

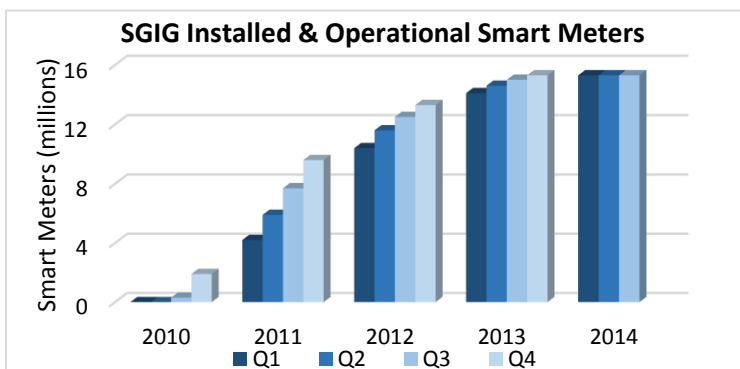
EnerKnol is an energy policy data company and the official policy partner of Clean Energy Connections. The EnerKnol Policy Primer provides an educational background on federal and state policy implications on the current event topic.

Grid Edge Analytics: Advances in Big Data, Intelligent Software and Analytics Behind the Meter

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The traditional one-way power flow model is shifting towards a decentralized structure with increased emphasis information processing, hardware technologies, and data standardization. This shift is highlighted by increased distributed generation, energy efficiency, and demand response, which is supported by a wide array of technologies. A key part of the technology stack is advanced metering infrastructure (AMI), which the Department of Energy (DOE) defines as “an integrated system of smart meters, communications networks, and data management systems that enables two-way communication between utilities and customers.” To support the advancement of grid modernization, the Smart Grid Investment Grant (SGIG) program was created under the Energy Independence and Security act of 2007, and amended under the American Recovery and Reinvestment act of 2009.

The SGIG program aims to accelerate the modernization of the nation’s electric transmission and distribution systems and promote investments in smart grid technologies. To date, the program – which matches up to 50 percent of project costs – has helped deploy more than 15 million smart meters and granted approximately \$4.15 billion to support AMI development.



SGIG Program AMI Expenditures

AMI Assets	Cost
AMI smart meters	\$2,587,700,830
Communications networks and hardware that enable two way communications	\$605,570,041
IT hardware, systems, and applications that enable AMI features and functionalities	\$639,133,090
Other AMI related costs	\$317,069,436
Total AMI cost	\$4,149,473,397

Source: Smartgrid.gov

Utilities in Florida (Florida Power & Light), Texas (CenterPoint Energy), and Nevada (NV Energy) respectively led smart meter deployments under the SGIG program. The utilities collectively deployed nearly 5.7 million smart meters and related AMI infrastructure.

State Efforts

Beyond federal programs, more than half of all U.S. states support smart grid and AMI development through legislative and regulatory requirements. According to DOE, nearly 75 percent of AMI installations have occurred in 10 states and the District of Columbia.

Key States to Watch

California
California passed smart grid legislation in 2008 (Senate Bill 17) to modernize the existing state electricity infrastructure. Also, in August, the California Public Utilities Commission (PUC) instituted a distributed resource plan (R.14-08-013) to address the impacts of increased DER integration in the state.
New York
The NYS Smart Grid Consortium is a public-private partnership to develop, test, and implement technologies help modernize the grid. New York’s Reforming the Energy Vision (REV) initiative aims to create a more efficient energy system, in part through increased customer engagement. Smart meter and increased access to customer energy use data will be key to achieving this part of REV goals.
Other States
Many states enacted legislation in 2008 and 2009 to leverage the SGIG program. These states include, but are not limited to Maine, Maryland, Ohio, Pennsylvania, Vermont, and Washington. In addition, a few of the states addressing wide-scale regulation of a decentralized energy model are Hawaii, Illinois, Maryland, Massachusetts, Ohio, and Oklahoma.

Sources: State Legislatures, Smartgrid.gov, EnerKnol

Looking Ahead

As federal and state programs continue to support distributed generation, energy efficiency, and AMI infrastructure deployment, state regulators and utilities must address a restructured energy generation and transmission model. These programs will also contribute to flattening energy demand growth, which will disrupt the traditional utility business model that is still – in most states – tied to quantity of energy delivered. In addition, increased access to customer energy use data through smart meter deployment will further support in-home energy efficiency-focused product development and demand response program expansion.

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