

Update on Carbon Price Proposal

November 10, 2016

DRAFT



NESCOE identified three major concerns with the carbon price proposal

- **Concern #1: the carbon price raises customer costs and presents cost allocation challenges**
 - In response to these concerns, Exelon has revised its proposal to set the initial carbon price at \$32/ton, rather than at the Social Cost of Carbon (\$42/ton). This level is based on the Social Cost of Carbon less the \$10/ton RGGI soft price cap
 - At this price level, offsetting benefits lead to net customer savings relative to the status quo
 - Customers in states that lack legislative carbon goals are better off with a carbon price when the price impact of renewable procurement by other states is considered
- **Concern #2: the carbon price does not guarantee new entry by clean generation**
 - On its own, a carbon price at this level is not high enough to incent entry by new renewables. For this reason, Exelon proposes that the carbon price be combined with a procurement backstop mechanism to ensure state procurement goals are met.
 - With appropriate contracting, a carbon price will directly lower the cost of such procurements
 - A \$32/ton carbon price is likely sufficient to retain nuclear and non-RPS qualifying hydro alleviating any future need to provide state support for these resources
 - By moving some resources in-market and reducing state-support costs for others, a carbon price reduces concerns related to Minimum Offer Price Rule mitigation (or similar)
- **Concern #3: doubts exist as to whether ISO-NE has legal authority to implement a carbon price**
 - FERC has adequate authority to allow market rules to reflect carbon intensity
 - This concern is no more significant for the carbon price proposal than it is for any of the other proposals.

Benefits from carbon emission revenue, renewable subsidy cost decrease, and nuclear retention outweigh the price impact of carbon at \$32/ton

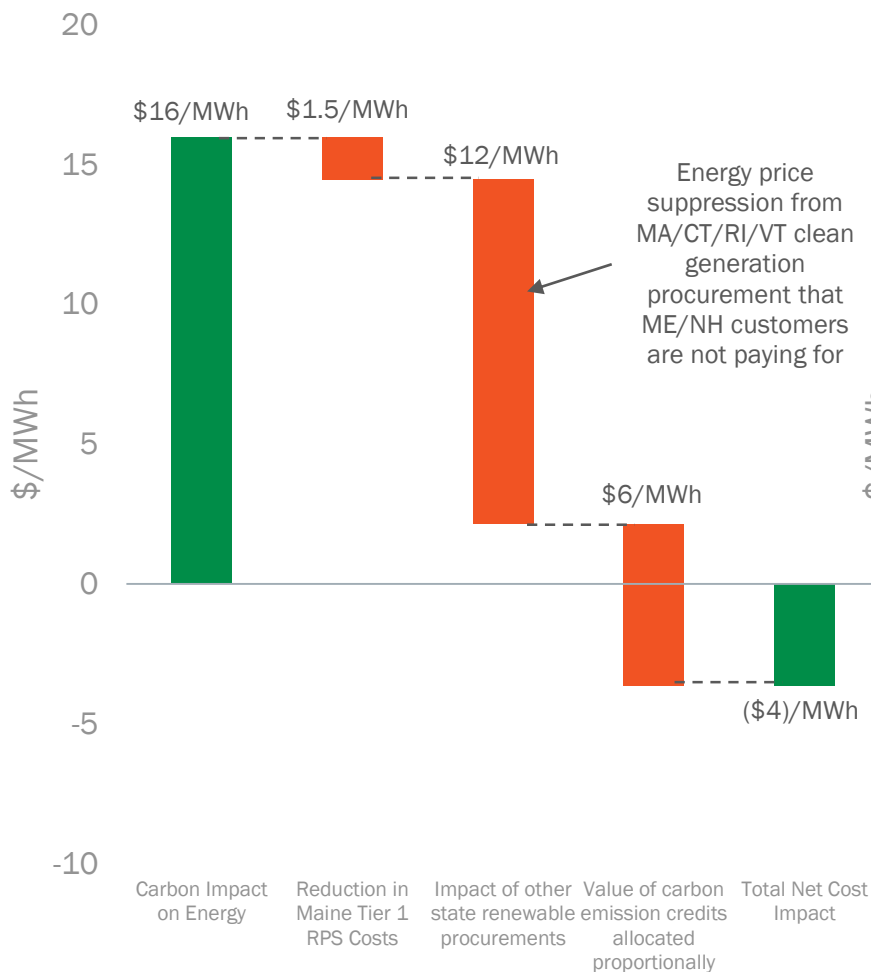
2030 retail rate impacts of administered carbon price set at \$32/ton versus status quo (New England average)



Assumptions: 0.47 short ton per MWh marginal emission rate; 0.17 short ton per MWh average emission rate; baseline REC price of \$35/REC; Future state renewable price impacts estimated based on ISO-NE 2016 Economic Study draft results (comparison of constrained scenarios 3 and 5 assuming 20.7 TWh of new renewables).

Customers in states without carbon goals are also better off with a carbon price, which reduces the need for a differential credit allocation scheme

Impact of \$32/ton Carbon on Maine Customers in 2030



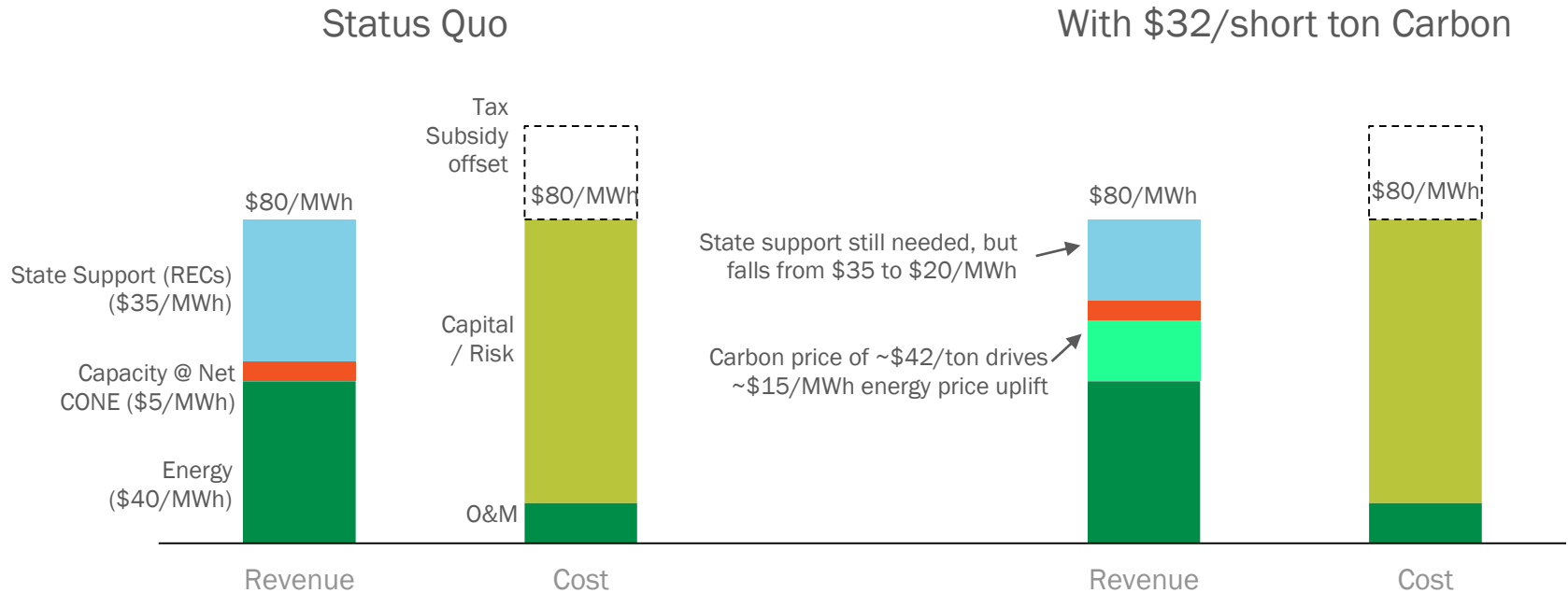
Impact of \$32/ton Carbon on New Hampshire Customers in 2030



Assumptions: 0.47 short ton per MWh marginal emission rate; 0.17 short ton per MWh average emission rate; baseline REC price of \$35/REC; Future state renewable price impacts estimated based on ISO-NE 2016 Economic Study draft results omitting price impact from future ME/NH RPS increases.

\$32 carbon will reduce renewable subsidy costs but not drive new entry alone; combination with a backstop achieves this

Illustrative New Renewable Economics



New Entrant renewables are provided state support which allow them to continue to enter even with depressed energy prices

A \$32/ton carbon price reduces, but does not eliminate, the amount of state support needed to induce renewable entry

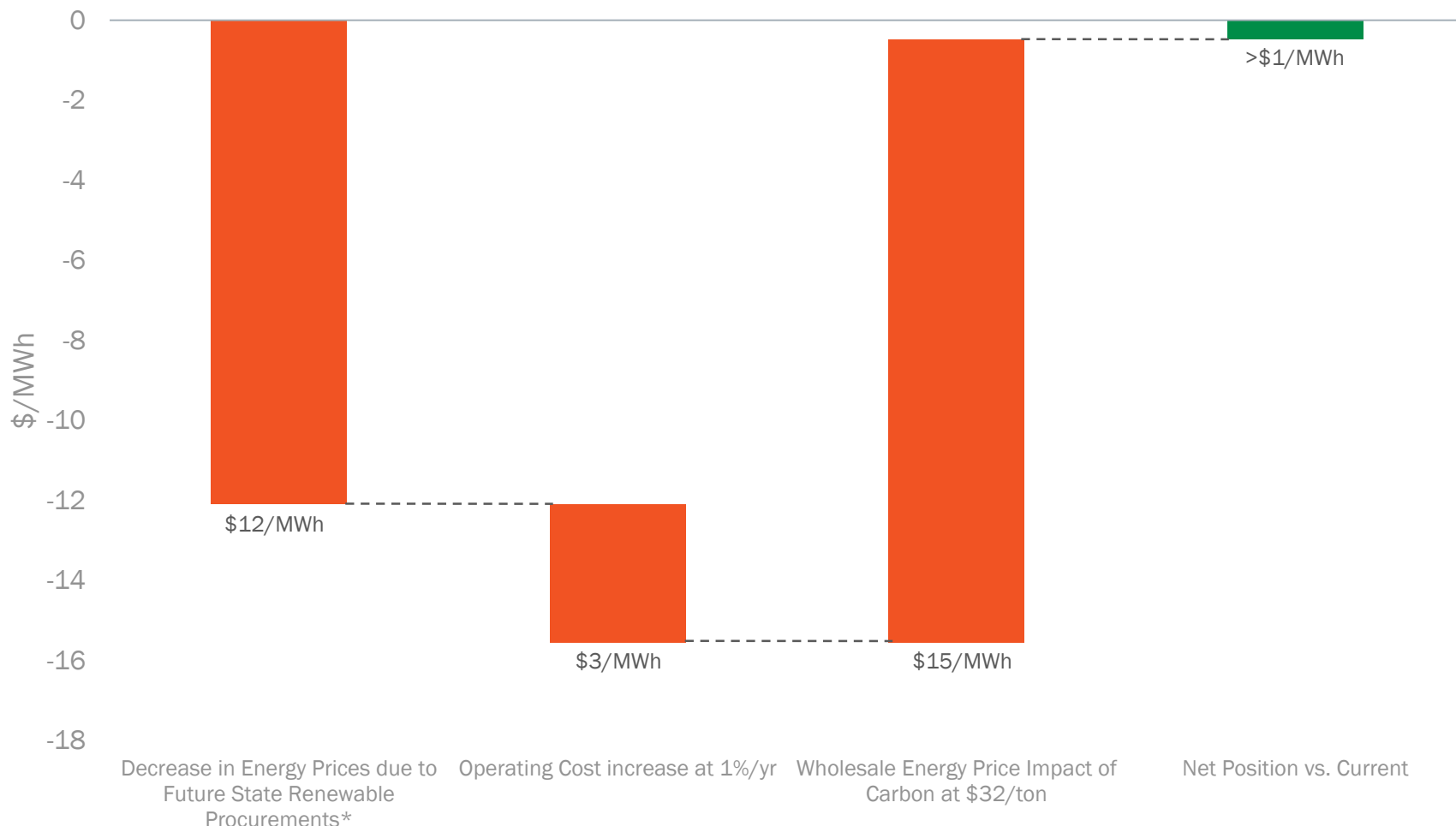
To address concerns regarding to new entry by clean generation, Exelon proposes that the carbon price proposal be combined with a clean generation procurement backstop mechanism. The FCM-C or FCEM proposals are examples of such a mechanism, as is the current range of state RPS & clean generation contracting programs. Any of these mechanisms could be combined with the carbon price proposal to achieve the desired result.

Carbon pricing enhances efficiency of all backstop mechanisms

- Carbon pricing at an adequate level can provide a complete and efficient solution to achieving carbon reductions without the need to rely on backstop mechanisms
- However, carbon pricing and other mechanisms such as RPS, contracts or an FCEM are not mutually exclusive
 - To prevent sudden consumer impacts, it may not be feasible to immediately incorporate the level of carbon pricing necessary to cover the cost of investment in new zero-carbon generation. A \$32/ton price should be sufficient to keep largest existing zero carbon resources in-market
- From a consumer perspective, carbon pricing is not an additive expense but should allow REC prices, contract rates or FCEM prices to be proportionally lower
 - Future contracts can include a mechanism to offset contract rates with carbon price benefits dollar for dollar
- Because the benefits of carbon pricing can be attained with or without these other mechanisms it should be thought of as a foundation upon which these other mechanisms can be layered to the extent they demonstrate merit.

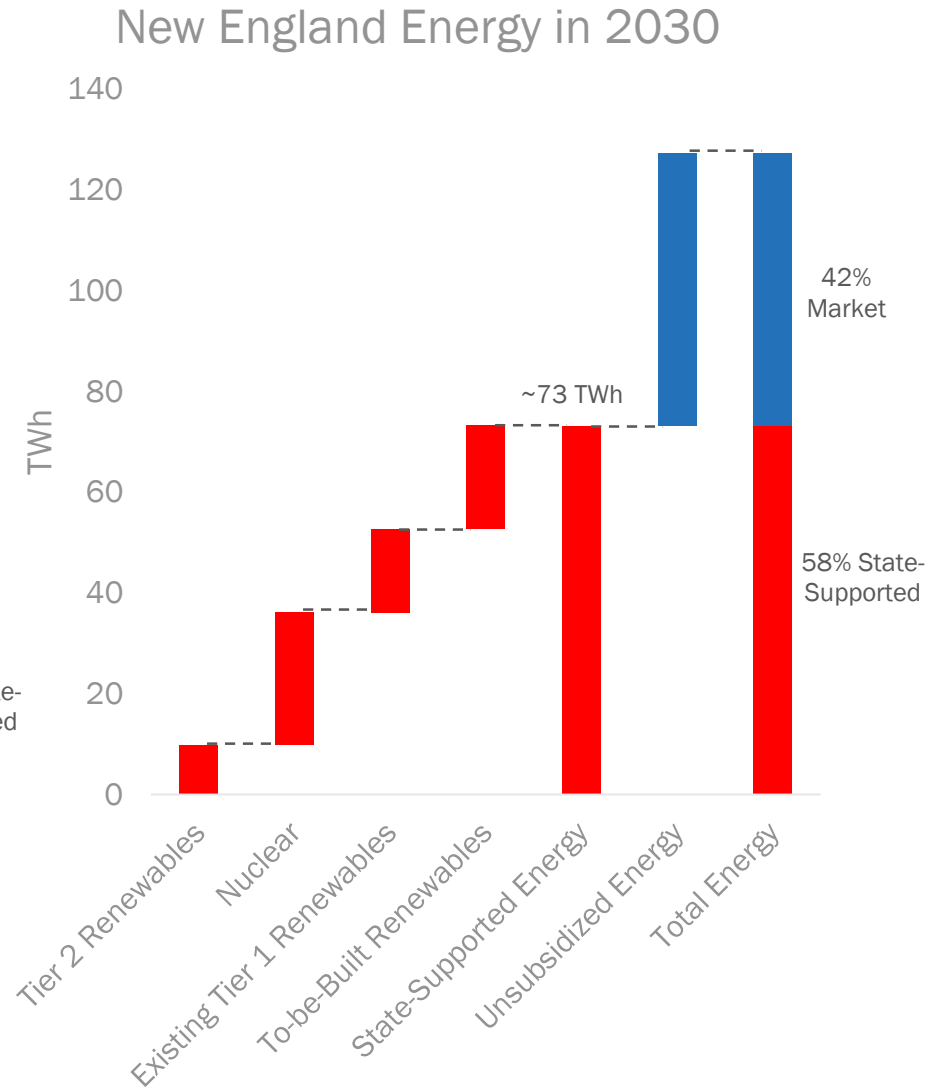
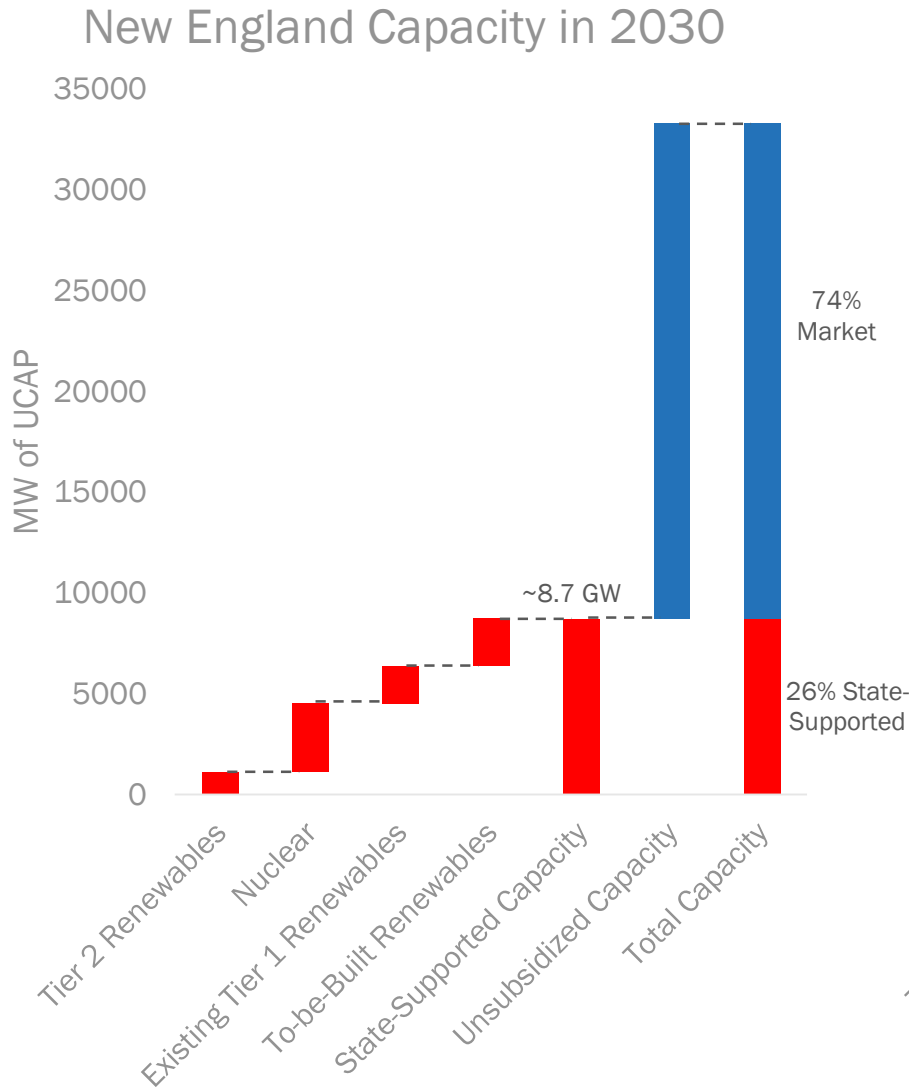
A \$32/ton carbon price is sufficient to offset future price suppression and cost inflation for nuclear

Incremental New England Nuclear Economics over 2020-2030
with State-Driven Renewable Buildout and \$32/ton Carbon



* Based on ISO-NE 2016 Economic Study draft results. Estimate is derived by assuming 20.7 TWh of new renewables by 2030 (based on incremental growth in aggregate RPS targets plus MA legislation mandating purchase of 9.45 TWh of incremental clean generation) by a wholesale energy price impact rate of \$0.59/MWh per TWh of new renewables based on comparison of constrained scenarios 3 and 5 (scenario 3 has +23 TWh of renewables driving \$2.1 B/yr in reduced customer energy costs relative to scenario 5)

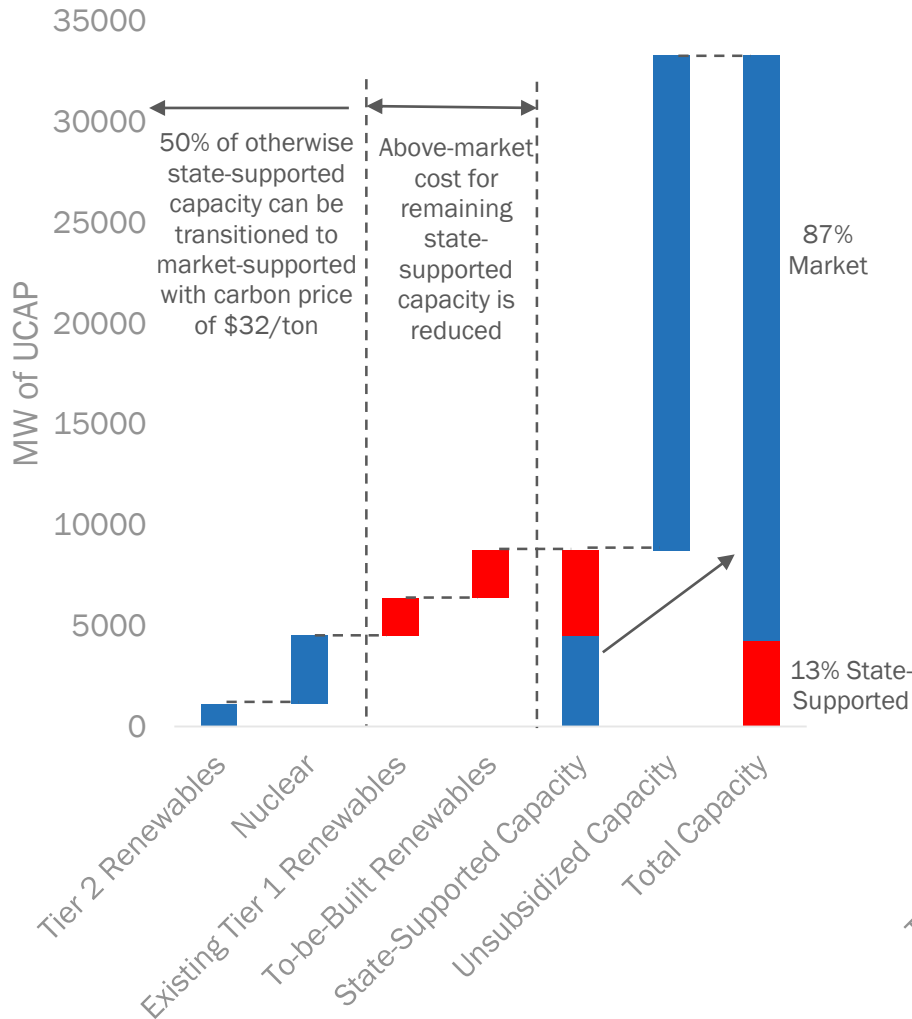
Under the current status quo, approximately 25% of capacity and 60% of energy will require state support by 2030



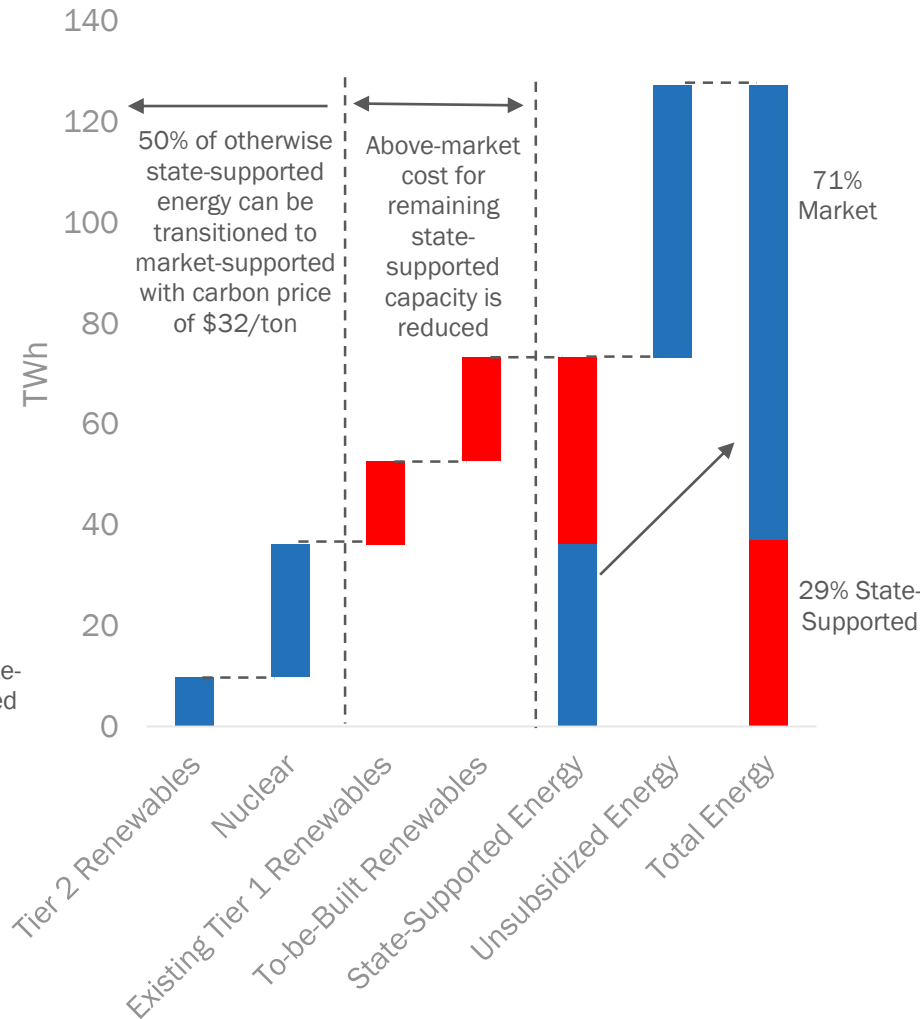
Note: To-be-built renewables includes 9.45 TWh of incremental clean generation specified in MA H. 4568

A \$32/ton carbon price would transition about half of state-supported energy and capacity to market

New England Capacity in 2030



New England Energy in 2030



Note: To-be-built renewables includes 9.45 TWh of incremental clean generation specified in MA H. 4568

Legal concerns are not unique to carbon price proposal, and in any event are surmountable

- The term "just and reasonable" is ambiguous and courts have recognized FERC has wide discretion to determine what is just and reasonable
- There is statutory and case law support for the concept that FERC can consider environmental issues in setting rates
- The same fundamental legal issue is raised by both the carbon price proposal and the various versions of the FCM-C/FCEM proposals. Both require FERC to accept as just and reasonable rates that reflect environmental goals.

Recommended Next Steps

- Continue work on refining proposals that have not reached the needed level of development
- Once all proposals have been developed, request that the ISO conduct an economic evaluation of the costs and benefits of each proposal, including carbon pricing
- Goal: identify the proposal that best balances the functioning of wholesale markets and cost to consumers while providing the states with the flexibility to meet their needs.