THE SELECT COMMITTEE ON
ENERGY INDEPENDENCE AND GLOBAL WARMING

"Get Smart on the Smart Grid: How Technology Can Revolutionize Efficiency and Renewable Solutions."

Opening Statement of Chairman Edward J. Markey

February 25, 2009

Over the past two years this Committee has explored key elements of our low carbon energy future – renewable energy sources and improving efficiency. Today, we focus on the next critical component – how the Internet and information technologies unleashed by the 1996 Telecommunications Act can enable us to take full advantage of renewable energy sources and efficiency. I think of this as the "energy Internet." Today we'll explore how the Internet can revolutionize the energy sector just as it has transformed so many other parts of our and economy.

We all recognize that the energy backbone infrastructure needed to integrate wind and solar resources is an issue that needs to be addressed as we move away from carbon producing fossil fuels towards new clean, cost effective renewable resources. But the backbone infrastructure needed for renewables requires more than tall towers and wide rights-of-way: to do it right, it also requires smart grid internet protocol communications networks, open protocol smart meters, backbone sensors connected by radio spectrum, and sophisticated interactive control technologies.

The U.S. electric grid has been called the most significant engineering achievement of the 20th Century. It is the largest, most

complex machine on the planet with over a million megawatts of generating capacity and 300,000 miles of transmission lines ready for just-in-time delivery of energy to heat our homes and light out world almost wherever it is needed. However, this grid was designed for a different era. Historically, environmentally unfriendly coal, natural gas, and nuclear generators have delivered electricity to passive consumers. These customers, both large industrial users and average consumers, lacked the information and incentives to change their consumption. Utilities also had limited information on grid conditions and limited ability to control and monitor demand side resources or respond to changing grid conditions. In an era when we have gone from black rotary phones to BlackBerry's, from three TV stations on the large appliance in your living room to YouTube on the tiny device in your pocket, we need to do better. The technology is available in 2009 to develop an energy Internet and a smart grid, and today we'll explore some of the potential technologies to accomplish that goal.

Smart grid technologies can alter the way we use electricity, allow distributed generation to be sold to the grid, help utilities to integrate intermittent renewable resources, allow us to reduce carbon emissions, and allow self healing of the grid when the system goes awry. This is not just the right thing to do; smart grid technologies also can save consumers money.

In discussing climate change legislation, we focus on the importance of putting a price on carbon to send price signals to businesses and consumers. On the electricity side, we need to ensure consumers large and small have good information to make wise decisions. Home-level smart grid technologies allow consumers to reduce demand and see their carbon footprint through the use of advanced meters. Smart meters, such as placed on thermostats, washer/dryers and refrigerators, allow consumers to respond dynamically to prices by turning down appliances and thereby reducing consumption. These end-user smart grid devices

also can be adopted by utilities to control numerous electricity usages from street lighting to industrial customers willing to reduce consumption.

There is also a huge opportunity for savings using Internet and wireless technologies in the energy backbone. Smart grid technologies allow utilities to send electricity more efficiently, integrate renewable resources which can be intermittent, increase system reliability and increase transmission capability. The amount of electricity produced by wind and other intermittent resources has been rapidly increasing. These new intermittent resources place additional strain on the grid in terms of balancing supply and demand. The wind won't blow and the sun won't always shine during peak demand hours. How to solve this problem of spike-y supply? Use smart grid technology to dynamically downscale demand in a way that the average consumer won't even notice. Home level smart grid meters and control devices provide utilities with numerous new distributed resources to provide these balancing functions.

These issues are critical to the goals of our committee – energy independence and climate change. These demand side resources are so significant that they can replace the need to build or keep online inefficient generation. In fact, one utility today is proposing to avoid building a 900 Megawatt plant by using advanced energy efficiency and demand side management to refocus the demand. These kinds of technologies and programs will allow utilities to build fewer generation plants needed to meet peak load and to balance the system which will lead to lower bills paid by consumers.

I am pleased that we have a panel of experts to explain the benefits and challenges facing us in the development of smart grid technologies and promoting an energy Internet. I thank them for being here and I look forward to hearing their ideas.