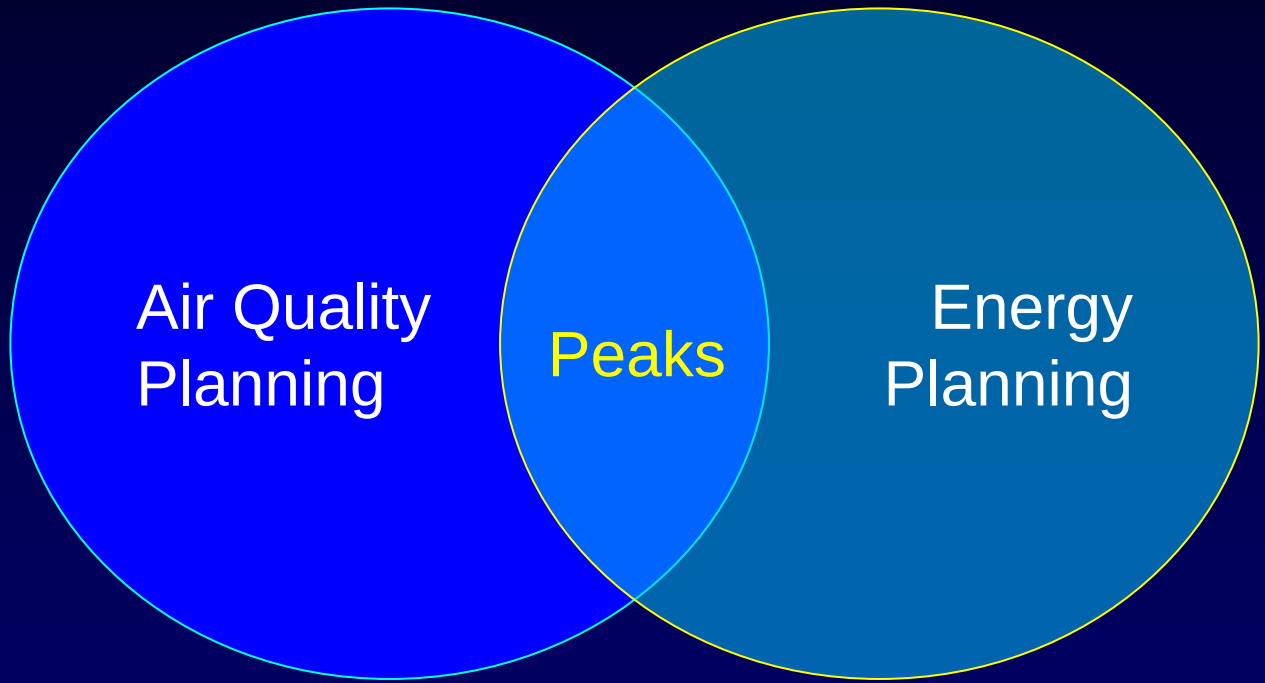
HIGH ELECTRIC DEMAND DAYS



OTC
November 15, 2006

CHALLENGES & OPPORTUNITIES

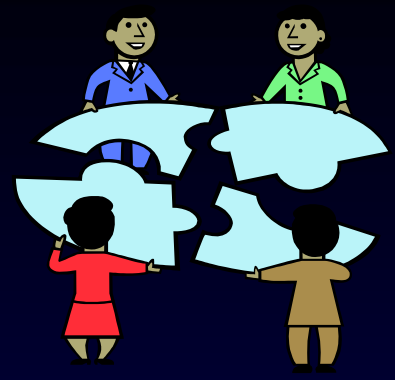
Goal:

Keep the lights ON…

Keep the costs DOWN…

Achieve healthy AIR QUALITY…

MUTUAL ISSUES



- Highest electric demand, worst air quality tend to coincide
- Meeting the peaks results in using dirtiest and most expensive sources
- Industry, generators and markets need certainty from energy and environmental regulators

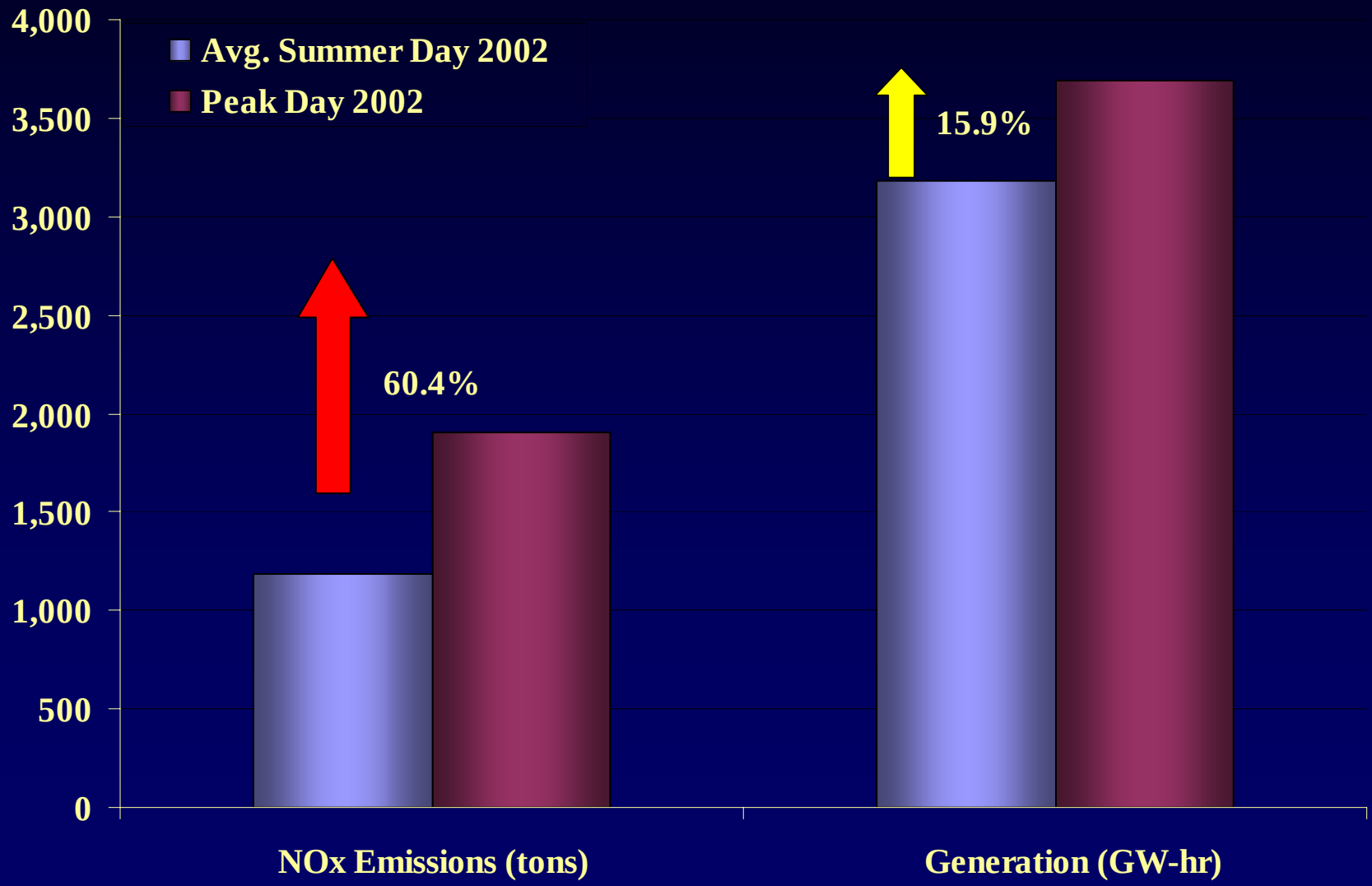
KEY ENERGY CONSIDERATIONS

- Reliability calls for maximizing operating capacity to address HEDD (must run and load shedding)
- Peaks drive up costs
- Transmission system constrains options
- Retail electric pricing structures can create incentives or disincentives
- Renewable goals, energy efficiency goals and RGGI must be met
- Fuel diversity is key to reliability, security and price stability

KEY AIR QUALITY CONSIDERATIONS

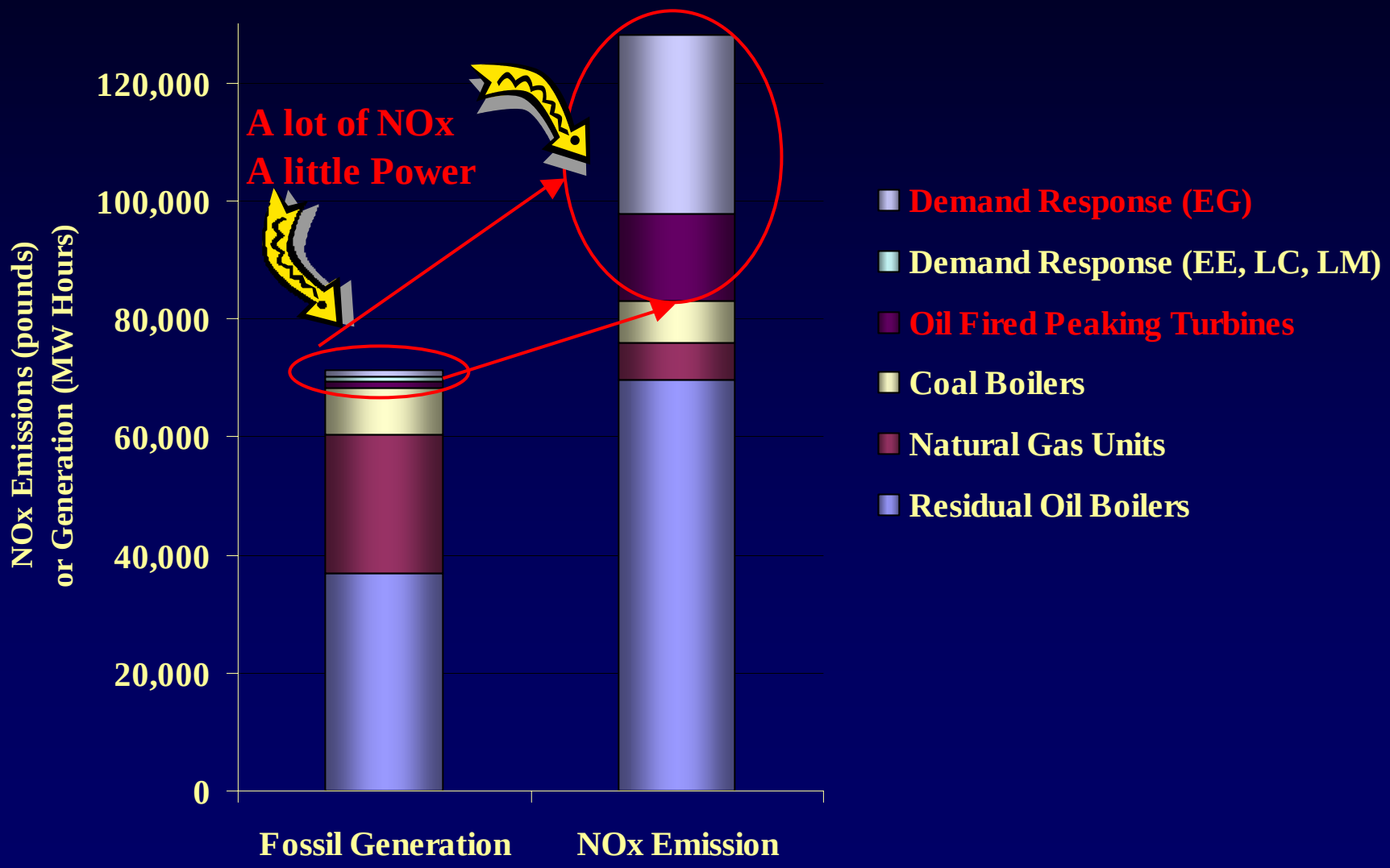
- Highest ozone levels occur on 90^{o} days; emissions from EGUs are higher on these days
- Existing models/inventory designed for average summer day
- Regulatory standards designed for larger EGUs
- Regulatory programs designed for ozone season (CAIR, emission credit trading, allowances) designed for ozone season--- they bring down the curve, but don’t adequately address the “peak”

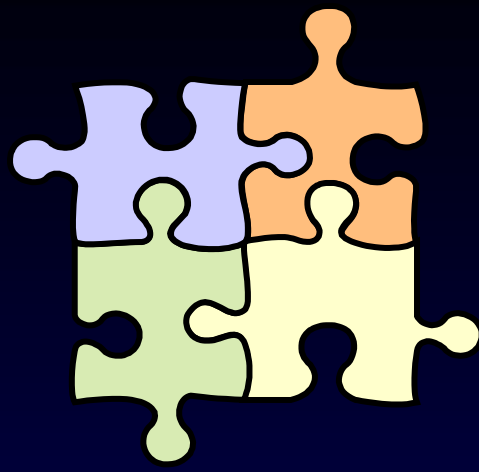
Average Day vs HEDD Energy Use and Emissions



Connecticut Peak Demand Day Response

August 2002

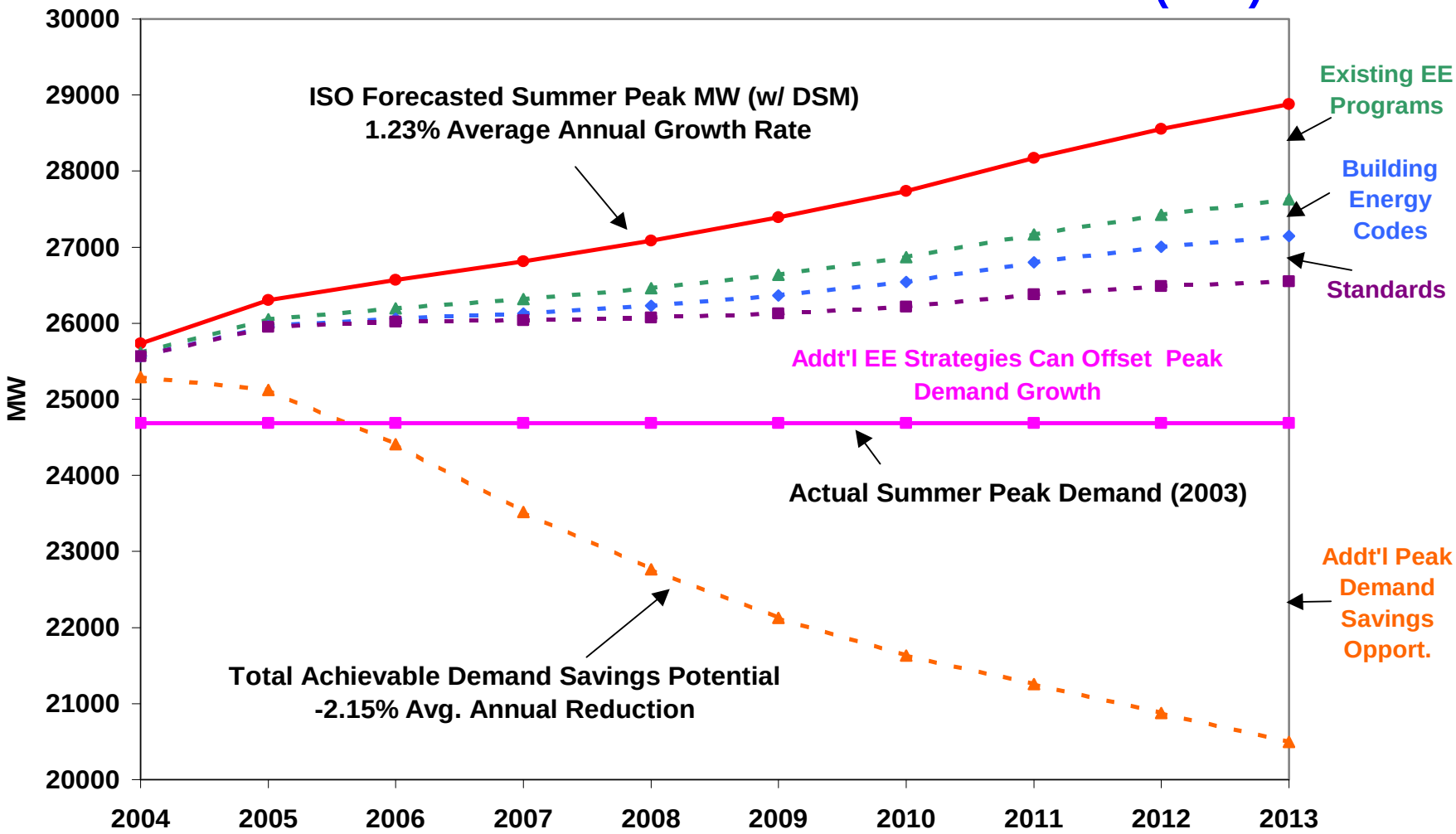




THE MOST PROMISING COST EFFECTIVE ENVIRONMENTAL SOLUTIONS WILL COME FROM…..

ENERGY EFFICIENCY AND UNDERSTANDING REGIONAL AND EXTRA REGIONAL ENERGY CHALLENGES

Existing and New EE Strategies Can More Than Offset ISO Forecasted Summer Peak Demand (MW)



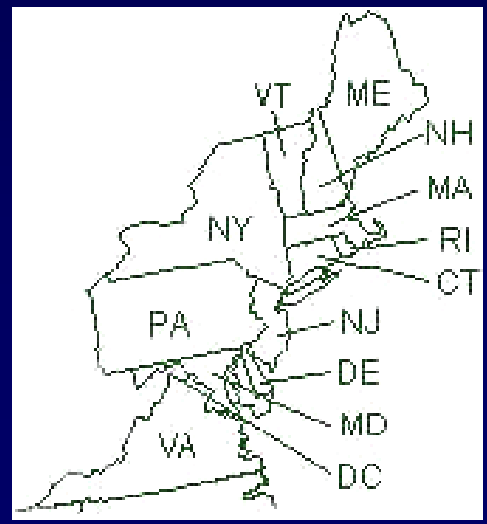
ISO REGIONAL CONSIDERATIONS

- Load growth throughout the region is consuming existing capacity
- Peak demand growing faster than baseload
- Load growth concentrated in locations where generation and transmission are hardest to site and build
- Reliability compromised by old inadequate infrastructure

SUB REGIONAL CONSIDERATIONS

- Old residual oil units in New England must run to meet peak demands
- Signficant use of combustion turbines in NY and NJ
- Low deployment of formal efficiency programs in some states

GEOGRAPHIC AND REGIONAL SIMILARITIES > DIFFERENCES



OTHER STATEGIES ARE NECESSARY

- Most states increasing energy efficiency, integrating energy efficiency into default service, and want to do more
- Capacity markets need to value energy efficiency
- Demand response is growing
- States are promoting renewables, but supply not keeping up
- Anticipate no change in nuclear fleet in air attainment planning horizon

ENERGY DECISIONS MUST BE INFORMED BY AIR QUALITY GOALS

and….

AIR QUALITY STRATEGIES MUST BE INFORMED BY ENERGY CONSIDERATIONS

HEDD OPTIONS
EVALUATION CRITERIA

- Air quality benefit
- Electric system benefit
- Investment magnitude
- Time horizon

Coordinated with technical workgroup

EMISSIONS QUANTIFICATION & REGULATION:
Where Can Reductions Come From?

- **Industry**:
  - emissions reported to the states and used in modeling are over estimated
- **EPA**:
  - analysis shows high NOx emissions from uncontrolled units
  - focus on local reductions
  - recommends clean energy and enhanced EE
- **States**:
  - need more work where/how load shifted/shed
  - regulatory thresholds must preclude bad air results

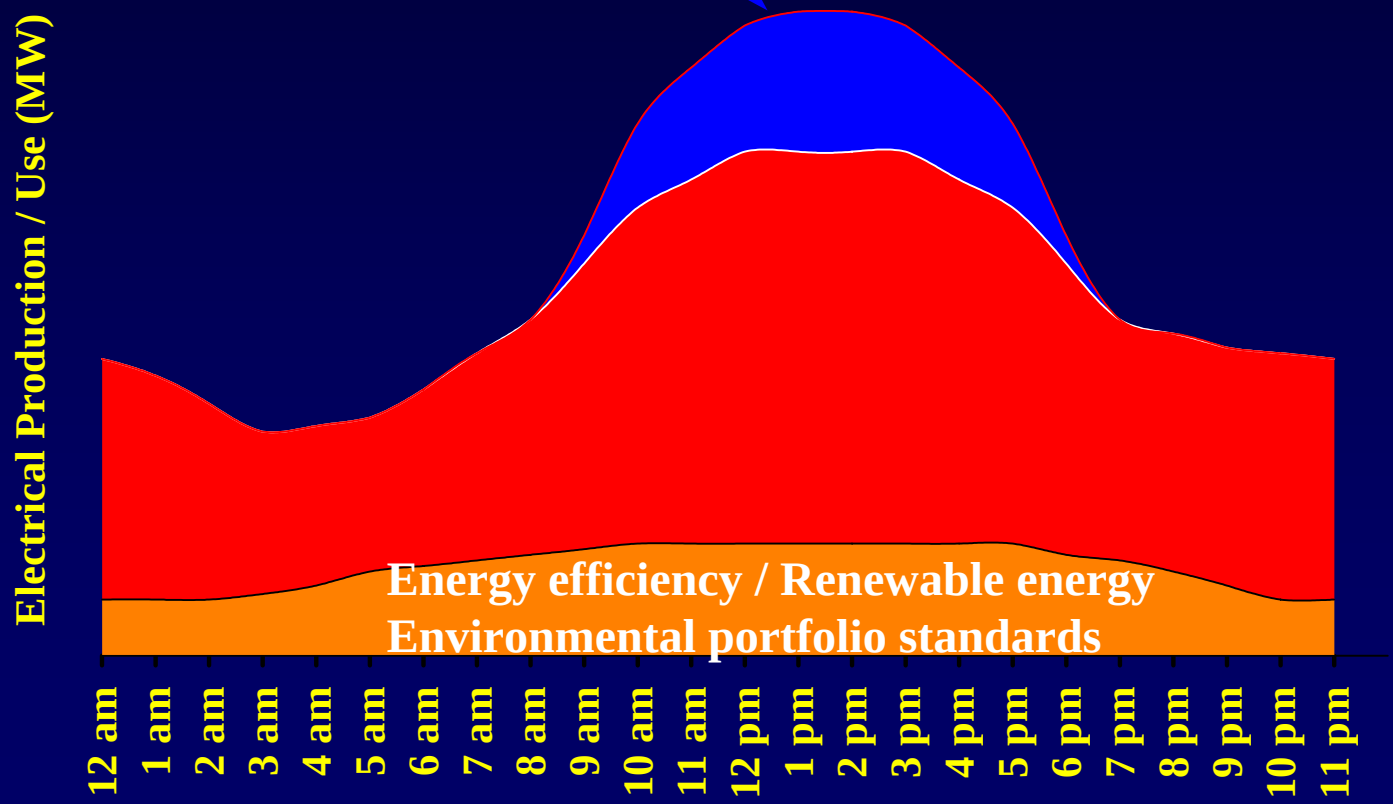
ARRAY OF OPTIONS DISCUSSED

- Dynamic pricing
- Maximizing demand resources
- Maximizing energy efficiency
- Changes to dispatch order
- Trading, daily or CAIR Plus framework
- Performance/targeted performance standards
- Replacement/repowering of existing EGUs

PRELIMINARY ASSESSMENT OF STRATEGY EFFECTIVENESS ON PEAK DEMAND

High Demand Day Strategies

- **Demand response**
  - Dynamic pricing
  - Corporate programs
- **Load shifting via distributed generation**
  - New clean distributed generation
  - Clean up old distributed generation
- **Clean dispatch**
- **Clean up existing high demand day units**
- **Performance standards**



FITTING THE AIR PLANNING FRAMEWORK:

HEDD and the 2007 Ozone SIPs

- Traditional Approach: Adopt all of the HEDD initiative into federally enforceable regulations
  - Certain aspects of HEDD may warrant a non-regulatory approach
  - Concepts are complicated
  - Time is short
- Non-traditional: Make HEDD voluntary
  - Some aspects of HEDD may work best through regulations
- Combination: Regulations, incentives and voluntary initiatives woven together
  - Identify and include a 2010 reduction goal and strategies in SIPs
  - Continue work on menu of strategies

CONTINUE EVALUATION: DEVELOP MOST COST-EFFECTIVE HEDD STRATEGIES

Avoid the Need:

- **Enhance EE and load reduction commitment OTC-wide to reduce peak demand**
- **Goal no load growth and decrease emissions**

Clean up Existing Units

- **Replace/repower old dirty residual oil with quick start units in New England**
- **Replace/control combustion turbines in NY and PJM**

Load Shifting

- **Ensure DG and demand response is clean**
- **Re-evaluate states' regs on DG and emerg generators, develop model rules**
- **Investigate and develop template for financial incentives for DR and DG**
- **Investigate and develop template for modified dispatch**

Address Upwind Sources

- **Establish environmental performance standards**
- **Continue work with mid-west states**

RECOMMENDED ACTION

- Continue to work in partnership with PSCs, ISOs, affected facilities and other stakeholders
- Develop a plan to combine the different types of options now being considered
- Summarize the plan and include in 2007 SIP
- Implement and fine-tune the plan between now and 2009