



STATE CLEAN ENERGY – ENVIRONMENT TECHNICAL FORUM

January 17, 2006

Tracking Performance of Lead by Example Programs

Participants: 40 participants from 20 states and several national organizations (see the attached participants list).

Background Document: Measurement and Tracking in State Lead-by-Example Programs
(download at: <http://www.keystone.org/html/documents.html#trackingperformance>)

Key Issues Discussed

- Challenges and solutions for data collection from state agencies and facilities
- Side benefits of tracking energy and purchasing performance
- Importance of weather-normalization of energy data
- Setting reporting requirements up front

Summary of Presentations

A. Overview — Julie Rosenberg, Director, State and Local Branch, Office of Air and Radiation

- **EPA Clean Energy-Environment Guide to Action** will be released Feb 7th. The chapter entitled “Lead by Example” is the basis of much of the information in the background document for today’s call.
- Leading by example has become a popular tool for states to pursue clean energy policies, and has a number of side benefits in addition to energy savings – state can leverage their aggregated purchasing power to spur the market in efficiency products and renewable energy and some states have uncovered billing errors that led to significant refunds.
- Examples of Lead by Example include efficiency or renewable energy goals, purchasing protocols, facility energy use targets
- Successful implementation can be aided by champions in the Legislature or Governor’s office; typically the Treasury office designs or implements programs
- Requires cooperation across multiple state agencies, including some that don’t typically interact such as General Services, Housing, and schools.
- To meet funding needs, states could use performance contracting, revolving loan funds, and accounting methods such as extended payback periods.
- ENERGY STAR and provisions of the Energy Policy Act of 2005 can provide additional resources

B. Massachusetts – Eric Friedman, Director, MA Executive Office of Environmental Resources (See “Tracking State GHG Emission: The Good, the Bad, the Ugly” PowerPoint presentation @ <http://www.keystone.org/html/documents.html#trackingperformance>)

- **Drivers:**
 - NE governors/Canadian Premiers agreement (2001) for specific regional GHG reductions; Massachusetts Climate Protection Plan (2004)
 - Energy is a large part of operating costs
 - Leading by example is an important motivation for private sector
 - Initiated with Governor Swift's Executive Order to move the state beyond compliance; calls for 25% reduction in GHG emission in 2012.
- **Implementation:**
 - State Sustainability Program developed a statewide guidance document ("EMS light") and periodic reporting requirements; had to ask questions like:
 - What is the baseline? What are we measuring? What data can we actually get? Who pays utility bills?
 - Which fuels and facilities should we target? – focused on fossil fuel consumption in buildings and vehicles, only CO₂, not other GHGs, leased facilities if data is available.
 - Will expand as new fuels are in use (e.g. biodiesel)
 - Included all facilities where centralized data existed – eg. State and Community Colleges, then went to individual agencies to find missing data
 - Motivators – Documenting emissions reductions is an added impetus for getting energy data, which is sometimes difficult; also returned the results of the data to agencies so they can see graphically the benefits
- **Results** – 3-4 years of data
 - Annual emissions increasing (7% overall) If this trend continues, state will have to add to our 25% reduction goal to achieve target.
 - Buildings represent the vast majority of emissions – 92%; remainder from transportation.
 - Univ. of MA & Board of Higher Education > 40% of total emissions
 - Dept. of Correction and Dept. of Parks next highest
 - Electricity is greatest source of GHG (55%); Comparison of BTU values shows that energy equivalent of natural gas has half the emissions of electricity.
 - Good news stories – Mt. Wachusett Community College reduced fossil fuel consumption and GHG emissions by more than 13% over past few years with biomass heating plant.
- **Challenges:**
 - Identified some inaccuracies in the data
 - Regional (ISO New England) electricity emission factors are changing over time; electricity consumption is decreasing slightly fuels have become slightly dirtier
 - Lack of time and resources.
- **Lessons learned:**
 - Use energy data to help prioritize where the greatest reductions can be achieved
 - Start with sources that have data – "Do what you can."
 - Centralized data collection is very helpful; standardize data reporting forms
 - Support from the top important

C. New York: Matt Brown, NY State Energy Research & Development Authority (See "Executive Order 111: Green and Clean State Buildings and Vehicles" PowerPoint

presentation downloadable at:

<http://www.keystone.org/html/documents.html#trackingperformance>)

- **Drivers:**

- Executive Order 111 serves as a bridge between Renewable Portfolio Standard, Regional Greenhouse Gas Initiative, and the State's Integrated Energy Policy
- Reducing summer peak load may be unique focus

- **Implementation:**

- NYSERDA is chair of interagency advisory council – set up working groups for different part of EO 111
- Focus on training, because regardless of targets, success boils down to who is implementing. Developed training programs for building operator certification, purchasing officers, boiler operators, etc.
- Each agency is autonomous in implementation – data is decentralized; each submit one page report with appendix of projects and progress; quality of supporting information varies, but improving overall in 5th year.
- Target for new construction is based on LEED and tied to green building tax credit program which rewards private institutions for green buildings. State needs to be at least as good.
- Overall building efficiency target is a 35% reduction from base year energy use.
- Retro-commissioning (process of ensuring that a building is designed, built and operating as it is intended; re-optimizing if necessary) has become more common. E.g. NYC transit authority and NYS Office of General Services
- Peak load reduction goals - state agencies set own goal for peak load reduction; not necessarily aggressive. ISO provides some monetary incentives; led to increased use of advanced meters which gives more information; found errors and reclaimed money
- Purchasing and plug load – separate law requiring minimum purchasing requirements, hard to monitor and track; purchasing officers have been very committed
- Emissions Calculations: Agencies report basic energy use to NYSERDA converts to emissions; NYSERDA looks at aggregated load to calculate emissions and total cost savings – estimated \$50 million in savings

- **Challenges:**

- State budget and staff cutbacks make it difficult to get staff out of the office for trainings
- Leased space - NY has 200 million sq ft. space where the State controls energy use, including leased space with separate energy bills. .
- Implementing and tracking renewable energy requirements is biggest challenge – State had no prior experience; Because NY and several other NE States have a renewable portfolio standard, many of the renewable energy credits were already claimed.

- **Results and lessons learned:**

- Alternative fuel vehicles program has been very successful. NY Office of General Services has been working on the program for 14 years
- Higher cost for renewable energy makes targets harder to sell to agencies than efficiency

- Good idea to understand trends in the market in renewable energy before setting target. RPS has created competition they didn't anticipate.
- Agencies beginning to use RE as a hedging mechanism for increasing fossil fuel prices
- Did not require agencies to submit sustainability plans – would have been valuable in retrospect
- Sustainable design and management was a hard sell in the beginning; now have strong advocates
- Have improved understanding of life cycle cost vs first cost principles
- Design & construction industry says EO 111 was tipping point in moving toward green buildings. Many of the LEED certified new buildings are state-owned.

D. Texas: Dr. Jeff Haberl, Assoc. Director, Energy Systems Laboratory, Texas A&M University (See “Accounting for Energy Efficiency & Renewable Energy for the Texas State Implementation Plans (SIP)” downloadable at: <http://www.keystone.org/html/documents.html#trackingperformance>)

- 2001 Texas legislation kick started this effort; 2003 & 05 amended legislation to add in new areas (e.g green power) that should be included in emissions calculation
- Important factors in calculation of the emissions reductions:
 - Weather normalization - Simulation models demonstrated that weather normalizing electricity use doubles the emissions reductions previously calculated for ozone peak days and halves the emissions reductions for natural gas consumption; weather normalization also allows you to back calculate energy savings to the base year.
 - Degradation factors – how does the savings degrade over time, important to include in projected energy savings or emission reduction calculations
 - Loss factors – percentage of electricity generated lost in transmission and distribution
 - EGrid – EPA database of utility emission factors and emissions (e.g. NOX per MWH) by county and power plant; Relates purchaser with source and source emissions
- Green power purchases – weather normalized back to base year
- Buildings program – added user interface to allow simulation of “what if” situations for code compliance and savings
- Municipal calculator – includes street and traffic lights, water supply and waste water.
- Results and Lessons Learned
 - In pulling together data for SIP, found different information coming in from different agencies; highlighted the need to standardize
 - Have demonstrated that it is feasible to account for and get significant savings.
 - Have to get state agencies coordinated early
 - Case studies and verification under way; Estimated reductions - 2 tons NOX on peak days

Discussion & Questions

Did MA agencies submit sustainability plans and were they effective?

Yes, agencies did submit plans, although they varied in quality, about 40 out of 52 agencies and 28 out of 29 campuses submitted plans. The plans are helpful in establishing key targets and require bringing together different individuals within facilities.

Have you shared your experience with other states?

Haven't talked to many other states but several other states have greening the government programs, such as PA, IN, and NC

Did the MA and NY incorporate weather normalization in calculations of energy savings and emissions reductions?

NY – considered it seriously, but some agencies were opposed so did not implement weather normalization.

MA – also discussed it, but energy and GHG goals didn't address it, therefore it is difficult to know how to relate weather-normalized savings to the target; hope over time the averages will tend to show discernable patterns even without weather normalization.

Is Ecalc able to look at different trends in energy and emissions in other states?

Ecalc is only calibrated for Texas so far; would like to make useful for other states. Energy Systems Lab has spoken to California and Ohio about applications of ECalc to their states.

Could states use utility data service companies (e.g. SMR) to collect data for them?

Yes

NEXT CALL: Thurs., February 9, 2 – 3:30 pm ET

TOPIC: Distributed Generation & CHP Interconnection Rules