



# Geoscience Role in the Development Process of Offshore Wind Farms

Geoscience Overview by Deanne Hargrave

# Deanne Hargrave

## **Atlantic Shores Offshore Wind/Shell New Energies Geoscience Manager**

As Geoscience Manager for Atlantic Shores Offshore Wind, a joint venture between EDF Renewables and Shell New Energies, Deanne is a recognized expert in marine shallow hazards and offshore development surveys with more than 20 years experience planning, executing and delivering large complex geoscience projects. Prior to joining Shell in 2014, Deanne was Operations Manager for Fugro Geo Services in Alaska, supervising technical personnel, implementing health, safety and environmental systems, and managing operations for large offshore projects throughout the Americas.

## **Co-Chair of Technical Working Group and Panel Member of the Hydrographic Services Review Panel**

The NOAA Hydrographic Services Review Panel, a chartered Federal committee with public members, interacts with NOAA experts and advises the NOAA administrator on various issues, including NOAA hydrographic survey priorities, technologies relating to operations, and ocean research. As an early adopter of new technology, Deanne brings this technical insight to the working group.



## Questions to Cover: A Developer's Perspective

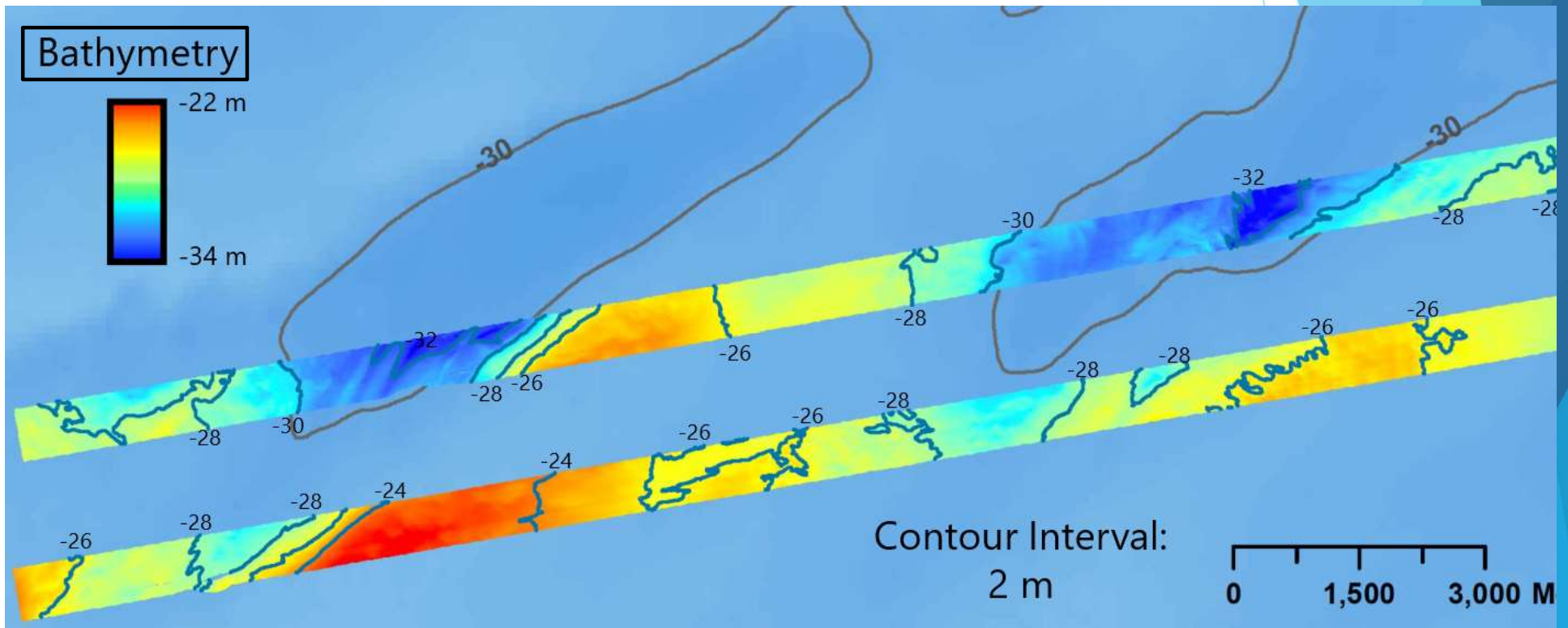
- ▶ What are the tools used to conduct these surveys?
- ▶ What kind of data are created?
- ▶ What is the purpose of conducting these surveys?
- ▶ When in the development process do these surveys occur?
- ▶ When does data collection from these surveys affect the project?
- ▶ Will data collected from these surveys be made publicly available? If so, when?

# What are the tools used to conduct these surveys?

- ▶ Purpose-built geophysical survey and geotechnical drilling vessels
  - ▶ Capable of self-sufficient, 24-hour operations for 3-4 weeks at a time
  - ▶ Hosts 20-30 technical personnel, including up to 6 Protected Species Observers & Passive Acoustic Operators, Onboard Representatives (e.g. company, fisheries, etc.)
  - ▶ Kitted with a suite of geophysical or geotechnical equipment that is suited for high-resolution mapping of the seafloor and to collect shallow subsurface soil measurements
- ▶ Dedicated project teams that plan, operate, analyze and deliver complex data sets
  - ▶ Multiple instruments being towed at the same time collecting 5+ different high-resolution geophysical data streams
  - ▶ Geologists, Geotechnical Engineers, Geophysicists, Seismic Processors, Equipment Technicians, Protected Species Observers, Archaeologists, HSSE Coordinators and QA/QC Representatives
  - ▶ Project Managers, Operations, Logistics

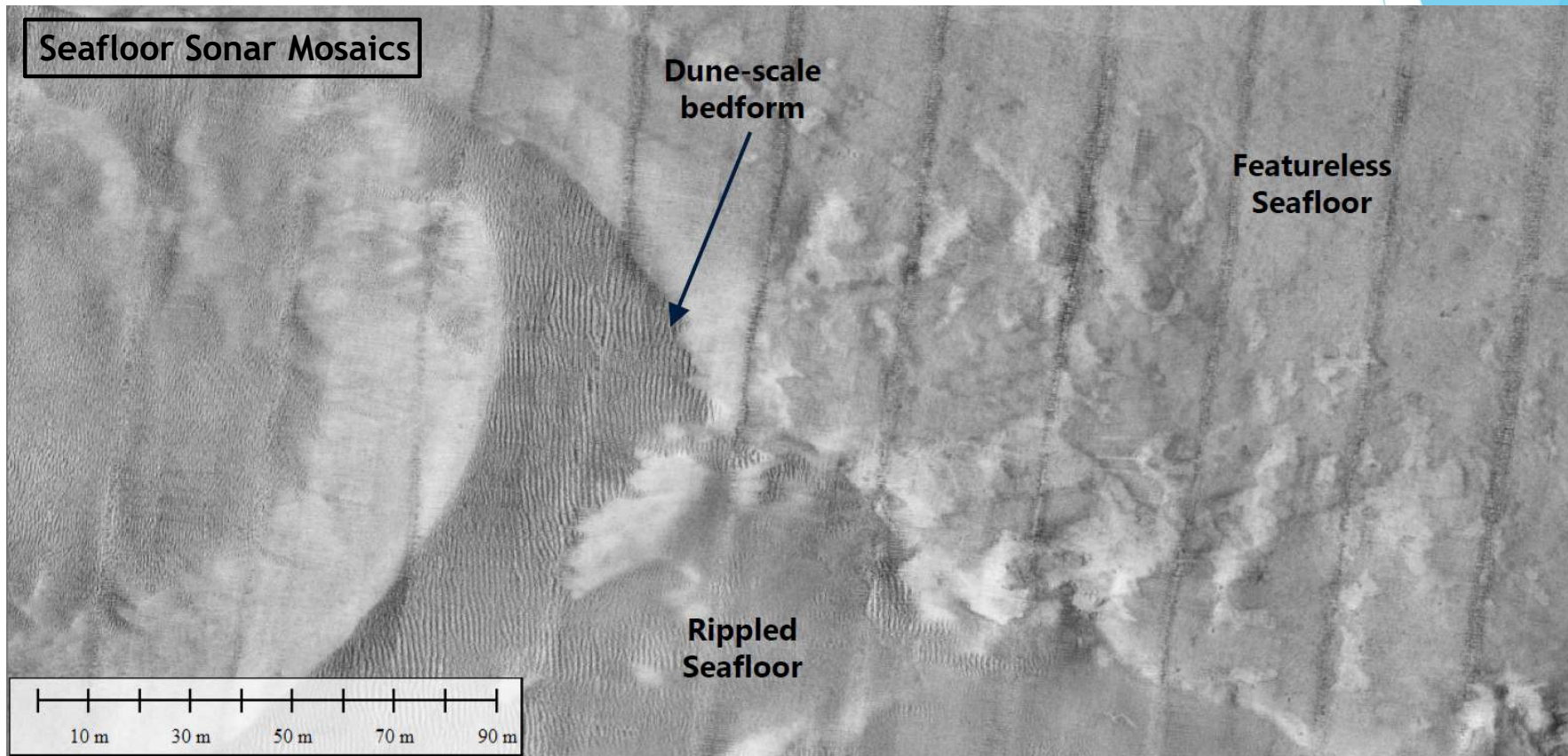


What kind of data are created?

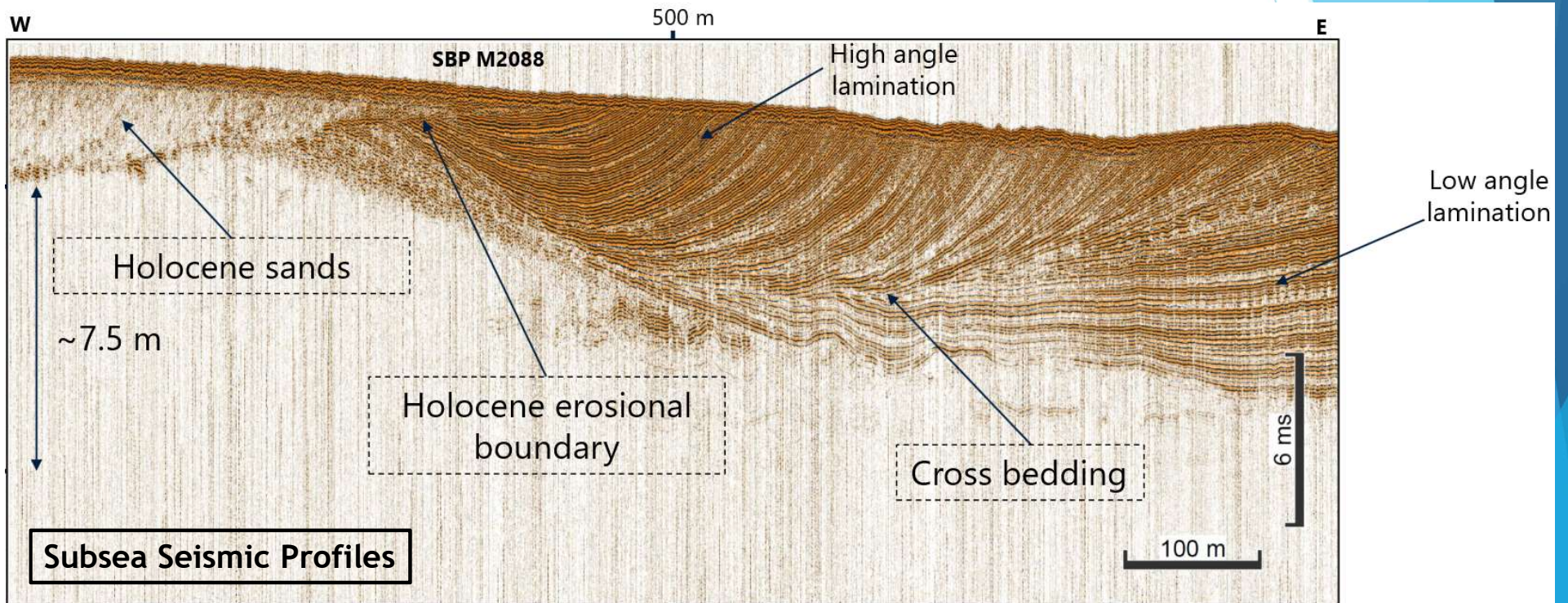




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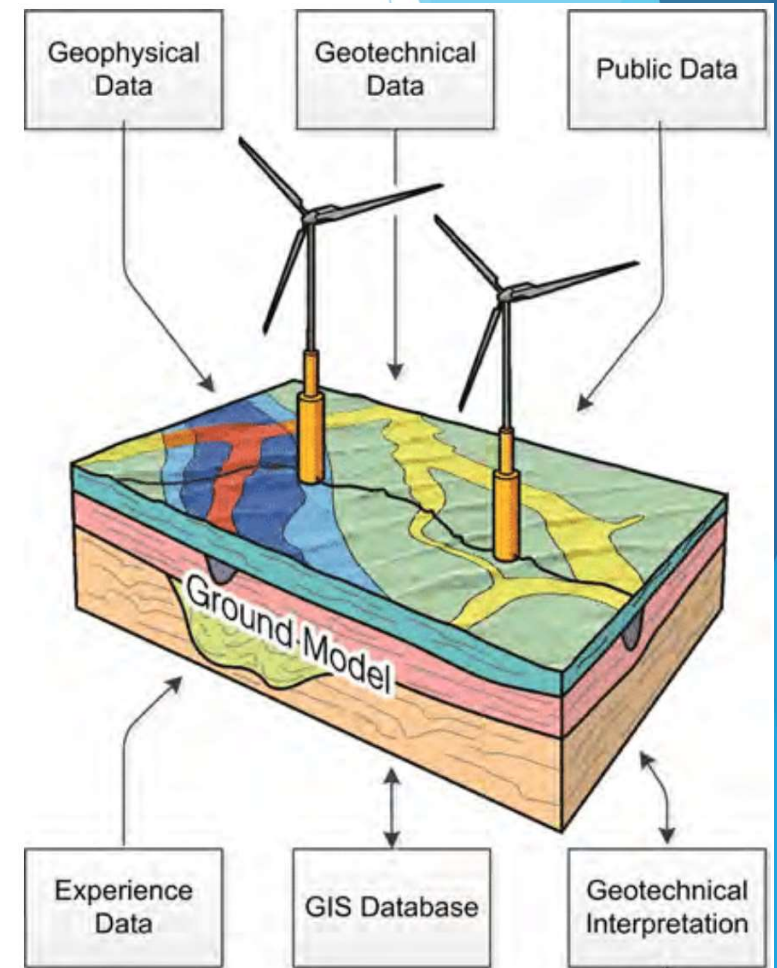
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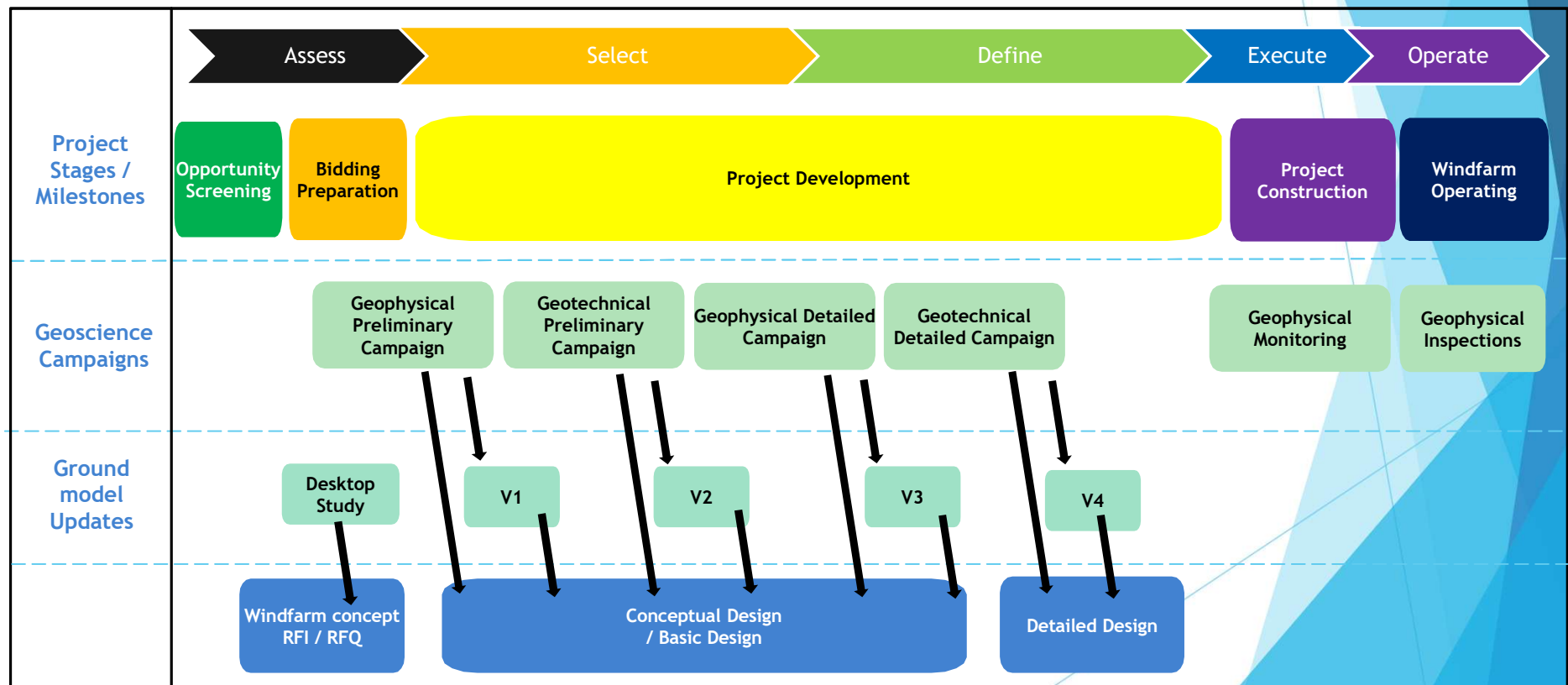


## What is the purpose of conducting these surveys?

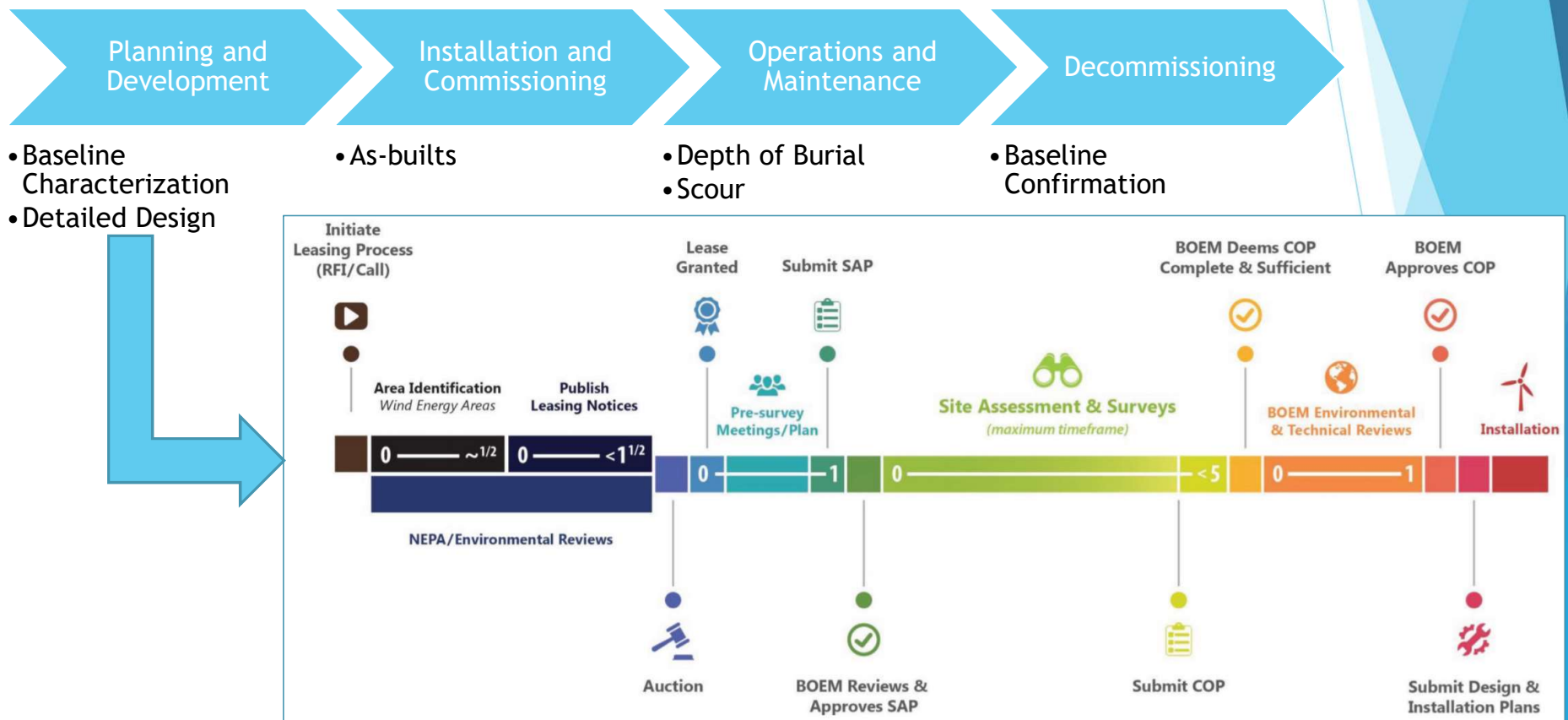
- ▶ Geohazard and Archaeological clearance for permitting and safety of construction and installation
  - ▶ Lease Area
  - ▶ Export Cable Routes
- ▶ Geotechnical soil properties for detailed engineering and design of
  - ▶ Offshore Wind Turbines
  - ▶ Offshore Sub-Stations
  - ▶ Inter-Array Cables
  - ▶ Export Cables
- ▶ Development of Ground Model



# When in the development process do these surveys occur?



# When does data collection from these surveys affect the project?





# Will data collected from these surveys be made publicly available? If so, when?

- ▶ Data collected is used to create maps, charts, statistics, models that are all included in Construction Operations Plans (COP) and submitted to the Bureau of Ocean Energy Management (BOEM)
  - ▶ Data formats are specific for geophysical interpretation software
  - ▶ Large volumes of data are generated
  - ▶ Interpretation completed by developer & reviewed by agency
  - ▶ Reports that summarize and present the data are included in COP submittals
  - ▶ Agency may turn data into public products (i.e. Marine Cadaster, seafloor maps)
- ▶ BOEM reviews the reports and makes non-proprietary report information available to the public with the COP.



The background features abstract geometric shapes in various shades of blue. On the left, a solid light blue triangle points upwards. On the right, a complex arrangement of overlapping triangles in light blue, medium blue, and dark blue creates a dynamic, layered effect. The text "Thank You!" is centered in the white space between these blue elements.

Thank You!