

# **Electricity Transmission Infrastructure Development in New England**

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**NPCC Governmental/Regulatory Affairs  
Advisory Group**

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## Transmission Infrastructure is Playing An Increasingly Important Role in Competitive Markets

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- 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

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

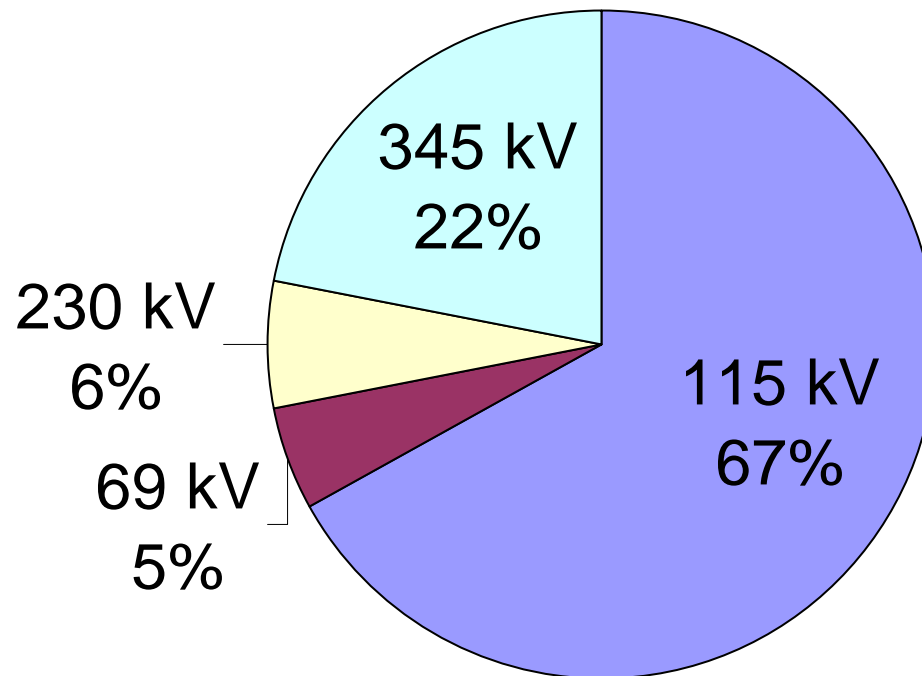
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- *Age and Size*: system consists of aging, lower-capacity lines, that are undersized for amounts of electricity transmitted
- *High Electricity Demand*: peak demand increased 28% since 2000 and is expected to increase another 20% over next decade
- *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

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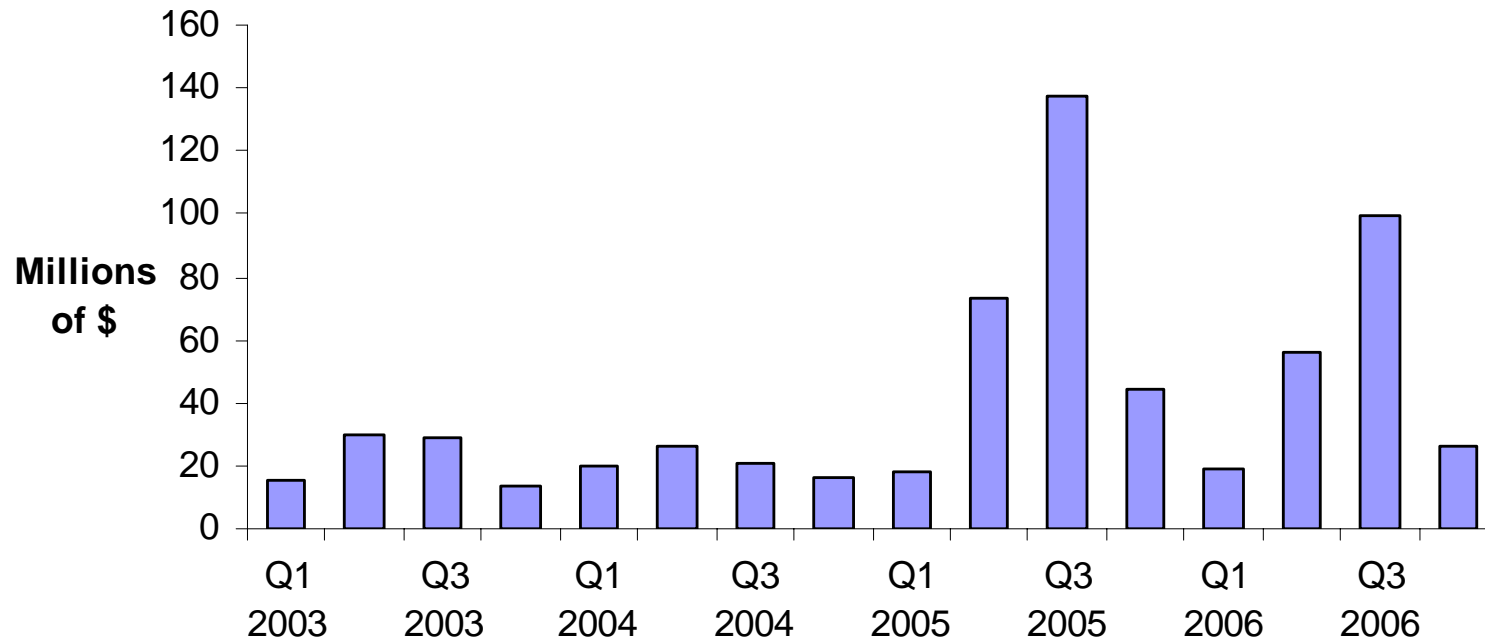
## 70% of System is Still Composed of Lower Capacity Lines --- More Upgrading Needed

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Source: ISO New England, Pool Transmission Facilities as of January 1, 2007.

# 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.

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## Congestion is Not Unique to New England and Effects States Differently

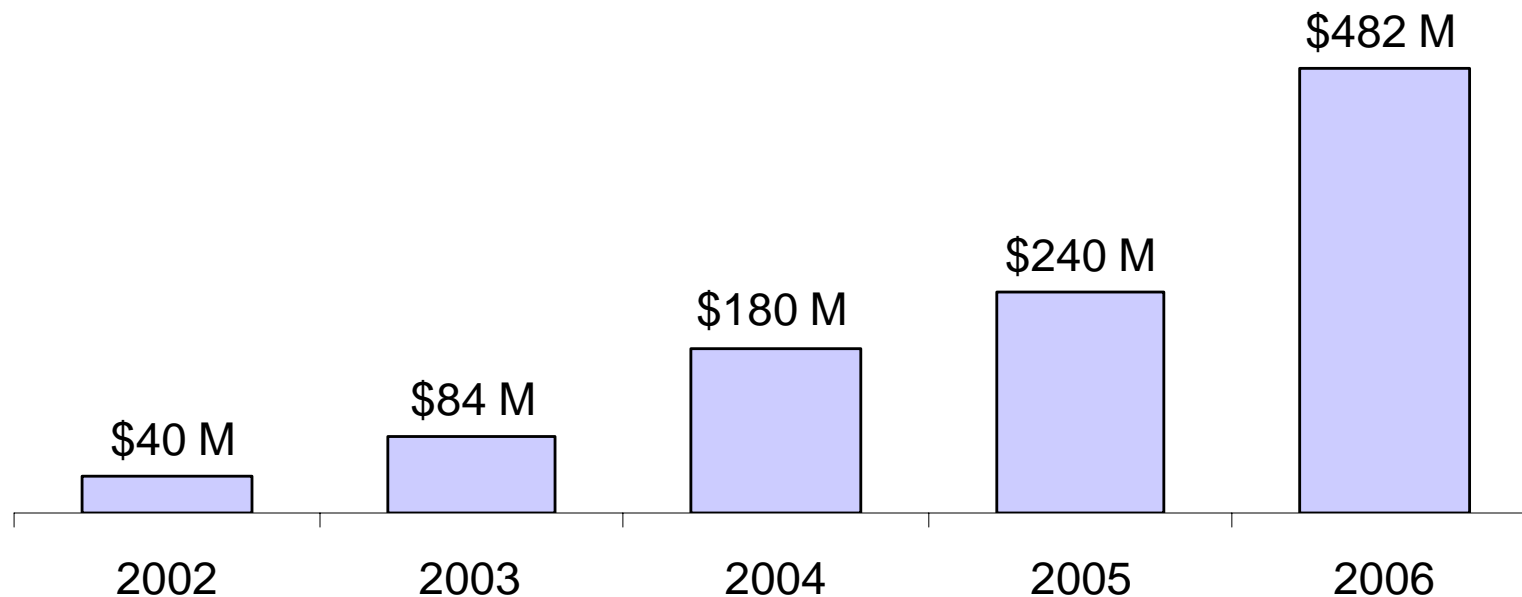
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- DOE has Designated parts of New York and PJM as being “critical congestion areas”:
  - PJM: congestion costs of \$2B in 2005
  - NY: congestion costs of \$900M in 2005
  - Even after accounting for the difference in size, these two ISO regions have 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

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

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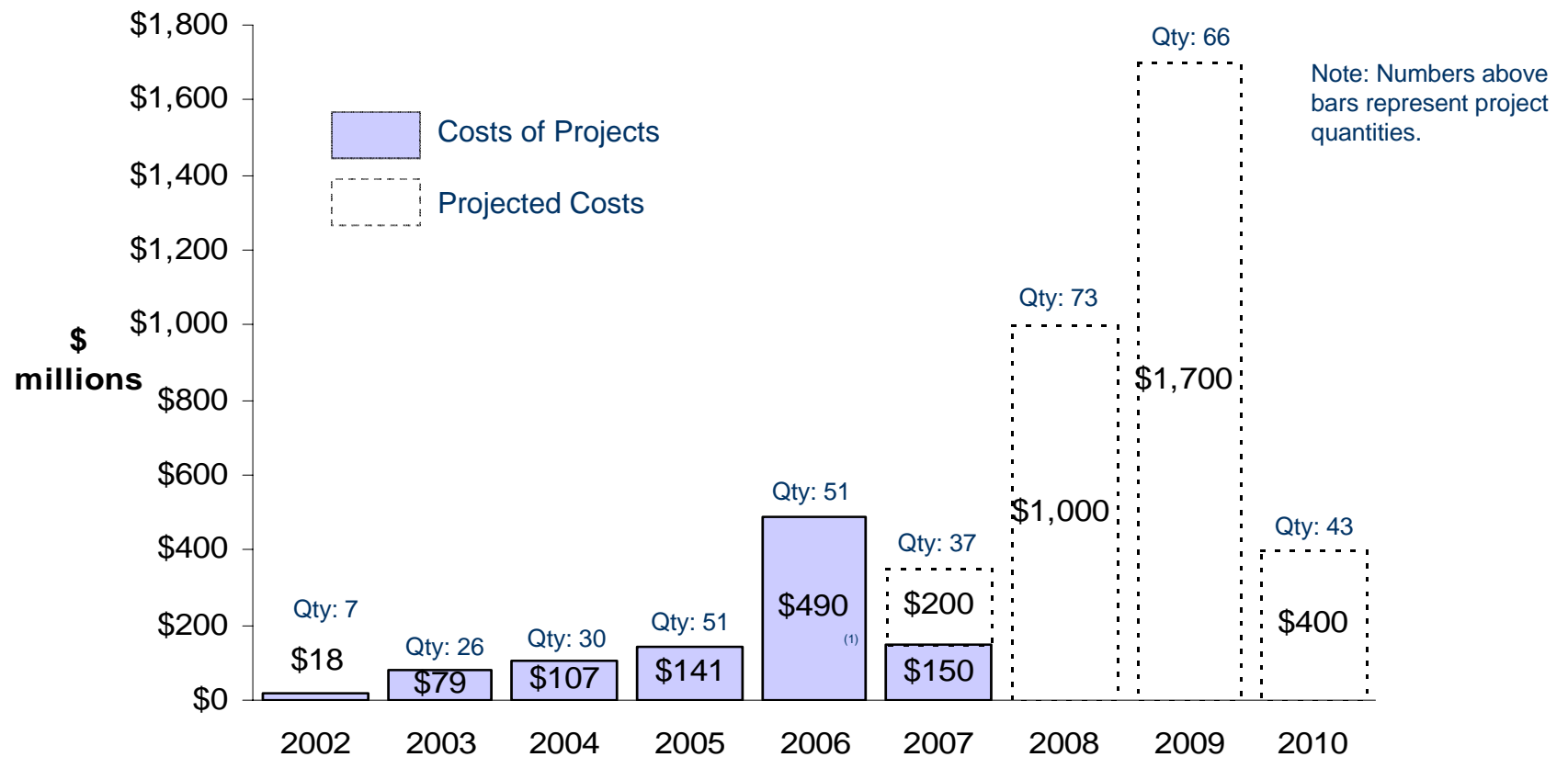
Source: ISO New England, "2006 Annual Markets Report", June 2007.

# New England has an Established Comprehensive Transmission Planning Process

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

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



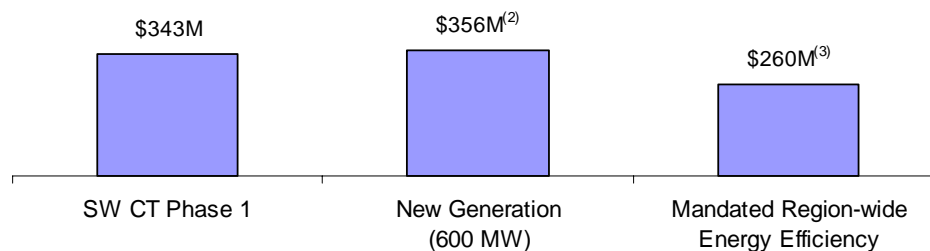
Source: ISO New England, "Regional Transmission Project Update", October 2007.

<sup>(1)</sup> Costs as of October 2007

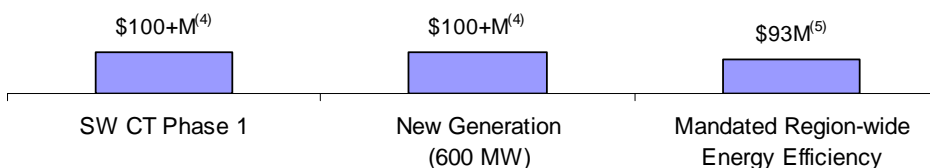
# Transmission Provides Economic & Environmental Value (Plus Increased Market Competition)

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

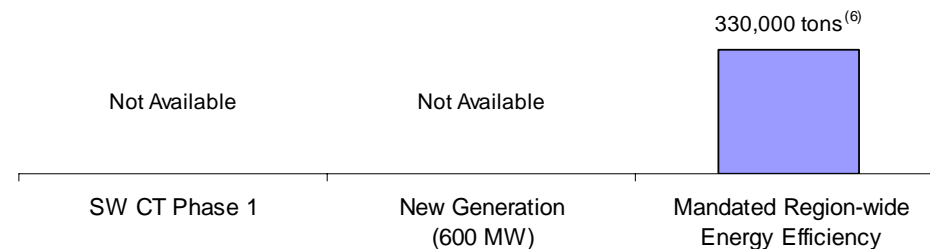
### Cost (one-time capital expenditure)



### Estimated Consumer Savings (per year)



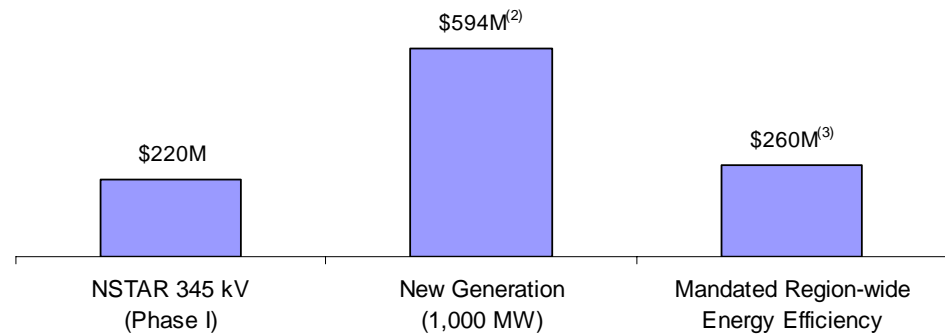
### Estimated CO<sub>2</sub> Emission Savings (per year)



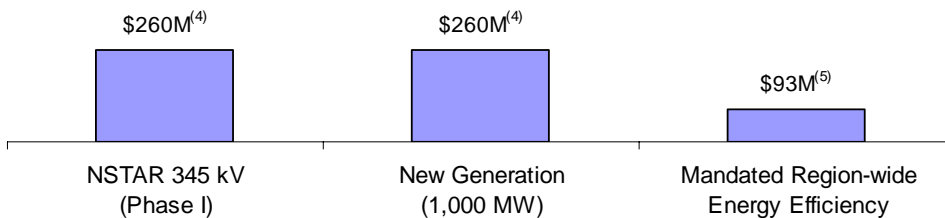
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## NSTAR 345kV Transmission Project Compared to Supply and Demand Resource Alternatives

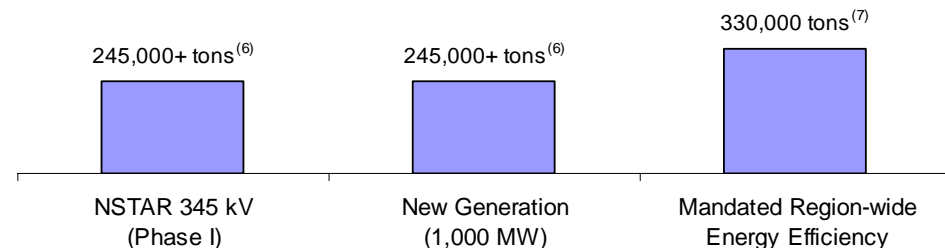
### Cost (one-time capital expenditure)



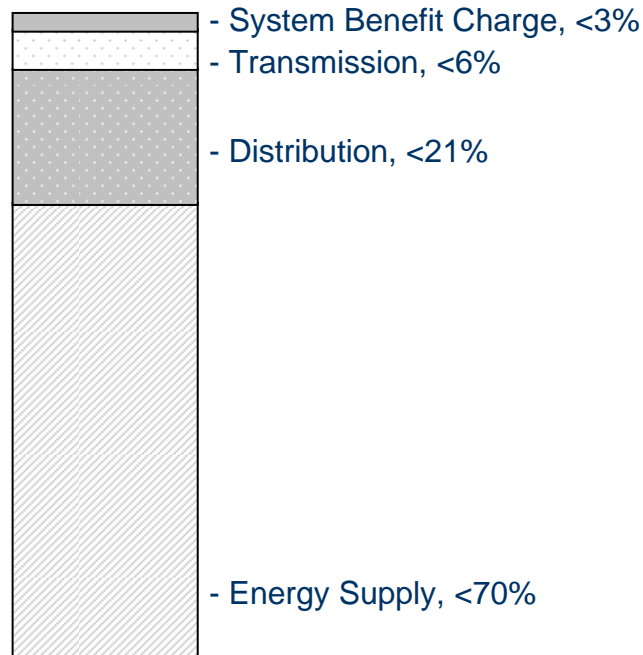
### Estimated Consumer Savings (per year)



### Estimated CO<sub>2</sub> 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**

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- 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?)