Smart Grid 101
for Local Governments

LEAP

Local Government
Energy Assurance Planning

pti Public Technology Institute

U.S. DEPARTMENT OF ENERGY

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To find out more about local government energy assurance efforts, we encourage readers to visit www.energyassurance.us. This site, maintained by PTI, is designed to support all local governments, large, medium and small, across the nation that want to learn more about creating energy assurance plans for their communities. Once created, these plans will help ensure that local governments can provide life-saving services during an energy emergency.

Editorial Team

This publication would not have been possible without the efforts of Mark Lesiw and Charles Bicknell of The Cadmus Group, Inc. This work was managed by Ronda Mosley, Assistant Executive Director for Research and Government Services, Public Technology Institute.

Smart Grid 101 for Local Governments

1 Overview and Background

1.1 What Is the Electric Grid and What Does It Do?

The electric grid is a network that delivers electricity from supplier to consumer. The process starts at a power station, where electricity is generated. After generation, the electricity moves along power lines, through a power transformer, a transmission substation, and then through a distribution substation, where it is carried to commercial and industrial business and residential consumers.

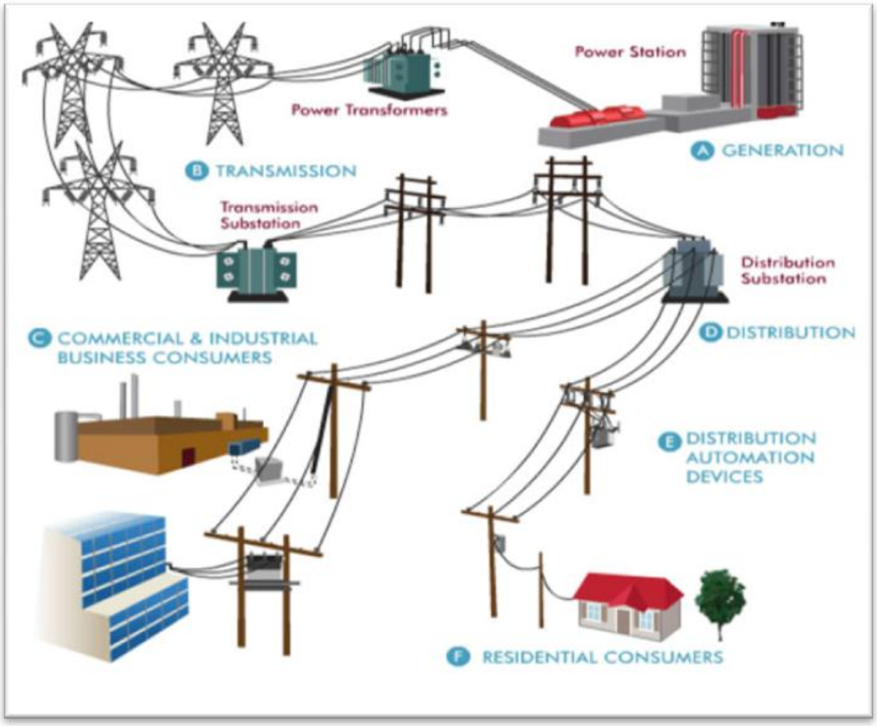

Figure 1. Example of the Electric Grid

Source: ©Copyright 2001, 2010, Oncor Electric Delivery Company LLC. All rights reserved. http://www.oncor.com/images/content/grid.jpg.

Consumer costs associated with the grid are based on consumption rates. The grid maintains a balance of electricity by managing supply and demand, and ensuring power quality and reliability.

1.2 How Does the Electric Grid Deliver Energy from Suppliers to Consumers?

Energy is traditionally supplied to consumers following a top-down model; generation occurs at centralized facilities and is then distributed in a one-way flow to consumers.

1.3 How Does the Electric Grid Apply a Mechanism for Allocating / Recouping Cost Based on Consumption?

In order to determine usage and cost information, consumers currently have two options. They can manually read their electric meter or they can refer to their monthly bill. Both options display how much energy was used in a specific time period; however, they do not provide detailed information pertaining to hour-to-hour or even day-to-day energy consumption. For that reason, it is difficult to discern how and when users are saving energy and money. Without real-time usage data, consumers are left in the dark regarding how their energy-efficient appliances and energy conservation efforts affect total energy expenditure.

1.4 How Does the Electric Grid Deal with Supply and Demand?

One of the primary objectives of electric utilities is to ensure there is a sufficient supply of electricity to meet customers' demand. Traditionally, that has meant focusing on increasing the available supply of electricity by building new electric generation facilities to keep up with demand. In the last several decades, however, there has been an increasingly popular shift towards demand side management (DSM). The goal of DSM is to reduce the demand for electricity through measures such as customer education and increased use of energy efficient products.

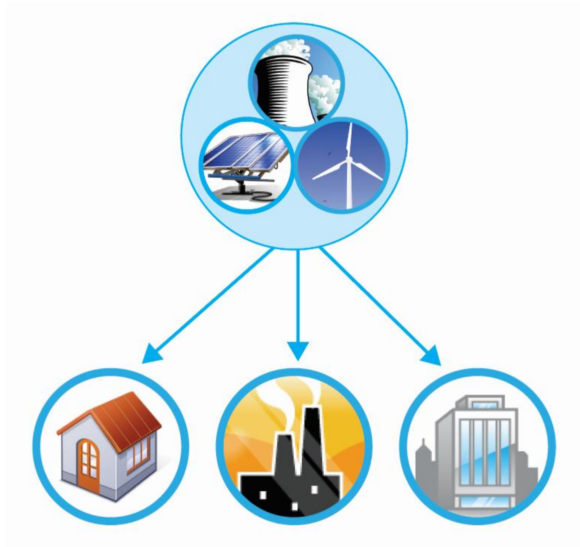

Figure 2. Example of Electricity Delivery System

1.5 How Does the Electric Grid Maintain Power Quality?

Power quality has been, and will continue to be maintained by utility engineers. The current electric grid is managed with a limited amount of information on grid conditions. For example, on a portion of the grid that serves 4,000 customers, there may only be 10 locations where information can be collected. Furthermore, this information may record only a limited amount of data, on a limited number of days, over a limited time period. These data are then used to determine if any adjustments need to be made to the grid.

1.6 How Does the Electric Grid Maintain Power Reliability?

Typically, power quality engineers also help improve power reliability. Using data similar to that which is collected for measuring power quality, engineers attempt to identify reliability issues before outages occur. However, the majority of outages are caused by storms and other natural hazards, and customers typically need to call their electric provider to report outages.

1.7 The Common Limitation

The common limitation affecting the current electric grid is a lack of information. An increase in timely information on grid conditions, collected from more data points throughout the grid, can help improve power quality and power reliability.

2 What Is the Smart Grid?

The smart grid is an electric grid that incorporates many different but related technologies that vastly improve the quality of energy information obtained from the electric grid. As conceptualized, the smart grid provides an extensive communication network that allows for near real-time communication among various smart grid components, control systems, and entities.

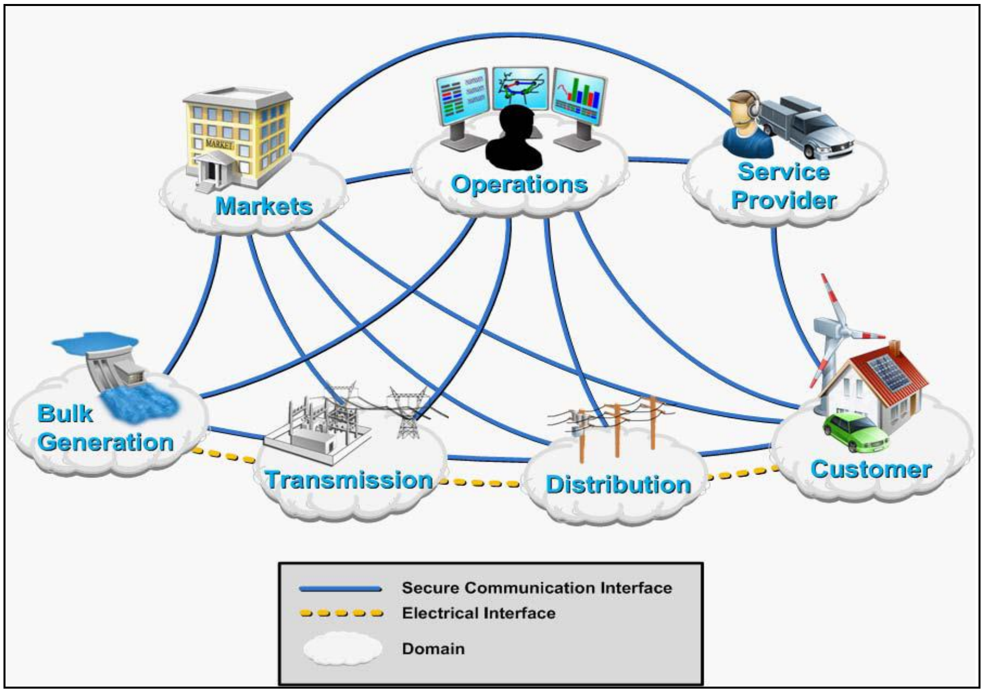

Figure 3. Smart Grid Conceptual Model

Figure 3 shows the conceptual model of a smart grid communications network.[1] The smart grid also allows for multi-directional electricity flow.

As defined by the Energy Independence and Security Act of 2007,[2] the smart grid is:

> "A modernization of the electricity infrastructure to maintain a reliable and secure system that can meet future growth. It is important to note that the Smart Grid vision is characterized by a two-way flow of electricity and information that creates an automated, widely-distributed electricity network. It will monitor, protect and automatically optimize the operation of its interconnected elements – from both central and distributed generators, through the high-voltage transmission network and the distribution system, to industrial users and commercial building automation systems; to energy storage installations; and to residential consumers with their thermostats, electric vehicles, appliances, and other household devices."

2.1 Smart Grid Components That Enhance Communication

The following section discusses the primary devices of a smart grid that may be most visible to – and directly used by – the majority of electric consumers (this is not an exhaustive list of all components).

2.1.1 Smart Meters

The smart meter is the heart of the smart grid and serves as the point of demarcation between utilities and their customers. Smart meters allow utilities to collect energy consumption data much more frequently and can communicate with devices inside customers' homes and

[1] NIST Smart Grid Framework 1.0, January 2010.
[2] Energy Independence and Security Act 2007.

businesses. Smart meters are traditional digital meters equipped with communication capabilities. The metrology of the smart meter (the way it measures energy consumption) is essentially the same as a traditional digital meter, but the smart meter adds communication capabilities.

2.1.2 Wide Area Network

In order to exchange information with smart meters, utilities are building wide area networks. The particular devices used to create these networks vary depending on the communication spectrum chosen. Most systems use either a mesh or a point-to-multipoint network to transmit and receive communications with the smart meters.

In a mesh network, each meter communicates with other meters in succession. In a point-to-multipoint network (sometimes known as a tower based network), each meter communicates with a central radio tower. Mesh networks are typically used in densely populated areas, and point-to-multipoint systems are used when there are greater physical distances between the individual meters.

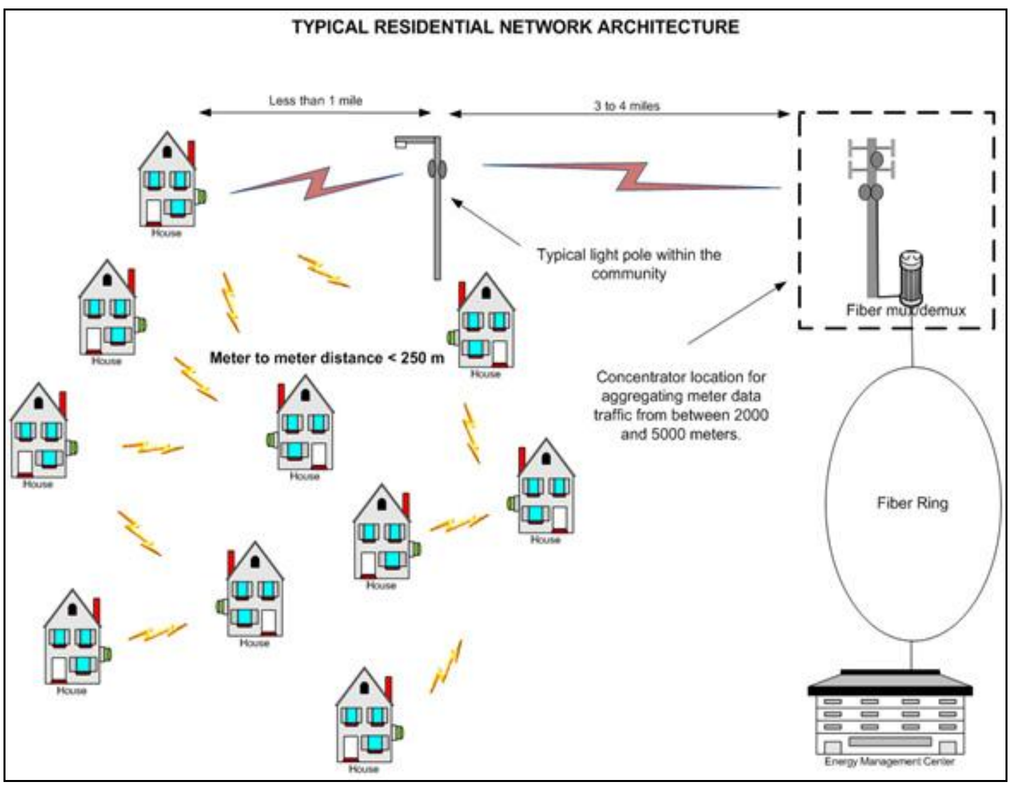

Figure 4. Mesh Network

Source: http://www.infraxinc.com/products/security/snic/.

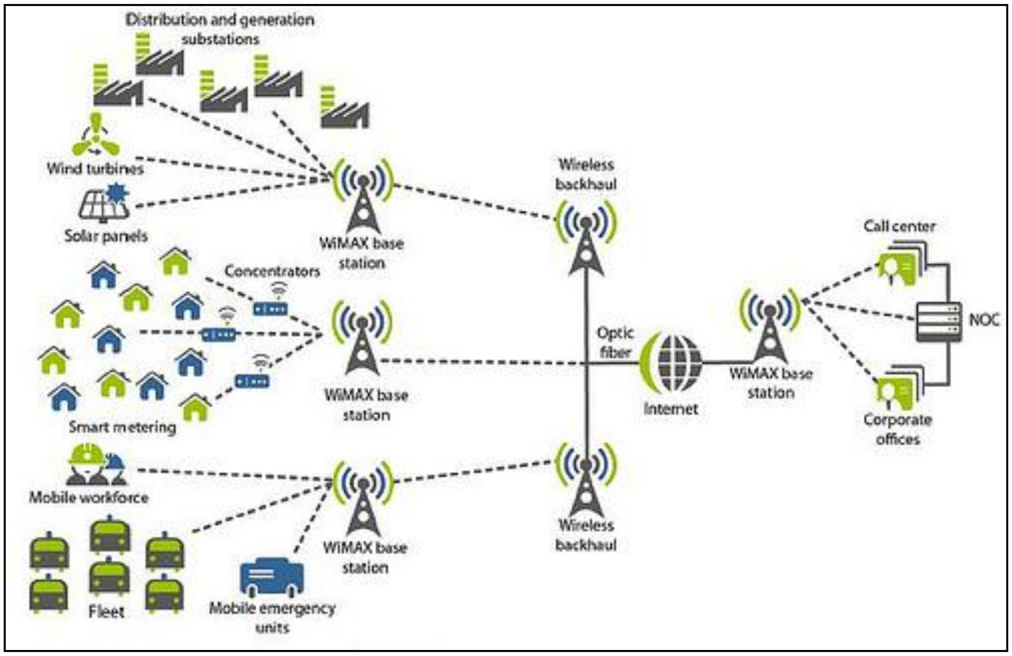

Figure 5. Tower Based Smart Grid Network – WiMAX

Source: http://www.dailywireless.org/2010/06/22/lte-connected-car-exhibited/.

2.1.3 Transmission and Distribution Devices

Just as smart meters have the ability to communicate, transmission and distribution devices can also take advantage of the smart grid network to communicate the grid's status and to receive instructions on modifying settings for better grid control. Devices such as transformers, voltage regulators, capacitors, and motor-operated switches are all used by utilities to provide customers with reliable power within a specified range of electric characteristics. Some of the devices in the current electric grid have communications capabilities. Advanced transmission and distribution devices will allow the electric grid to become more connected over time as additional smart grid technologies are deployed.

2.1.4 Customer Devices

Customer devices are a way for customers to receive more accurate and timely information regarding their energy consumption. Currently, most consumers receive a monthly bill and statement explaining their energy consumption. This method allows for only a poor understanding of how energy usage translates into total consumption and ultimately, utility bills. For example, a customer might purchase compact fluorescent light bulbs (CFLs) in an attempt to lower energy consumption and reduce utility bills. However, in comparison with bills from previous months, the bills after CFL installation may not show a significant difference, and could even increase.

There are many factors that affect a customer's monthly energy consumption, including temperature, vacations, personal schedules, inclement weather, and other factors. Because a month is too long a timeframe, monthly bills do not reflect how a consumer behavior impacts total electricity consumption.

The smart meter solves this problem by recording consumption information, typically every hour, giving customers useful data over a shorter timeframe. For example, a customer could compare his or her consumption for an hour before and an hour after installing CFLs in order to fully understand the energy saving capabilities. Since in most homes, other energy usage will be similar in any two consecutive hours, the results will have little impact from other variables.

Figure 6. In-Home Displays

a. In-Home Displays

In-home displays vary in size, type, and complexity, but all present customers with information about their energy consumption. At the most basic level, an in-home display might simply show the customer's current energy consumption in kilowatt hours. More sophisticated in-home displays might predict a customer's total electric bill, based on past history combined with weather forecasts. Most in-home displays use some type of graphical display that ranges in size from the size of an iPhone and an iPad. [3] These devices are often wireless and can be used throughout a customer's home or business.

b. Web Portals

Utilities typically offer most smart grid customers a personalized website with detailed information about their electric consumption. Similar to in-home displays, the amount of detail provided to customers may vary.[4]

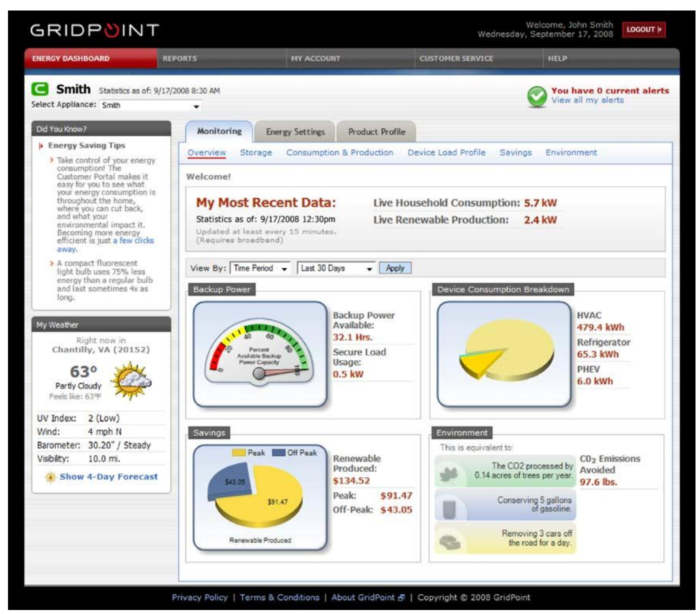

Figure 7. Smart Grid-Enabled Consumer Web Portal

c. Intelligent Devices

Intelligent devices can communicate with smart meters and take a particular action in response to that communication. Intelligent devices include smart thermostats, load-control devices, smart plugs, lighting controls, and energy management systems.

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[3] http://www.homeauto.com/Products/Omnistat/Omnistat2Products.asp.
[4] http://www.gridpoint.com/solutions/homeenergymanagement/energyinformationportal.aspx.

The smart thermostat is an intelligent device currently being tested in various utility smart grid pilot programs. With a smart thermostat, customers can easily participate in utility time-of-use or dynamic pricing programs, in which utilities manage the demand for electricity by varying the price of electricity throughout the day. When there is an energy supply surplus, prices are relatively low. When electricity demand approaches the limit of the available supply, the utility may charge a higher rate. By shifting consumption to lower demand periods, the utility can often be more efficient in its generation and distribution of electricity. Smart thermostats are designed to alter the amount of energy that air conditioning or heating systems use based on various electric prices and the customer's preference.

Similarly, load-control devices, smart plugs, lighting controls, and energy management systems all manage how much electricity various appliances and systems use in response to signals sent by the smart meter.[5]

3 What Will the Smart Grid Change?

While a majority of the physical assets of the electric grid will not change (poles, towers, wires, transmission and distribution devices, substations, base-load generation, etc.), the smart grid will overlay extensive communication channels onto those devices to allow each to function more effectively.

Many utilities are currently piloting and deploying various devices and combinations of smart grid technologies. Potential benefits that can be achieved through smart grid are presented below, but the technical, regulatory, and business specifications of each utility's smart grid program will have a large impact on the number and extent of these benefits.

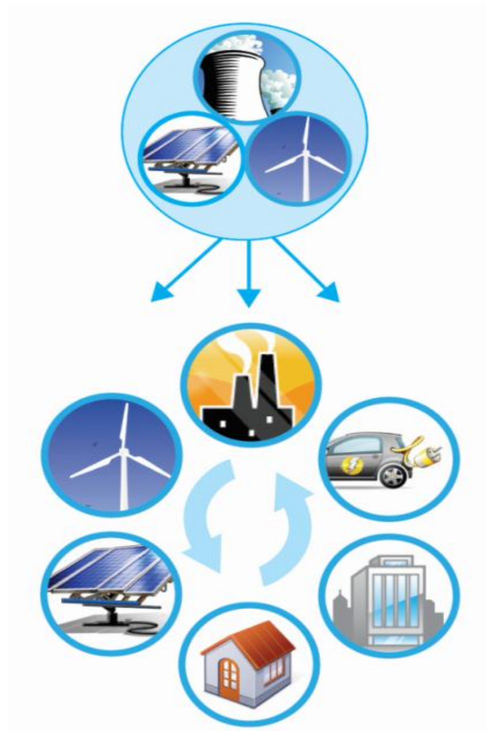

Figure 8. Example of Smart Grid-Electricity System

3.1 Delivery

While the current electric grid focuses on managing the supply of electricity in order to keep pace with consumer demand, the smart grid will allow for newer and more advanced methods of managing consumer demand to reduce the need for developing an additional electricity supply. The intelligent devices mentioned above are examples of some of these different technologies. Each type of demand side management will utilize different aspects of those devices.

3.2 Distributed Generation

Because the original distribution grid was designed as a one-way system, it is not set up to readily accept electricity from multiple sources of electricity generation. To do that, utilities need to monitor and understand all of the sources of generation as well as the consumption of

[5] http://www.centerpointenergy.com/services/electricity/residential/smartmeters/.

electricity on a real-time basis. This information is necessary so that utilities can ensure that the physical attributes of the grid—such as wire sizes and circuit protection—are capable of handling these alternate distribution schemes. The two-way communication capability of the smart grid will enable utilities to monitor the flow of electricity, and that in turn will allow utilities to add alternative sources of generation to the grid.

3.3 Renewable Integration

As previously noted, the current electric grid was designed as a one-way system: electricity flows from a small number of large generation plants, across increasingly smaller capacity transmission and distribution systems, until finally reaching the end user. System operators strive to keep the system in balance by ensuring that sufficient supply (plus a reserve capacity) matches demand. Sophisticated near-real time metering equipment is deployed at all supply sources and at various points along the transmission and distribution systems to ensure that controllers have sufficient information to manage the grid. As the number of supply sources increases—as is currently the trend—and as there are more options for delivering electricity, the system becomes more complex to operate. This issue is further complicated by the fact that some renewable resources such as wind and solar photovoltaic (PV) systems fluctuate in supplying energy to the grid. That is, wind and PV systems are not only an additional supply source, but their output varies, whereas a coal-fired power plant can provide a continuous supply of energy at a constant rate. The communication capability of the smart grid will allow for the integration of an increased number of renewable energy sources with varying output rates, because more information will be available for balancing the demand and supply of electricity.

In addition to measuring the electricity used by consumers, smart meters also have the potential to measure the electricity that consumers add back into the grid from distributed generation such as home-based PV systems. Through complex control systems and information available from the smart grid, system controllers will be able to use renewable resources to meet the demand for electricity.

3.4 Cost Allocation

3.4.1 Avoided System Improvement Costs

Utilities have traditionally improved their electric systems to keep pace with demand. That is, as consumers use more and more electricity, utilities build more and more power plants, increase the number and size of the wires and poles on their electric transmission and distribution systems, build larger transformer substations, and increase the number of grid devices on their system. Because the smart grid offers new opportunities for utilities to manage the demand of electricity, they will likely be able to avoid some of the increased costs associated with having to increase the supply of electricity.

3.4.2 New Rates

While the previous section addresses the cost associated with expanding the electricity infrastructure, this section accounts for the additional savings that may come from sourcing electric power from different types of generation. As mentioned earlier, utilities generally charge customers flat electric rates that do not vary based on the costs associated with producing electricity for their home or business. The smart grid will allow utilities to provide consumers with time-variable rates that more closely coincide with the true real-time cost of providing that electricity. Consumers will have the opportunity to choose when they use power, which may result in a reduction during high cost periods and a lower overall average energy cost.

3.5 Supply and Demand

3.5.1 Demand Response

Energy efficiency programs seek to permanently reduce electric consumption across all hours; demand response programs, on the other hand, seek to temporarily reduce electric consumption during a relatively small number of hours. Reducing consumption by less than 1-2 percent of hours annually can help increase grid reliability and reduce the need for relatively expensive energy sources such as natural gas or petroleum-fueled peaking generators.

Demand response has been used by utilities for decades, but with smart grid technologies, new demand response programs can be offered. A traditional barrier to demand response has been the inability to provide hourly pricing to consumers. Because utilities have not typically used hourly interval metering for customers, they could previously bill only a flat rate. As a result, there was little to no difference to the consumer in electric supply costs between energy consumed on the hottest day of the year, when demand approaches supply, and energy consumed on a mild spring day, when there is a significant excess of supply. As the smart grid typically allows utilities to meter energy consumption by the hour (at least), new rate programs such as time-of-use pricing and dynamic pricing can be offered to consumers. The smart grid is expected to communicate these varying prices directly to intelligent devices inside consumers' homes and businesses.

3.5.2 Consumer Education

In addition to its impact on demand response innovation, the smart grid will also facilitate the education of consumers on the environmental impacts of their energy consumption. That in turn may influence their behavior. Some in-home displays and utility web portals display greenhouse gas emissions in addition to electricity consumption. The smart grid can inform customers of the approximate energy source mix of the electricity they are consuming, including renewable energy sources that have a lower impact on the environment. Consumers concerned with their environmental impact may respond by reducing their electricity use.

3.5.3 Plug-In Electric Vehicles

The smart grid will pave the way for plug-in electric vehicles to utilize the excess electric capacity that typically exists during off-peak hours. By utilizing time-varying rates, plug-in electric vehicle owners will likely realize significant savings when compared to traditional petroleum-based fuels. As the economic benefits of plug-in electric vehicles begin to further outweigh their costs, wider adoption will likely occur. There may come a point in time when plug-in vehicles will be numerous enough that the electricity stored in their batteries, in aggregate, could be used to supply peak power on demand. The idea is that electric vehicles can be charged at night or when demand and prices are low, and then plugged-in during peak power demand, enabling the grid to aggregate supply from thousands of individual vehicles.

3.6 Power Quality

3.6.1 Power Quality and Grid Efficiency Benefits

To maintain power quality on the electric grid, utilities currently use a vast number of devices, such as voltage regulators, capacitor banks, transformers, power boosters, and switches. Many of those devices lack two-way communication capabilities and function in a somewhat isolated manner. Using the communication capabilities of the smart grid, these devices will better communicate with one another and with utility grid management systems. With utilities communicating to and receiving status updates from these devices, they will function as a more fully integrated system.

Utilities strive to maximize the efficiency of their electric systems, yet some electric systems experience upwards of 10 percent electric line loss when delivering electricity from generation to the end user. Some line loss is inevitable due to the laws of physics and the passing of electricity through long lengths of conductors and grid devices, but utilities can decrease line loss by optimizing their electric systems. This optimization process includes adjusting the settings of devices such as voltage regulators and capacitors, and strategically routing electricity depending on system conditions.

On a smart grid, settings on these devices can be more accurate; the smart grid will also allow for the settings to be adjusted in a timely manner if needed. Some integrated systems may be able to optimize themselves according to the conditions measured in near-real time throughout the system. This capability will help the smart grid to operate more efficiently and to improve power quality.

3.6.2 Power Reliability

Power reliability is one of the benefits of smart grid that local governments will likely find most relevant. The following text provides a general description of reliability features; Section 5 discusses how they may be used in a local government energy assurance plan (EAP).

a. Outage Management

Currently, utilities use a number of different outage management systems. More sophisticated systems have some ability to detect outages remotely, but many utilities still rely on customers to inform them of electric outages.

With the smart grid, smart meters can be equipped with systems that communicate a “last gasp” signal to the utility as they are losing power, giving the utility more time to respond to electric outages. In catastrophic storms and widespread outages, this timely information can be used to prioritize restoration efforts to the most critical consumers and services.

b. Self-Healing

With more accurate information regarding the condition of the grid and which customers are without power, utilities may be able to implement self-healing systems. These systems utilize the communication capability of the smart grid to strategically operate grid devices that reroute power around trouble spots and automatically restore power to some customers.

c. Proactive Maintenance

While the smart grid will enable more efficient power restoration, it also has the ability to prevent power outages from occurring. Through vastly improved grid monitoring capabilities, utilities will have better insight into the condition of their electric grid. Powerful analytics programs may allow utilities to predict when certain grid devices are reaching the end of their useful life, which may prevent some device failure-related outages.

4 Frequently Asked Questions about the Smart Grid

4.1 Is the Smart Grid Secure and Does It Protect My Personal Information?

The cyber security of smart grid components is a growing concern. However, manufacturers of smart grid components are taking steps to increase cyber security and protect users' personal information.

4.2 Are There Common Standards Governing the Technologies?

Yes, there are common standards governing the technologies. Most smart grid systems, devices and programs function through common protocols to ensure compatibility. For example, ZigBee standards-based wireless devices use the Smart Energy Protocol (SEP). SEP is a common and open standard that allows any SEP-certified device to communicate with other SEP devices.[6]

4.3 How Much Does the Smart Grid Cost?

The cost of smart grid technology depends on the specific components that are deployed. Experts estimate that complete replacement of current grid distribution and transmission components could cost billions of dollars.[7] Installation of a smart meter averages $250, and installation of a home area network for energy savings is approximately $330. Utilities that are governed by State public utility commissions will likely have to justify the cost of investing in smart grid technologies to ensure that the benefits of the technologies outweigh the costs.

5 What Does the Smart Grid Mean for Local Governments?

A number of potential system-wide smart grid benefits have been mentioned throughout this document, but it may not be apparent how the smart grid can help local governments improve their EAPs. The benefits of smart grid technologies for local governments will depend on the specific technologies deployed.

One universal benefit of smart grid technology is access to information about grid conditions in near-real time. Access to more accurate information in a timely manner will allow electric utilities to react to grid conditions quickly, which increases energy resiliency. Local governments can then work with their utilities to continue building this resiliency into an EAP.

The following benefits of the smart grid are important to consider when developing or updating an EAP.

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[6] http://www.zigbee.org/Home.aspx.
[7] http://www.greentechmedia.com/articles/read/dissecting-the-cost-of-the-smart-grid/.

5.1 Self-Healing

The self-healing capabilities of the smart grid will likely minimize outage frequency and duration, and will restore power quickly to critical entities. A local government might consider coordinating self-healing capabilities with utilities to ensure that critical assets are accounted for in the self-healing schemes developed by the utility.

5.2 Distributed Generation

Distributed generation can enable alternative power generation to be more easily integrated into the grid and, if necessary, directed to critical entities or rotated to share the available capacity.

The communication capabilities of the smart grid will allow it to more readily accept multiple distributed generation sources. The smart grid will have near-instant information on electric demand and new distributed generation sources, and it can more effectively allocate distributed generation based on demand.

By enabling multiple generation facilities to power the community, exposure to an energy emergency is reduced. Similar to a stock portfolio, a diversified energy portfolio will result in reduced exposure to negative consequences.

5.3 Outage Notification

A key aspect of any local government EAP is the process by which the local government and the public will receive timely and accurate information about grid conditions from utilities. This information will enable local government to know when to take appropriate action.

Utilities typically communicate outage information as soon as they have a proper understanding of the problem; however, with the current grid, that understanding may take up to several days to develop. With the smart grid's two-way communication network, individual meters and grid devices will communicate problems to utilities in near-real time, and utilities will be able to quantify and respond to power outages much more quickly. This technology will also enable local governments to take appropriate actions at a more efficient rate.

5.4 Restoration Planning

Before an emergency, the smart grid allows local governments to more fully understand the energy requirements of a particular community, such as how much power critical facilities need to sustain operations, how much capacity is available on each circuit in a community, which circuits could be re-routed to avoid outages, and which DSM methods have the largest effects on the transmission system.

Local governments can use this information to develop multiple reaction scenarios to various levels of energy disruptions, such as preparing a contingency plan in case a critical circuit is damaged and incapable of serving a key community infrastructure.

The smart grid is useful even after an energy emergency has occurred. The smart grid can communicate the severity of an energy emergency much more quickly, enabling the utility and the local government to respond at once. The smart grid then provides timely updates on the status of restoration efforts.

In a sustained catastrophic emergency, automated switching operations or load-limiting capabilities could be employed to distribute a limited supply of electricity. This grid-monitoring capability will allow utilities to inform local governments when certain critical facilities may be back online.

6 Conclusion

The implementation of the smart grid will help modernize the electric system. This modernization will allow for new opportunities to monitor and control key aspects of the electric grid, which will help utilities and local governments increase energy assurance and the reliability of their electricity distribution.[8]

Local governments are encouraged to enter into dialogues with their local utilities in order to determine how they may improve their EAPs in tandem with new smart grid developments.

[8] http://www.naseo.org/energyassurance/Smart_Grid_and_Cyber_Security_for_Energy_Assurance-NASEO_December_2010.pdf.

Appendix A. Smart Grid Example Projects

Investor Owned Utilities

1. CenterPoint Energy (Houston, Texas)

Project Amount: $639,187,435
Number of Smart Meters: 2,200,000

CenterPoint Energy will improve its current smart meter project and begin building a smart grid. CenterPoint Energy plans to complete the installation of 2.2 million smart meters, and hopes to further strengthen the reliability and self-healing properties of the grid by installing more than 550 sensors and automated switches to protect against system disturbances such as natural disasters.

2. Baltimore Gas & Electric Company (Baltimore, Maryland)

Project Amount: $451,814,234
Number of Smart Meters: 2,000,000

Baltimore Gas & Electric Company (BGE) initiated a smart grid project to install 2 million residential and commercial smart meters that could potentially save BGE electric and gas customers more than $2.6 billion over the life of the project. BGE plans to deploy a smart meter network and advanced customer control system that will enable dynamic electricity pricing for 1.1 million residential customers. The utility will also expand its direct load control program to enhance grid reliability and reduce congestion.

Municipal Utilities

1. City of Glendale Water & Power (Glendale, California)

Project Amount: $51,302,105
Number of Smart Meters: 84,000

The City of Glendale Water and Power utility will develop a smart grid energy management system. The city will install 84,000 smart meters and a meter control system that will enable dynamic rate programs and provide customers access to their electricity usage data.

2. City of Fort Collins Utilities (Fort Collins, Colorado)

Project Amount: $36,202,526
Number of Smart Meters: 79,000

The City of Fort Collins will develop a smart grid energy management system. The city will install 79,000 smart meters and in-home demand response systems, including in-home displays, smart thermostats, air conditioning and water-heater control switches, automated transmission and distribution systems, and devices to enhance grid security.

Source: http://www.smartgrid.gov/projects.

Appendix B. Other Government/Municipal Utility American Reinvestment and Recovery Act Programs

The following list of programs is included as a reference for local governments to further understand how the smart grid could be utilized. Energy assurance planners are encouraged to reach out to communities near them or communities with similar characteristics. Smart grid information can often be found on each government's website.

Table B-1. Municipal Utility ARRA Programs

Municipal Utility	City	State
Burbank Water and Power Smart Grid Project	Burbank	California
Central Lincoln People's Utility District Smart Grid Project	Newport	Oregon
City of Anaheim Smart Grid Project	Anaheim	California
City of Auburn Smart Grid Project	Auburn	Indiana
City of Fort Collins Utilities Smart Grid Project	Fort Collins	Colorado
City of Leesburg Smart Grid Project	Leesburg	Florida
City of Naperville Smart Grid Project	Naperville	Illinois
City of Ruston Smart Grid Project	Ruston	Louisiana
City of Wadsworth Smart Grid Project	Wadsworth	Ohio
Cuming County Public Power District Smart Grid Project	West Point	Nebraska
Electric Power Board of Chattanooga Smart Grid Project	Chattanooga	Tennessee
Golden Spread Electric Cooperative, Inc. Smart Grid Project	Amarillo	Texas
Guam Power Authority Smart Grid Project	Hagatna	Guam
Indianapolis Power and Light Company Smart Grid Project	Indianapolis	Indiana
JEA Smart Grid Project	Jacksonville	Florida
Knoxville Utilities Board Smart Grid Project	Knoxville	Tennessee
Lafayette Consolidated Government Smart Grid Project	Lafayette	Louisiana
Madison Gas and Electric Company Smart Grid Project	Madison	Wisconsin
Modesto Irrigation District Smart Grid Project	Modesto	California
New Hampshire Electric Cooperative Smart Grid Project	Plymouth	New Hampshire
Rappahannock Electric Cooperative Smart Grid Project	Fredericksburg	Virginia
Sacramento Municipal Utility District Smart Grid Project	Sacramento	California
Town of Danvers Smart Grid Project	Danvers	Massachusetts
Central Maine Power Company Smart Grid Project	Augusta	Maine
City of Fulton Smart Grid Project	Fulton	Missouri
City of Glendale Water and Power Smart Grid Project	Glendale	California
City of Quincy Smart Grid Project	Quincy	Florida
City of Westerville Smart Grid Project	Westerville	Ohio
Cleco Power LLC Smart Grid Project	Pineville	Louisiana
Cobb Electric Membership Corporation Smart Grid Project	Marietta	Georgia
Connecticut Municipal Electric Energy Cooperative Smart	Norwich	Connecticut

Municipal Utility	City	State
Grid Project		
Denton County Electric Cooperative d/b/a CoServ Electric Smart Grid Project	Corinth	Texas
Lakeland Electric Smart Grid Project	Lakeland	Florida
Marblehead Municipal Light Department Smart Grid Project	Marblehead	Massachusetts
South Kentucky Rural Electric Cooperative Corporation Smart Grid Project	Somerset	Kentucky
Stanton County Public Power District Smart Grid Project	Stanton	Nebraska
Woodruff Electric Smart Grid Project	Forrest City	Arkansas
City of Tallahassee Smart Grid Project	Tallahassee	Florida
Iowa Association of Municipal Utilities Smart Grid Project	Ankeny	Iowa
Atlantic City Electric Company Smart Grid Project	Mays Landing	New Jersey
El Paso Electric Smart Grid Project	El Paso	Texas
Hawaii Electric Co. Inc. Smart Grid Project	Oahu	Hawaii
Memphis Light, Gas and Water Division Smart Grid Project	Memphis	Tennessee
Municipal Electric Authority of Georgia Smart Grid Project	Atlanta	Georgia
Snohomish County Public Utilities District Smart Grid Project	Everett	Washington
Kansas City Power & Light Company Smart Grid Demonstration Project	Kansas City	Missouri
Los Angeles Department of Water and Power Smart Grid Demonstration Project	Los Angeles	California
City of Painesville Smart Grid Demonstration Project	Painesville	Ohio
Public Service Company of New Mexico Smart Grid Demonstration Project	Albuquerque	New Mexico

Source: http://www.smartgrid.gov/projects.

Is the Smart Grid in Your Jurisdiction?

To learn whether there are smart grid projects in a particular local jurisdiction, contact the local electric utility. Typically, a local government is a key account, with a specific account manager assigned to help with any special requests, including providing information about the utility's smart grid plans. Local government energy assurance planners can also contact their accounts payable department or the main phone number for their utility to obtain additional information on smart grid plans. This guide may act as a starting point from which to discuss smart grid plans with the utility. As utilities are typically required to work with their governing agencies, it may be useful for both the utilities and local governments to discuss smart grid plans, costs, and benefits to better enable the advancement of smart grid technology.

7 Sources

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