Integrating Public Health and Environmental Protection into Demand Response Programs

Christopher James
Connecticut Department of Environmental Protection
Price Responsive Demand Conference
February 14, 2002

Who Are We?

- Coalition of Northeast and Mid-Atlantic State Regulators

- Representing Departments of Environmental Protection, Public Utility Commissions, and State Energy Offices

The Objective

Lay groundwork for integrating energy and air quality goals into demand response program designs.

Current Programs

- Reduce peak electricity load
- Provide greater power system reliability
- Lack of consideration and/or tracking of the environmental performance

Future Programs

- Incorporate public health and environmental protection via energy efficiency and clean distributed generation
- Provide innovative tools to meet critical power, public health, and environmental needs

Public Health and Environmental Issues

The Problem: ambient air emissions:

- nitrogen oxides
- volatile organics
- diesel exhaust
- carbon monoxide
- carbon dioxide
- mercury
- other air toxics

Public Health and Environmental Issues

The Impacts:

- Respiratory distress and disease (even in healthy populations)
- Premature mortality
- Pest/pathogen caused disease
- Damage to Ecosystem & national monuments
- Eutrophication of water bodies
- Adverse agricultural impacts
- Climate Change & visibility

Recent Demand Response Programs

Recent Demand Response Programs	Number of Participants	Peak Affect	Diesels Allowed?	EE and Clean DG Included?	Environmental Results?
ISO New England Class 1 Demand Response Program Class 2 Price Response Program	5	↑ > 500,000 kWh; ↓ > 2,000 kWh	Yes	No	↑ > 1000 lbs NOx; ↑ > 3500 lbs SO2; and ↑ 500,000 lbs CO2
New York ISO Emergency Demand Response Program ICAP Special Case Resources Program Day-Ahead Demand Response Program	13 LSEs, 9 aggregators, 7 industrial end-users (representing 275 resources)	↓ Peak > 400 MW in the Emergency Program; ↓ Peak 400 MW in Economic Program	Diesels excluded in Day-Ahead Program	Yes	None available
California ISO Participating Load Program Demand Relief Program Discretionary Load Curtailment Program Voluntary Load Curtailment Program		↓ Peak 50 MW in Demand Relief Program; ↓ Peak 16 MW in Discretionary Load Curtailment Program	Tiered system allows, but non-diesel onsite generation is favored	No	None available
PJM Interconnection Economic Option Emergency Option	None available	None available	None available	None available	None available

Taking Action

- Develop new energy efficiency and clean distributed generation programs and incentives targeted towards peak power usage

- Tie incentives to energy efficiency and clean distributed generation, including renewable energy and combined heat and power

- Develop policies and regulations to restrict the use of uncontrolled diesel and other high-emitting on-site generators as an alternative to grid-based power

The Benefits of Taking Action

Health

- Reduced asthma attacks, pulmonary and mortality risks, and lung damage from ozone and particulate exposures
- Less exposure to air toxics and reduced risk for cancer and other disease
- Reduced risk of certain diseases caused by pests/pathogens
- More opportunity for outdoor activities

Environmental

- Cleaner air and improved visibility
- Fewer smog episodes
- Healthier ecosystems
- Improved agriculture and forest yields
- Improved visibility

Societal

- Reduced health care costs; fewer emergency room and hospital visits
- Higher quality of life/productivity
- Fewer sick days at work

A Collaborative Pilot Project

The Goal

- Improve power system reliability and air quality, and relieve grid congestion

Objectives

- Determine mechanisms to further integrate demand response programs with energy efficiency and renewable energy opportunities
- Assist in developing clean distributed generation

Project Basics

- Voluntary participation
- Number of participating states dependent on the type and amount of available funding
- Key state agencies involvement for participating pilots required (environmental, energy, PUC)

Implementing the Pilot

Initiating the Project

- Working Group Sessions - key state policymakers to investigate, design, develop and then implement environmentally friendly demand response options

Two-phase Approach

- Phase I – develop near term EE/RE, low- and no-emitting DG and other environmentally friendly mechanisms for implementing in summer 2002
- Phase II – examine similar and long term options for implementing in summer 2003

Results

- Energy and environmental performance information gathered and analyzed
- Environmentally friendly model and case study report