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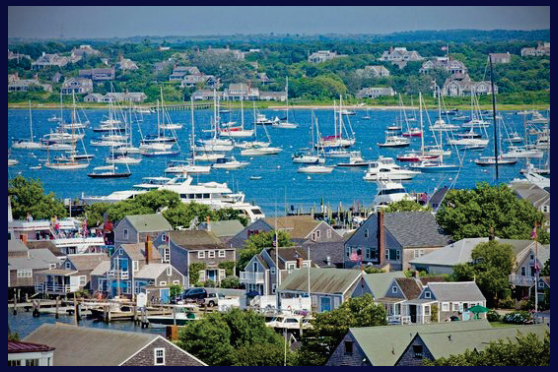
A NANTUCKET ELECTRICITY INITIATIVE

Innovative solutions to Nantucket's rapidly increasing energy needs



February 7, 2018

Current state – nearing a system overload

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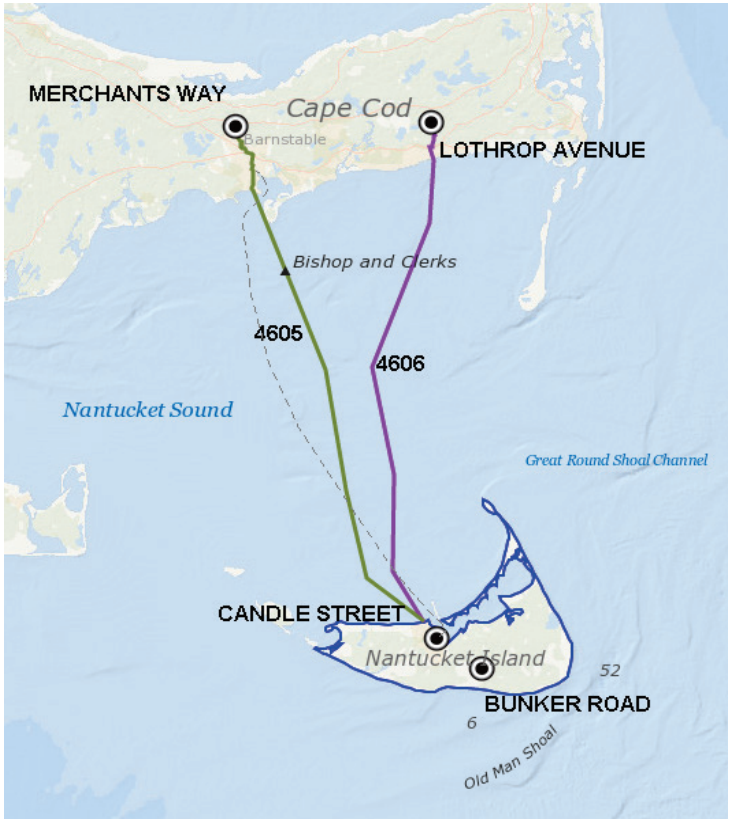
- Nantucket served by two undersea cables
- Currently, 6 megawatts of diesel generation (two 3 MW units) provide some back-up supply in the event of a cable-related outage
- Nantucket continues to experience very rapid growth and significant increasing demand for electricity
- Current forecasts indicate a third cable will be needed, as well as additional back-up supply



The threat to the electrical system grows

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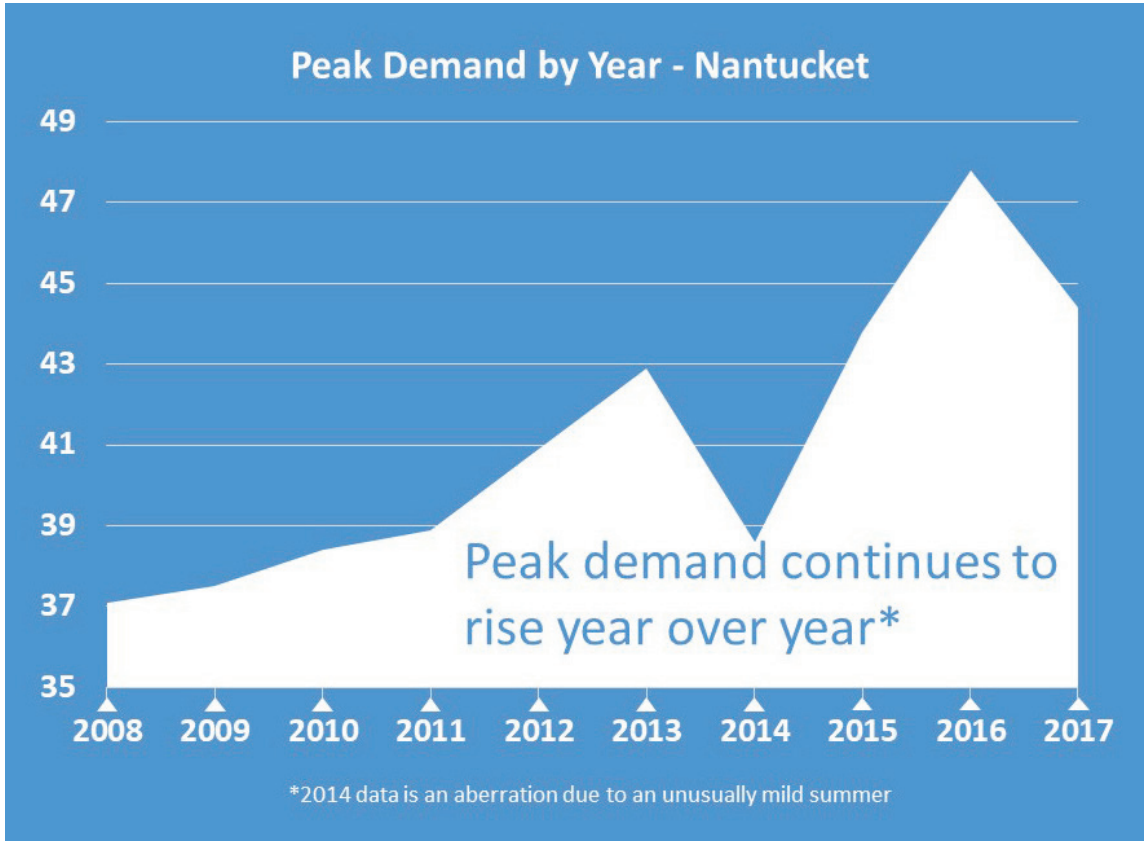

Peak demand was as high as 47.8 MW in 2016

Current system was not designed to handle that peak load

Demand is driven by island growth AND increased use of electricity

Failure to upgrade system could lead to outages at peak demand times

A comprehensive proposal to meet the Island's needs

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Improved Redundant Power Supply	Better protection of existing electrical infrastructure	Improved system reliability and performance
Replace the 2 existing diesel generators with one 10 MW generator Install a state-of-the-art battery energy storage system (BESS) to serve as back-up supply	Move Candle Street transformer controls indoors for added protection from elements Relocate, elevate the switchgear to better protect against flood threat, comply with latest standards	Comprehensive upgrade to the downtown and Milestone Road circuits Switch from radial to looped system to improve reliability

What does the IslandReady project do?

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- Increases electricity delivery capacity to parts of the island
- Protects the downtown (Candle Street) substation that sits in a flood plain
- Increases resiliency of distribution network in the downtown area
- Delays the need for a third undersea cable to serve Nantucket
- Contributes to a more stable, reliable electrical future for all Island residents and businesses

Energy Conservation: DemandLink

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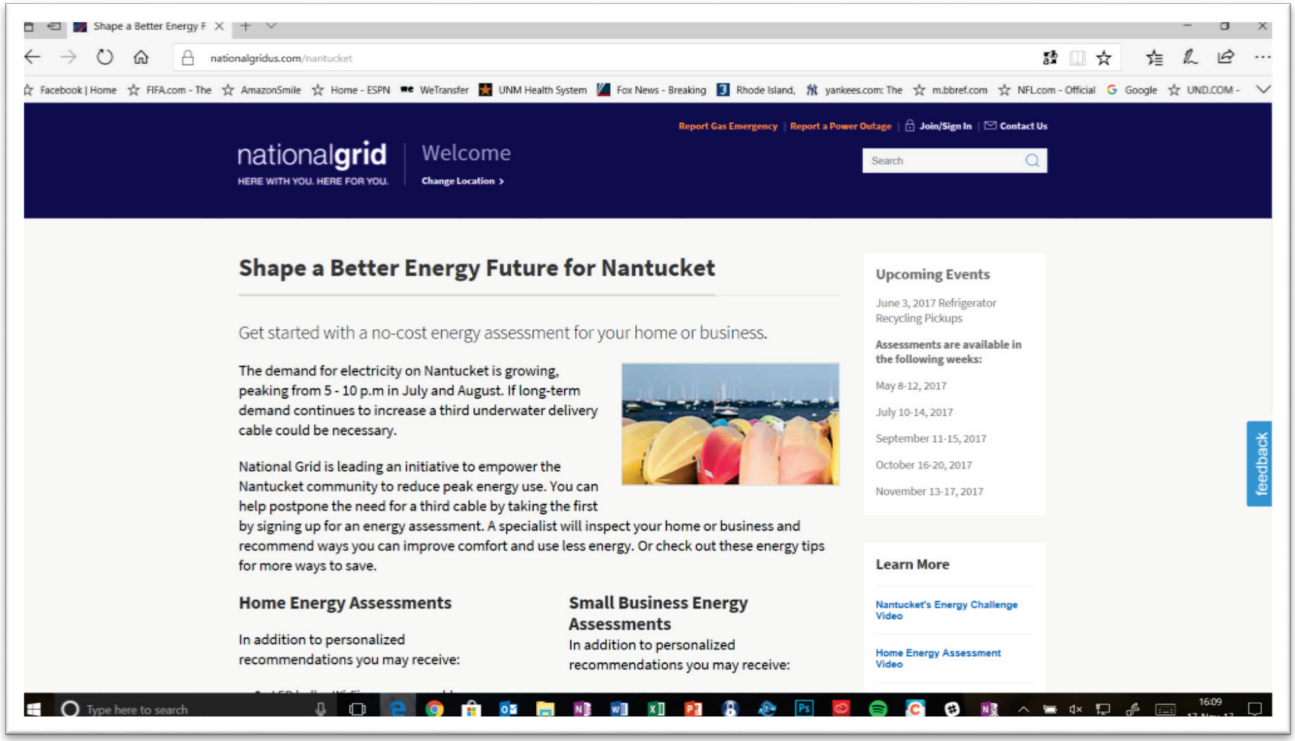
Seven-year effort to pilot new methods to reduce peak load (DemandLink Nantucket)



Three project components

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1. Candle Street Substation Flood Mitigation
2. Bunker Road Generation System
    a) Diesel generator replacement
    b) Battery Energy Storage System (BESS)
3. Electrical system distribution system improvements
    a) Downtown loop system
    b) Milestone Road system

Flood Mitigation at Candle St. Substation

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- Candle Street Substation identified as needing flood mitigation measures
- National Grid has developed a two-part remedy
- Solution will enhance system reliability in harshest weather conditions

- **Phase 1 (Short Term)**
  - Improve sandbag systems currently protecting the switchgear
  - Seal conduits at designated manholes and riser locations
- **Phase 2 (Long Term)**
  - Permanently raise switchgear and relocate transformer controls indoors

Candle Street Flood Mitigation Visual

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Phase 1: Improve existing sandbag protection at switchgear

NOTE: Images are representative for presentation only and may not represent actual final conditions

Candle Street Flood Mitigation Schedule

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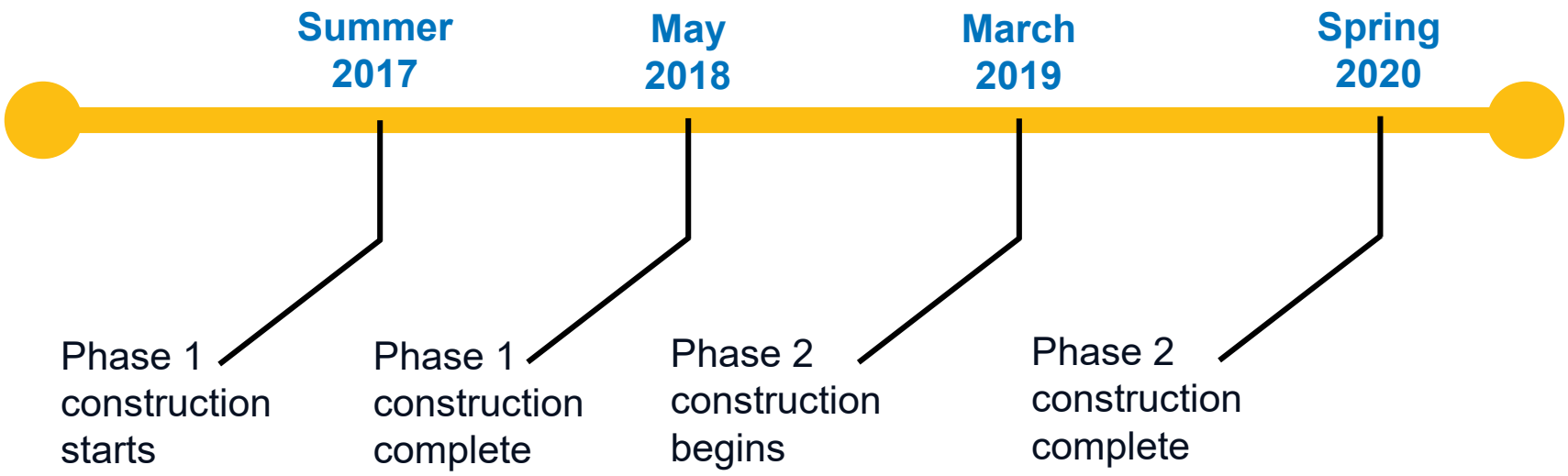

Bunker Road Generation: The Need

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- The existing diesel generation serves as back-up in the event of a cable-related service interruption
- Currently, one of the undersea cables and the generators would be able to supply most, but not all, customers on Nantucket during the peak summer months if the second cable failed
- In the event of a lengthy service interruption, large mobile generators will be needed; it could take several days to import and connect the generators
- The existing diesel generators are reaching the end of their useful life and need to be replaced
- National Grid is proposing a two-part plan to better serve customers during an emergency and further delay the need for a third cable

Phase 1: Upgrade Diesel Generation

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- Replace the two existing 3MW diesel generators with a new 10MW diesel generator
- Would reduce the amount of mobile generation needed in a peak-time emergency situation
- Given the condition of the existing generators, replacement is needed ASAP

Phase 1 Timeline:

June 2016: National Grid issues RFP to supply/install generators

November 2017: Construction Start

December 2018: Expected completion date

Phase 1: Backup generation visual

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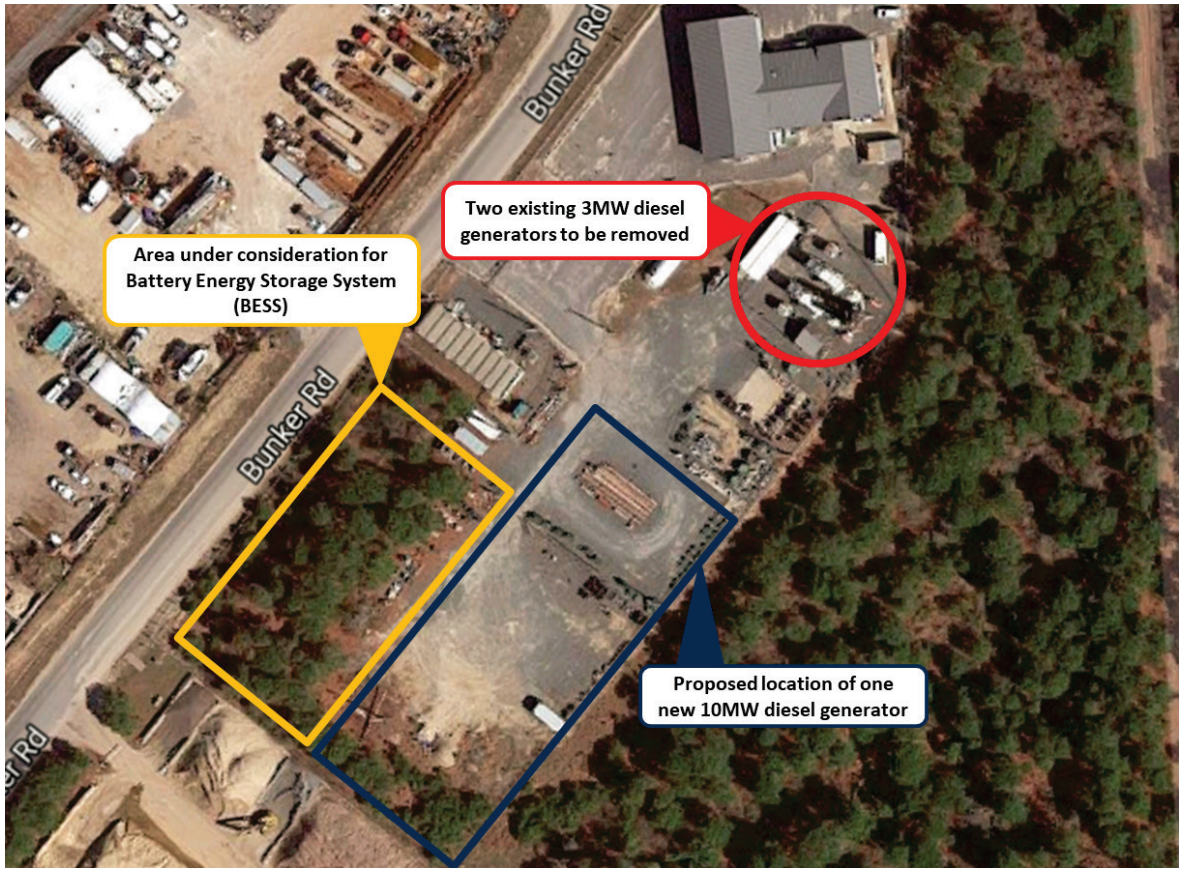

Phase 2: Install Battery Storage

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- Additional back-up generation will be needed as Island growth and usage continues
- National Grid has selected a state-of-the-art battery energy storage system to meet that need
- Battery + energy efficiency programs will help defer third cable longer

Phase 2 Timeline:

Spring 2018: Construction of Battery installation begins

December 2018: Battery installation goes live

Phase 2: Install Battery Storage (visual)

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Downtown Distribution Line Improvement: L1

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- Improves energy delivery and reliability by converting from a radial (point-to-point) system to a loop system
  - Allows for re-routing of electricity to restore some customers more quickly in the event of a service interruption
  - Moves conduit underground, which improves system resiliency and allows for easier future system expansion
- Project will be very disruptive to downtown traffic and parking
  - National Grid project team will work with all affected business to mitigate disruption to the extent possible
  - Provide signage to notify patrons that businesses are open and aid in parking direction

Downtown Distribution Line Improvement: L1

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Project Impact Overview

- Work will NOT take place in summer season
- Work will be disruptive to the downtown area while in active construction
  - National Grid will work with affected businesses to ensure greater public awareness of business openings
    - Work with Chamber of Commerce
    - Individual meetings with business owners
    - Signage in work areas
    - Literature to hand to customers
    - Web buttons to link to project website for updates

Downtown Distribution Line Improvement: L1

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Downtown Distribution Line Improvement: L1

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Milestone Rd Distribution Line Improvement: L8

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- A new underground cable will be installed from the Candle Street Substation out to Milestone Road to meet growing demand in that area
- Project will be less disruptive along the route
- Work will occur during the off-season so as to not affect island tourism

Milestone Rd Distribution Line Improvement: L8

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NEW / UPDATED INFRASTRUCTURE

EXISTING / UNCHANGED INFRASTRUCTURE

PARKING LOT AT NANTUCKET TAX COLLECTOR

Downtown Distribution Line Improvement: L8

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Public Outreach and Engagement

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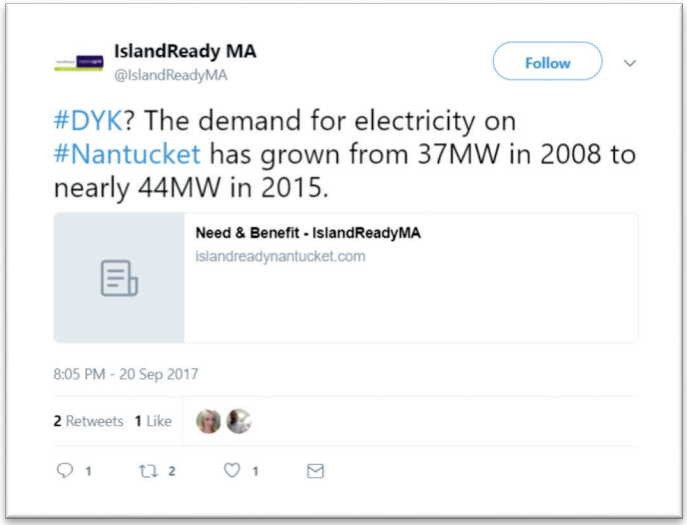
- There will be many opportunities for engagement, dialogue and feedback through public meetings, site visits and direct mailings
  - Open Houses, webinars
  - Door-to-door outreach
  - Mailings (email, snail mail)
  - Telephone hotline
  - Twitter
  - Website



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QUESTIONS?