



Our Goals

To build a secure, interoperable, and integrated smart grid infrastructure in northeast central Ohio that improves distribution system efficiency and reliability and demonstrates smart grid technologies and consumer programs that are expected to:

- reduce energy consumption by 18,000 megawatt-hours (MWH),
- peak demand by 15 megawatts (MW), and
- carbon dioxide emissions by 16,650 tons over the project period.

Combined, energy and peak demand reductions represent enough energy to power 1,800 homes and show how smart grid technologies can help better utilize the dispatching of existing generation today while helping to delay the need for new generation in the future. In addition, the reduction in carbon dioxide emissions is equal to removing approximately 2,900 passenger vehicles off the road each year.*

**Based on 2000 EPA figures and adjusted slightly to reflect reduced emissions from new model cars.*

The AEP Ohio gridSMARTSM Demonstration Project will make the utility grid smarter and the people that use it more energy smart through a multitude of smart grid technologies that provide consumers greater control of their energy usage, enhanced energy conservation opportunities, improved customer services and greater service quality and reliability.

AEP Ohio's project is the first of its kind to fully integrate a broad range of commercially available products, innovative new technologies and new consumer products and services within a single, secure two-way communication network between a utility and its customers.

How will we do this? The first step is to test more than 13 field technologies, products and services designed to demonstrate the full benefits of installing a comprehensive distribution smart grid for consumers and AEP Ohio. The northeast central Ohio area was chosen because it provides an ideal proving ground for this demonstration.

Imagining gridSMART

The plan is based on the evaluation of a large number of technology and consumer business model combinations, and on the viability and practicality of scaling the demonstration results to the AEP Ohio service area and the nation.

- | | |
|---------------------------------------|--|
| ■ Smart Meters | ■ Smart Appliances |
| ■ Wireless Communications Network | ■ Programmable Controllable Thermostats |
| ■ Distribution Automation | ■ Direct Load Control Devices |
| ■ Integrated Volt Var Control | ■ In-Home Displays |
| ■ Community Energy Storage | ■ Web Portal |
| ■ Cyber Security and Interoperability | ■ Time Differentiated Pricing
(including Time-of-Use Rates, Critical Peak Pricing, and Real-Time Pricing) |
| ■ Simulation Tools | |
| ■ Plug-In Hybrid Vehicles | |

AEP's gridSMARTSM INITIATIVE

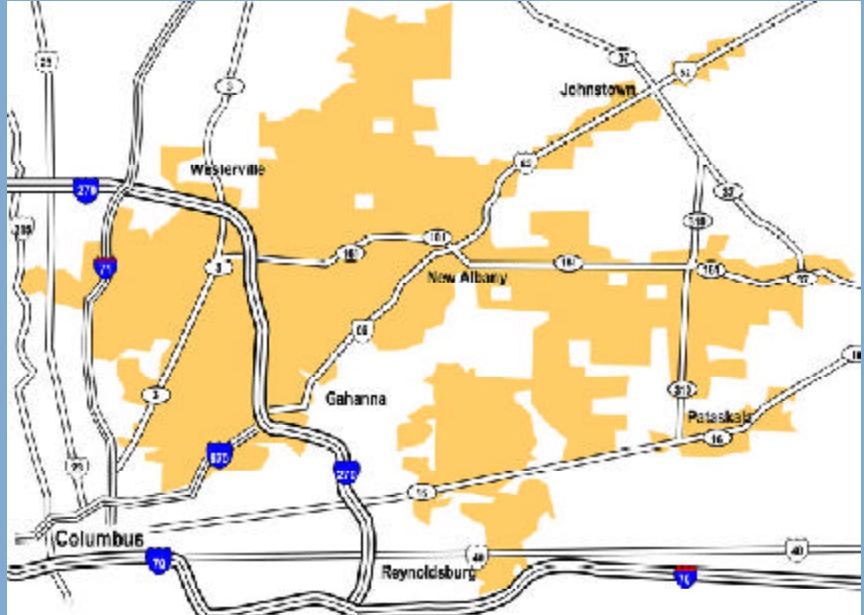
AEP's gridSMART initiative is a suite of customer programs and advanced technology initiatives that will transport us into a new era of energy delivery and customer services. It includes customer programs, new energy delivery system technologies, local generation and storage devices and AEP internal system efficiencies. The gridSMART initiative is a multi-year journey into the future of energy delivery and service.



Project Site: 150 square miles

Communities: Parts of Columbus, Clinton, Gahanna, New Albany, Reynoldsburg, Westerville, Jefferson, Johnstown, Blendon Township, Mifflin Township, Sharon Township, Plain Township, Minerva Park, Worthington, and Pataskala.

Area Significance: Common distribution voltages, diverse income levels, a rich blend of residential, commercial and industrial customers, and electricity rates below the national average. The service territory itself is representative of the Midwest in all categories and includes the Columbus, Ohio Metropolitan Statistical Area (MSA) that is well known as a test market for the nation.



Partnering for a gridSMART Future

AEP Ohio's project aligns with the goal of the U.S. Department of Energy to demonstrate how smart grid technology can enhance the safety, reliability and efficiency of energy delivery on a regional level. To accomplish such ambitious project objectives, AEP Ohio is working with a strong team of industry leaders, including Battelle, General Electric (GE); Pacific Northwest National Laboratory (PNNL), a Federally Funded Research and Development Center managed by Battelle; Lockheed Martin; S&C Electric; Silver Spring Networks; and PSC Utilidata. We also will be working with regulatory and stakeholder collaborators, including the Public Utilities Commission of Ohio (PUCO), the Ohio Consumers Counsel, PJM, and the Electric Power Research Institute (EPRI) and other commercial partners, who believe these efforts will demonstrate the value of integrated deployment of these emerging technologies to all electric system stakeholders, including consumers, shareholders, utilities, regulators and the general public.

