

2015 Economic Studies Keene Road Upgrades Scope of Work – Revised Draft



Planning Advisory Committee Meeting

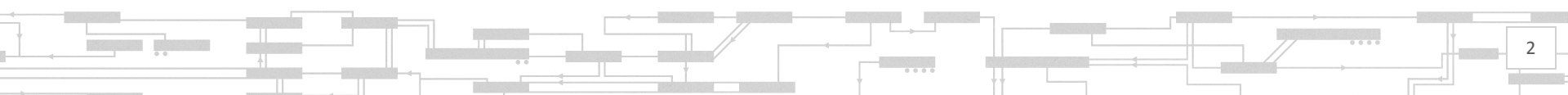
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Outline

- Goal
- 2015 Economic Study Request
- Scope of Work
- Scenarios and Cases



Background

- Keene Road area is north of Orono, ME (north of Orrington)
 - Area peak load approximately 30 MW
 - Resources behind constraint
 - Existing: ~320 MW (nameplate)
 - Proposed: ~ 90 MW+ (nameplate)
 - All lines in-service export limit
 - Currently about 175 MW (depending on system conditions)
 - Limits are due to stability (post-fault voltage recovery)
- Major drivers of curtailment:
 - Competition for export capacity over Keene Road interface
 - Exacerbated by loss of local load – (paper mill closing)
 - Exacerbated by transmission construction (e.g., MPRP)
 - Orrington South



Goal: Keene Road Economic Study

- Develop economic and environmental metrics
 - Transmission improvements that increase Keene Road export limits
 - Reduce bottled-in wind energy
 - Reduce fossil fuel consumption in New England
- Develop metrics that *may* be used to inform the region on the need for future transmission upgrades:
 - Market Efficiency Transmission Upgrades (METU)
 - Ten year evaluation period
 - Based on 2021 network model
- The results *may* be used to inform Public Policy requests for projects facilitating the integration of wind resources
- Requirements specified in Attachment N to the OATT
 - Quantify benefits of relieving transmission constraints
 - Compare production cost metric with and without the hypothesized transmission upgrade(s) to the estimated cost of transmission improvements

SCOPE OF WORK

Keene Road Economic Study

Basis for Study

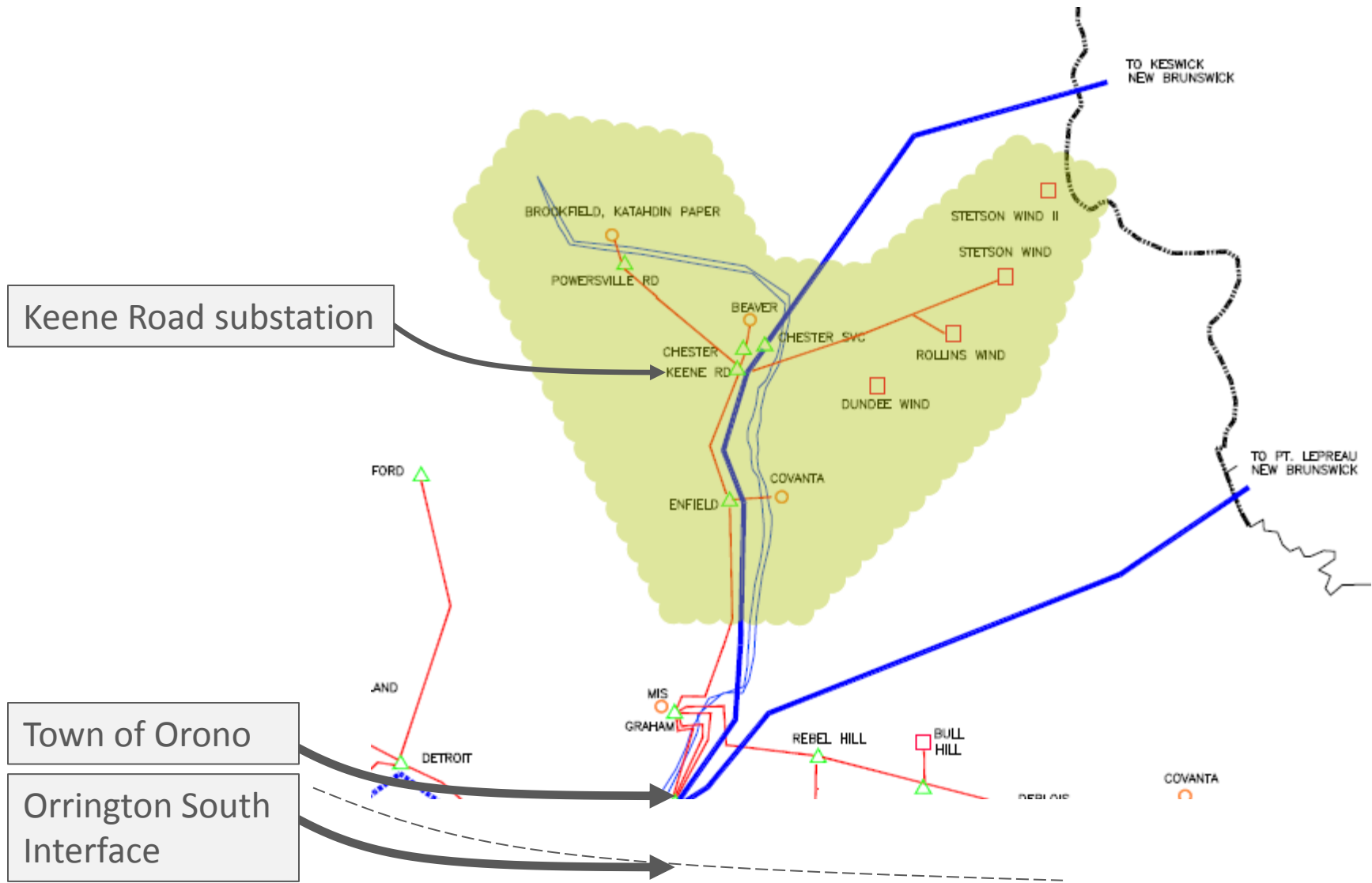
- The Strategic Transmission Analysis Wind Integration Study
 - Evaluated alternatives for reducing congestion
 - Identified 50% series compensation as a conceptual solution
 - Other conceptual transmission upgrades could also provide improved system performance
- Quantify economic benefits
- Develop high level cost estimates for
 - One or more potential transmission solution
 - Ensure sufficient detail
 - Valid comparison of economic benefits versus costs

Base Economic Evaluation Model

- Given available resources and transmission
 - Net demand growth
 - Fuel costs
 - Fuel availability
 - Generator availability
 - Release of bottled generating resources
- Determination of the net present value of power system resource costs includes:
 - Energy costs
 - Cost of supplying total operating reserve (embedded in production cost)



Keene Road



Keene Road substation

Town of Orono

Orrington South Interface

Scenarios

- Base case
 - Use only resources existing as of April 1, 2015
- Sensitivity cases evaluate the impact of additional wind development from resources currently in the queue
 - Sensitivity 1
 - Include additional wind resources under construction as of April 1, 2015
 - Sensitivity 2
 - Include all wind resources behind the Keene Road Export interface in the interconnection queue as of April 1, 2015



Scenarios

- Base Case – with only existing wind as of April 1, 2015
 - Export limits of 175 MW, 225 MW and unconstrained
- Base Case plus wind under construction as of April 1, 2015
 - Export limits of 175 MW, 225 MW and unconstrained
- Base Case plus all wind in the queue as of April 1, 2015
 - Export limits of 175 MW, 225 MW and unconstrained



Scenario Summary – Table of 10-Year Metrics

	Post -MPRP Transmission System (including identified upgrades that are already in the RSP)	Transmission Upgrades designed to relieve Keene Road constraints	Unconstrained (Note: no specific transmission projects are identified to accomplish this)
Base Case with only existing wind as of April 1, 2015	A (benchmark)	B	B"
Sensitivity 1 Base Case plus wind under construction as of April 1, 2015	C	D	D"
Sensitivity 2 Base Case plus all wind in the queue as of April 1, 2015	E	F	F"
Sensitivity 2 with 1000 MW of energy flow from New Brunswick	G	H	H"

Questions

