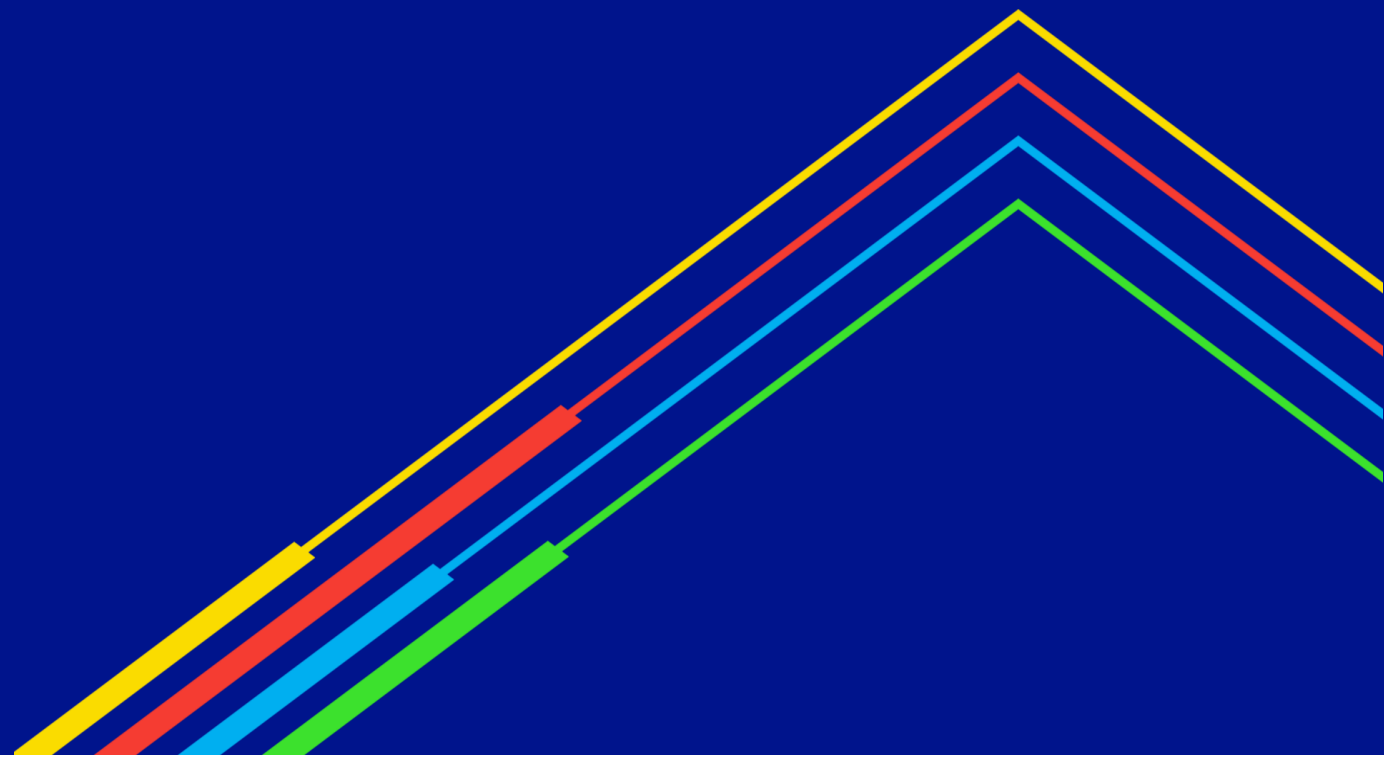


Central & Western MA Study Update

October 20, 2020
Online Meeting

nationalgrid



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This online meeting is being recorded.

Agenda

00 Welcome/Safety

**01 Transmission Study
Update**

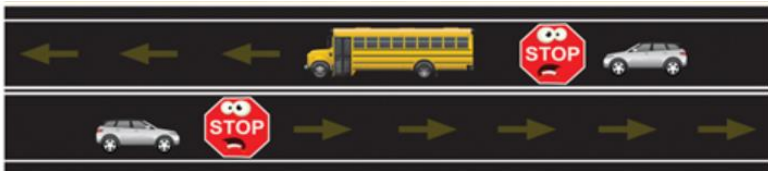
**02 Distribution System Impact
Study Update**

03 Cost Expectations

04 Questions



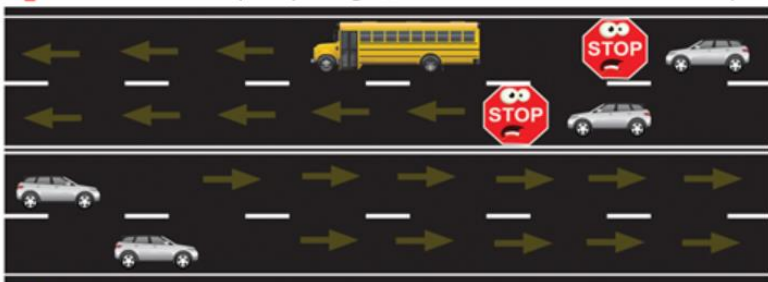
Safety Message – School Bus Safety



↑ 2 LANE ROADWAY
 When school bus stops for passengers, all traffic from both directions must stop.



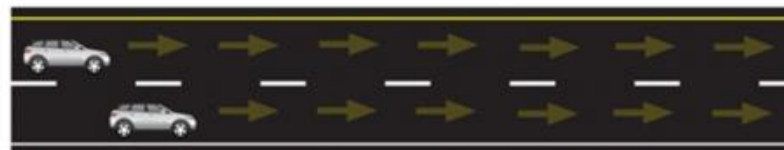
↑ 2 LANE ROADWAY + CENTER TURN
 When school bus stops for passengers, all traffic from both directions must stop.



↑ 4 LANE ROADWAY NO MEDIAN SEPARATION
 When school bus stops for passengers, only traffic following the bus must stop.



DIVIDED HIGHWAY



↑ 4 LANES + DIVIDED HIGHWAY + MEDIAN SEPARATION
 When school bus stops for passengers, only traffic following the bus must stop.

- Slow down! Look for children walking, especially if there are no sidewalks in the neighborhood.
- Yellow flashing lights indicate the bus is preparing to stop to load or unload children. Be prepared to stop your vehicle.
- Red flashing lights and extended stop sign indicate the bus has stopped, and that children are getting on or off. You must wait for the red lights to stop flashing and the extended stop sign is pulled in before you start driving again.

01

**Central/Western MA ASO Study
Transmission Study Results**

**Michael Porcaro, PE
Director, NE DG Ombudsperson**

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Transmission Restudy



Results

- All upgrades previously identified requiring developer contribution still required
- Adverse impact solution at the Chestnut Hill 69kV substation no longer required
- Results subject to Reliability Committee approval

Transmission Upgrades Required

No.	Upgrades	Thermal/ Voltage Issue	Company System Improvement Contribution ¹	Developer Contribution ²	Timeline Required before Interconnection ³	MW Toward Developer Contribution
1	A-1/B-2 69 kV circuits (All sections): Reconductoring	Thermal	Yes	No	6-7 years	-
2	Deerfield 4 Substation - 69 kV: Buswork and switches	Thermal	Yes	No	4-5 years	-
3	Vernon Substation - 69 kV: Buswork and switches	Thermal	Yes	No	4-5 years	-
4	Otter River Substation - 69kV: Configuration change involving both circuits, and the connection of 32 DVAR of reactive support	Voltage	No	\$50M	5-7 years	29.5MW
5	Deerfield 2 Substation - 69kV: Ramp down existing synchronous generation at Deerfield 2 and 3 between contingencies.	Voltage	Not Required	No	N/A	-
6	Wendell Depot – Reactor	Voltage	No	Identified in Distribution Slides		
7	E-5/F-6 Ware Substation - 69kV: O-15N breaker	Thermal	No	\$2M	2-3 years	24MW

Notes:

¹ Indicates if a NEP project is planned on this asset

² Indicates if there is potential cost to developers

³ Approximate duration to complete the transmission project

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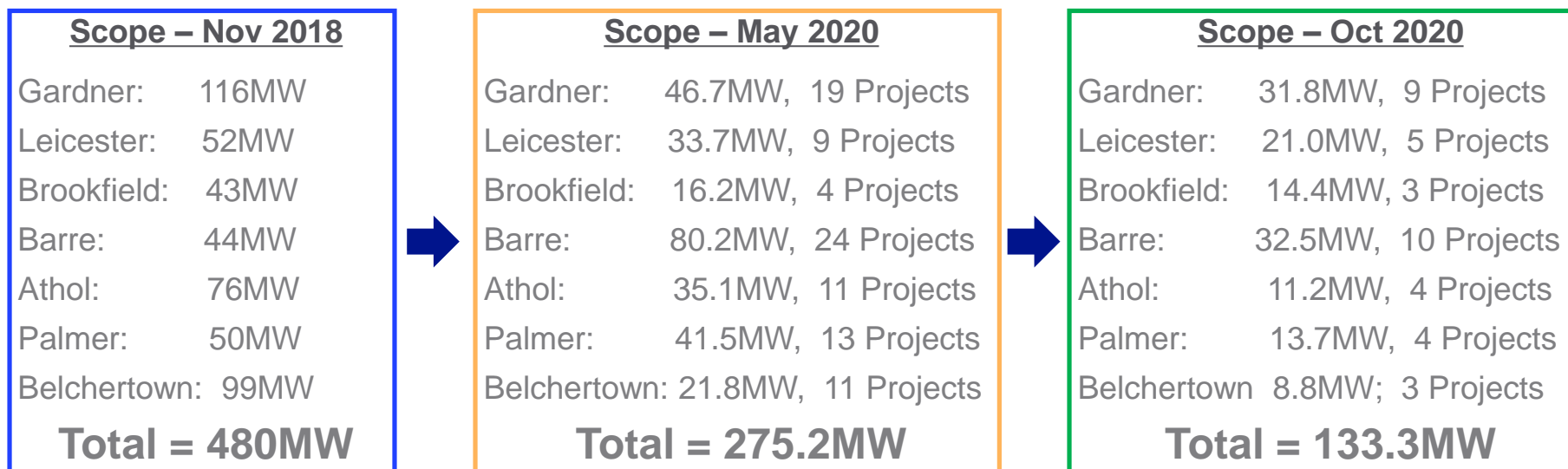
02

Distribution System Impact Study Update

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Area Summaries

Most significant geographic areas requiring significant amount of MECo Distribution System Modifications



System Modification Scope Summaries

Gardner: 31.8MW, 9 Projects

- Upgrade East Winchendon and Westminster Substations

Leicester: 21.0MW, 5 Projects

- Upgrade North Oxford Substation
- Retire existing Leicester Sub and replace with new near Stafford St in Leicester

Brookfield/Meadow St: 14.4MW, 3 Projects

- Upgrade Meadow St and Lashaway Substations

All areas include extensive distribution line reconfiguration, extension, and/or reconductoring. Additional transmission upgrades as a result of the transmission study identified on previous transmission study slides

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Barre: 32.5MW, 10 Projects

- Upgrade Barre and Ware Substations

Athol: 11.2MW, 4 Projects

- Upgrade Wendell Depot Substation (required by transmission study)

Palmer: 13.7MW, 4 Projects

- Upgrade Little Rest Rd Substation

Belchertown 8.8MW; 3 Projects

- Minimal substation upgrades

DSIS Shared Asset Cost Summaries

	MW Studied	Substation ^{1,3,4}	D-Line ^{1,2,3}	Total ^{1,3}
Gardner	31.8	\$ 9,271,197	\$ 17,844,018	\$ 27,115,215
Leicester	21.0	\$ 31,807,533	\$ 25,653,482	\$ 57,461,015
Brookfield / Meadow St	14.4	\$ 33,385,103	\$ 22,526,361	\$ 55,911,464
Barre	32.5	\$ 41,794,319	\$ 45,487,005	\$ 87,281,324
Athol	11.2	\$ 17,294,559	\$ 24,515,859	\$ 41,810,418
Palmer	13.7	\$ 18,886,171	\$ 12,215,065	\$ 31,101,236
Belchertown	8.8	\$ 482,925	\$ 5,515,982	\$ 5,998,907

Notes

1. Costs include tax gross up, Transmission PTF Tax Rate:13.30%, Transmission Non-PTF Tax Rate: 12.94%, Distribution Tax Rate 16.47%.
2. D-Line Costs do not include specific Point of Common Coupling estimates.
3. Costs associated with elements of scope that qualify as System Improvement are not the responsibility of the customers, and have been removed from the totals above
4. "Substation" column included NEP and MECo scope associated with substation upgrades

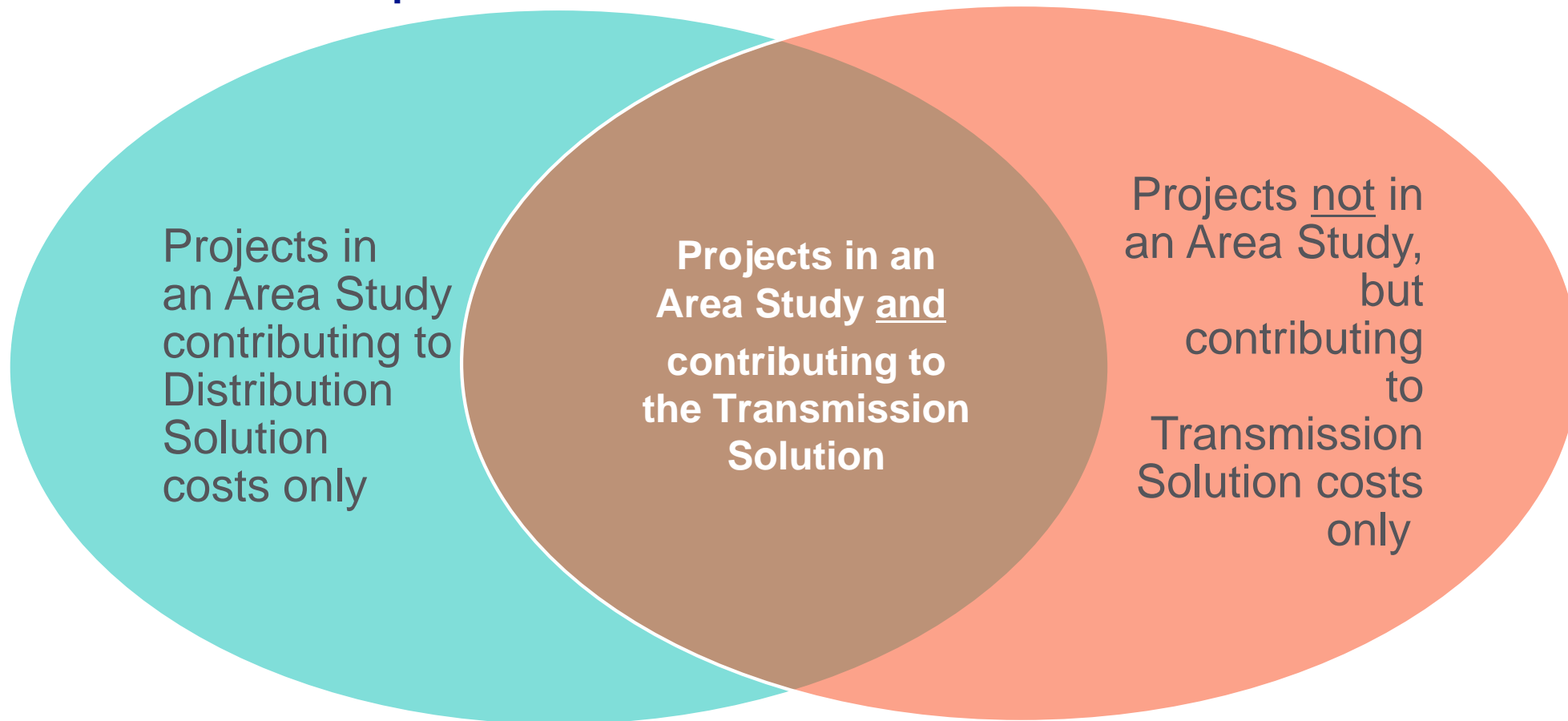
03

Cost Expectations

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Cost Estimate Expectations



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Note: Sizing of diagram is not proportional to MW or project totals. Visual provided here as a reference only for concept of project overlap potential

Cost Estimate Expectations

Upgrade costs identified from both the transmission and distribution studies have removed System Improvement costs

- Although costs are removed, work will be required to complete prior to interconnection

Estimated costs for distribution System Modifications from the distribution Detailed Studies are +/-10%

- In accordance with MA interconnection tariff MDPU 1320

Estimated costs for ASO transmission system upgrades will be reconciled to actual costs

- In accordance with NEP's FERC tariff

Cost Sharing

- Distribution System Modifications will be cost shared on per MW basis
- Transmission upgrades will be shared on per MW basis
- ISAs will identify total area costs, as well as pro-rata share
- Total area costs will not change, however pro-rata allocation may change based on attrition

Carrying Charges

- ASO Annual On-going Carrying Charges
 - These on-going charges include O&M, property taxes, and other carrying costs
 - Carrying charge rate is calculated annually in accordance with FERC approved tariffs
- NEP's 2020 rate is 5.21%
- Calculated based on formula identified in [NEP's Schedule 21](#) ("Direct Assignment Facility (DAF)" section) and data from the FERC Form 1
 - The total charge is calculated as the product of the total reconciled transmission upgrade costs made by the ASO and the annual carrying charge rate

All ASO upgrade costs as well as the associated on-going carrying charges will be passed through to those DG projects causing the need for ASO upgrades

Interconnection Service Agreements

Delivery upon receipt of customer document corrections

ISA includes:

- *Distribution system modifications*
 - Project specific cost (site specific costs and pro-rata share of shared scope)
 - Implementation schedule
- *Transmission upgrades (if applicable)*
 - Project specific cost
 - Implementation schedule
- “Cost Allocation” based on area costs (if applicable) and reassessments for attrition. The current method is based on Cost Causation principle.
- ASO Upgrade cost and associated on-going carrying charges (if applicable)
 - Carrying charges will be collected when the DG facility is energized plus cost security before that estimated date
- Contingencies for permitting, approvals and land rights

Payment schedule in accordance with MDPU 1320 (amended by recent queue mgmt. order)

- 25% in 60BD, remaining 75% in subsequent 120BD

Next Steps

Customer decision

- Correct documents as applicable, and execute ISA to proceed toward design and construction activities
- Withdraw application

Asset condition planned system improvement work to the transmission system will progress regardless of customer decisions

New distribution study groups are in formation for these areas, aligned with the Group Study provision of the DG tariff

- DPU orders relevant to Group Study [here](#)

QUESTIONS?

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