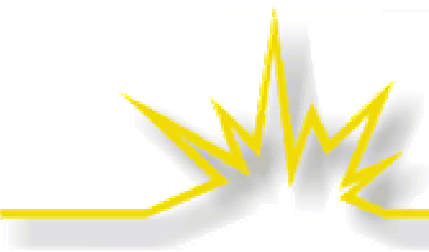
Energy Efficiency – the Regulator's View

Richard Cowart
China State Electricity Regulatory Commission
Jiangsu Provincial Delegation
Montpelier, VT - December 8, 2004



The Regulatory Assistance Project

50 State Street, Suite 3
Montpelier, Vermont USA 05602
Tel: 802.223.8199
Fax: 802.223.8172

177 Water St.
Gardiner, Maine USA 04345
Tel: 207.582.1135
Fax: 207.582.1176

Website:
http://www.raponline.org

Why efficiency? A regulator's view

- New power plants & fuel ***more expensive***
- Rapid load growth causes ***reliability*** problems
- Generation is a major source of ***pollution***
- ***Productivity*** is the engine of growth – becoming more efficient improves the economy
- Lots of low-cost efficiency is ***available***
- ***Key point: the power system includes generation, wires, AND end use consumption***

Efficiency is a power system resource

- Generation Benefits:
  - Both capacity and energy savings
  - Lowers fuel supply and fuel costs
  - In real-time and through deferred investment
  - Reduces required reserves
- Transmission & Distribution Benefits:
  - Deferral of new investment
  - Line loss reductions
  - Improves reliability

Vermont Law: efficiency is a power system resource

- "A least cost integrated plan ... is a plan for meeting the public's need for energy services...**at the lowest present value life cycle cost, including environmental and economic costs**...through a strategy combining investments and expenditures" on energy supply, transmission, distribution, ***and energy efficiency programs.***
- (Vermont statutes, 30 VSA 218c)

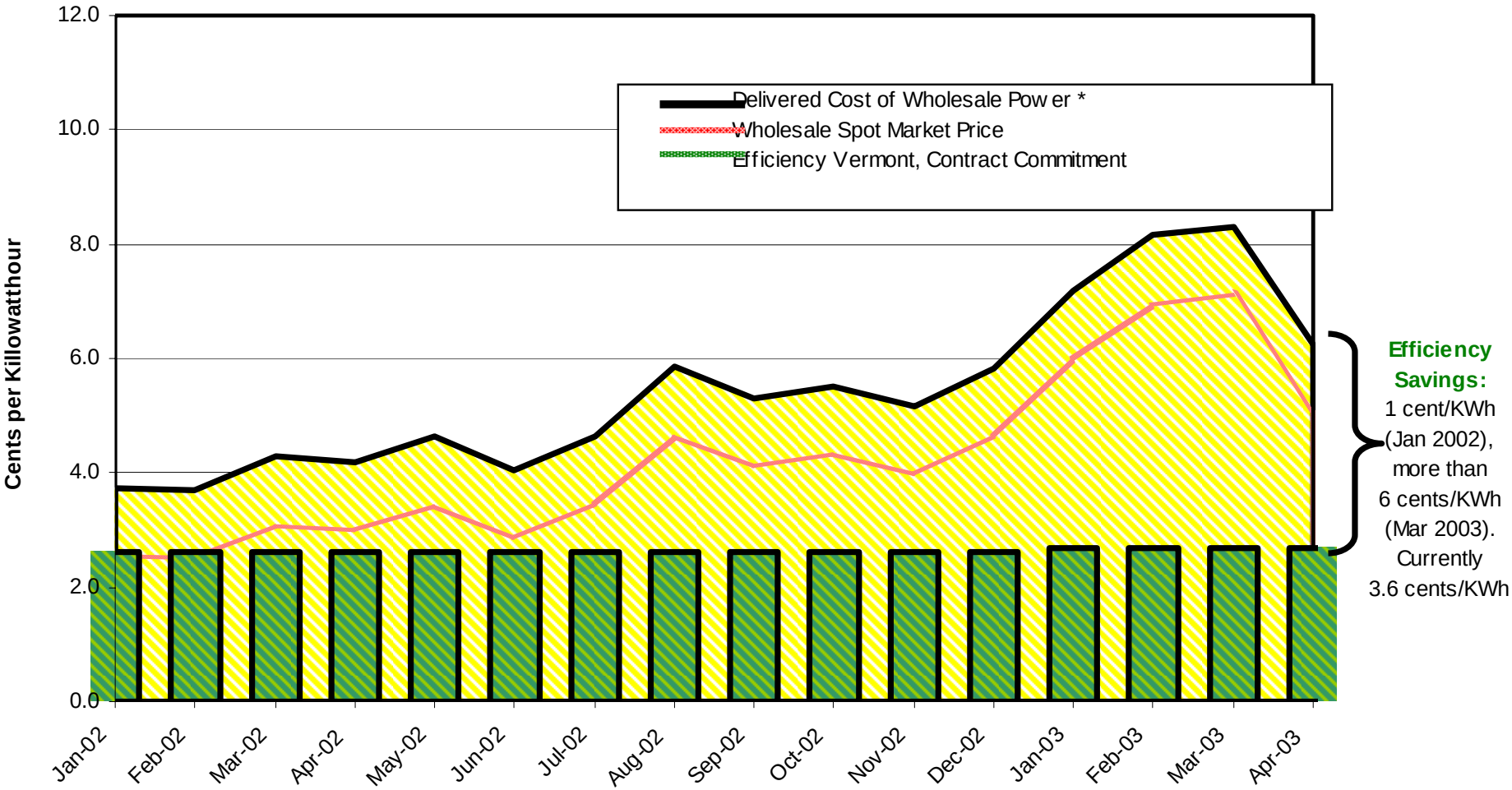
Efficiency lowers pollution costs

- No single industry has a larger environmental "footprint" than the electric industry
- In America, the electric industry contributes
- 67% of the SOx emissions
- 28% of the NOx emissions
- 36% of the CO2 emissions
- 33% of the mercury emissions
- but only 2.5% of the gross national product

Efficiency is cheaper

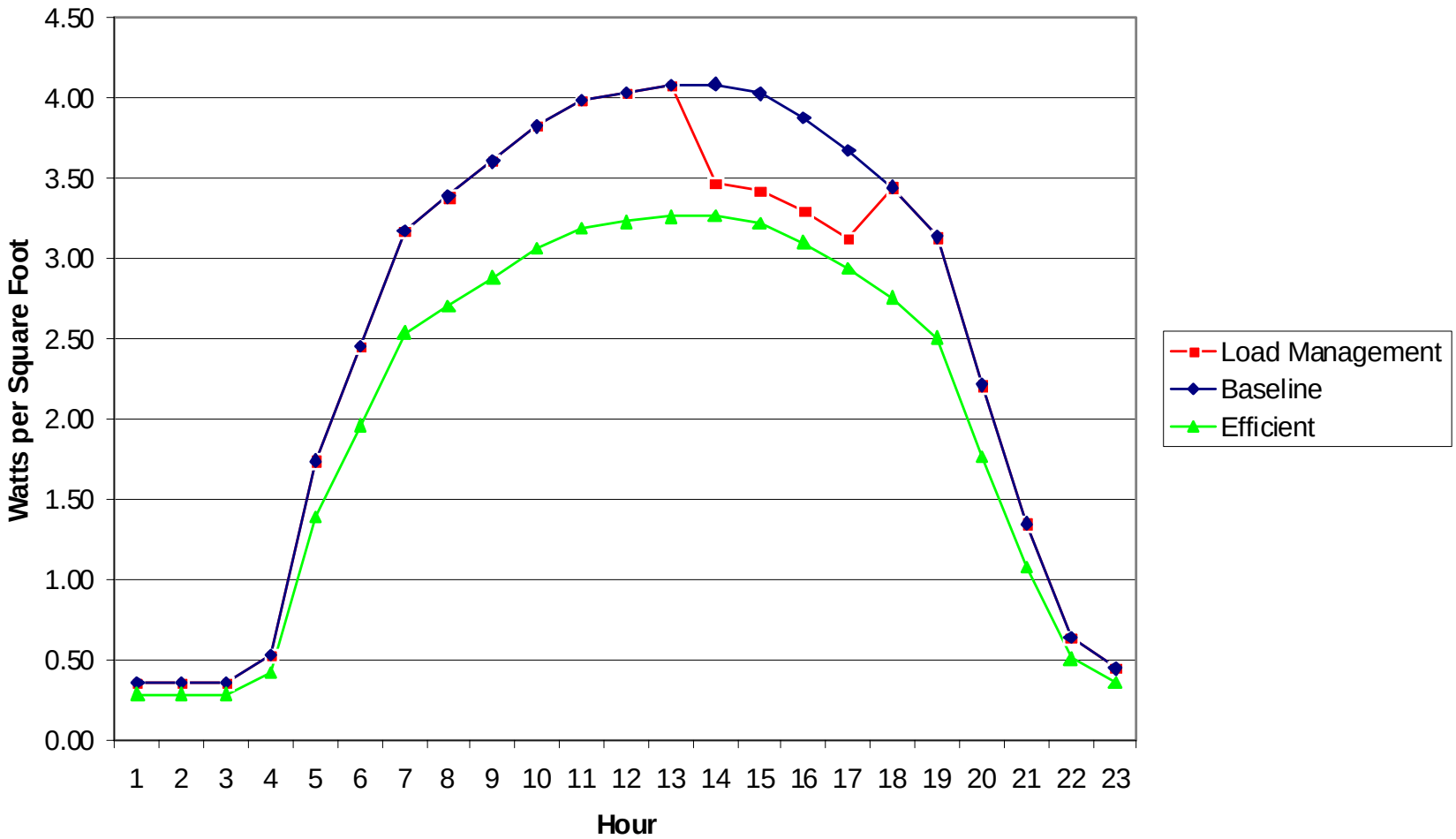
Power Costs vs. Efficiency Vermont Costs for 2002 & 2003

NE-ISO Average Monthly Price

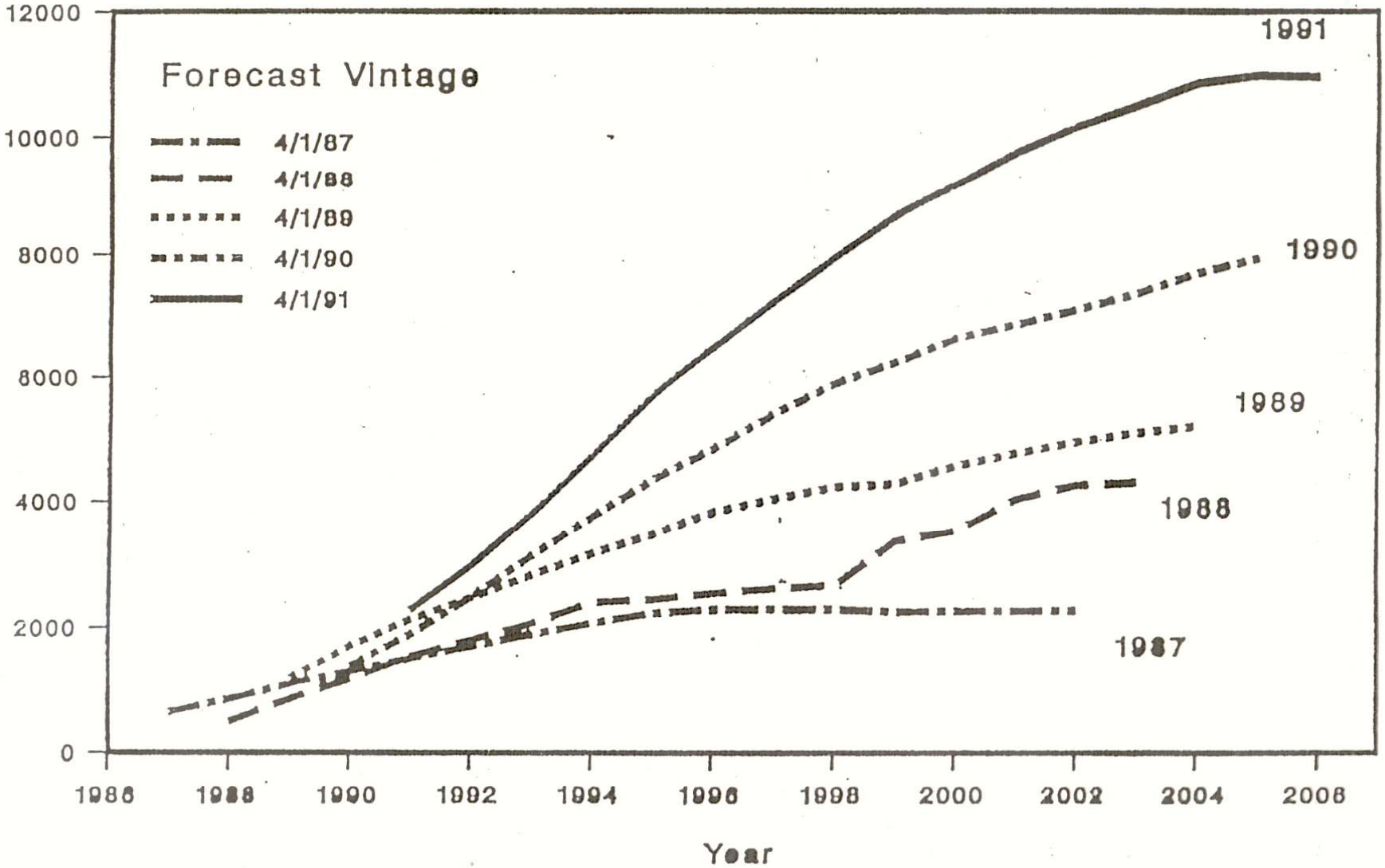


Efficiency lowers peak loads, improves reliability

Combined Commercial Cooling and Lighting Loadshape
Baseline and Load Management Compared to Energy Efficiency



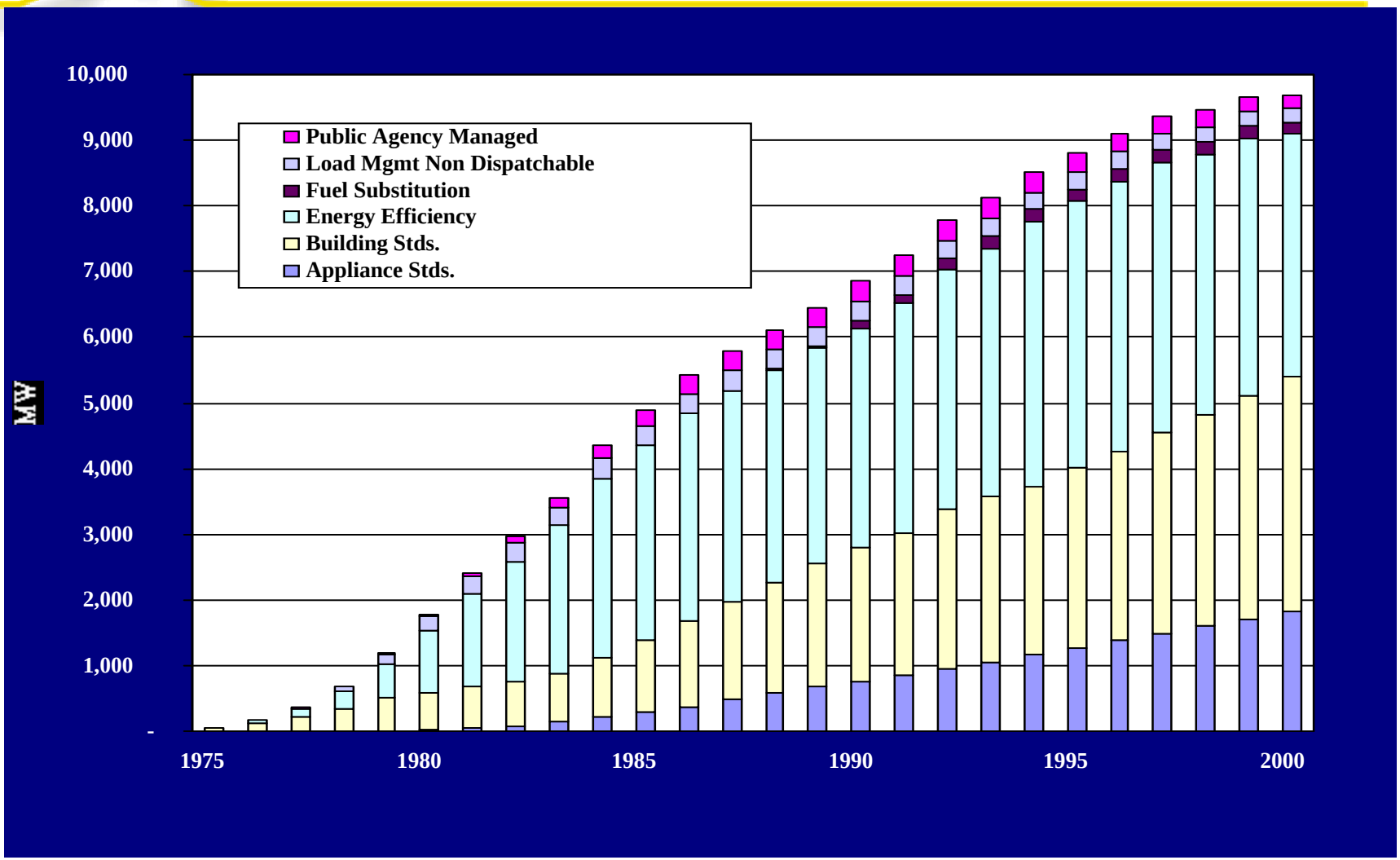
A History of NEPLAN DSM Forecasts



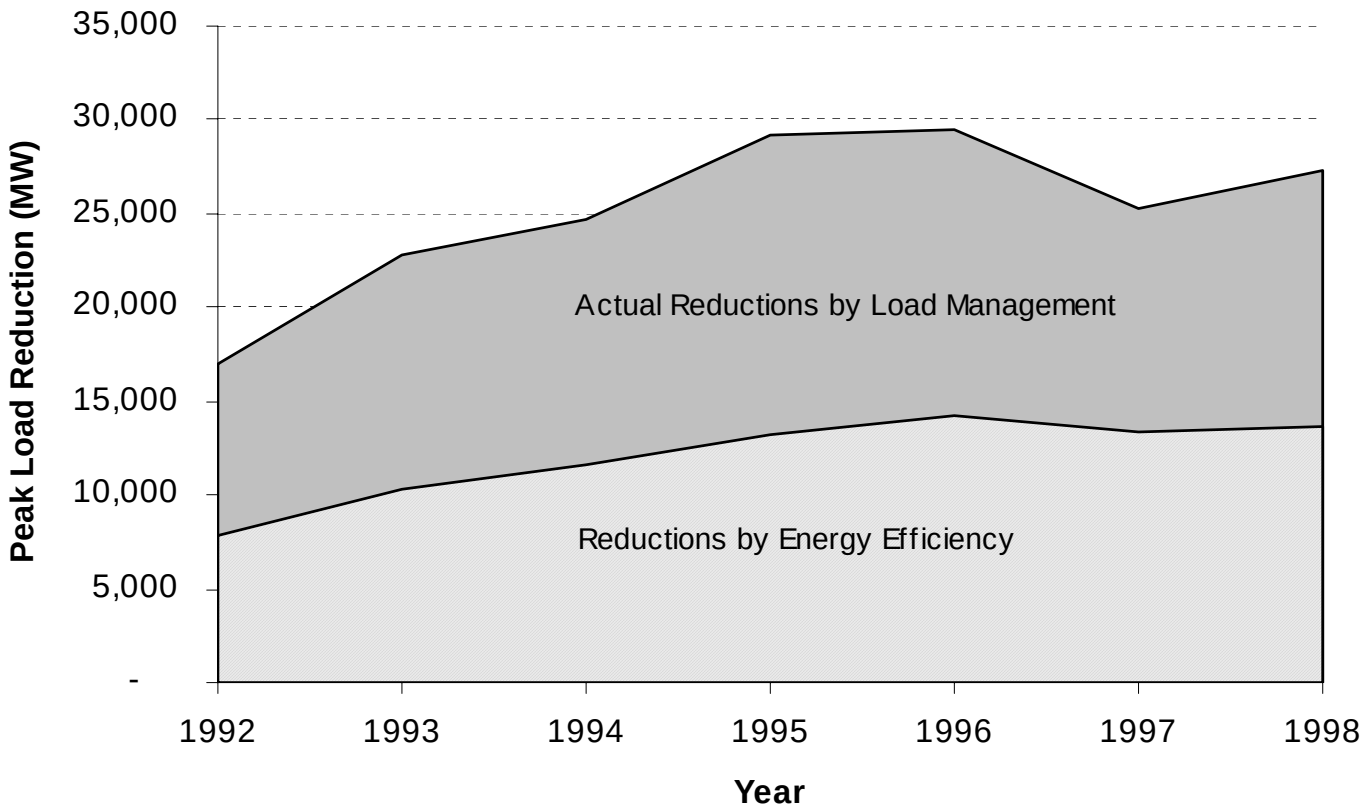
The Large Efficiency Reservoir

- **DOE "Five Labs" Study (1997)**
  - **cost-effective DSM potential is 15% of total load by the end of this decade**
- **ACEEE studies, summer 2000:**
  - **At least 64,000 MW available cost-effectively by 2010 from just three programs:**
    - **Residential AC upgrades & repairs**
    - **Commercial HVAC equipment and tuneups**
    - **Commercial lighting design and upgrades**
- **California, Summer 2001: 12% reduction**
  - **"Crash" effort, many programs**
- **New England 2003: EE and LM can meet 80% of load growth over next 15 years**

Efficiency benefits grow over time (California example)



US balances efficiency and load management



Customer efficiency is a utility obligation

- Utility is a *public service* organization with a special monopoly status
- Consumers deserve least-cost, most reliable service possible
- “Market share” and “greater sales” are NOT excuses for raising power costs to the economy
- Utility knowledge and customer relationships give it a special role in efficiency services
- Pay for efficiency just like we pay for power plants, fuel, and transmission – in the utility bill

Make Efficiency Profitable for Utilities

- Utilities have many fixed costs, and rates often exceed marginal production costs:
- Extra sales are profitable to utility
- In Vermont: each ***saved kWh*** can save customer $.10, but cut $.04 from utility profits
- Efficiency programs cutting sales by 5% can cut *profits* by 23%
- Needed: rate policies to make efficiency profitable to utilities