

Lutron® Smart Grid solutions for homes



Light control



Shade control



HVAC control



Appliance control



Smart Grid introduction

You've probably heard the phrase "Smart Grid" in relation to energy use. You might have even heard that it will change the way we use energy. But what exactly is the Smart Grid—and what can you expect from it?

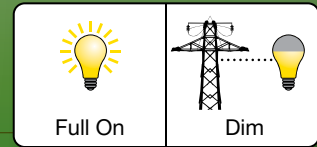
The benefits to you

In general terms, the Smart Grid is the modernization of today's electricity grid, with improved technology to help save energy, reduce your electricity bills, and decrease brownouts and blackouts. The Smart Grid features two-way communication—between you and the utility company—so that you can see how much electricity you're using, when you're using it, and how much it costs.

One of the major components of the Smart Grid is demand response, meaning a utility will work to decrease electricity demand during peak hours (utilities have limited ability to simply increase electricity supply to the customer due to high costs, government regulation, and transmission restraints). Utilities will offer lower prices for using electricity during off-hours when demand for electricity is low.

A smarter grid will change the way you use electricity by giving you the ability to manage your home's energy use and costs, while improving the quality and reliability of your power.





Lutron's role in the Smart Grid

Although Smart Grid technologies for use in residential homes are still in development, we're investing in research for the Smart Grid and actively pursuing partnership opportunities so that we'll be ready when the technology is available. We are working to help define the future of the Smart Grid as we continue to help our customers save energy and money.

The Lutron Smart Grid solution will offer direct control of lighting, shades, HVAC, and plug-in devices as well as control of third-party devices. The system will also display your real-time energy use and analyze trends to identify additional ways you can save energy.

Both you and the Lutron Smart Grid solution will receive messages from your utility about how much energy you're using, when you're using it, and how much it's costing you—all in real time via a smart meter or server. The Lutron Smart Grid solution will automatically respond to price changes and energy events, such as times of peak demand, by cutting back on the amount of energy used by your lights, shades, HVAC, and certain appliances. That, in turn, will save you money.



Light control

Dimmers lower light levels or turn lights off



Shade control

Shades reduce heat gain or let sunlight in to warm the space



HVAC control

Control adjusts temperature set points



Appliance control

Plug-in appliance module turns off appliances and electronics

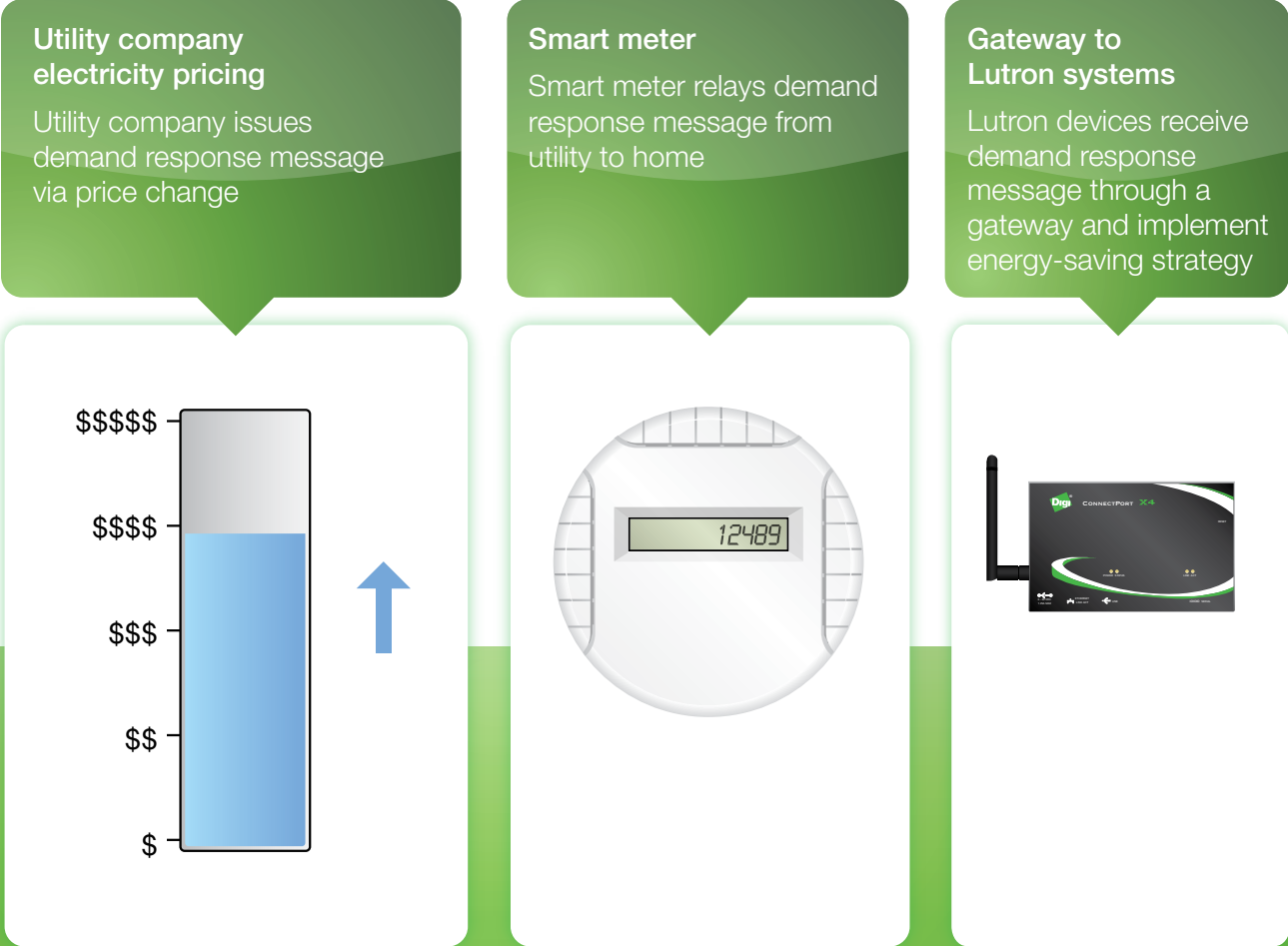
Examples of Lutron's Smart Grid solutions

While our role in Smart Grid is still evolving, here's a basic overview of what our Smart Grid solution will do, along with two examples of how it might work.

Price response

You receive a price change alert from your utility company—the current price for electricity has just increased by two dollars per kWh. Based on your preconfigured preferences, Lutron's Smart Grid solution automatically increases the thermostat cooling set point, lowers sun-facing shades, dims appropriate lights, and switches off unnecessary appliances.

You can monitor your energy consumption and pricing via your computer or mobile access device, and can manually override the system's actions if you desire.



Demand response

On a hot summer day, you receive a demand response alert from your utility company. The utility company's grid is near max capacity from all of the electricity currently being used, and the utility company would like you to reduce your usage per the terms of your contract. Based on your preconfigured preferences and how many people are in each room of your home, Lutron's Smart Grid solution automatically increases the

thermostat set point, lowers sun-facing shades, dims appropriate lights, and switches off unnecessary appliances.

When you check your in-home display, you'll see that you have freed up electricity capacity well beyond what you agreed to in your contract, so you decide to lower your thermostat back to its pre-alert set point.

Lutron Smart Grid ready products

Dimmers lower light levels.

Switches turn lights off.

Shades reduce heat gain from the sun.

Air conditioning temperature set point increases.

Appliance modules are switched off.



Dimmer



LED bulb



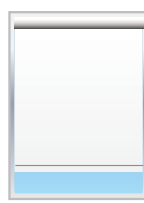
Switch



CFL bulb



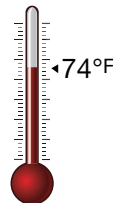
Shade keypad



Sivoia® QS shade



seeTemp



HVAC control

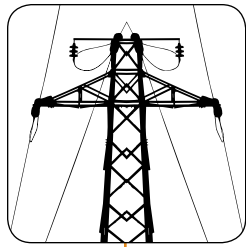


Appliance module



Dehumidifier

Smart Grid system design

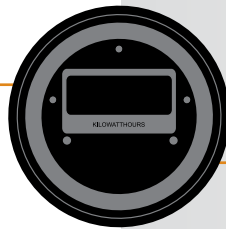


Utility company sends out demand response signal

Smart meter relays demand response signal from utility to home by Zigbee® or Ethernet.

Home Exterior

Home Interior



Smart meter

Zigbee (802.15.4)

OR

Ethernet



Gateway

RS-232

Ethernet



Router

Ethernet



Software for home computer allows user to pre-program load-shed strategies.



A Lutron system device receives demand response signal and lowers lighting, turns off pre-programmed loads, increases HVAC set point, and adjusts shades to save energy.

Wired communication

OR



Clear Connect™ RF technology

Homeowners can program how they would like to reduce their energy usage during load-shed periods to ensure comfort and convenience in their home.

Dimmers/switches



Shades



HVAC



Non-lighting loads



What you can do now

You can do a few things now to ensure you're ready for the Smart Grid when it's fully enabled. First, call your utility company and inquire about having a smart meter set up in your home so you can see where and when you're using the majority of your electricity.

Second, invest in a Lutron RadioRA® 2 or HomeWorks® QS system, which will help you save energy—and will allow you to be Smart Grid ready for the future.

To learn more about Lutron's Smart Grid solutions please visit www.lutron.com.

Questions?
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