IslandReady: Construction Plans for L8 Feeder

Presented to Select Board - Nantucket, MA
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nationalgrid

Introductions

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Agenda

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02	Project Description & Need
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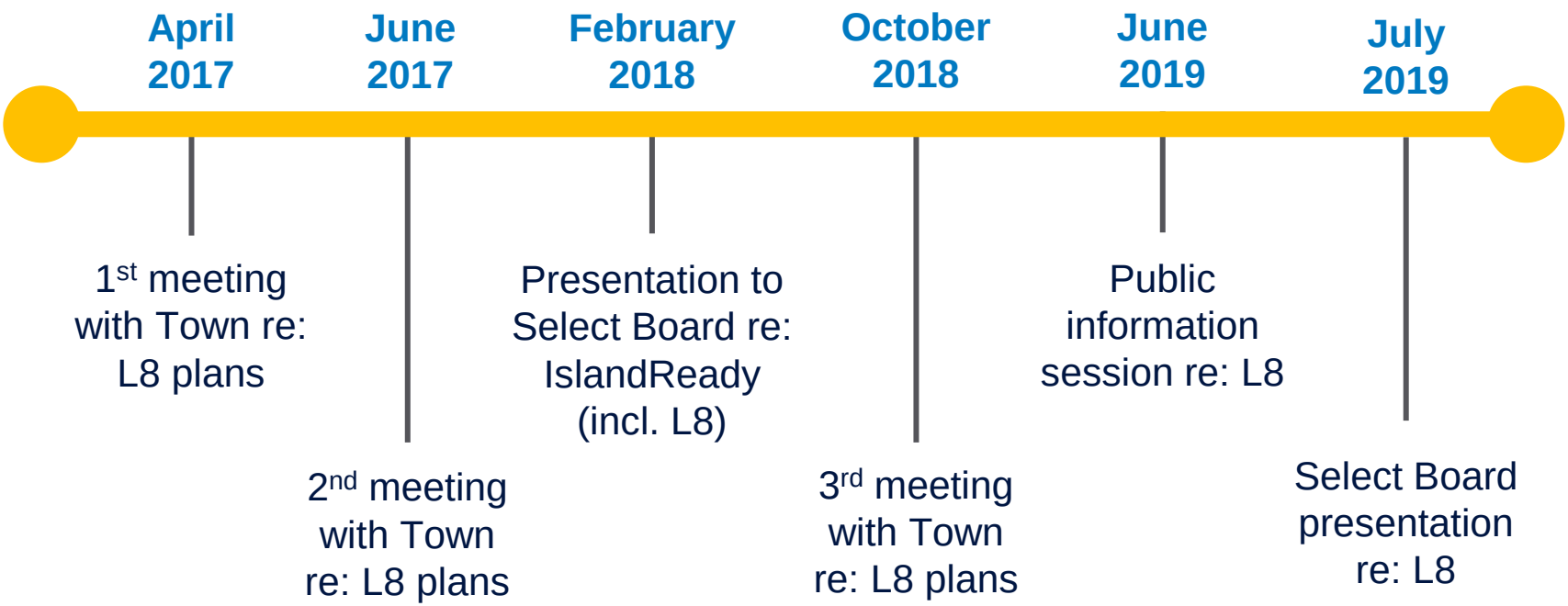
History of L8 Planning



Project Description and Need

Scope

Replace and upgrade existing facilities between Candle Street and Milestone Road

- Installation of 13.2kV feeder to Milestone Road (101L8)
- Scope is consistent with typical overhead maintenance operations (completed many similar projects on Nantucket in past without any public process)
- Anticipated cost: ~ $3 million (socialized among MECo ratepayers)

Purpose

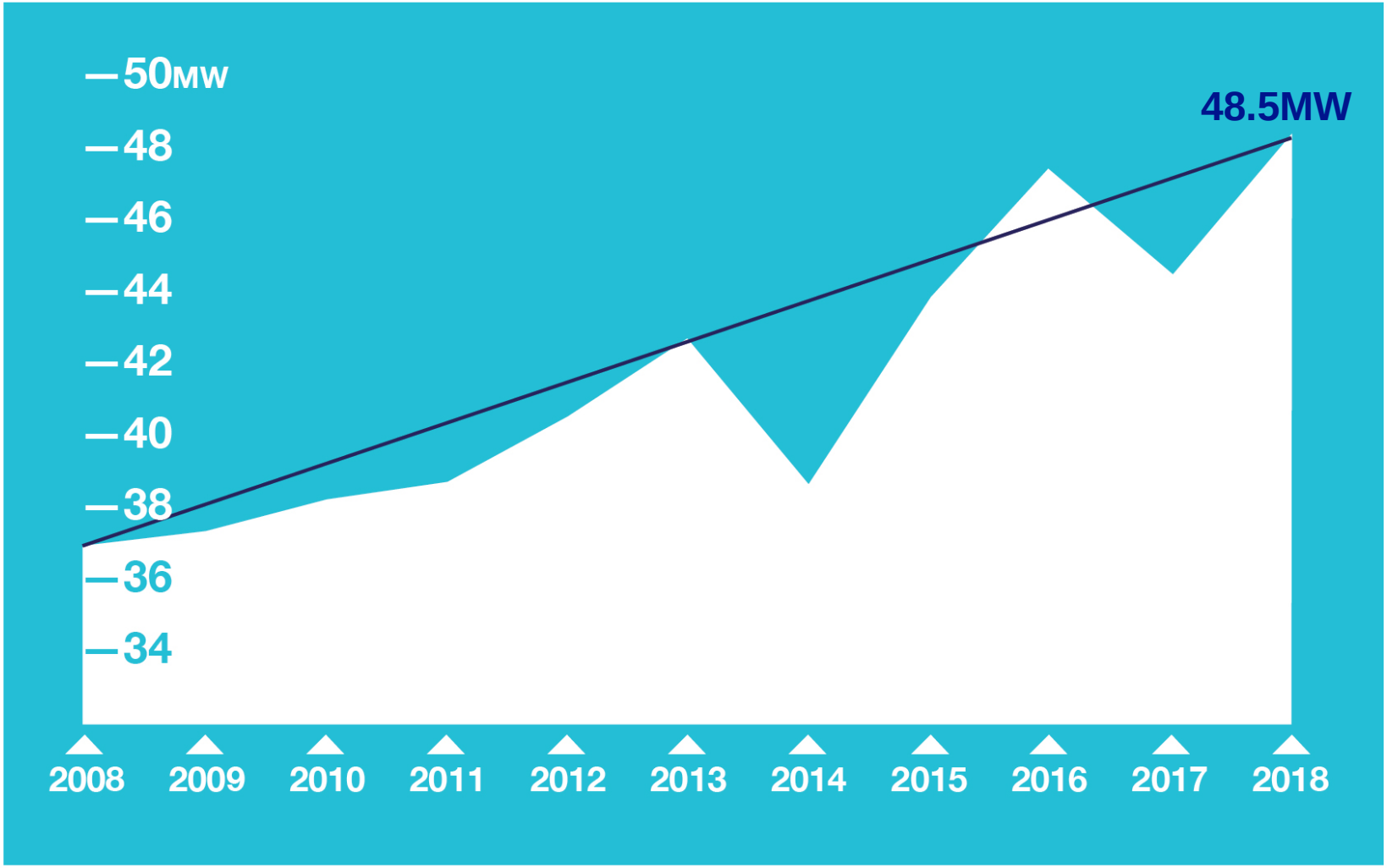
Ensure electric reliability for the island:

- Increase capacity for east side of island, improve switching ability
- Utilize full benefit and capacity of Bunker Road battery system and generator
- Reduce potential for outages on other feeders, which serve critical facilities (L2 – sewage treatment; L4 – hospital; L7 – airport)

Nearing summer capacity ratings: the wire could potentially fail and outages would result until repairs are completed

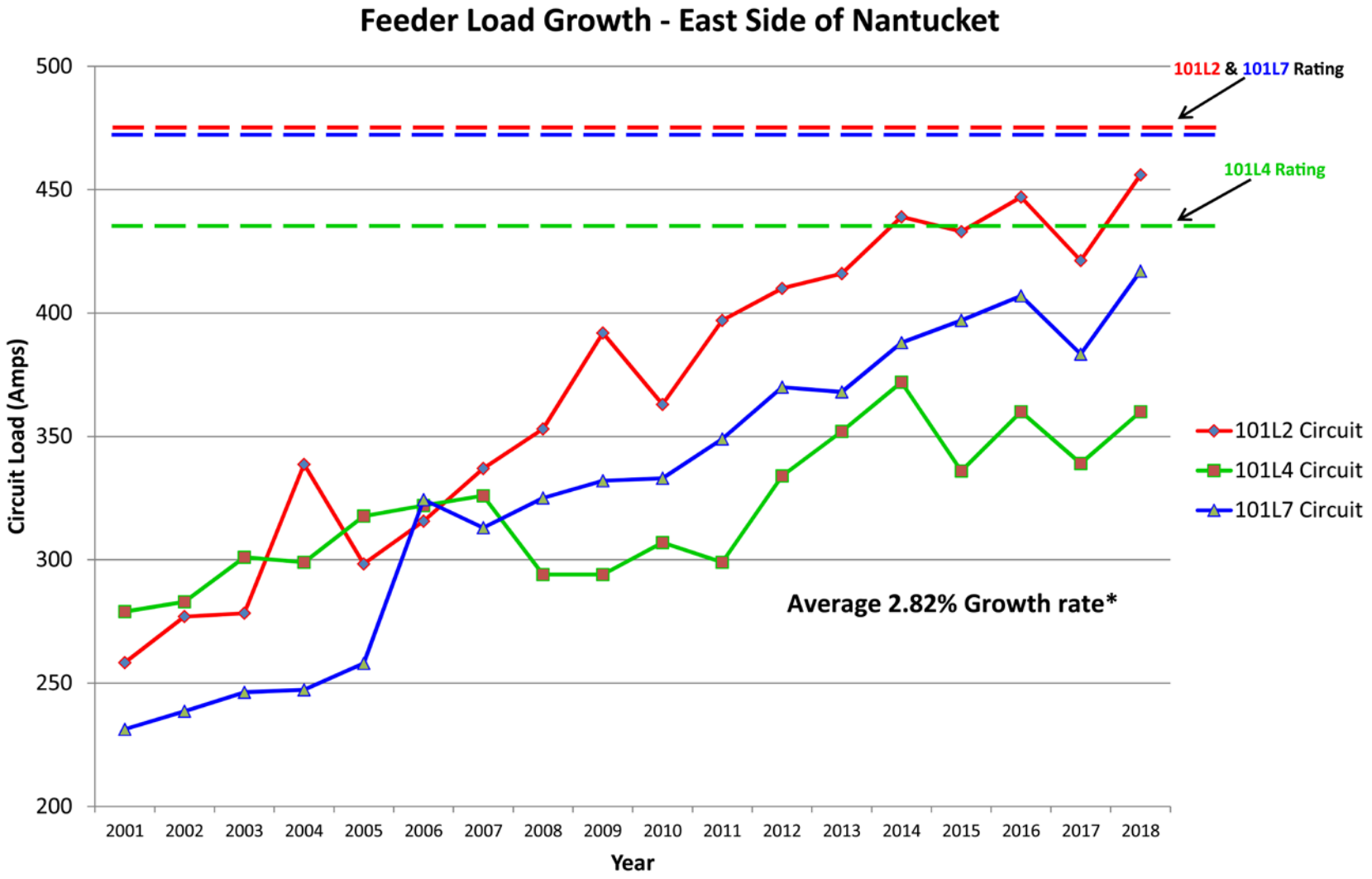
Upgrades via L8 feeder alleviates summer demands on L2, L4, and L7

Demand Growth (2008-2018)



Demand in 2014 was aberration due to unusually mild summer.

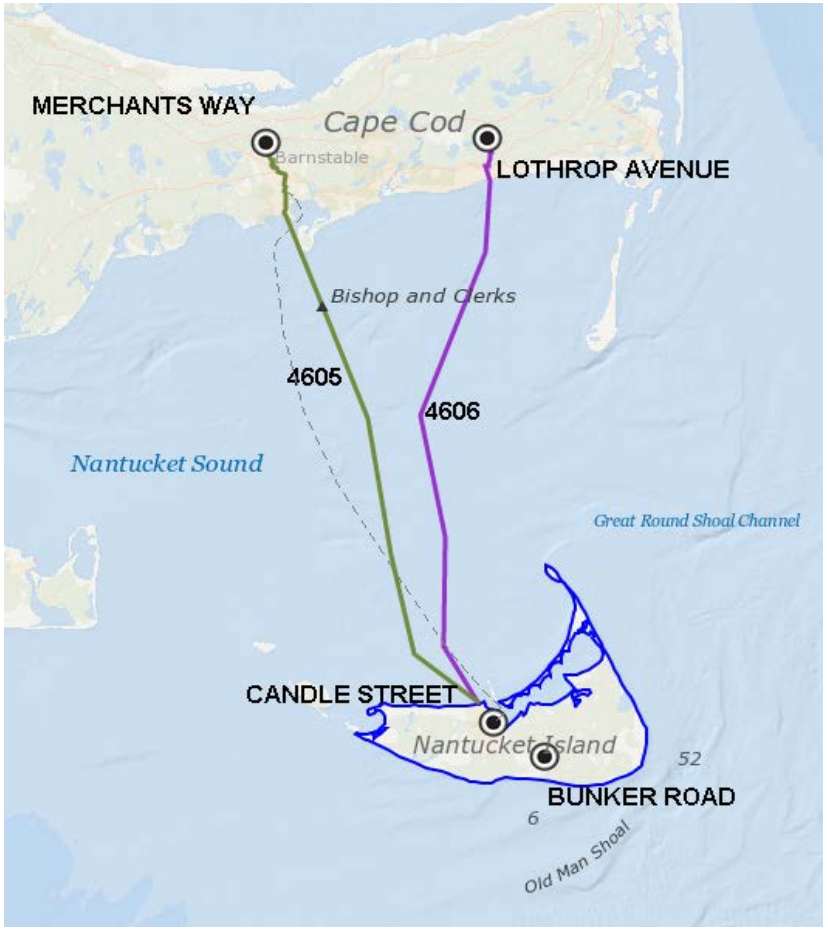
Demand Growth by Feeder (2008-2018)



Transmission Network

Nantucket fed via submarine cables from mainland through Candle Street

- Island currently fed through two submarine cables from mainland
- Submarine cables connect to the Island at Candle Street Substation
- All of Nantucket's electricity infrastructure runs through Candle Street



Explored Options

Underground (In-road)

- Need to place conduit ~10ft below surface to avoid other infrastructure, incl. laterals
- Operation of circuits deep underground = safety, reliability issues
- Significant cost of const. to meet federal standards + coordination with other utilities
- Significant traffic impact (in-road excavation)
- Multi-year const. timeline
- OH lines remain due to other utilities (Cox, Verizon, etc.)
- Repair times = much longer than OH feeder

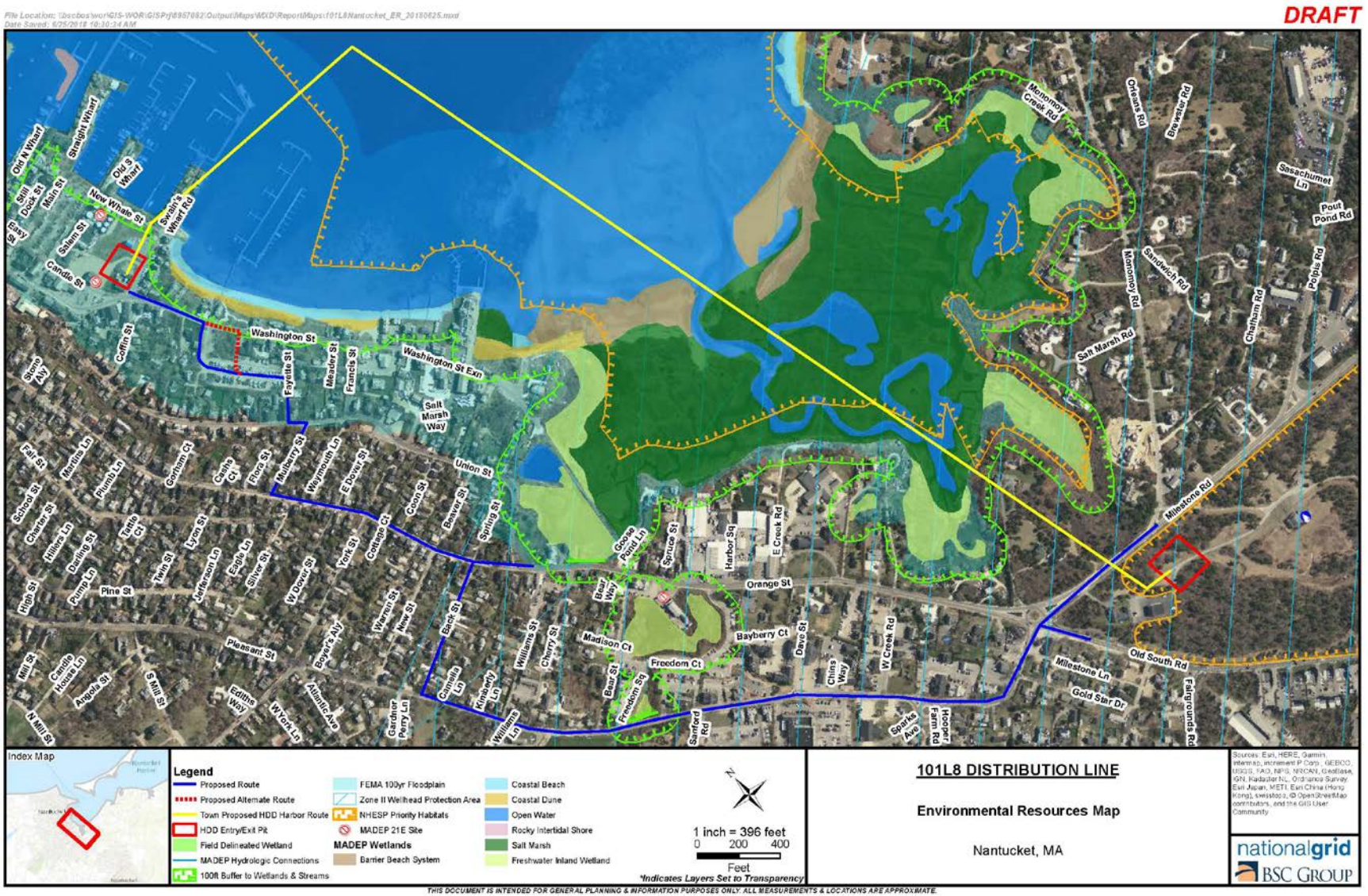
Harbor HDD

- Very significant cost of construction to use HDD method
- Required splice in harbor could impact reliability
- Required environmental permits unattainable
- Significant traffic and harbor impact (in-road excavation, drilling in harbor)
- Multi-year construction timeline

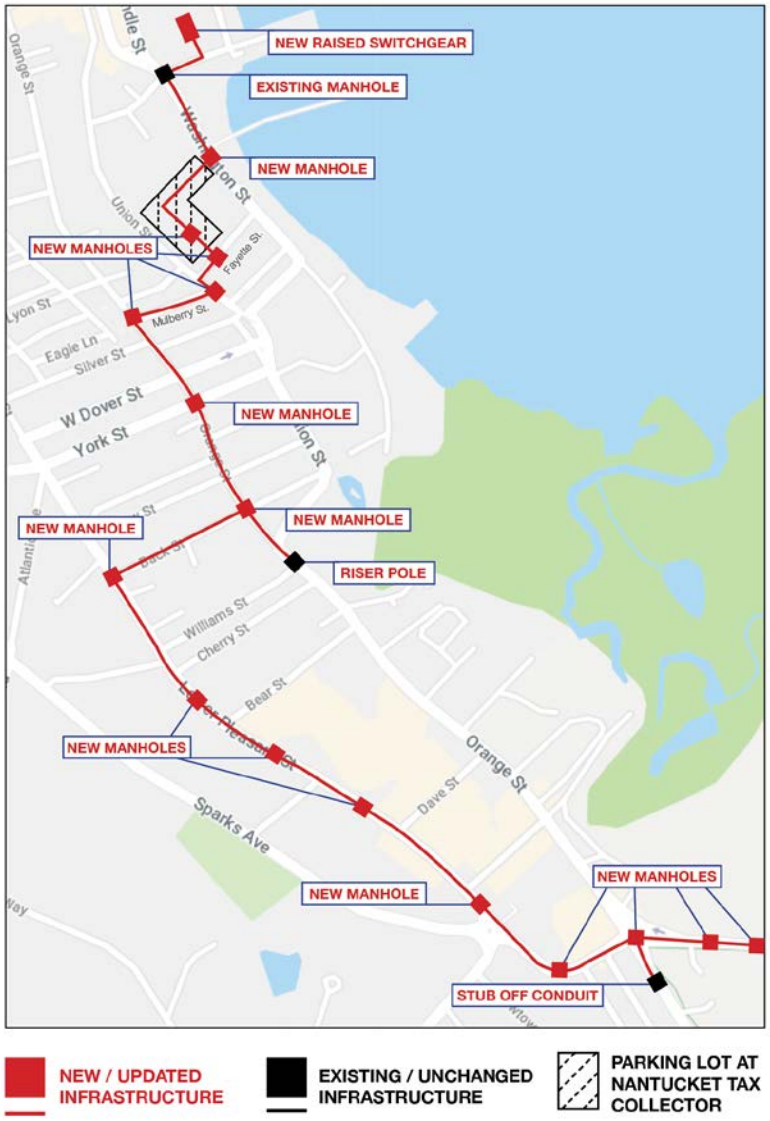
Overhead ✓

- Ability to utilize existing infrastructure
- Most cost-effective option
- Most-expeditious construction (~ 6-7 months)
- Modest traffic impact
- Little to no visual impact upon completion (improvement in some locations)
- Faster repair times than underground feeder

Harbor Route (proposed)



Underground Route (proposed)



Complexities/Challenges of UG Route

Deep Underground: install line at avg. 10 feet

Shoring and dewatering

- Have to maintain clearances around duct bank with shoring

Manholes cannot go that deep

- Worker safety

Depth effects cable ratings

- 10-foot depth would require an increase to a second set of cables

Standards require ducts to pitch into the manhole

- Standing water in ducts degrade rating

Sewer Pipe: use of abandoned sewer pipes

Manholes cannot go that deep. Would require excavation on either side to bring conduit into manholes. Cost savings and paving requirements would be minimal.

Shoring and dewatering

Unknown depth of existing pipe - Too much risk on feeder

Creates safety issues since there would be no way to use marking tape over conduit

Reduces conduit capacity from 12 conduits to 3 or 4; reduces capacity and reliability benefits

Stability of conduit in the pipe is questionable

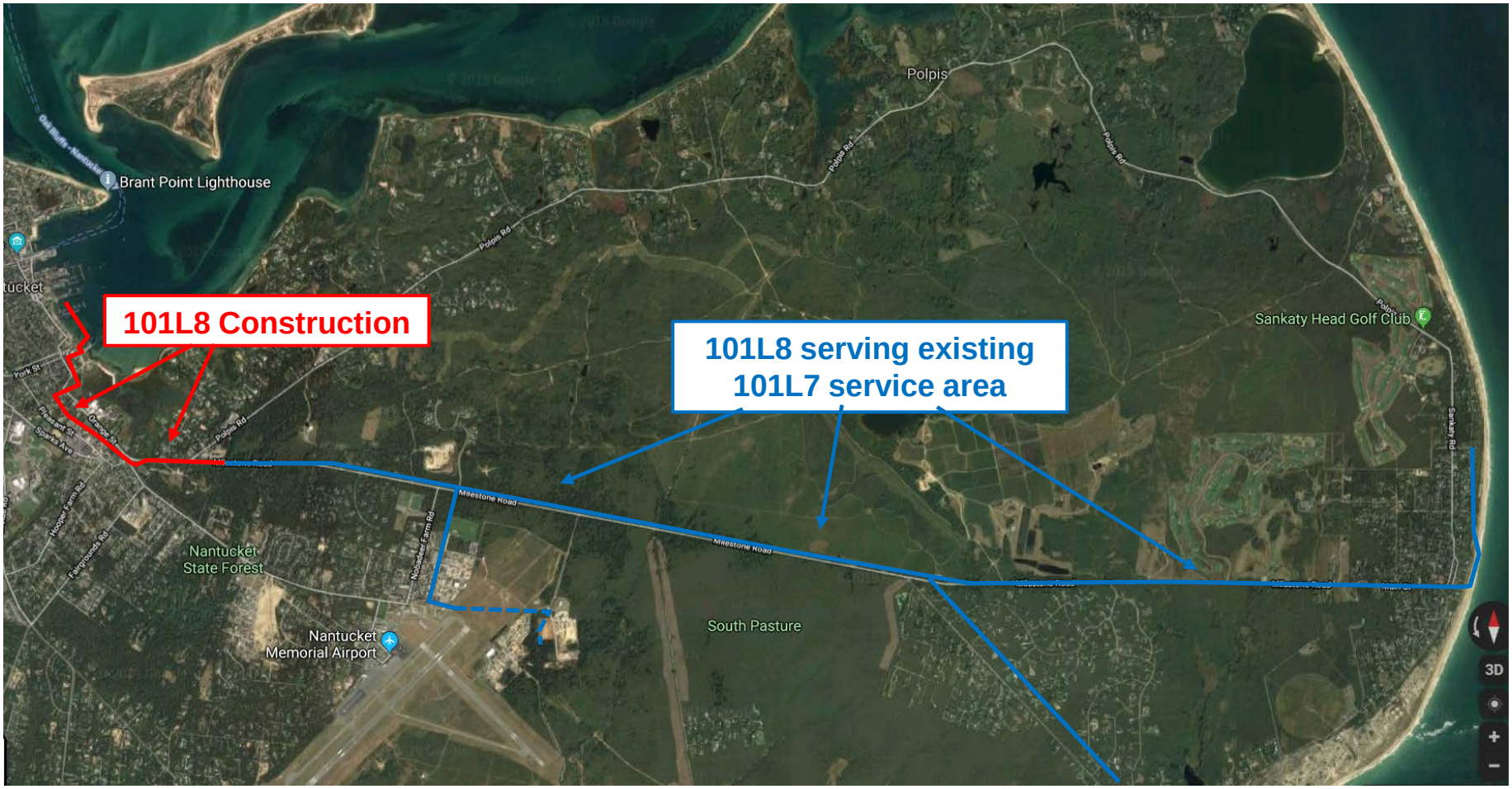
Conventional manhole and duct system: Discussed, but not a preferred option due to impacts and costs (difference between OH and UG will be borne by Nantucket customers)

Overhead Project Route via Existing Facilities

Minimal visual impact, connection to existing infrastructure

- Aerial cable upgrades:
  - Replaces three vertically-oriented wires (slightly thicker, singular wire)
- Other wire upgrades:
  - Top three horizontally-oriented wires are replaced with upgraded versions
  - Lower three vertically-oriented wires converted to one triplex wire (bundled, appears as one wire)

Connection at Milestone Road



Construction Elements

Poles

There are 71 existing poles over 1.5-mile route

- Re-using 44 existing poles
- Installing/upgrading 27 replacement poles (same locations as existing)
  - 16 will be slightly taller to meet clearances/standards (40’ → 45’)

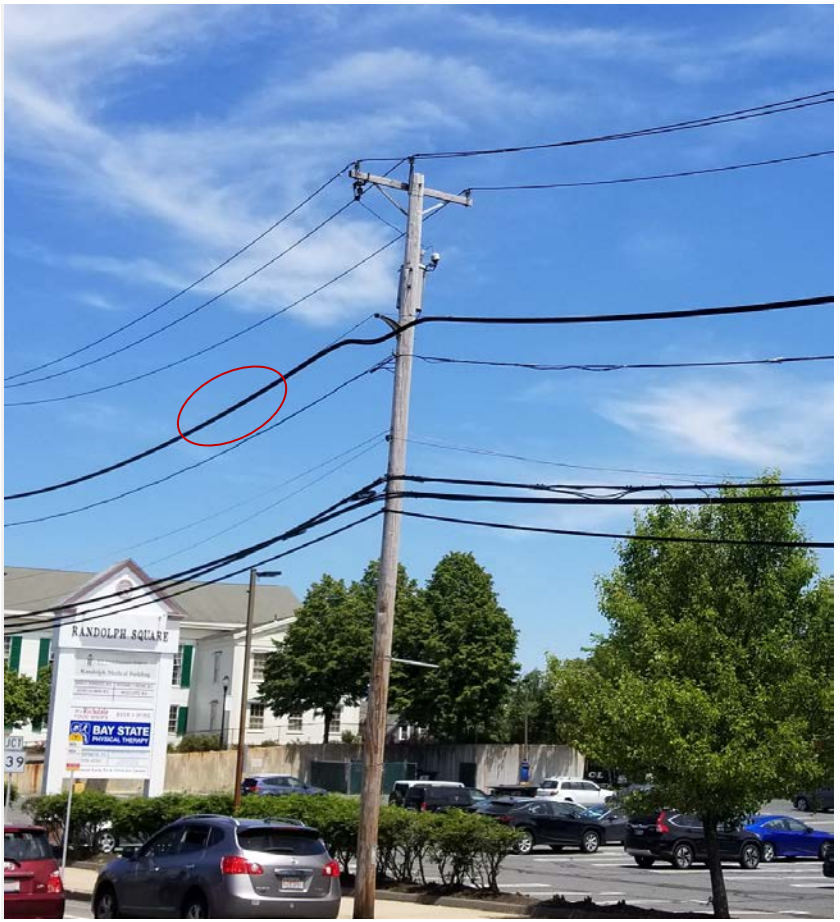
Aerial Cable

Provides needed capacity, reliability

Bundles cables together, reducing number of electrical wires in many locations

Overhead Existing vs. Proposed

Existing



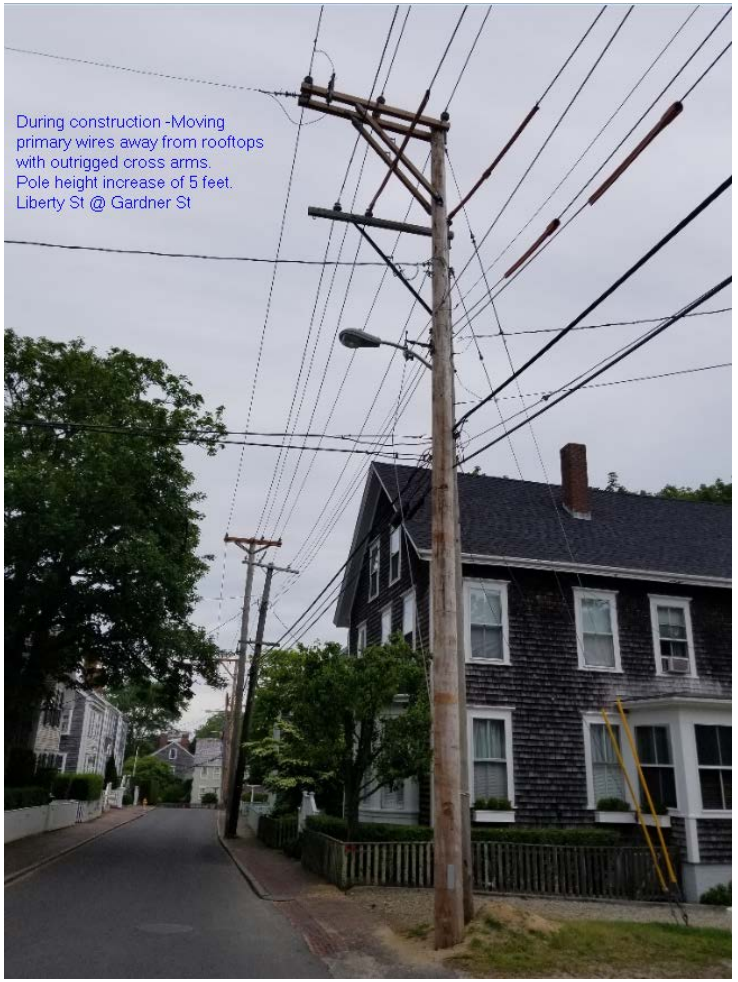
Proposed (example)

Three, vertical wires in secondary → Single, slightly thicker wire in aerial cable

Pole Comparison

New poles required to meet standards and clearances

- Replacement poles are needed to meet current federal electrical standards, and to provide necessary clearances
- Replacement poles provide greater durability and reliability (less susceptible to damage, particularly from wind)
- Pole size comparison:
  - Existing = approx. 40’
  - Proposed = approx. 45’ (and a couple of inches thicker)
- Exploring process for faster removal of old poles (limit duration of “double poles”)



Underground Risers

Challenges w/ Relocating Riser Poles

- Several of the poles along the route have underground risers (where utilities transition from underground to overhead)
- Relocating a pole from its current location also requires relocating all of the risers
- Relocating risers requires extensive sidewalk and roadway excavation
- Proposed pole replacement plan allows for risers to remain in location, and be reattached to new pole
- Relocating poles would require design changes, in many cases - changing the angle of lines can require additional support equipment (e.g. guy wire or push pole)

Traffic Management

Traffic Management Plan

Intended to limit impact during construction

Developed in collaboration with Nantucket officials (town, police, fire)

Potential conditions include:

- Maintain one lane of travel (alternating traffic) on two-lane roads
- Temporary closures on narrow roads (e.g. East Dover, Back Street, Weymouth Street @ Union Street)

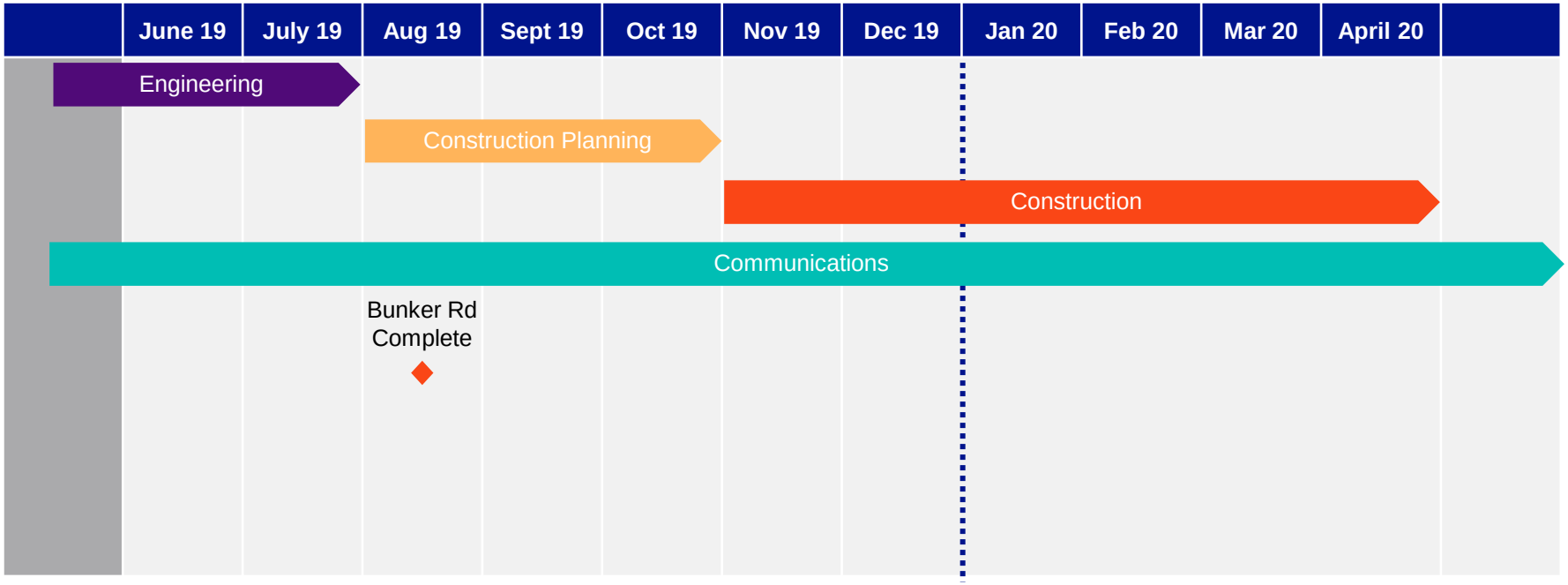
Police detail likely at all times (exact plans TBD in collaboration with NPD)

Timeline

Fall 2019 (November) → Spring 2020 (April)

Condensed construction timeline is significant benefit of overhead solution

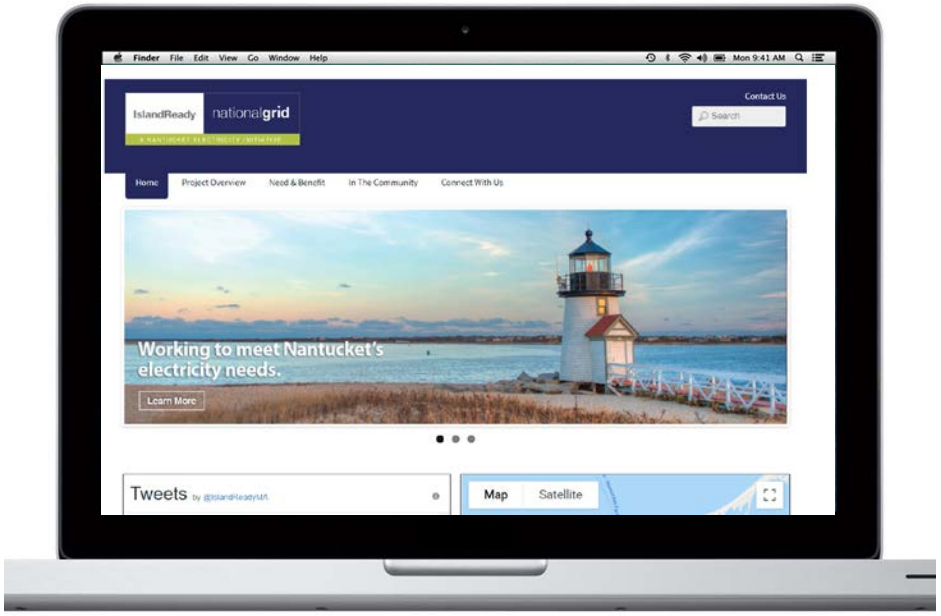
No impact to, or need to bridge, summer seasons



Outreach

Comprehensive Communications Plan

- Proactive outreach to project abutters and town officials re: project updates
- Door-to-door outreach, one-on-one meetings
- Public Information Sessions
- Maintain regular channels of communication (web, email, phone, Twitter)
- Provide project updates via Inquirer and Mirror (editorial + paid ads)
- Participate in Nantucket events (e.g. Nantucket Island Fair)



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