
DEEPWATERWIND
Clean energy is just over the horizon.

SOUTH FORK WIND FARM

Deepwater Wind was awarded a 20 year contract to supply power to LIPA in East Hampton

NY's 1st offshore wind farm, 30 miles east of Montauk

Will power 50,000 typical homes

Allows LIPA to avoid construction of fossil-fired generation in East Hampton

SOUTH FORK WIND FARM

Topics for Today

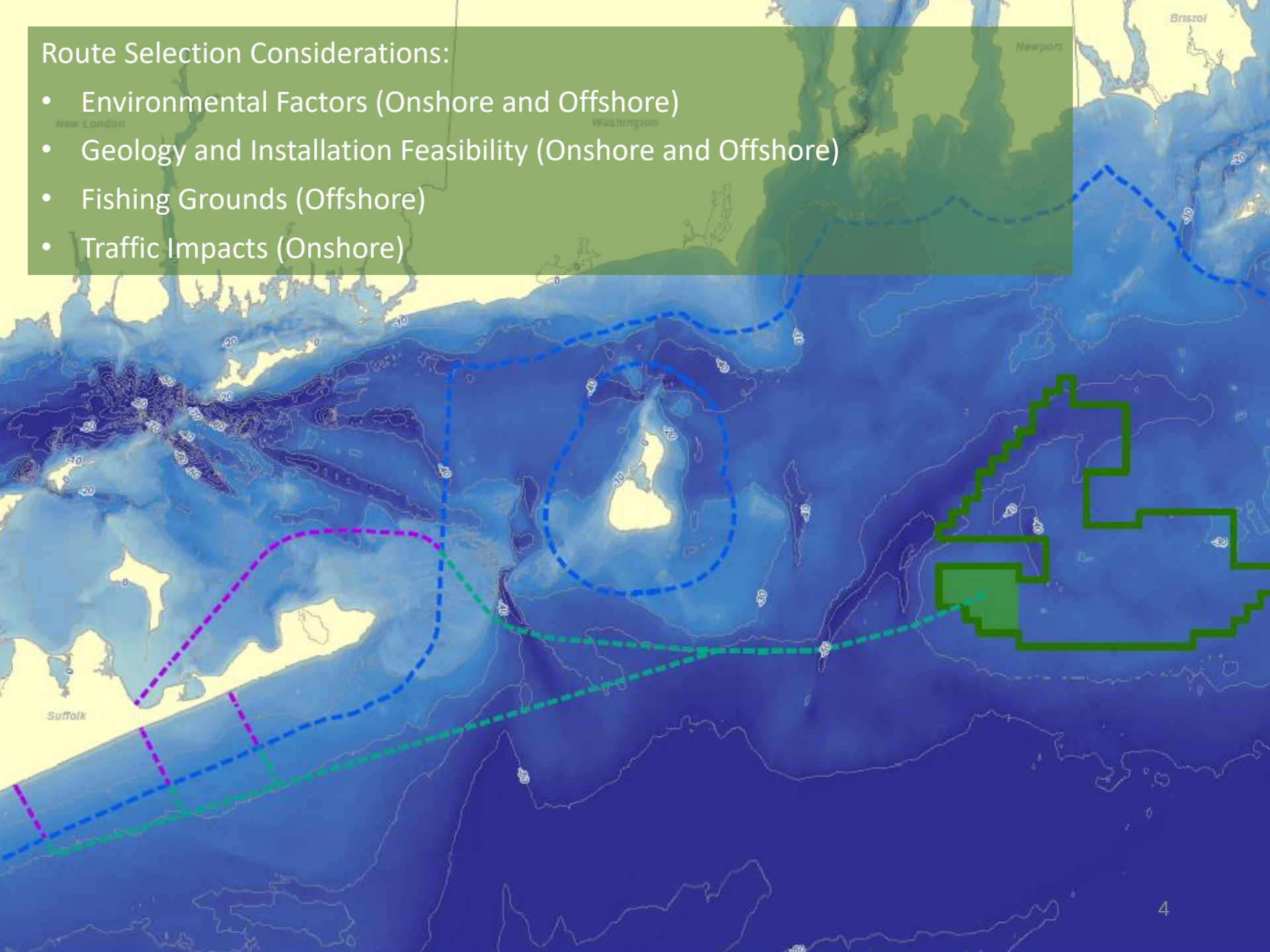
Cable Route Selection

Coastal Geology at Beach Lane

Construction Approach Optimization

Environment, Health & Safety Considerations

Community Benefit Considerations


Route Selection Considerations:
• Environmental Factors (Onshore and Offshore)
• Geology and Installation Feasibility (Onshore and Offshore)
• Fishing Grounds (Offshore)
• Traffic Impacts (Onshore)
Bristol
Newport
New London
Washington
Suffolk

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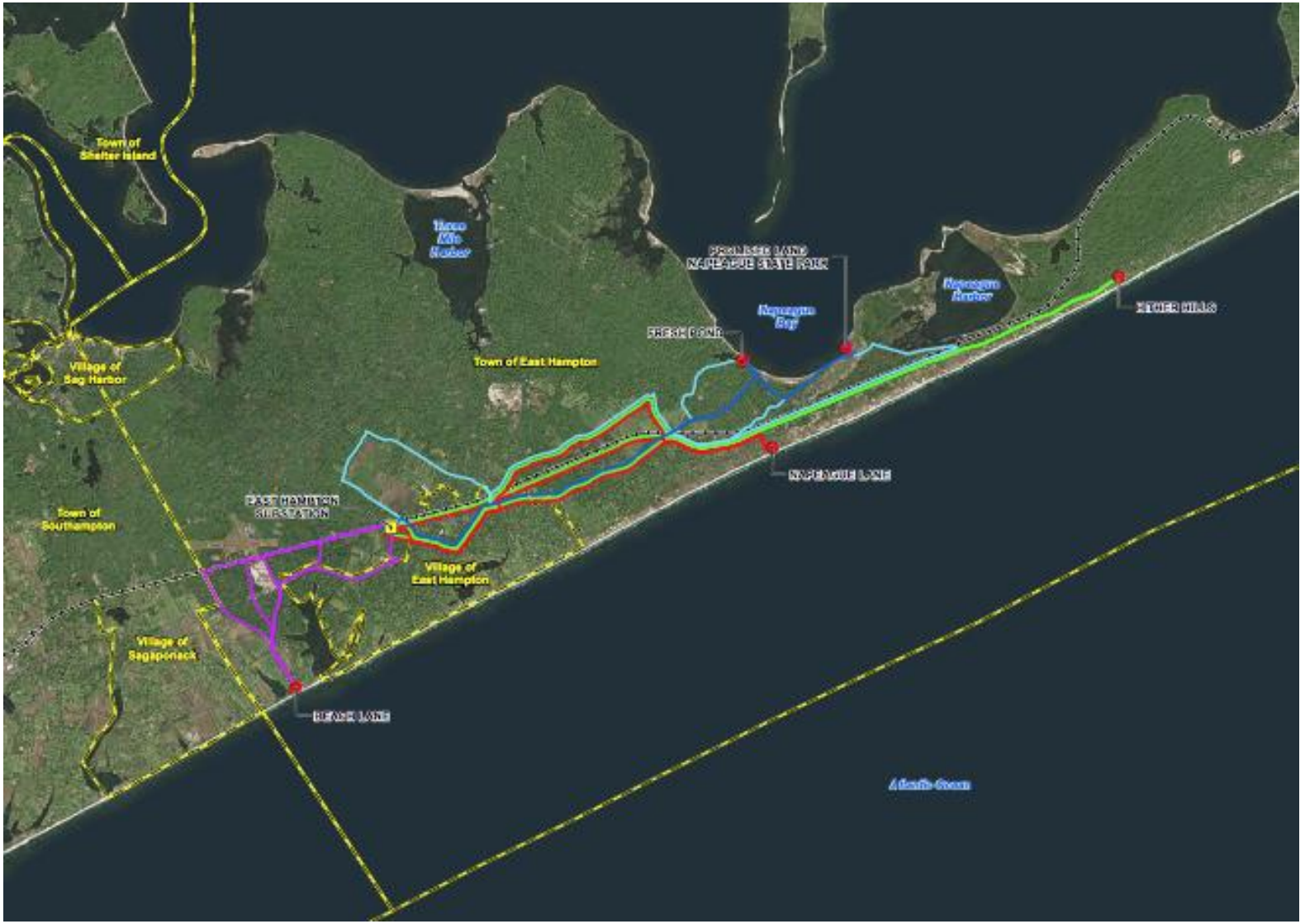
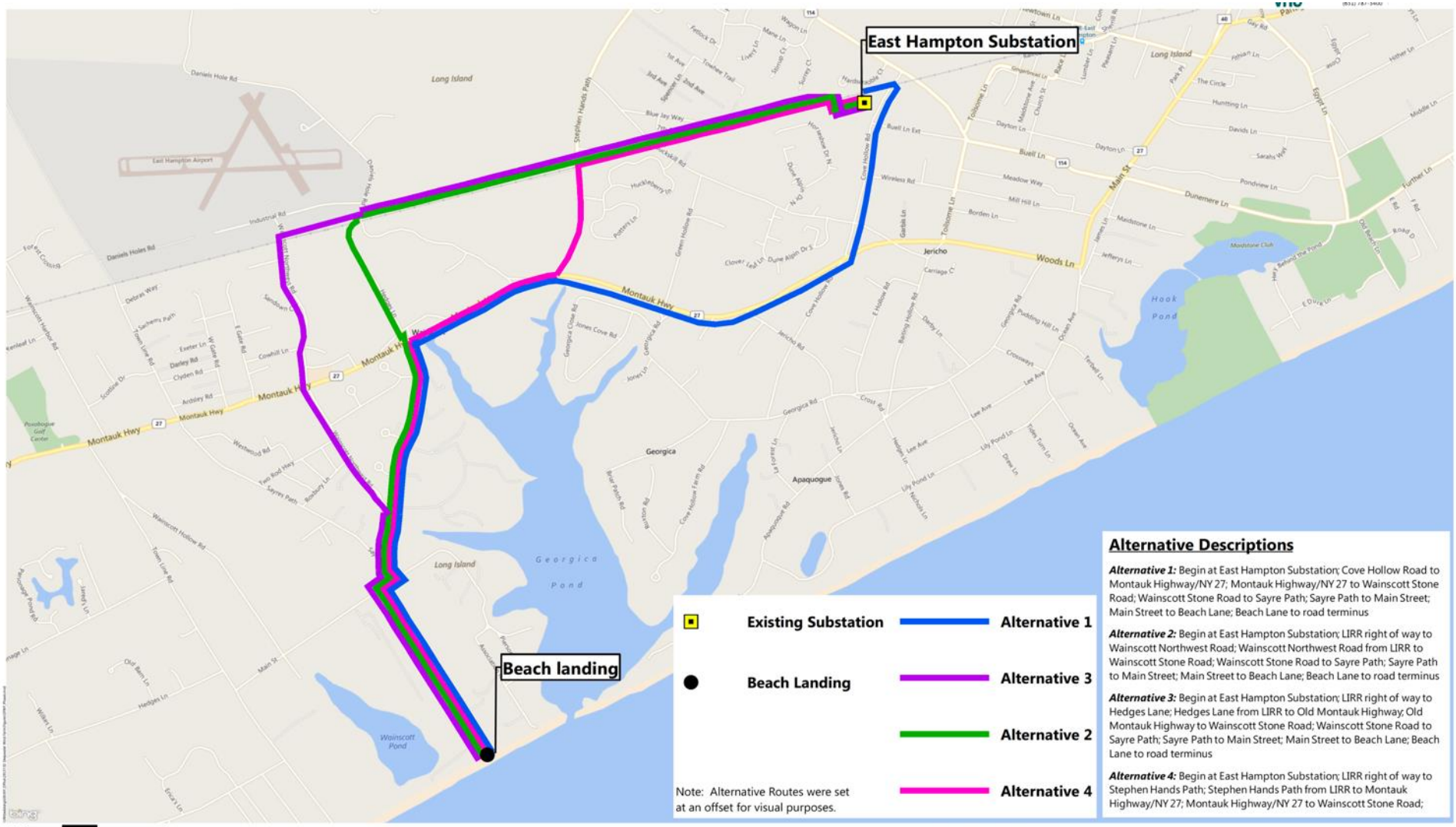
Multiple Onshore Routes Considered



Wainscott is an excellent potential landing

Technical conditions and proximity to substation allow for easy installation with minimal disturbance

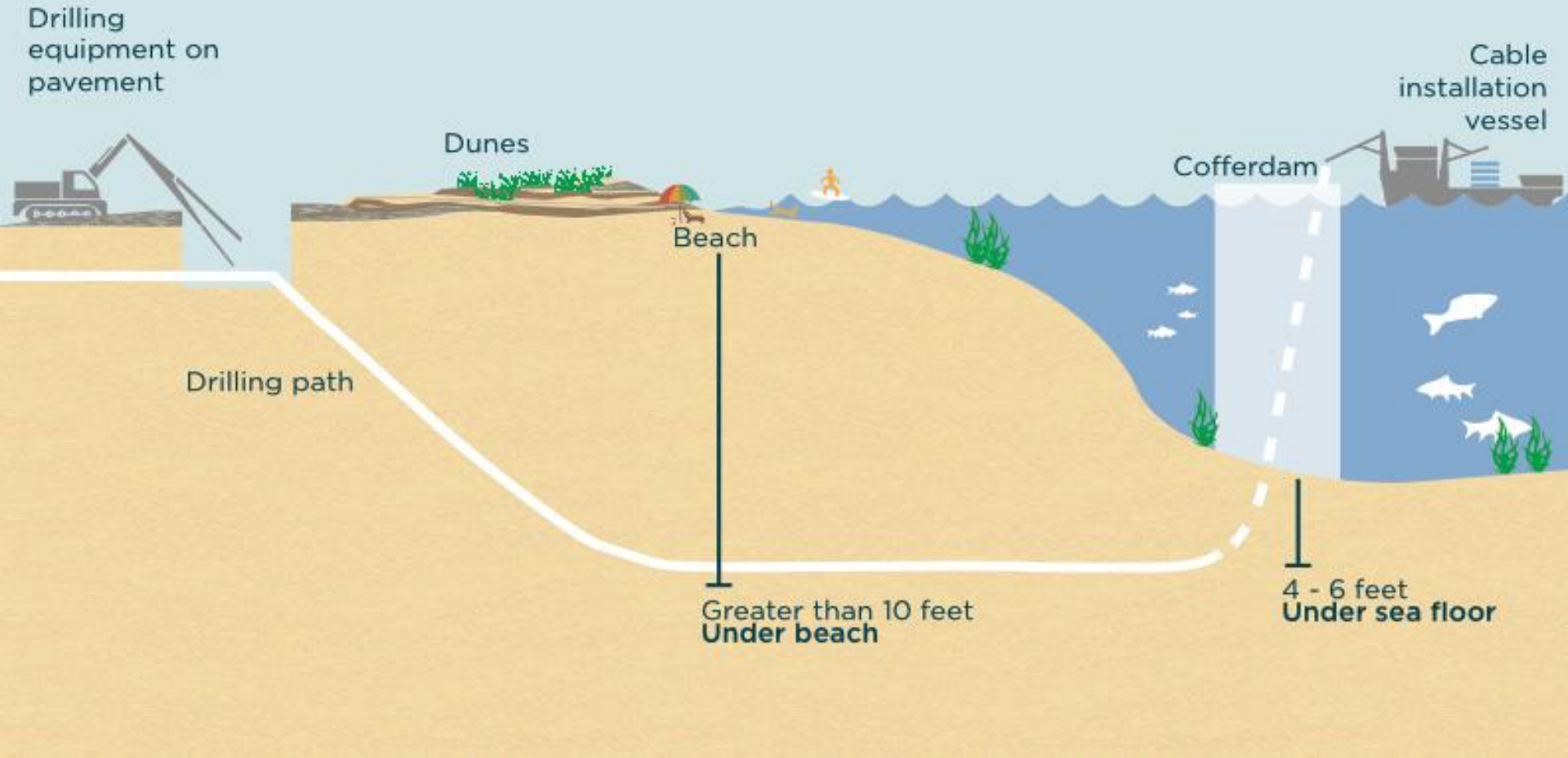


Overview of Proposed Cable Shore-Landing Process

PHASE 1: CONDUIT
Install a conduit – a plastic pipe – from road deep under the beach to significant distance offshore

PHASE 2: RESTORE
Restore work area to condition better than we found it.

PHASE 3: CABLE
Pull submarine cable from offshore through previously installed conduit.



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Beach Lane has the Most Suitable Geology for a Cable Landing

- Sand deposits are a relatively thin overlay over **underlying glacial (headland) soils**.
- During storm events, glacial soils have been temporarily exposed.
- Glacial soils are significantly less likely to erode than overlying sand.

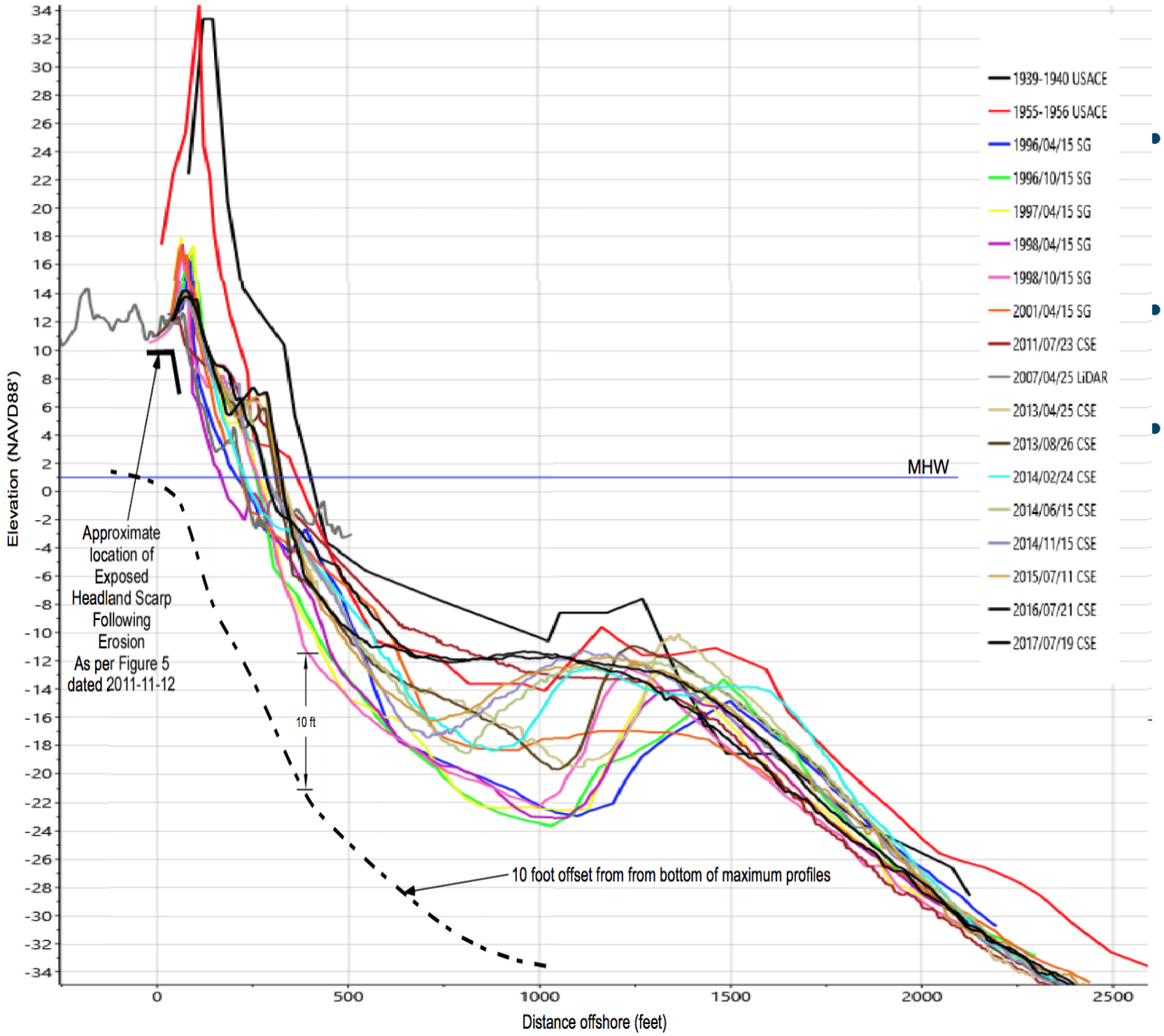
Post storm photographs reveal the headland soils at the seaward end of Beach Lane (November 2009).

Local Geology has been Studied Extensively Over Last 80 Years

The profile of the overlaying sand layer in front of Beach Lane has been studied extensively between 1939 and 2017 including:

- 1939-1956 from the **U.S. Army Corps of Engineers**,
- 1995-2001 from the Atlantic Coast of New York Monitoring Program administered by **New York Sea Grant**, and
- 2011-2017 from the **Sagaponack BECD Beach Nourishment Project** Monitoring.

80 Years of Geology Shows a Hard Bottom at Beach Lane



- Data from 1939 to 2017 shows a point of resistance to erosion
- This corresponds with 2009 headland soils contours
- Deepwater's cable design is 10' or more beneath the approximate headlands contour

Optimizing Design Considerations for Cable Landing

1. Must maintain access to beach
2. Focus work that impacts Beach Lane from October to May.
3. No intrusive activities on beach
4. Noise from construction to comply with local noise ordinances
5. Cable depth below beach must account for seasonal and storm induced erosion over life of project
6. Leave area in better condition than we found it

DWW Optimized Work Area

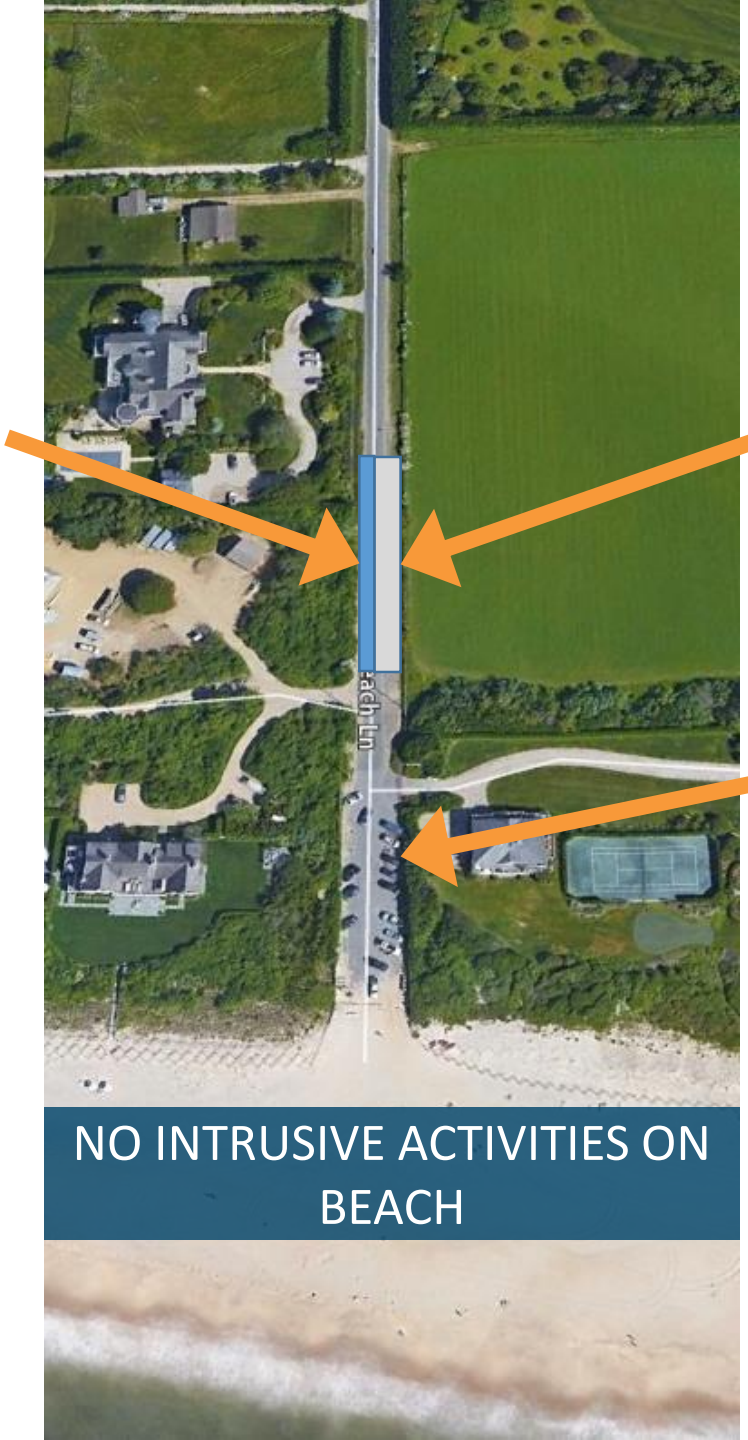
DWW Initially Proposed Work Area

(August 2017 Wainscott CAC meeting)

Optimized Work Area

Access Road During Installation

- ~530’ long by ~12’ wide
- Allow for access to parking lot and beach 24 hours per day and 7 days per week during installation.
- Traffic control similar to typical road construction.



Work Area

- ~530’ long by ~28’ wide
- Fenced-in area during installation

Beach Parking Lot

- Fully accessible throughout construction

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PHASE 1: CONDUIT

Install a conduit – a plastic pipe - from the road, deep under the parking lot and beach, to distance significantly offshore

Conduit

PHASE 1 DESIGN CONSIDERATIONS

- Phase 1 Target Work Duration: ~ 14 weeks
- Schedule at time with least impact to road: October through March
- Construction noise to comply with local noise ordinance
- Cable depth to account for seasonal and storm induced erosion. Ensure greater than10 feet below beach following all erosion scenarios.

Beach Ln

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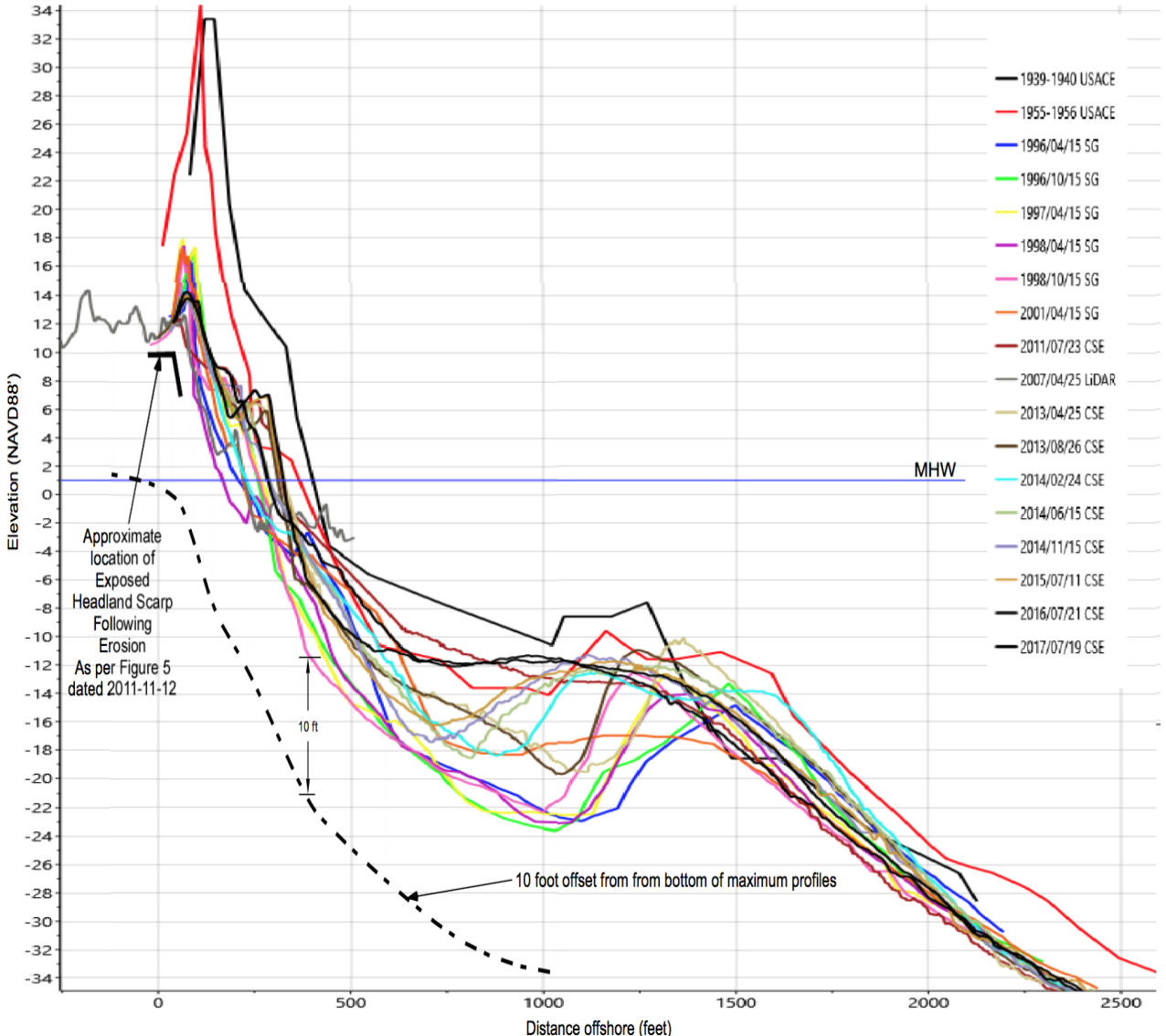
Optimized work area allows pipe to be buried deep below beach and extend a significant distance offshore.



PHASE 2: RESTORE
Restore Beach Lane to better condition better than we found it

Roads to be fully restored/resurfaced.

PHASE 3: CABLE PULL-IN:

Submarine cable from offshore is pulled-in through previously installed conduit.

PHASE 3 DESIGN CONSIDERATIONS:

- Maintain public access at all times
- No intrusive activities at beach
- Work Area on Beach Lane
  - Work area required for ~7 days
  - Space for a truck/winch and over-length of cable
  - Minimal noise anticipated
- Schedule tied to offshore installation: Phase 3 conducted between March and Memorial Day (weather dependent)

Onshore Construction Activities Scheduled to Minimize Disturbance

Phase 1: Conduit Installation

- Target Installation Duration: 14 weeks
- Timeframe: Between October and March (weather dependent)

Phase 3: Cable Pull-In

- Target Installation Duration: 1 week
- Timeframe: Between March and May (weather dependent)

Restoration and improvement activities (Phase 2) will be conducted to minimize impact and will not be conducted between Memorial Day and Labor Day.

Block Island Example:

- A horizontal direction drilling process was used for the cable landin Block Island.
- The landing location is the island's most popular local beach.
- Today, manhole covers are the only visible evidence of installation.

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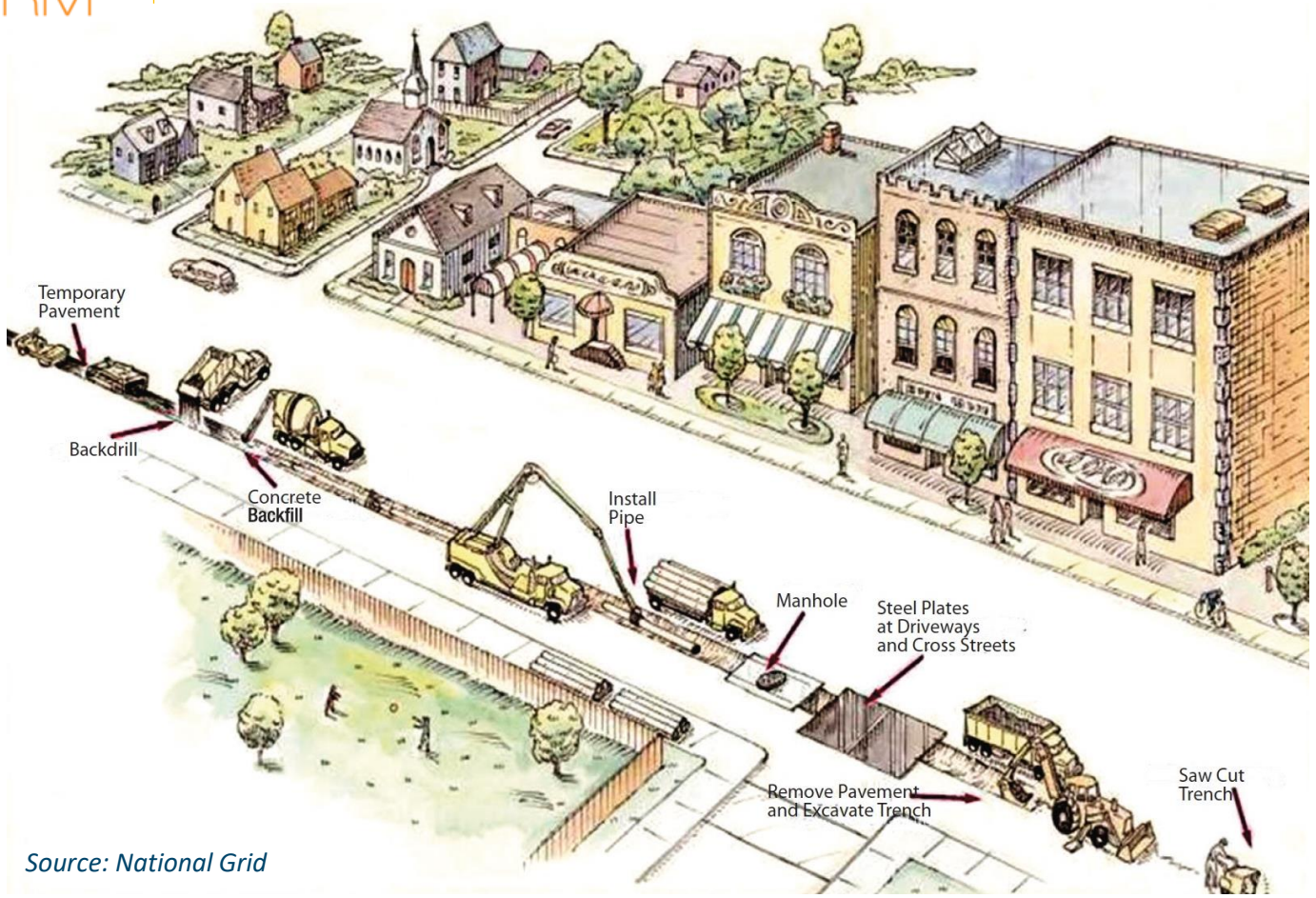
Terrestrial Cable Route to Substation



Source: National Grid

- The cable will be buried 3 to 6 feet deep like a typical underground utility
- The route will follow publicly owned rights-of-way
- Following installation, the roads will be fully resurfaced/restored

Project Development Timeline

2010 - Stakeholder outreach begins at Bureau of Ocean Energy Management (focused on wind farm lease area)

2011 - Science begins, ongoing

2017- Detailed science and engineering studies to assess potential transmission routes and turbine siting areas

2018 – Permit application submission in Q1. **Requires identification of preferred route**

2019-2021 - Permit review, public participation opportunities, science & engineering assessment

2021 - Expected permit approval

2022 - Construction completed, SFWF operational

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Permitting and Site Control involves many Municipal, State, and Federal Agencies

BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

US Army Corps of Engineers®

Electrical and Magnetic Fields (EMF)

- **EMFs are ubiquitous:**
  - Every household appliance (e.g. lamps, televisions) and all local electricity distribution lines produce EMFs.

- **The South Fork cable is designed to minimize EMF:**
  - Buried cable blocks electric fields
  - Three conductors in close proximity reduce magnetic fields

- **There are Established Standards for Pubic Exposure to EMFs:**
  - World Health Organization: 2,000 milligauss (mG)
  - International Commission on Non-ionizing Radiation Protection [ICNIRP]: 9,040 mG
  - New York State Public Service Commission applies a 200mG limit to assess cable projects.

- **In project permitting, Deepwater Wind will demonstrate that EMFs from this specific cable are below the New York State standard.**

Referenced Standards:

- World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. Geneva, Switzerland: WHO, , 2007.
- International Commission on Non-ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Phys 99: 818-836, 2010.

Consideration of Avian Species

- **Piping Plover**
  - Federally-threatened, NY-listed endangered species
  - Solitary nesters on open beaches and sandflats
  - Arrive in March, lay eggs in April to July and chicks typically fledge by August
- **Least Tern**
  - NY-listed threatened species
  - Nest in colonies; often together with piping plover needs
  - Arrive in March, lay eggs in April to July and chicks typically fledge by August
- **DWW conducting science, consultations to ensure installation methodology minimizes impact**
  - Science: Habitat surveys at landing site, review of historical nesting data.
  - Consultations: US Fish and Wildlife Service and the New York Department of Environmental Conservation
  - Current installation methodology includes no intrusive activities at Beach, any potential impacts identified will be carefully examined and mitigated during the permitting process.

Questions?

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