



AXA can help you make sense of life insurance.

Take the next step Advice Retirement Life Insurance redefining standards AXA

Smart Grid Costs Are Massive, but Benefits Will Be Larger, Industry Study Says

By PETER BEHR of **ClimateWire**
Published: May 25, 2011

Deployment of smart grid technology from U.S. utility control centers and power networks to consumers' homes could cost between \$338 billion and \$476 billion over the next 20 years, but will deliver \$1.3 trillion to \$2 trillion in benefits over that period. The benefits will include greater grid reliability, integration of solar rooftop generation and plug-in vehicles, reductions in electricity demand, and stronger cybersecurity, according to a new [study](#) by the Electric Power Research Institute (EPRI).

PRINT SINGLE PAGE

ME AND EARL AND THE DYING GIRL WATCH TRAILER

More News From ClimateWire

- [How Does Your Building Rank Now in Energy Efficiency? Check the 2003 Data](#)
- [One Senate Republican, a Climate Believer, Considers Repealing Oil Subsidies](#)
- [Inland Storms, Growing in Violence, Drive Insurers to Accept Riskier Reality](#)
- [Offshore Wind Transmission 'Backbone' Clears One Hurdle, Faces Several More](#)
- [Va. Supreme Court to Rule on Insurance Coverage of Warming Claims](#)

The projected costs of deploying digital controls and applications on the grid, averaging \$17 billion to \$24 billion a year, will fall most heavily on utility distribution systems that deliver power to retail customers, EPRI concluded. About 70 percent of the total investment in the higher-cost estimate would be required to upgrade substations, lines, poles, meters, billing and communication systems on the retail side to enable smart grid technologies and replace aging equipment, the study says.

EPRI assumes that by 2030, 10 million plug-in vehicles will be on the road, and smart grid technologies will permit plug-in vehicles not only to take recharging power from the grid, but to feed power back in from their batteries to help meet sudden changes in electricity demand.

About 20 percent of investments in the high-cost scenario would go into upgrading the high-voltage transmission grid, including installation of sensors to alert operators to potential failures of transformers on the system, and purchases of equipment to protect the grid and make it more efficient, EPRI said.

The smart grid components going directly into the home would add about 10 percent to overall smart grid investment in the high-cost scenario. The average household could see its monthly electricity bill rise by \$9 to \$12 for smart grid products and services. EPRI concluded that consumer acceptance and adoption of smart grid applications would increase slowly.

About 10 percent of residential customers would have advanced energy management

ScanSnap

Go paperless
Scan to secure PDFs
For PC/Mac/Mobile
High-reliability

[see more](#)

iX500
wireless desktop scanner

MOST EMAILED

MOST VIEWED

1. THE END
The Right Paperwork for Your End-of-Life Wishes
2. GADGETWISE
Electronic Bidet Toilet Seat Is the Luxury You Won't Want to Live Without
3. As Celiac and Gluten Sensitivities Gain Prominence, Drug Companies Race to Find Treatments

systems by 2030, the study assumed. (EPRI does not include the costs of a new generation of efficient, programmable refrigerators and other appliances as part of the household's smart grid costs.)

'Ultimately ... the consumer pays'

Clark Gellings, an EPRI senior fellow and lead author of the new study, said that the division of investments among the distribution, transmission and customer segments should not obscure the fundamental reality: "Ultimately, at some point, the consumer pays for everything."

One of the many unknowns the authors encountered was where consumers would get their smart grid appliances and devices. The study reports "a growing belief" that these services will be delivered to customers as part of a package of services from new competitors in the telecommunications and information technology industries, rather than traditional electric utilities.

Utility executives and smart grid advocates agree that apart from the smart grid projects funded by \$4 billion in federal stimulus grants, most current smart grid investment is going into improving the efficiency, reliability and profitability of power supply, rather than reaching consumers directly. Recent studies conclude that while some tech-savvy consumers will line up for smart grid applications for the home, most residential customers are not eager to manage their daily energy use, particularly with electricity prices at relatively low levels.

Given the right financial incentives, though, many households may accept smart grid strategies that let utilities reduce power consumption in homes at peak periods of demand, when wholesale electricity prices are highest, some analysts conclude.

"Many of the experts who are studying the Smart Grid are increasingly adopting the view that a truly Smart Grid should require as little consumer participation as possible. The Smart Grid does not require consumer participation to succeed," the EPRI study says.

EPRI's study updates a 2004 report that estimated total smart grid investments of \$165 billion, one-third below the current study's top figure.

Gellings said this increase in the smart grid's cost is based on the expanded capabilities of the new technologies. "They reflect a newer, more advanced version of a smart grid," he said.

As the grid gets 'smarter,' electricity use slows

A major consumer benefit, according to the study, could be a reduction in electricity consumption. EPRI noted that the Energy Department's 2010 energy outlook forecasts a 1 percent annual growth rate in electricity consumption over the 2008-2035 period.

Demand response and efficiency gains enabled by smart grid technologies would reduce annual electricity growth to less than 0.7 percent, EPRI predicted. The growth rate in peak energy demand would be even lower.

1 | [2](#) | [NEXT PAGE »](#)

For more news on energy and the environment, visit www.climatewire.net. ClimateWire is published by Environment & Energy Publishing. [Read More »](#)



PRINT



4. [David Letterman Reflects on 33 Years in Late-Night Television](#)



5. [The Class of '90: Where Are They Now?](#)



6. [Jean Nidetch, 91, Dies; 72 Pounds Lighter, She Helped Start Weight Watchers](#)



7. [THOMAS L. FRIEDMAN On Trade: Obama Right, Critics Wrong](#)



8. [ECONOMIC SCENE Income Inequality Is Costing the U.S. on Social Issues](#)



9. [Report Says American Psychological Association Collaborated on Torture Justification](#)



10. [17-Year-Old Makes the First-Ever Charge From an Orthodox Yeshiva to West Point](#)

[Go to Complete List »](#)

[Show My Recommendations](#)

ELSEWHERE ON NYTIMES.COM



[Anna Kendrick on "Pitch Perfect 2" and not trying too hard](#)

• [Review: "The Casual Vacancy"](#)

• [Sign up for the Movies Update newsletter](#)

Store
Celebrate Mom With The New York Times

[SHOP THE GIFT GUIDE](#)

Ads by Google

what's this?

[Recover Energy from Water](#)

Replace your PRV with a hydropower turbine to generate electricity.

www.canyonhydro.com

 SINGLE PAGE

[Home](#) | [World](#) | [U.S.](#) | [N.Y. / Region](#) | [Business](#) | [Technology](#) | [Science](#) | [Health](#) | [Sports](#) | [Opinion](#) | [Arts](#) | [Style](#) | [Travel](#) | [Jobs](#) | [Real Estate](#) | [Autos](#) | [Site Map](#)
© 2011 The New York Times Company | [Privacy](#) | [Your Ad Choices](#) | [Terms of Service](#) | [Terms of Sale](#) | [Corrections](#) |  [RSS](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Advertise](#)