

Electricity Transmission Infrastructure Development in New England

**NPCC Governmental/Regulatory Affairs
Advisory Group**

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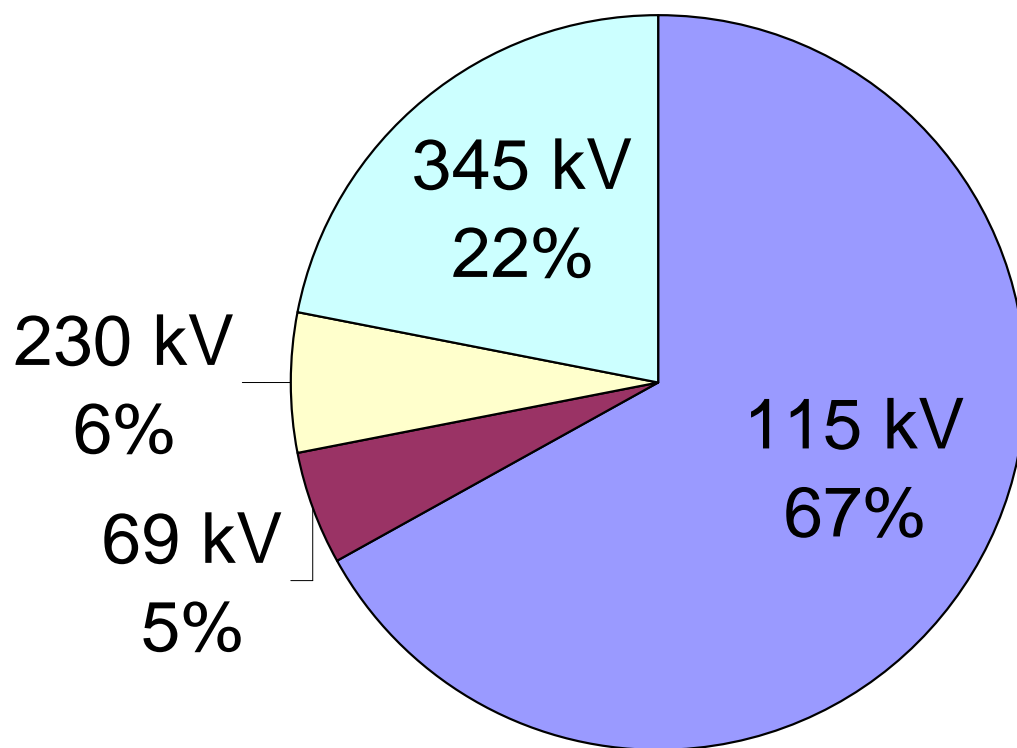
Transmission Infrastructure is Playing An Increasingly Important Role in Competitive Markets

- Traditional role to provide reliable delivery of an essential energy source
 - Increased to incorporate new mandated standards imposed by NERC and other reliability organizations
- Now must also allow for effective and efficient trading as well as delivery of a commodity
 - Ability of suppliers to have fair access to the transmission system
 - Adequacy to deliver electricity to where it is needed
 - Buyers to be able to choose the least expensive wholesale electricity available
- The competitive wholesale marketplace requires a substantially more integrated and upgraded managed transmission infrastructure

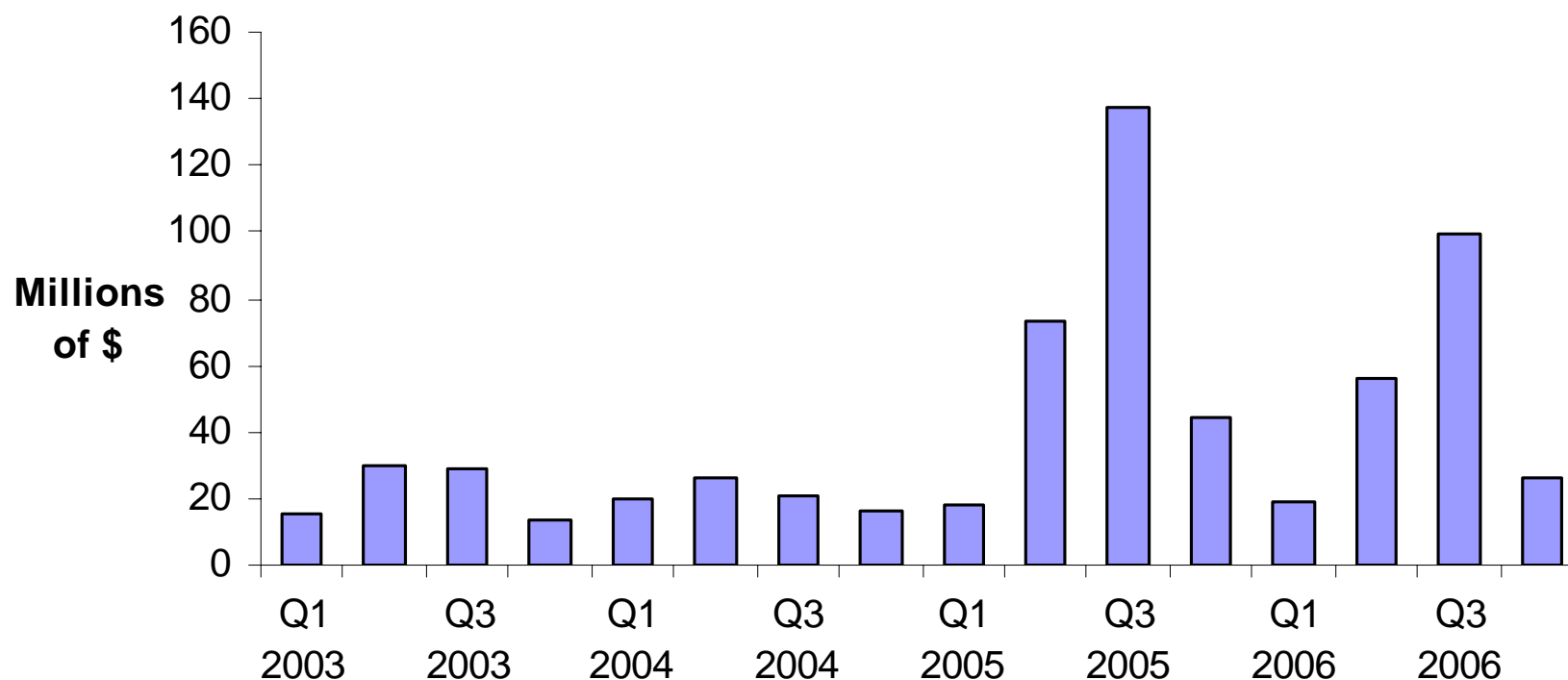
Several Challenges are Limiting the Grid's Capability to Efficiently and Economically Transmit Electricity

- *Age and Size*: system consists of aging, lower-capacity lines, that are undersized for amounts of electricity transmitted
- *High Electricity Demand*: peak demand increased 28% since 200X and is expected to increase another 20% over next decade
- *Infrastructure Underinvestment*: \$9B was spent on new generating facilities since restructuring, <\$1B on transmission
- *Transactions*: more than 300 companies participate in \$11B in buying/selling transactions annually – system not designed for this heavy or type of use

70% of System is Still Composed of Lower Capacity Lines --- More Upgrading Needed



Lag in Post Restructuring Transmission Investment has Led Consumers to Pay >\$600M in Congestion Costs

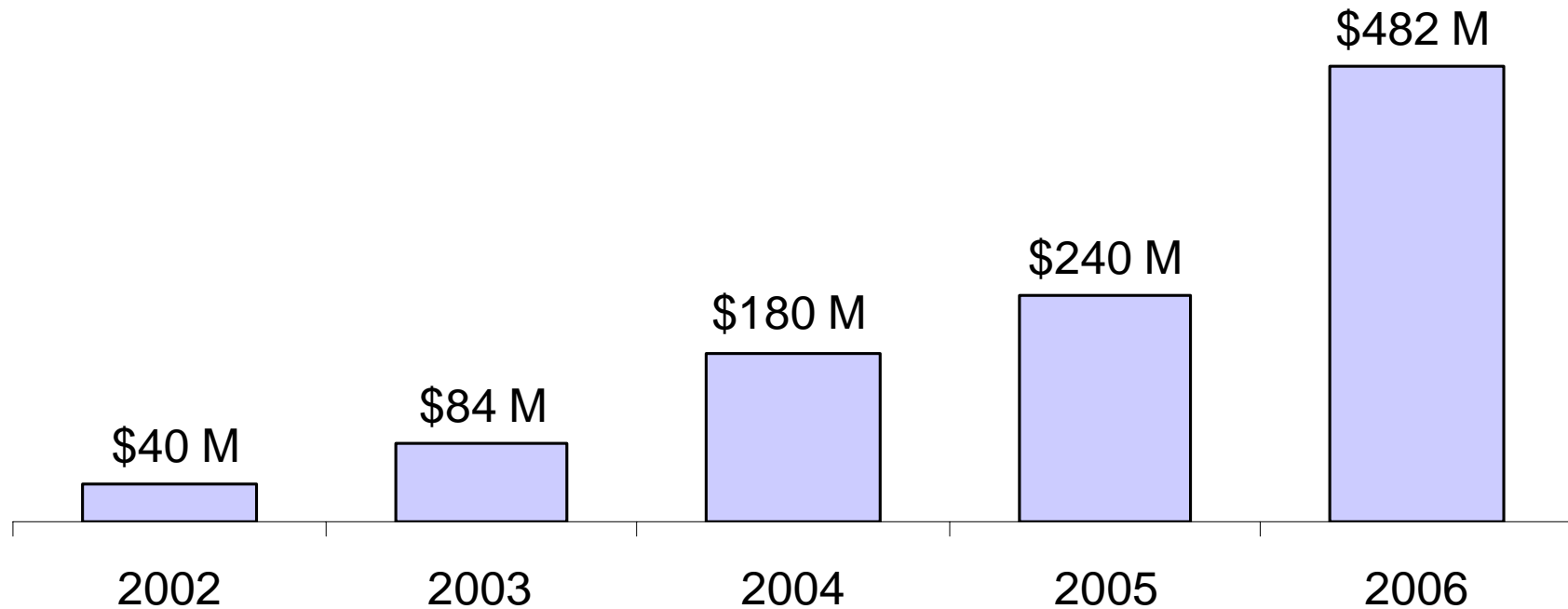


Source: ISO New England, "2006 Annual Markets Report", June 2007.

Congestion is Not Unique to New England and Effects States Differently

- DOE has Designated parts of New York and PJM as being “critical congestion areas”:
 - PJM: congestion costs of \$2B in 2005
 - NY: congestion costs of \$900M in 2005
 - Even after accounting for the difference in size, these two ISO regions have substantially higher congestion costs than does New England
- In New England congestion is localized, which can introduce parochial political positions
 - In 2006 there was a \$10.41/MWh price differential between Maine and Connecticut

Transmission Driven RMR Contracts Needed in Boston Area and SW CT Have Cost Consumers \$1B



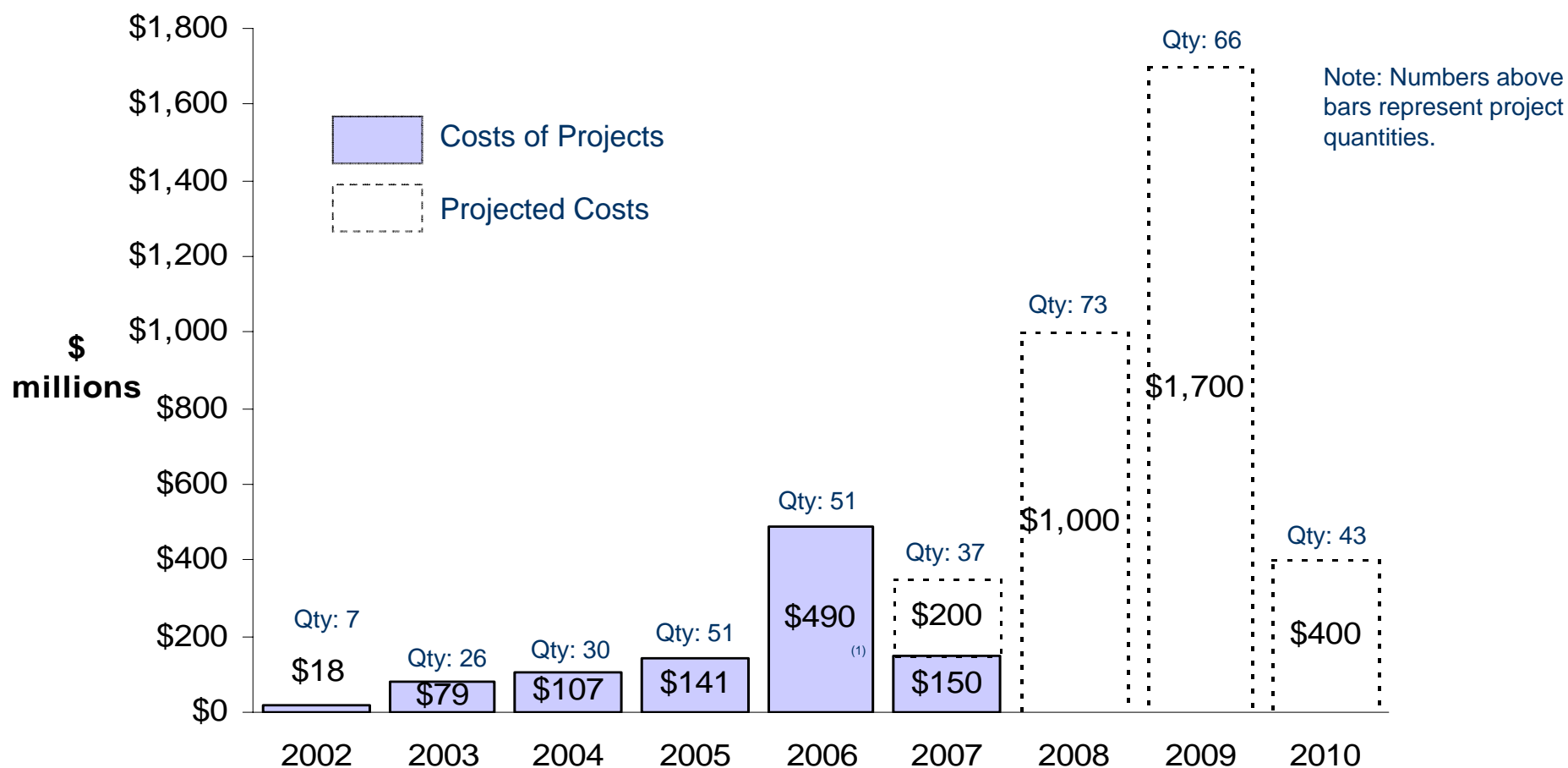
Source: ISO New England, "2006 Annual Markets Report", June 2007.

New England has an Established Comprehensive Transmission Planning Process

New England Reliability Transmission Projects (underway according to ISO New England as of 10/07)		
Project Status	Total Number	Estimated Cost
Conceptual	81	\$0.4B
Proposed	164	\$1.2B
Planned	62	\$0.5B
Under Construction	47	\$2.3B
Total	354	\$4.4B

Source: ISO New England, "Regional System Plan Transmission Projects", October 2007 Update.

Major Investment is Underway/Planned for the Next Few Years --- Significant Reliability Enhancement



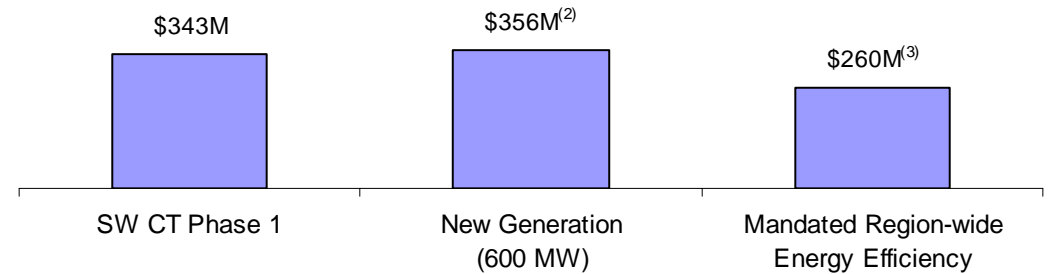
Source: ISO New England, "Regional Transmission Project Update", October 2007.

⁽¹⁾ Costs as of October 2007

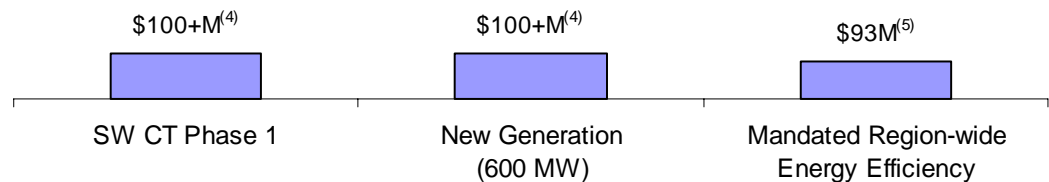
Transmission Provides Economic & Environmental Value (Plus Increased Market Competition)

SW CT Phase I Transmission Project Compared to Supply and Demand Resource Alternatives

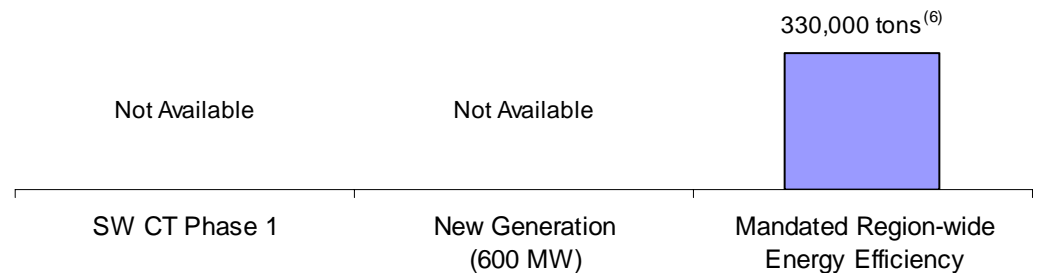
Cost (one-time capital expenditure)



Estimated Consumer Savings (per year)



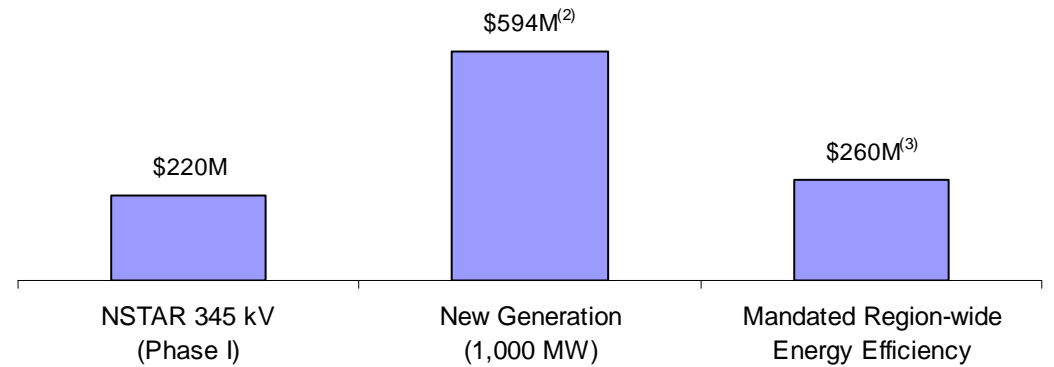
Estimated CO₂ Emission Savings (per year)



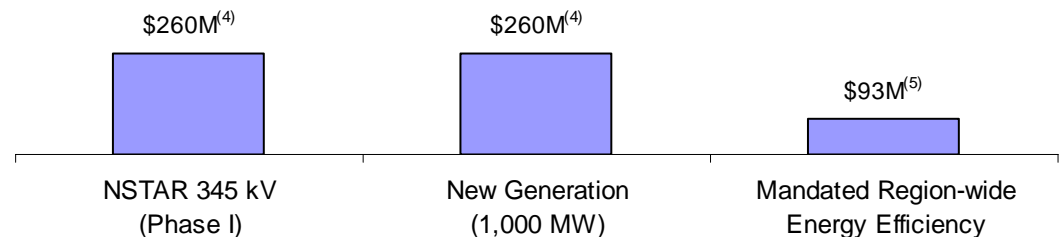
Transmission Provides Economic & Environmental Value (Plus Increased Market Competition)

NSTAR 345kV Transmission Project Compared to Supply and Demand Resource Alternatives

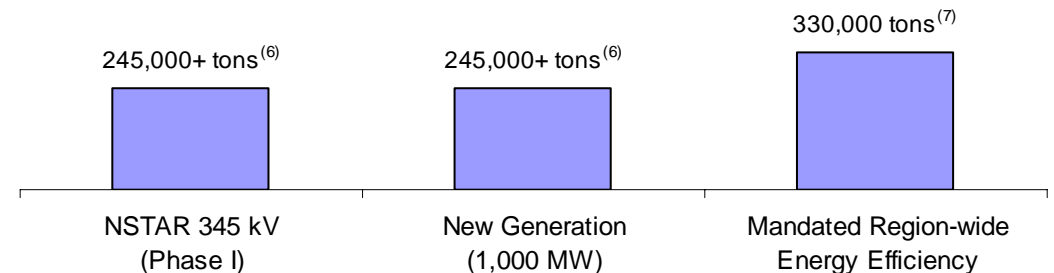
Cost (one-time capital expenditure)



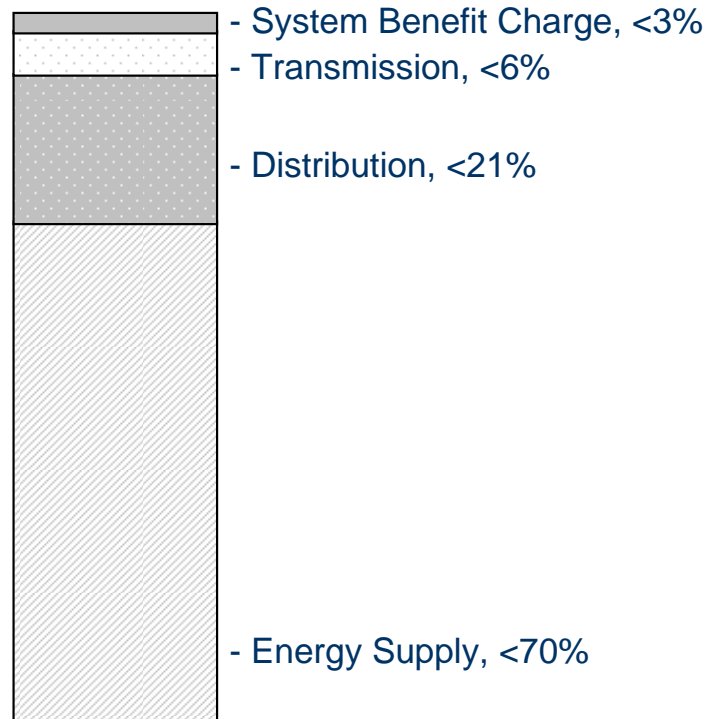
Estimated Consumer Savings (per year)



Estimated CO₂ Emission Savings (per year)



The Small Cost of Transmission on a Typical Bill Belies its Economic/Environmental Value and Necessity in Assuring Reliability and Competition



Typical 500 kWh Residential Consumer in New England

Key New England Transmission Issues Must be Addressed by State and Federal Policy Makers

- Transmission projects that provide benefits other than reliability face hurdles in “demonstrating need”
- Planning processes do not account for fuel diversification or RGGI/RPS Compliance
- Siting/approval processes are lengthy and subject to local actions that can be detrimental to entire region
- FERC-approved cost allocation – New England Stakeholders continue discussions (settled but controversial?)