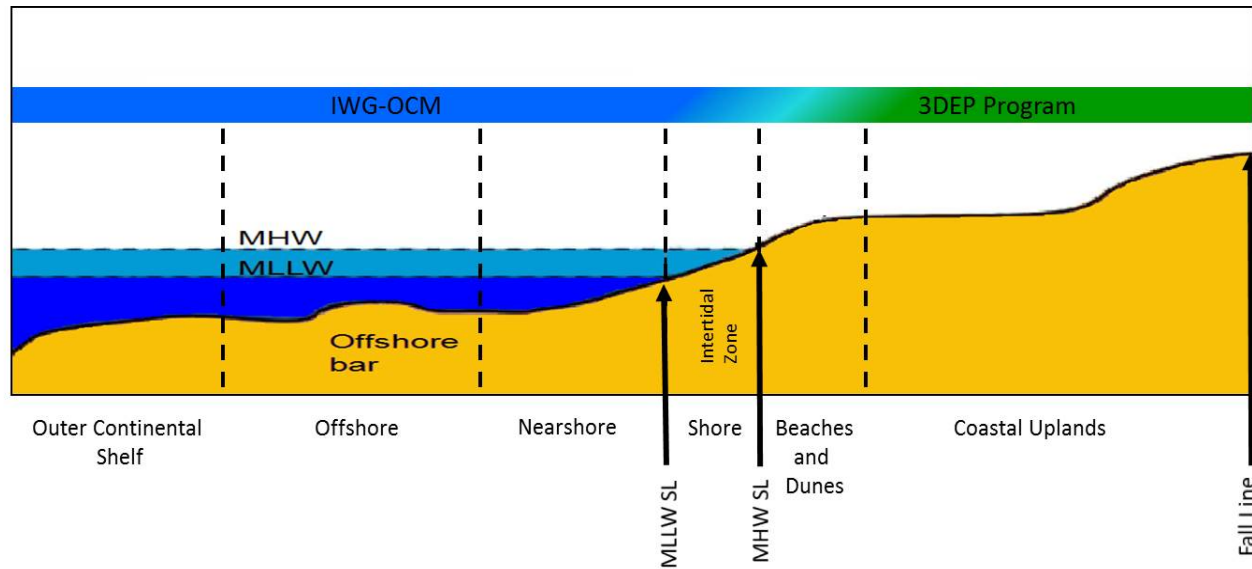


National Coastal Mapping Strategy 1.0

Coastal Lidar Elevation for a 3D Nation

Components:

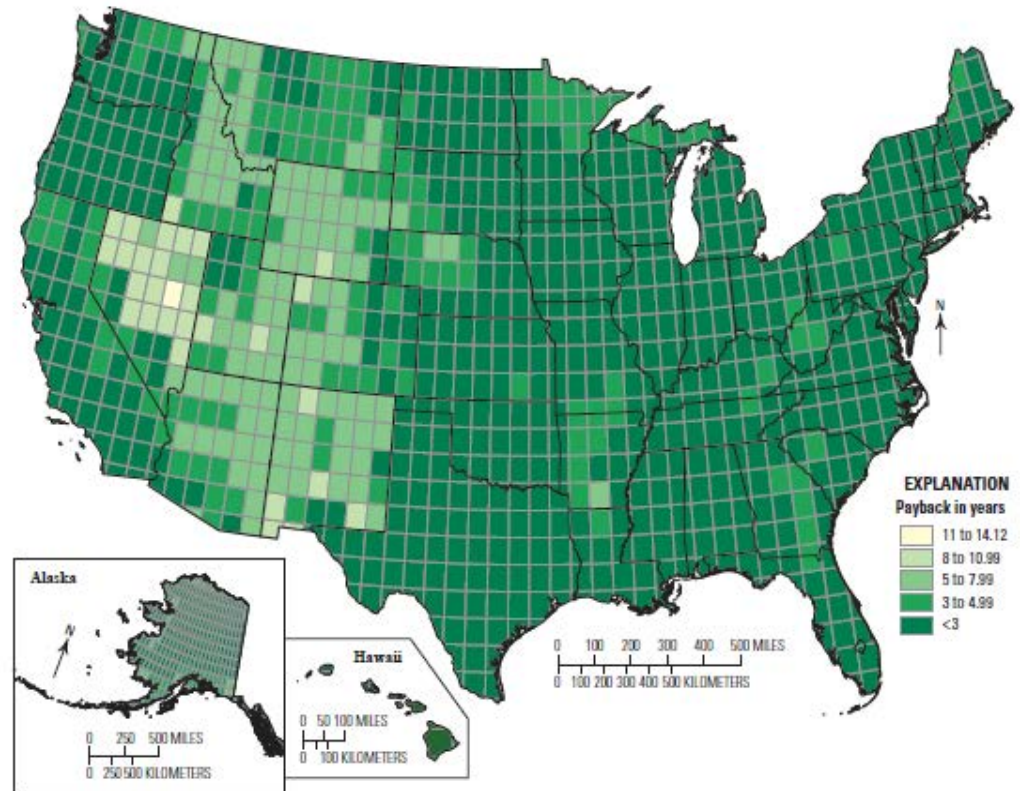
- Regional Coastal Mapping Summits for coordination
- Common standards – Bathymetry Quality Levels aka 3DEP topo QL's
- Whole life cycle approach to data
- R&D on new tools/techniques for data collection and use.



National Coastal Mapping Strategy 2.0

Ocean Elevations for a 3D Nation

- Version 2.0 will include
 - Offshore/OCS
 - Acoustic
 - Aerial photography, HSS
- Building from agency inputs such as NOAA Hydro Survey Priorities work, BOEM priority areas for survey, etc.
- Scoping study for NEEA Update and Coastal/Offshore (NEEA-OC) Elevation Requirements and Benefits Study



Study Goals

Understand 3D Data Requirements

- Refresh the National Enhanced Elevation Assessment (NEEA) for the years beyond the initial 8-year acquisition program
- Understand inland and nearshore bathymetric data requirements and benefits
- Understand offshore bathymetric data requirements and benefits
- Understand how requirements and benefits dovetail in the nearshore coastal zone

National Enhanced Elevation Assessment (NEEA)

A comprehensive inventory of user requirements and benefits for elevation data

- Conducted in 2011 – 2013

- Data collection
 - 34 Federal Agencies
 - 50 States
 - Local Government, tribal, private, not-for-profits

- Results
 - 602 Mission critical activities that need significantly better data than are currently available
 - Between \$1.2 billion and \$13 billion in benefits annually
 - Increases in Presidents budget in FY14 and FY15
 - <http://nationalmap.gov/3dep>

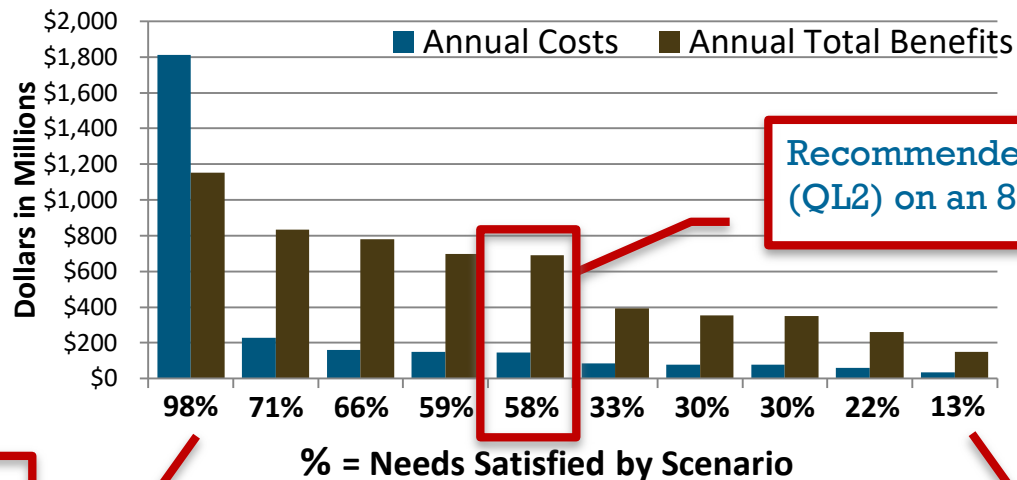
NEEA Benefits for Top Business Uses

Business Use		Annual Benefits	
		Conservative	Potential
Rank			
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
Total for all Business Uses (1 – 27)		\$1.2B	\$13B

National Elevation Program Recommendation

Multiple Scenarios Considered

- Avg. Annual Costs: \$146M
- Avg. Annual Benefits: \$690M
- Avg. Annual Net Benefits: \$544M
- Benefit Cost Ratio - 4.7:1
- Total Benefits Satisfied: 58%



Highest quality level (QL1) on an annual cycle

QL3 on a 25 year cycle (closest to existing program)

Study Design Process

Overview

- Literature review
- Define stakeholders
- Develop study workflow
- Develop draft questionnaire
- Develop outreach and training plan
- Develop questionnaire validation process

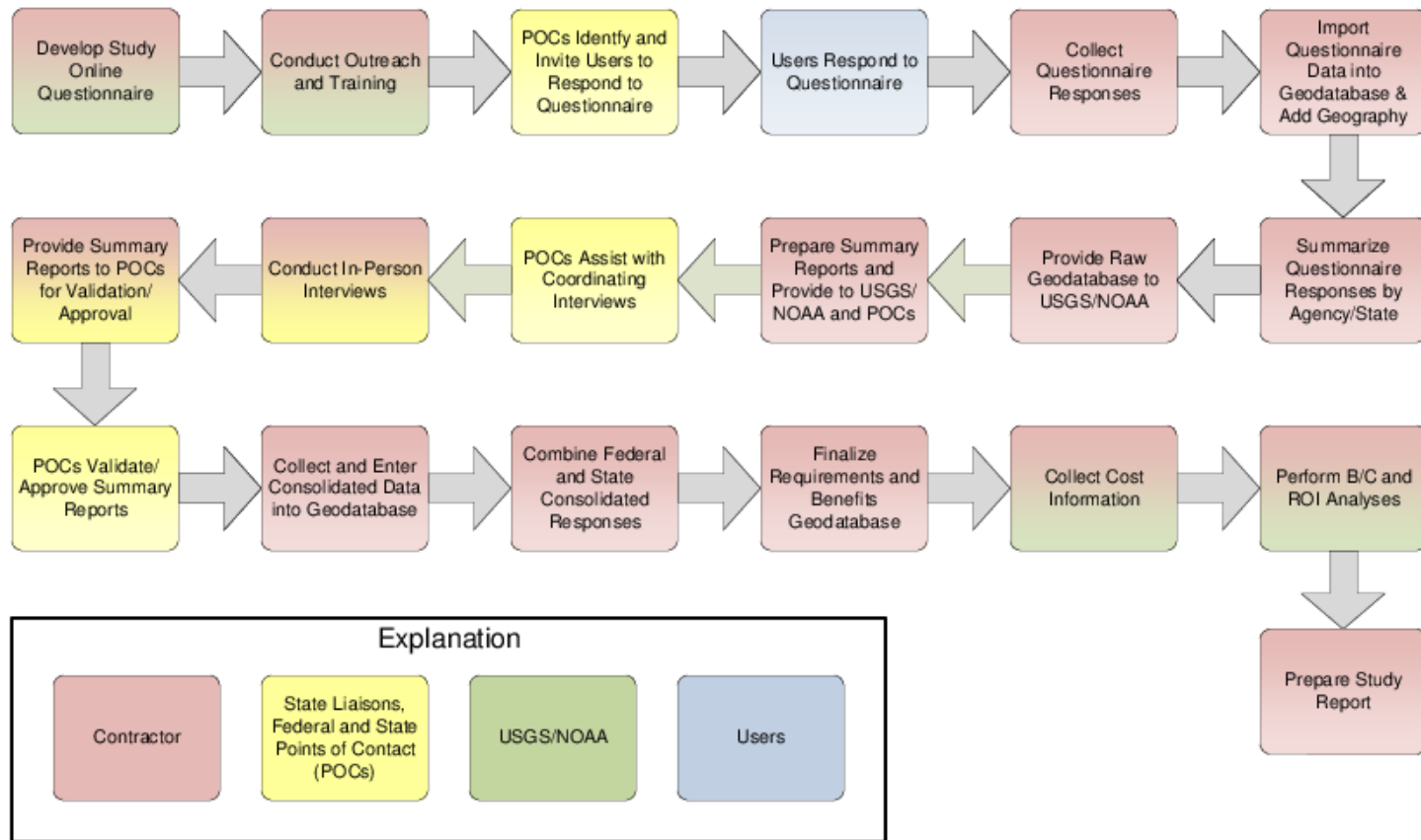
Stakeholders

Federal, State, Local, Tribal, Non Profit, Academia, and Private

- 70 Federal departments and agencies
- 4 Federal commissions or committees
- 50 states plus D.C. and territories
- Local and regional stakeholders
- 16 Non-profits
- Private/commercial

Study Workflow

3D Nation Requirements and Benefits Study Workflow



Draft Questionnaire

Contact and Activity

- Contact information
- Mission Critical Activity (MCA) title and description
- Business Use – Primary and secondary
- Program supported by MCA
- Program budget supported by MCA
- Geographic area of interest

Draft Questionnaire (cont'd)

Main Data Requirements

- Data type required
 - Inland
 - Nearshore/beaches
 - Offshore/OCS/EEZ

- What surface is needed (e.g. bare earth, rooftops, bottom of ocean)

- Horizontal and vertical accuracy

- Update frequency

Draft Questionnaire (cont'd)

Related Data Requirements

- Importance of integration with other datasets (examples)
 - Other elevation data
 - Nautical or navigation charts
 - Seafloor imagery
 - Bottom and subbottom characteristics
 - Water column properties
 - Currents, tide heights, wave heights
 - Habitat distribution and classification
 - Boundaries
 - Routes
 - Cadastral or lease areas
 - Shorelines
 - Hydrography

Draft Questionnaire (cont'd)

Quantitative and Qualitative Benefits

- Current benefits
 - Dollar benefits
 - Operational
 - Customer Service
 - Societal

- Future benefits
 - Dollar benefits
 - Benefits description
 - Operational
 - Customer Service
 - Societal

Draft Questionnaire (cont'd)

Data Access

- Datasets currently used
- Geospatial extents of data used
- Data types (file formats)
- Services used
- Data storage location of purchased or acquired elevation data
- Data storage location of products or results

Outreach and Training

Federal and State Teams

- Form state liaison/champion teams
- Identify Federal and state POCs
- Brief liaisons and POCs on study and their roles
- Identify study participants
- Send questionnaire invitations and follow-ups as needed
- FAQs and Benefits Examples
- Inform participants of study progress and results

Questionnaire Validation Process

Validate and Consolidate Questionnaire Responses

- In-person interviews and/or workshops where possible
- Review responses for agency or state
- Understand agency or state uses of data
- Consolidate duplicate responses and/or group lower level activities into higher level activities
- Fill gaps in responses
- Clarify responses if needed
- POCs sign off on validated information

Study Geodatabase(s)

Raw Questionnaire Responses and Validated Information

- Stores geospatial extents of areas of interest
- Separate polygons for each MCA
- All requirements and benefits are tied to geography
- Facilitates Benefit/Cost and Return on Investment analyses

B/C and ROI Analyses

Using Study Geodatabase

- Areas with greatest requirements
- Areas with greatest benefits
- Unit costs for collection of enhanced data
- “Degradation” of benefits if requirements are not met
- Program scenarios
 - Benefit/Cost analyses
 - Return on Investment analyses

Study Timeline

Tentative

- Study design to be completed February 2017
- Study implementation anticipated for fall 2017

Questions?

