

# Massachusetts' EE/RE Set-Aside Program

---

Sharon Weber

Massachusetts Department of  
Environmental Protection

Incorporating Renewables Under CAIR  
January 12, 2006

# NOx Allowance Trading Program basics

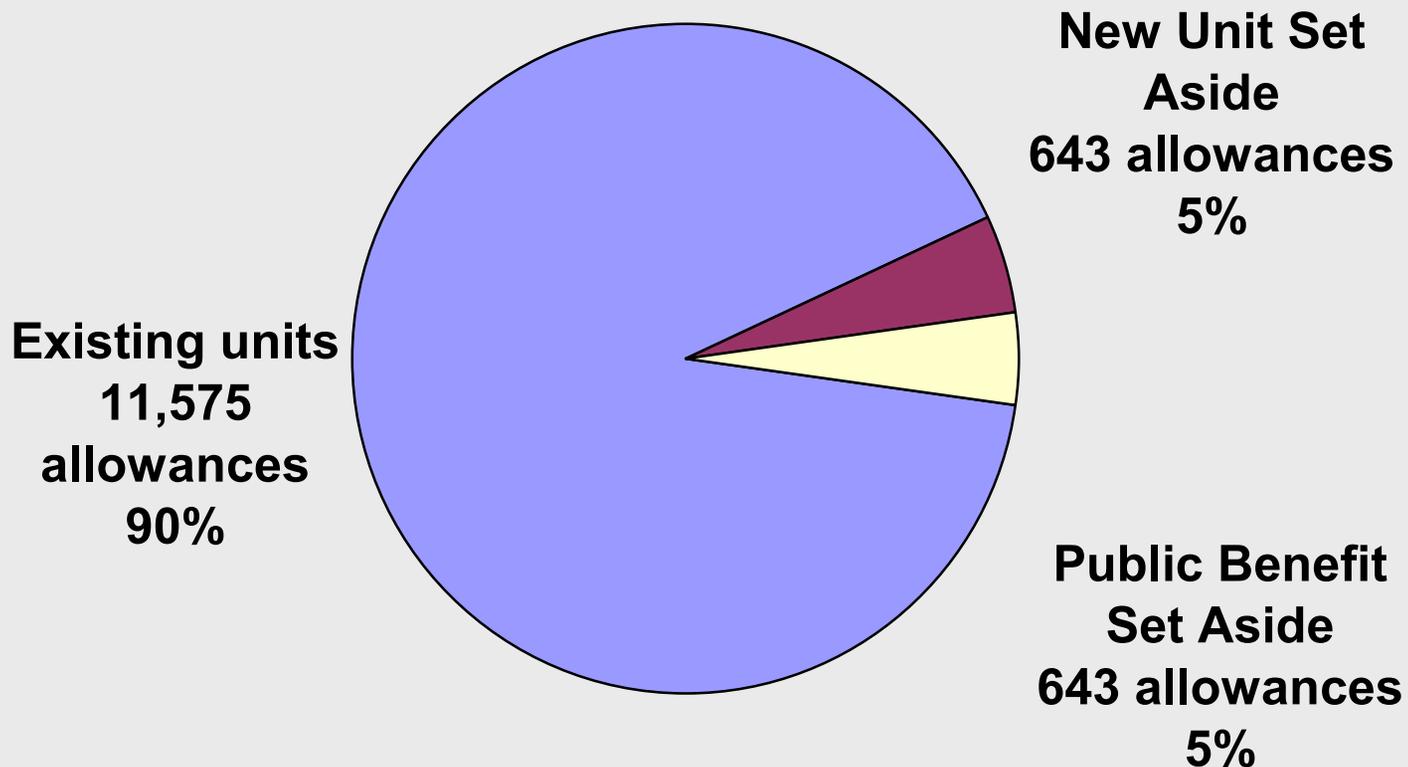
- Goal: Reduce NOx emissions to prevent formation of ground-level ozone
- Implementation:
  - Establish region-wide NOx emissions cap
  - States allocate NOx allowances to facilities, where 1 allowance permits 1 ton of NOx emissions
  - Facilities determine whether it is cheaper to:
    - install NOx controls and sell extra allowances to pay for the controls, or
    - buy allowances from other facilities to cover emissions
- Result: Reductions at lower cost

# NOx SIP Call Framework

- Each state establishes regulations to be included in State Implementation Plan (SIP)
- States have flexibility to include set-asides
  - MA established 2 set-asides in NOx trading rule promulgated in 1999
    - New unit set aside
    - Public benefit set aside (PBSA)
      - Energy Efficiency Projects (EEPs)
      - Renewable Energy Projects (REPs)

# MA Set Asides: New Unit and Public Benefit

**Total MA NOx Budget = 12,861 allowances**



# PBSA Implementation Regs Issued July 2004

- Only projects after December 31, 1999 are eligible
- Multiple small projects may aggregate to earn an allowance
- The calculations for determining the number of allowances awarded are specified (generally 1.5 lb. NO<sub>x</sub>/MWh saved or generated); however
  - applications for fewer than 5 allowances may propose “other reliable and replicable methods of quantification acceptable to the Department”
  - Tradeoff between verification and not being too burdensome for small projects

# Energy Efficiency Projects (EEPs) - Examples

- Buildings more efficient than state building code requires
- Windows, doors, caulking, weather-stripping, insulation, automatic energy control systems, refrigeration, hot water systems, lighting fixtures, motors
- Replacement of furnaces or boilers
- Combined heat and power systems that achieve an energy efficiency of 60%

EEPs can earn allowances for 7 years

# Renewable Energy Projects (REPs)

- “solar photovoltaic or solar thermal energy; wind energy; fuel cells that do not employ a fuel processor that emits NO<sub>x</sub>; ocean thermal, wave or tidal energy; hydro and geothermal energy”

REPs can earn allowances each year as long as generate energy

# First Years of MA PBSA Implementation

- 96 PBSA allowances awarded in 2003
- 208 PBSA allowances awarded in 2004
- 464 PBSA allowances awarded in 2005 (fully subscribed)

# Projects Awarded PBSA Allowances

- 2 Renewable Energy Projects (hydro)
- Many Energy Efficiency Projects (light bulbs, boiler controls, motors, LED exit signs, computer “sleep” mode software, Energy Star homes, thermostats, refrigerators, insulation, chiller & HVAC controls, occupancy sensors)

## 2 Renewable Projects

- Deer Island Sewage Treatment Plant. Hydroelectric plant has two turbines rated at 1.0 MW each, powered by the flow of wastewater effluent to the outfall tunnel.
- Cabot Station Hydroelectric Plant began commercial operation with six units in 1916 and used original equipment until upgrades occurred beginning in 2001. Major overhauls and upgrades have been completed on two units each year, increasing total station capacity from 53 to 62 MW.

# Measurement & Verification

- Regional power pool has established meter accuracy requirements; MassDEP uses same requirements
  - NEPOOL's Operating Procedure 18 "Metering and Telemetry"
- International Performance Measurement and Verification Protocol (IPMVP)
  - Requires normalization for weather and for change in building use unrelated to project

# Lessons Learned

- Even though application forms required energy generated or saved (MWh or mmBtu), each application calculated energy differently, needing careful review
- Must check energy calculations for:
  - Appropriate assumptions
  - Completeness
  - Double-counting
  - Math
  - Normalization for weather (via degree days)
  - Use of energy output, not input, as per reg.

# Why more EE than Renewable applications?

- New program
  - Expect a geothermal project to apply this year
- Allowance/certificate interaction
  - All generators reporting MWh to the ISO New England are issued "Certificates" under the NEPOOL Generation Information System (1 MWh earns 1 certificate). Note that a certificate represents a bundle of attributes (emissions, fuel, union labor).
  - Certificates are used for: Renewable Portfolio Standard (RPS), Environmental Disclosure in electric bills, Emissions Performance Standards (EPS) and green claims

# Allowance/certificate interaction: Marketing Laws

- **If** a renewable generator receives an allowance **and** it is sold to an emitting electric plant **and** it is used to cover emissions **and** the renewable generator had made a claim of “greenness” to the buyer of the renewable MWh
- **Then** renewable generator could possibly be liable under Consumer Protection laws as not having actually sold green power
  - Note: If “Mrs. Smith’s 4<sup>th</sup> grade class” bought the allowance and retired it, there would be no Consumer Protection problem

# Allowance/certificate interaction: Prices

- Relative prices of allowances and certificates
  - Allowances would have to sell for ~\$66,666 to equal the price of certificates. Note that NOx allowances are actually selling for ~\$3,500.

# Conclusions

- MassDEP and the public have been encouraged that projects have fully subscribed the available MA Public Benefit Set Aside allowances
- Process has become smoother as experience has been gained
- MassDEP CAIR proposal will be released later this year, final regulations in fall 2006