



Energy Efficiency

Supporting Growth with Smart Energy Usage

Introduction

For the United States economy to grow, it must have access to affordable, clean and sustainable sources of energy. Concerns about climate change and infrastructure investment requirements driven by energy use growth send the signal that we should use less. According to a recent Electric Power Research Institute study,¹ electricity consumption in the United States in the residential, commercial, and industrial sector has grown at an annual rate of 1.7% from 1996 to 2006, and over the next twenty years is expected to grow at an annual rate of about 1%. Growth in consumption would require expansion of the electric transmission and distribution infrastructure, as well as construction of additional generation capacity, and will raise demand for the fuels that supply generation plants, including natural gas. Costs, for both the delivery and the commodity, can be expected to rise if electric energy usage and demand grow.

One of the most cost effective ways to counter this trend without reducing economic output is to invest in energy efficiency and demand response and encourage conservation. Using energy more efficiently reduces pressure on supply sources, postpones the need for additional energy delivery infrastructure, and results in less pollution and carbon dioxide emissions.

In a prominent recent evaluation of state energy efficiency programs, New York ranked 5th among all 50 states for its energy efficiency policies and programs in transportation and building efficiency.² The State must continue to lead by example.

Discussion

New York State has a substantial role to play in creating a cleaner energy future through enhanced electricity planning efforts and policies that encourage efficient use of energy. Before consideration of other options for satisfying our energy needs and additional energy distribution and generation infrastructure, we must think of energy efficiency, conservation and demand-response as the quickest, easiest, and least expensive solutions. Moreover, these solutions can be deployed faster and at lower costs than new power plants, potentially enhancing the reliability of the electric bulk power system.

Technology and Energy Efficiency

Energy efficiency can be achieved through technology. In the 1970's, the average refrigerator used more than 1800 kWh per year. Today an average refrigerator uses less than 500 kWh. Technological advancements have resulted in similar gains for the efficiency of lighting, air conditioning, electric motors, natural gas-fired furnaces and water heaters.

¹ "Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.," January 2009.

² "The 2008 State Energy Efficiency Scorecard," American Council for an Energy Efficient Economy.

An integrated approach to managing energy systems along with technological advances will have a great impact on increasing efficiency and reducing electric demand and consumption. One way to achieve this integrative approach is to perform energy audits that evaluate all the energy consuming applications in a location, as well as considering how to minimize energy losses. The key is to identify where new technology and behavioral changes can drive savings.

Demand Response

Technology can also be leveraged to manage consumer behavior during critical periods of scarce supply resources when prices are high and the electric grid is under increased stress, by enabling demand response management (DR). Electricity customers can decrease their energy usage at the request of the New York Independent System Operator and Con Edison. Smart Grid – enhancing the grid using digital information technologies – will increase the benefits derived from DR and energy efficiency by facilitating additional customer options, greater usage and response information for system operators, and additional pricing information to encourage consumers to reduce usage when prices are highest.

State Initiatives

The New York State Energy Research and Development Authority (NYSERDA) Energy Smart program, funded through a public benefits charge added to utility bills, offers energy efficiency solutions to residential and business customers in New York State. Con Edison administers a Targeted Demand Side Management program in its service territory that is also funded through an additional charge on utility bills. Through the State's utilities, New York has initiated the Energy Efficiency Portfolio Standard (EEPS) to reduce energy consumption by 15% by 2015. The EEPS goals are aggressive, and will require a shift in strategic planning, new skills at the utilities, and proactive and timely support from the Public Service Commission that allows utilities to invest in the resources to build a new core business and contribute to meeting the State's objectives.

Market and Regulatory Barriers for Deploying Energy Efficiency Initiatives

Implementing energy efficiency in the building sector will be challenging because of the breadth and complexity of the sector, with millions of owners, tenants, and structures. Another barrier in the building sector is the issue of split incentives, when one party, e.g. the builder, makes the initial capital investments and determines the specific energy equipment and energy efficiency performance criteria, but another party, e.g. the buyer or tenant will ultimately receive the benefits of the reduced energy usage. This division of incentives between those buying energy equipment and those receiving the benefits of the investment can impact market adoption of such initiatives. A related disincentive occurs when the energy consumption of a group is not individually metered and the energy benefits are socialized to the group (as occurs in apartment buildings where a master meter measures total energy but there is no sub-metering to measure an individual apartment's use). In this situation, there is little reason for any individual to reduce usage.

Regardless of how an energy efficiency project is funded, measurement and verification (M&V) that efficiency is being achieved is critical. Without effective M&V, planning efforts cannot rely on energy efficiency projects to justify the postponement of new energy deliver system infrastructure.

Proposal

1. Encourage utilities, NYSERDA, and non-profit organizations in New York State to collaborate in expanding energy efficiency outreach and education to consumers on how to manage costs and contribute positively to a clean and efficient energy future.
2. Support transforming the electric energy delivery system by implementing Smart Grid technology that can, in turn, provide real time usage information to customers and system operators.
3. Promote expansion of utility energy efficiency and demand response programs, including allowing utilities to implement programs customized for their service territories to allow the postponement or elimination of infrastructure investments. Appropriate incentives should also be considered to achieve the identified benefits.
4. Request NYISO to permit energy efficiency projects to participate in the electricity markets, subject to appropriate M&V.
5. Remove structural barriers to energy efficiency and demand response in the rental housing market by supporting the implementation of programs and policies that allow apartment renters to upgrade to efficient appliances.
6. Expand funds for existing utility rebate programs to allow more homeowners to upgrade to high efficiency natural gas furnaces or tankless water heaters.
7. Establish or enhance energy efficiency resource standards that set long-term achievable electricity savings goals and institute state-of-the-art building energy codes and appliance efficiency standards.
8. Restructure utility rates, regulations, and incentives to remove barriers to energy efficiency and demand response programs, and make these programs attractive to investors. For example, provide rates for hourly pricing of supply and also rates for new uses such as electric vehicle charging.

Questions or comments?

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