



Notice of Initiation of the Cape Cod Resource Integration Study

Planning Advisory Committee

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SYSTEM PLANNING

Highlights/Summary

- The ISO has completed several interconnection studies on Cape Cod
 - Most recently completed the System Impact Study for QP 700 (800 MW connecting to West Barnstable)
- There are several more Interconnection Requests in the queue
 - A further 2,948 MW of generation (and an Elective Transmission Upgrade) are seeking to interconnect to Barnstable/West Barnstable or Bourne
- The ISO expects that additional new transmission infrastructure, on Cape Cod, will be needed to interconnect additional generation
 - However, the ISO has also identified there will be a limitation on how much can continue to be added to Cape Cod without also adding very significant new transmission, beyond Cape Cod, to strengthen the connection between Cape Cod and the rest of the surrounding network
- The ISO is initiating a cluster, to move forward generation interconnection, using additional transmission on Cape Cod
 - Consideration of further additions, using new transmission infrastructure that would extend beyond Cape Cod, may be taken up in a future effort



Agenda

- Summarize the status of the ISO's interconnection process in the area of Cape Cod, Massachusetts
- Initiate the Cape Cod Resource Integration Study
- Identify the cluster-eligible Interconnection Requests for the Cape Cod Resource Integration Study
- Describe the scope and the initial conceptual Cluster Enabling Transmission Upgrade(s) (CETU) to be considered in the Cape Cod Resource Integration Study



2019 NESCOE ECONOMIC STUDY AND CURRENT STATUS OF THE INTERCONNECTION PROCESS ON CAPE COD

Relevant Summary

NESCOE 2019 Economic Study Transmission Interconnection Analysis: Cape Cod Area

- Screening analysis of the continued addition of new generation to the Cape Cod area identified the following limitations of the existing transmission system:
 - Thermal limitations, particularly the Stoughton – K Street 345 kV cables
 - Introduced significant exposure to problematic loss of right-of-way extreme contingencies
 - Very low short circuit ratios (relatively low system strength) indicating weak grid conditions expected to manifest as unstable behavior of the wind farms
 - Stability issues such as un-damped oscillations and degraded NPCC bulk power system behavior

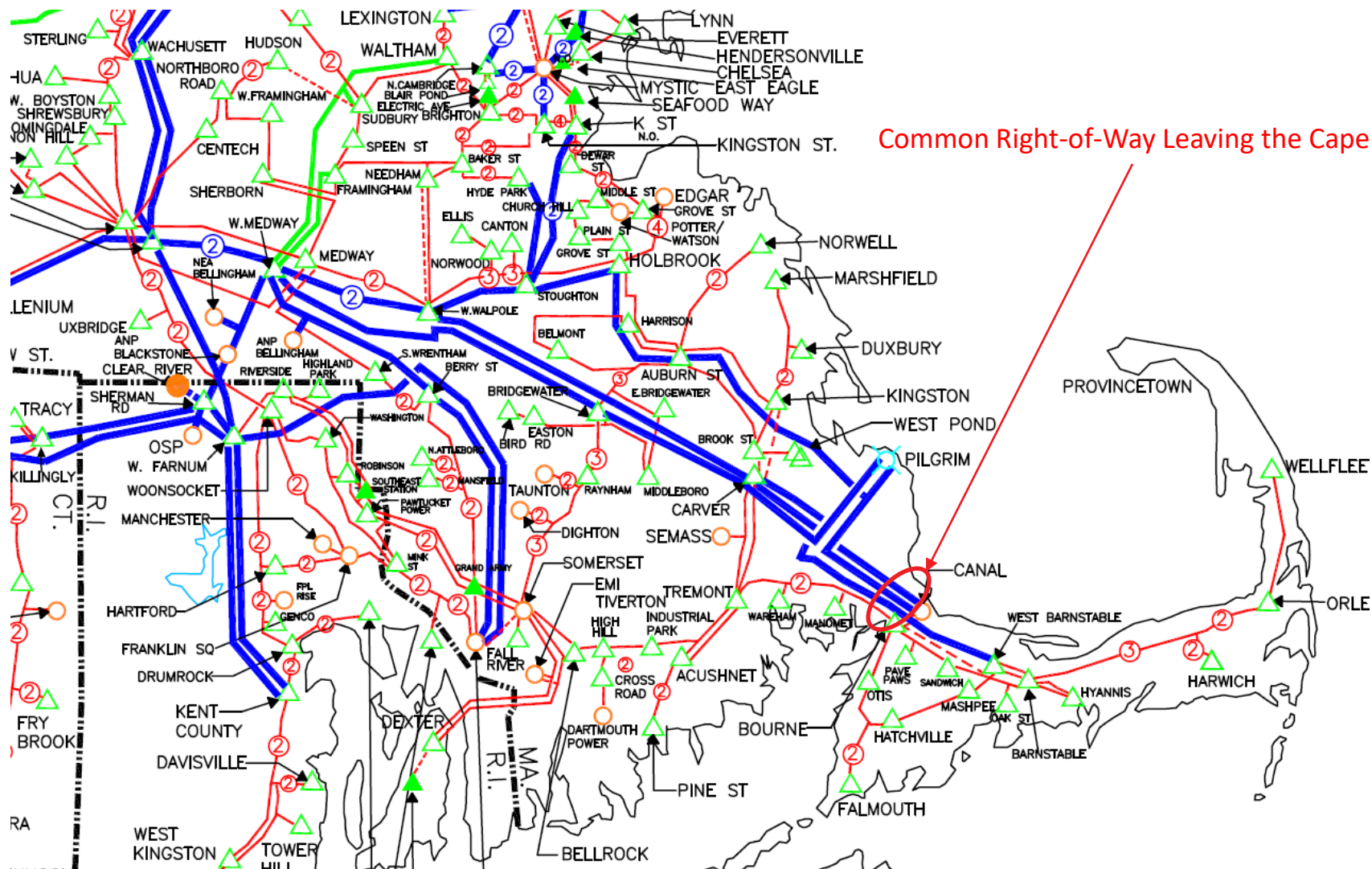


What Were the Insights Gained from the Cape Cod Injection Analysis?

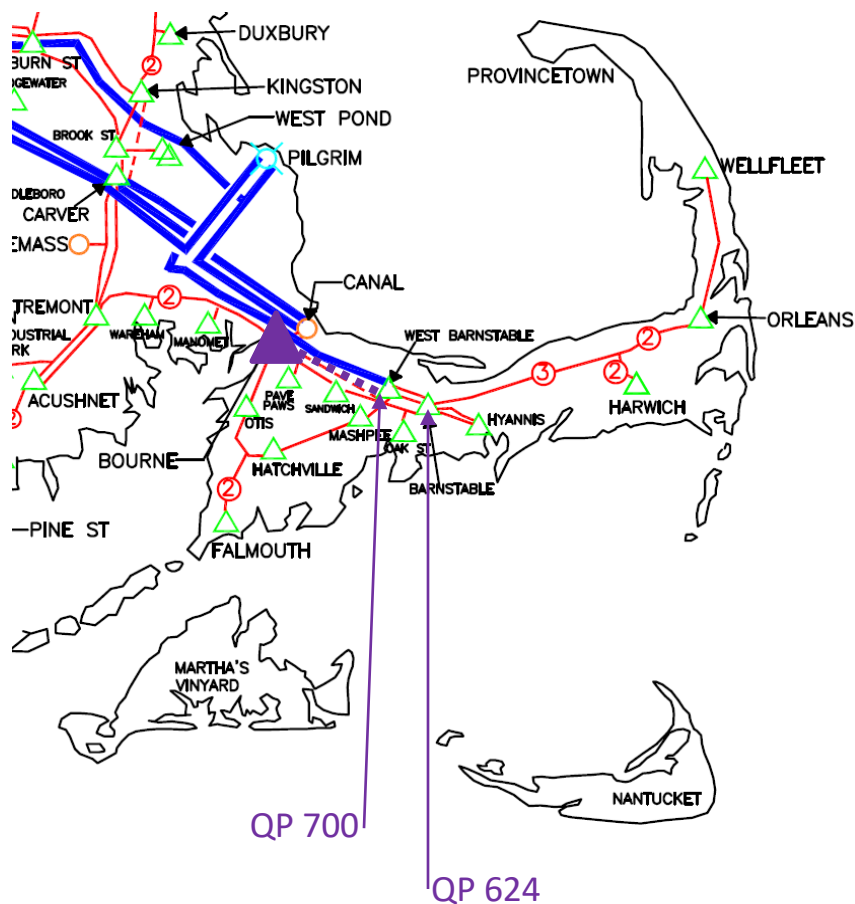
- The nature of the identified limitations indicate that between 2,400 and 3,200 MW of injection there appears to be a “hard ceiling” of the amount that can readily be interconnected to the Cape Cod area
 - Not only would new transmission be needed to address both the weak-grid issues and the thermal issues on the Stoughton-K Street 345 kV lines, but
 - The new transmission would have to be in its own right-of-way to avoid an unacceptable exposure to loss-of-supply (loss of up-to 3,200 MW of connected offshore wind) for the loss of the right-of-way



Cape Cod Area Transmission



Status of the Interconnection Process on Cape Cod



- QP 624 (800 MW) has a completed system impact study and is interconnecting to the Barnstable 115 kV substation
- QP 700 (800 MW) has a completed system impact study and is interconnecting to the West Barnstable 345 kV substation and will require network upgrades including the following:
 - A 345 kV line from West Barnstable to Bourne
 - New Bourne 345 kV substation
 - New 345/115 kV autotransformer at West Barnstable
- A further 2,948 MW of generation (and an Elective Transmission Upgrade) are seeking to interconnect to Barnstable/West Barnstable or Bourne

CLUSTER-ELIGIBLE INTERCONNECTION REQUESTS

Cape Cod Resource Integration Study

Cluster Triggering Conditions

- The ISO has identified that the conditions in Section 4.2.1 of Schedule 22, Section 1.5.3.1 of Schedule 23, and Section 4.2.1 of Schedule 25 of Section II of the Tariff have again been triggered
 - At the discretion of the System Operator, Interconnection Requests will be studied in clusters for the purpose of the Interconnection System Impact Study and the Interconnection Facilities Study when the combination of the following circumstances is present in the interconnection queue: (a) there are two (2) or more Interconnection Requests without completed Interconnection System Impact Studies in the same electrical part of the New England Control Area based on the requested Point of Interconnection, and (b) the System Operator determined that none of the Interconnection Requests identified in (a) of this Section will be able to interconnect, either individually or on a cluster basis, without the use of common significant new transmission line infrastructure rated at or above 115 kV AC or HVDC
- The queue currently contains several Interconnection Requests (listed on subsequent slides) for generation projects that will require common new transmission infrastructure to interconnect
- Therefore, pursuant to the Interconnection Procedures, the ISO is notifying the PAC of the initiation of cluster for studying these requests

Eligible Interconnection Requests

- The following Interconnection Requests are currently being considered for inclusion in a new CETU Regional Planning Study (CRPS) that will be known as the Cape Cod Resource Integration Study, and have been identified as potentially eligible to participate in a subsequent Cluster System Impact Study (CSIS)
- This **does not** reflect the final list of Interconnection Requests that will be ultimately identified as eligible to participate in a subsequent CSIS
- The final eligibility to participate in such a subsequent CSIS will be determined by the status of each Interconnection Request at the time the Cape Cod Resource Integration Study is finalized

Eligible Interconnection Requests, continued

QP806

QP828

QP829

QP830

QP922

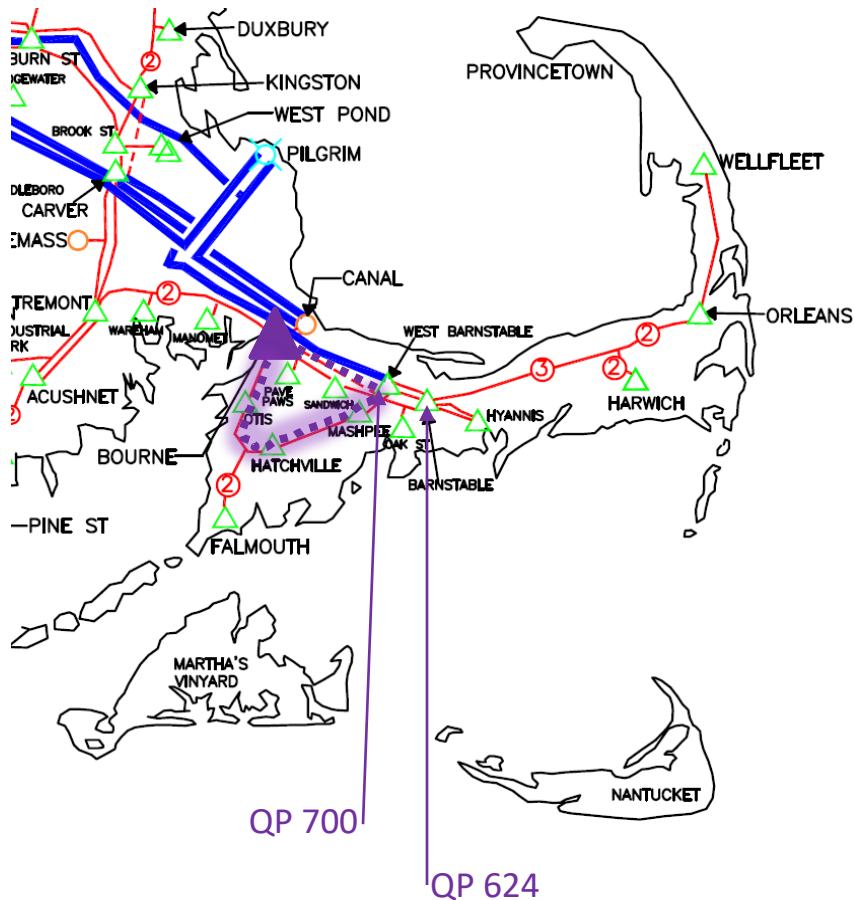
PRELIMINARY TRANSMISSION UPGRADE CONCEPTS

Scope of the Cape Cod Resource Integration Study

Proposed Scope of the Cape Cod Resource Integration Study

- Identify potential transmission infrastructure that could be used to interconnect queued generation on Cape Cod
 - Quantify generation that could interconnect with new transmission pursuant to the Network Capability Interconnection Standard (NCIS)
- The conditions used in NCIS System Impact Studies are described in [Planning Procedure 5-6](#)
 - Peak load (mostly for steady state) and light load (mostly for stability) testing
 - Resources are modeled at their nameplate ratings (50 degrees F or 0 degrees F, as appropriate)
 - New resources may dispatch against existing resources under the Network Capability Interconnection Standard
 - Interfaces modeled at the transfer limit
- Also identify the quantity of capacity that could meet the Capacity Capability Interconnection Standard (CCIS) with the identified infrastructure

Conceptual Cluster Enabling Transmission Upgrades



- The Cape Cod Resource Integration Study will focus on the addition of **new 345 kV transmission infrastructure between West Barnstable and Bourne**
- Identify the **quantity of megawatts** that could be interconnected while also recognizing and further quantifying the export limitation from Cape Cod that was identified in the 2019 Economic Study

Next Steps

- Review any feedback from stakeholders regarding the initial conceptual transmission upgrades
 - Please email any additional feedback to PACmatters@iso-ne.com by 11/20/20
- Present results of the Cape Cod Resource Integration Study
- Issue CRPS Draft Report for Comment
 - The Tariff identifies that the ISO should use reasonable efforts to complete the Cape Cod Resource Integration Study within twelve (12) months from the notice of the cluster initiation to the Planning Advisory Committee
 - Because of the analysis that has already been performed in the economic study and in the interconnection studies, development of the draft report is expected sooner than this timeframe
- After the publication of the final CRPS report, the ISO will open the window for eligible projects to proceed to the Cluster System Impact Study (CSIS) phase
 - Eligible projects must meet the CSIS entry requirements, including the submittal of a Cluster Participation Deposit, to proceed into the CSIS

Questions

