

New England Regional Power System Update

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New Hampshire Energy Planning Advisory Board

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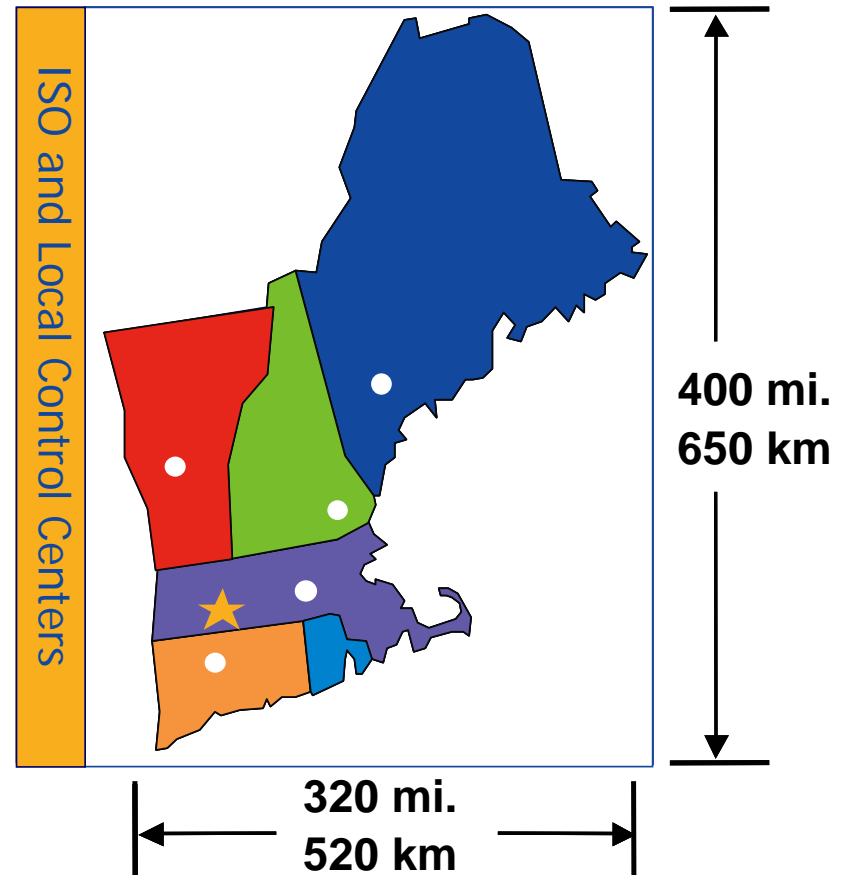
ISO New England

- Regional Transmission Organization
 - Independent of companies doing business in the market
- Responsible for:
 - Real-time bulk power system reliability
 - Administration and oversight of wholesale electricity markets
 - Regional system planning
- Not-for-profit corporation
 - Regulated by Federal Energy Regulatory Commission (FERC)



New England's Electric Power Grid

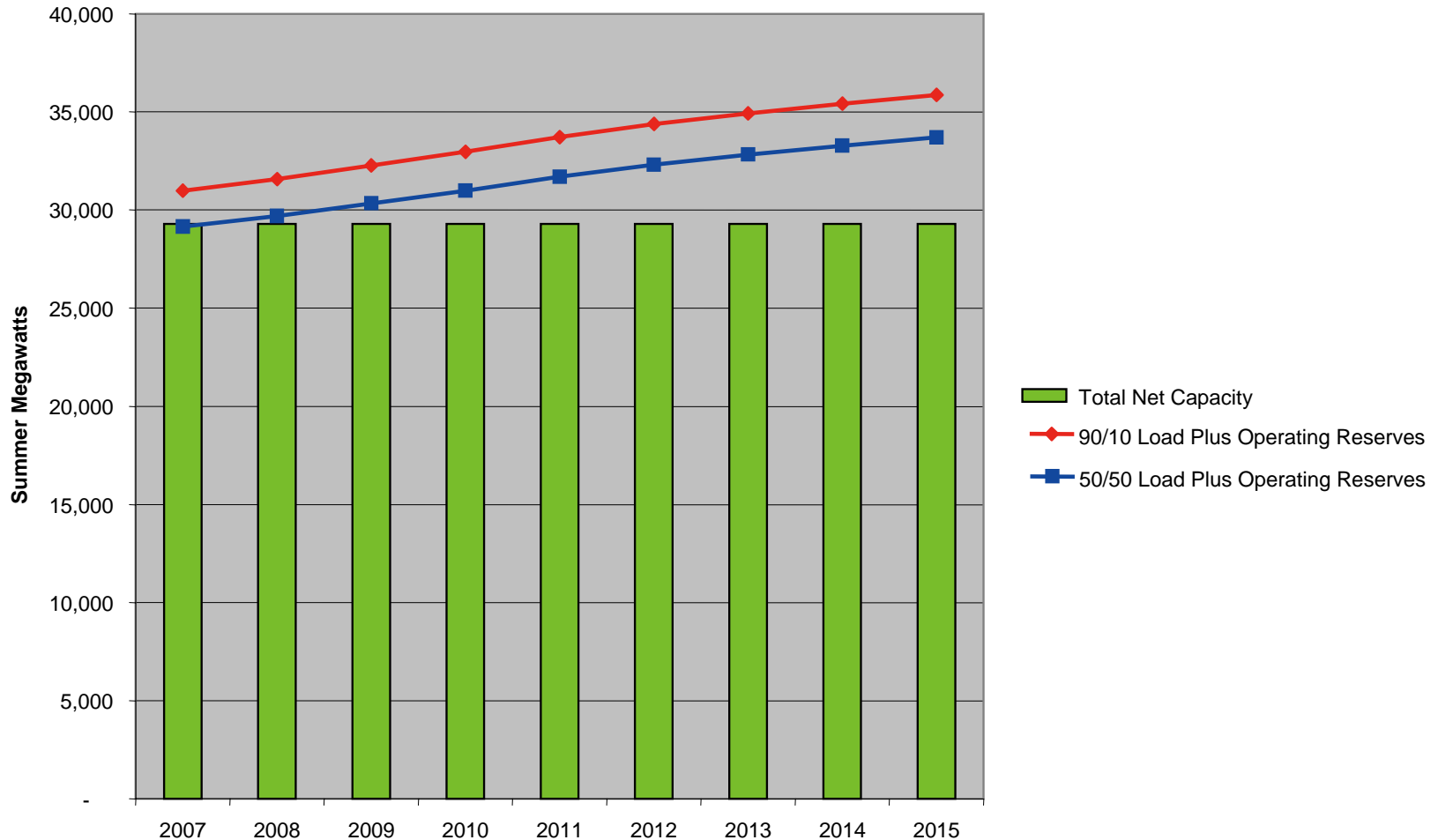
- 6.5 million customer meters
- 350+ generators
- 8,000+ miles of high voltage transmission lines
- 5 local control centers
- 12 interconnections to neighboring systems
- 32,000 MW of installed generating capacity
- Peak load:
 - Summer: 26,885 MW (7/05)
 - Winter: 22,818 MW (1/04)



System Challenges

- Meeting growing demand
 - Demand on the system is growing at 1.3% per year
 - Peak demand growing faster than average use at 1.9% per year
- Achieving diversity of fuels for generating electricity
 - Heavy reliance on natural gas to fuel generation
- Lack of diversity has reliability and price implications
 - Reliability
 - Gas supplies can be tight, especially during extreme weather conditions
 - Fuel delivery infrastructure impacted by natural disasters, global market forces
 - Price
 - High cost fuels set the price most hours
 - 26% rate increases in New England this winter
- Siting needed infrastructure
 - Difficulty siting generation, especially other than natural gas-fired
 - Major 345 kV transmission investments underway

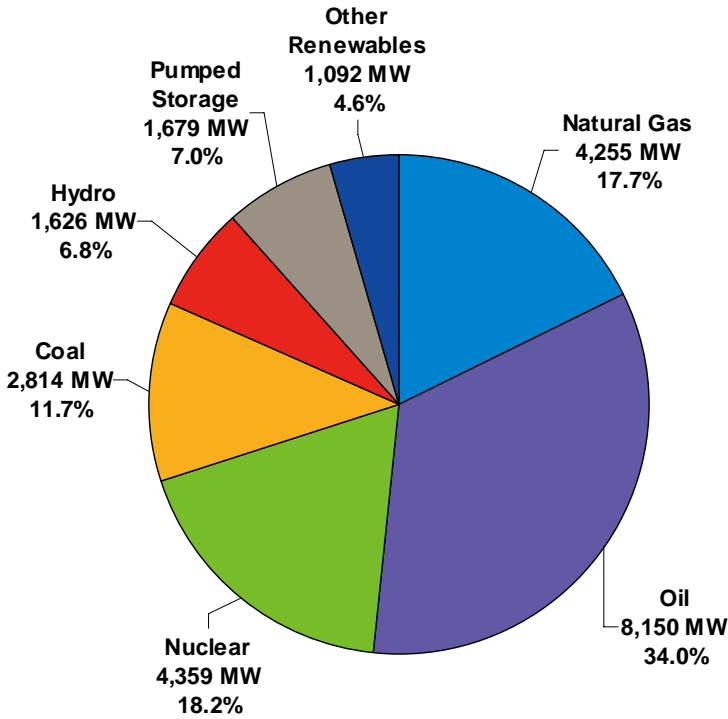
Adequate Supplies Dwindling, Regional Deficiency As Early As 2008



The results above do not reflect generation unit additions, retirements, or deactivations that could occur during the study period.

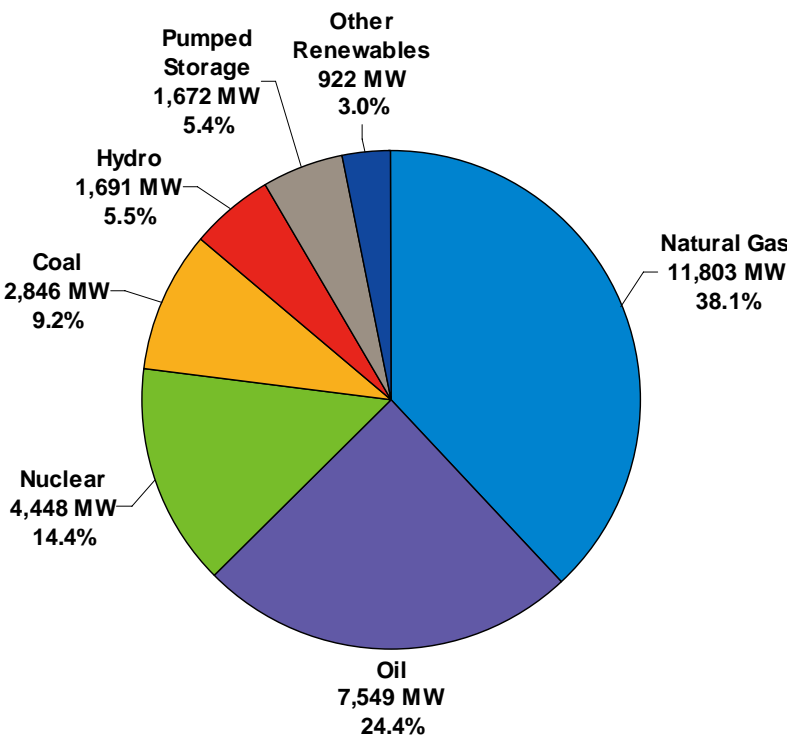
New England's Generation Mix: Nearly 40% Natural Gas-Fired

Summer 2000



Total: 23,975 MW

Summer 2006

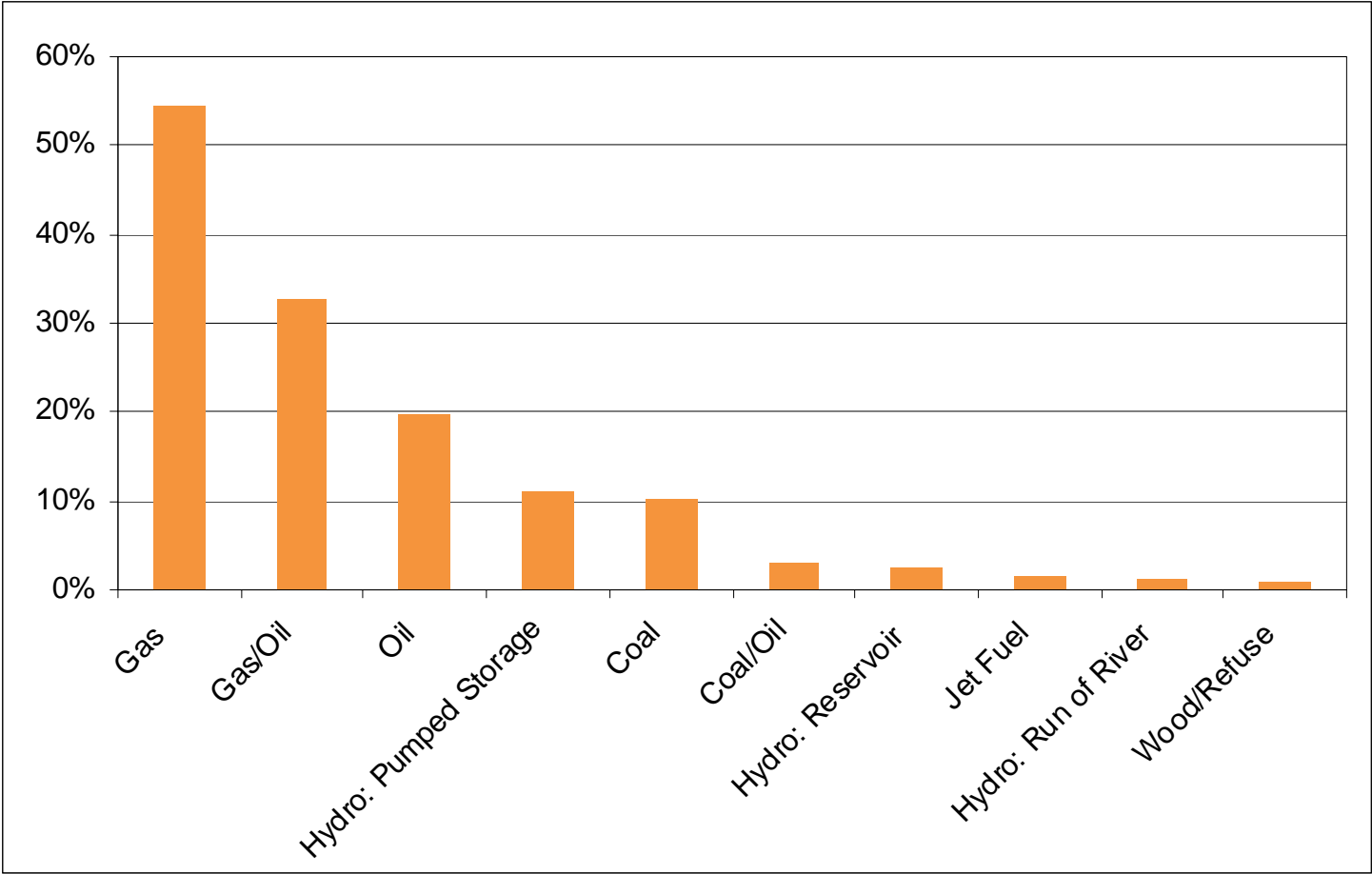


Total: 30,931 MW

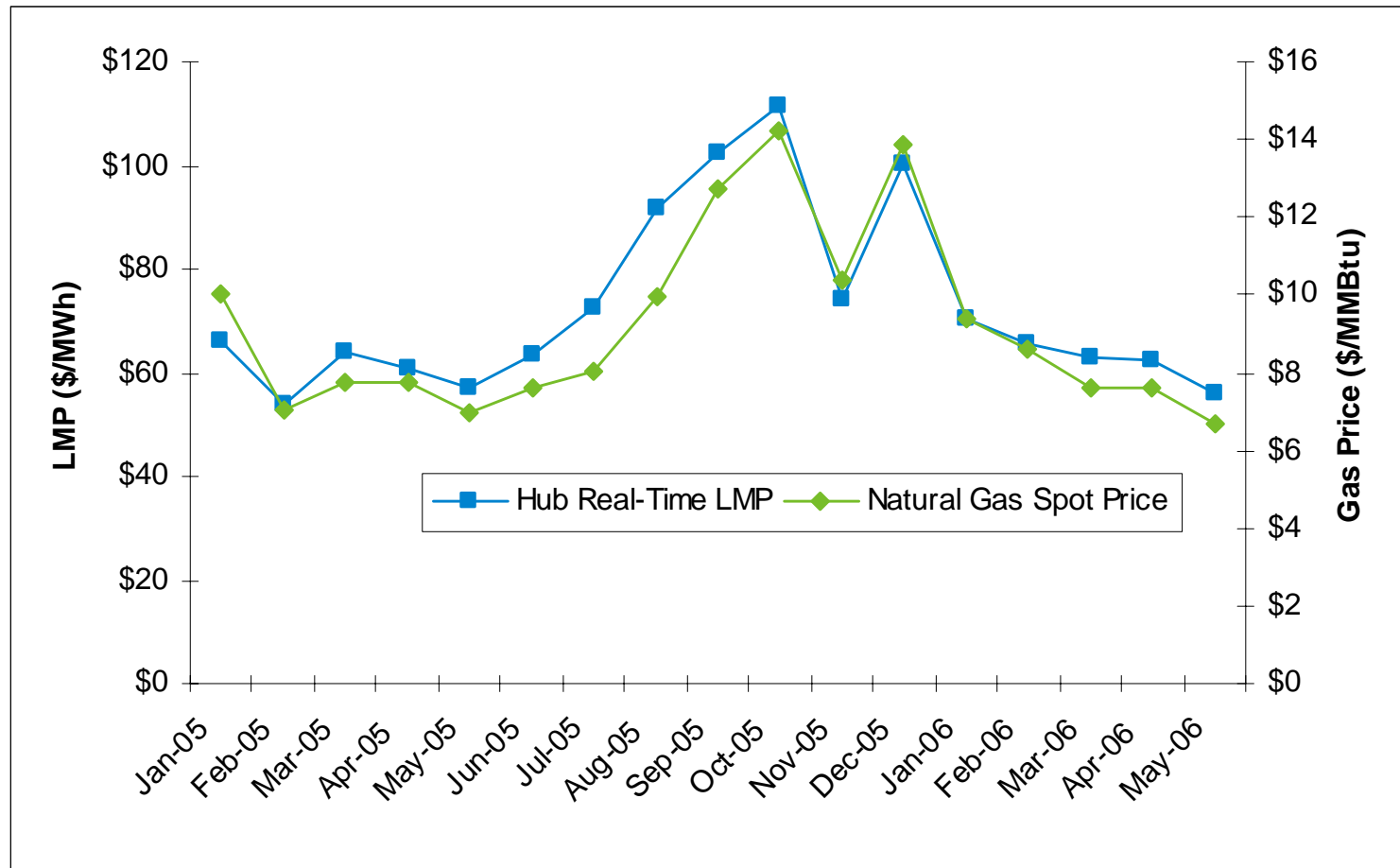
Note: Units in the "Other Renewables" category include those fueled by biomass, refuse, and wind.

Gas Plants Set Price Most Frequently in New England

Marginal Input Fuels in Real-Time, 2005

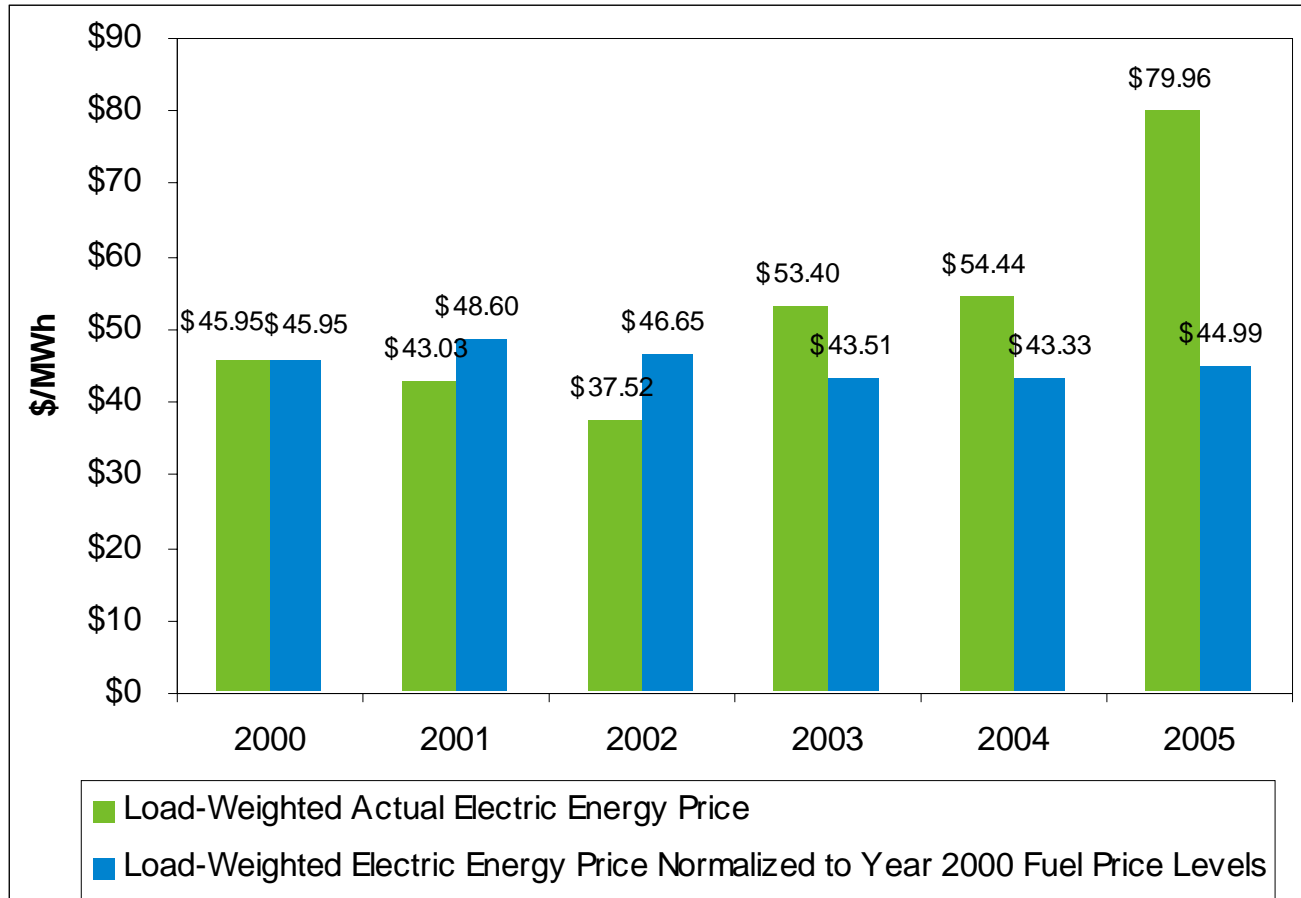


Electricity Prices Track Natural Gas Prices



Electricity Prices Rose, Fuel-Adjusted Prices Remained Stable

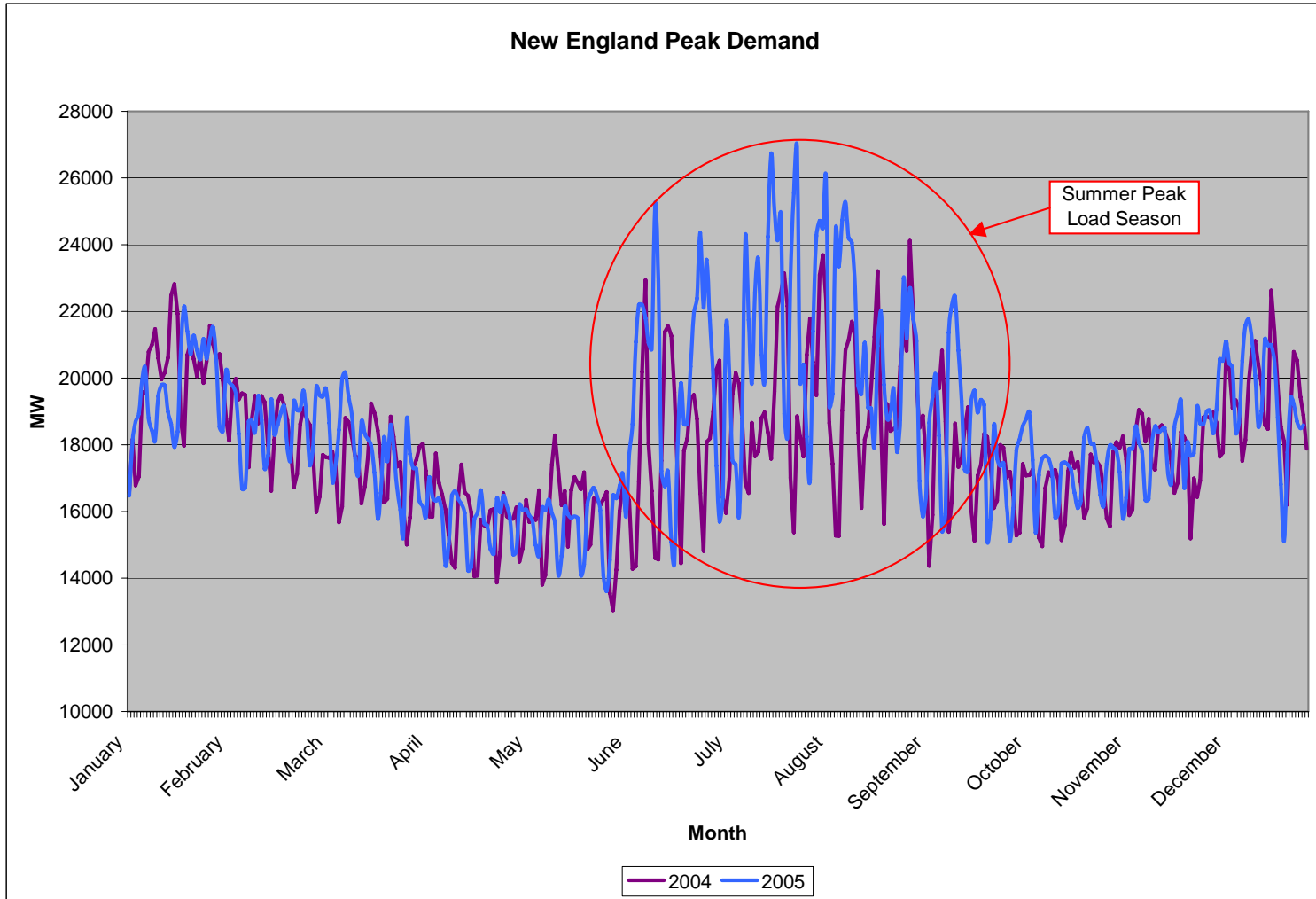
Average Real-Time Electric Energy Prices, 2000 – 2005



Region's Growing Peak Contributes to Increased Costs

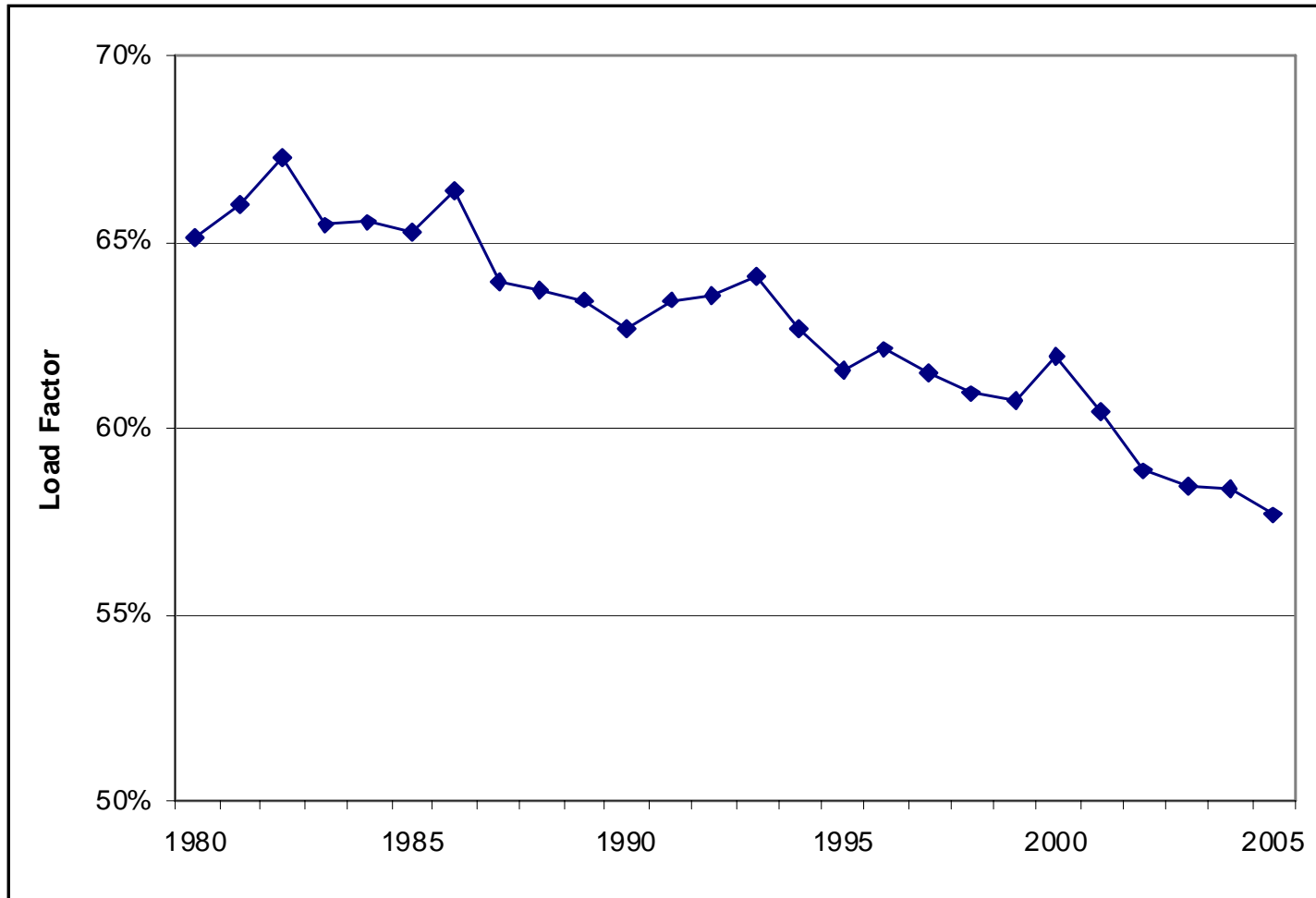
- New England is a summer-peaking system; i.e., the highest demand days occur in the summer
- Peak demand is increasing faster than average demand
 - Results in increase in transmission congestion, which raises prices
 - Drives need to build capacity and transmission to handle increasing loads to support fewer hours of operation

Summer Peak Demand is Growing



Capacity Utilization Declining

New England Annual Peak Load Factor (1980–2005)



Long-Term Solutions Help Control Costs

- Site resources with lower cost fuels
 - Helps protect reliability and reduces the price impact of volatile fuels on electricity prices
- Implement market solutions
 - Forward Capacity Market will encourage investment in generation and demand-side participation
 - ASM Phase II provides incentives for quick-start resources in high demand areas, reducing reliability costs
- Reduce demand on the system
 - Encourage efficiency, conservation and demand response
 - Consider dynamic retail rates for commercial customers to increase consumer responsiveness to wholesale prices

Strategies to Control Electricity Costs

	% Change in Wholesale Electricity Price	Change in Total Consumer Costs	Change in Total Production Costs	Change in Total Capacity Costs
1 Add baseload	-5.70%	-\$600 million	-\$470 million	-
2 Add coal	-5.60%	-\$590 million	-\$300 million	-
3 5% growth	5.80%	\$600 million	\$420 million	\$90 million
4 5% reduction	-4.70%	-\$490 million	-\$360 million	-\$90 million
5 Load response	-0.02%	-\$2 million	-\$0.5 million	-\$30 million

Note: RSP06 will provide an indication of the relative market and reliability benefits from different resources in each sub-area.

New England's Energy Action Agenda

- Implement new reserves and capacity market
- Achieve greater energy efficiency
 - Energy efficiency will be able to participate in Forward Capacity Market
 - Adopt dynamic retail rates to increase consumer responsiveness to wholesale prices
- Diversify the fuel mix
 - Market is providing signals for fuel diversity
 - Siting is a major obstacle to building lower cost resources