

Smart Homes - Vision

“Smart homes will improve the lives of Ontarians. Served by a marketplace that provides the tools, information, and incentives, consumers will be easily able to make intelligent energy choices that are in their interest. In the process, they will provide valued services to the electricity grid and benefit society.”

Goals

Secure exchange of usable information with and within the smart home.

A deep and vibrant marketplace providing a wide range of technological options for consumers.

Recognize and reward customer choices that benefit themselves, the system and the economy

Associated Smart Grid Principles:

General Principles:
Security and Privacy
Customer Control :
Access, Visibility, and Control
Participation in Renewable generation
Customer Choice,
Education

Associated Smart Grid Principles:

General Principles:
Interoperability, Safety, Security and Privacy
Adaptive Infrastructure :
Flexibility and Forward Compatibility

Associated Smart Grid Principles:

General Principles: Economic Development, Environmental benefits
Power System Flexibility: Control and Automation
Adaptive Infrastructure : Encourage Innovation, & Maintain Pulse on Innovation
Customer Control: Customer Choice, Education

Challenges

- Distributed decision-making:** decisions will be made by individual consumers. Result: less control by gov't or utilities.
- More points of failure:** Multiple parties and systems accessing data presenting security and privacy challenges
- Emerging interoperability standards** and related technologies are still evolving.
- Data access:** LDCs and non-utility 3rd parties will need to access the necessary data while maintaining security and privacy and fund these activities.
- Readiness disparity:** New-build vs. existing homes, LDC readiness, geographic differences, etc.

- Emerging interoperability standards** and related technologies are still evolving. What about mobile customers?
- Proprietary Infrastructure:** The Smart Metering Initiative will leave the province with several proprietary AMI networks, each with their own data access challenges (and costs) for home area networks.
- Alignment of interests:** Do vehicle and appliance manufacturers have the same incentives to achieve full interoperability?
- Around the edges of the electricity industry:** How will electrical devices in the smart home enable fuel switching, interact with components from other utilities, home entertainment systems, etc.?

- The competition question:** How should 3rd party providers be enabled to compete?
- Economic spinoffs:** Translating the development of the smart home into economic growth.
- A concerned customer base:** the smart home vs. a backdrop of rising energy costs.
- Aligning the benefits:** pricing and program designs need to create the right incentives.
- Communications and bringing the smart home case to consumers:** varying levels of education and needs.

Development Path

2012	<ul style="list-style-type: none"> •Security and privacy framework in place •Substantial take-up of the microFIT program •Real-time info available to consumers and tied to more price sensitive demand •Electric Vehicle pilot projects complete 	<ul style="list-style-type: none"> • Resolve smart meter data access question for consumers in terms of who pays. • Initial standards and systems in place to accommodate 1st generation electric vehicles. 	<ul style="list-style-type: none"> •Consumer offerings emerge beyond current initial offerings, providing consumers with more tangible, and real-time results •Completion of Smart Metering Initiative - all (or most) on a TOU price schedule
2015	<ul style="list-style-type: none"> • Smart home technology embedded in most consumer appliances. •More intensive use of real-time information for automated control and response of energy use. 	<ul style="list-style-type: none"> • Every home is enabled to have technology with interoperable energy mgt. devices. • Established and adopted interoperability standards for most types of smart home technologies including electric vehicles. 	<ul style="list-style-type: none"> •Developed market for third party service providers. •More robust products and services offerings emerge with customized features.
2020	<ul style="list-style-type: none"> •1 in 20 cars are electric vehicles (Ministry of Transportation target) •Residential consumers fully integrated into the operation of the grid and accrue the benefits of their decisions. 	<ul style="list-style-type: none"> • Smart homes able to support the integration of intelligent fuel switching and other energy storage options. • Proliferation of smart appliances and home area networks 	<ul style="list-style-type: none"> •A comprehensive slate of electricity consumption, production and DR services. •Residential consumers fully integrated into the operation of the grid and accrue the benefits of their decisions.
2030	<ul style="list-style-type: none"> •Smart Homes able to make use of multiple source of energy (wind, solar, geothermal and hydrogen as storage). 	<ul style="list-style-type: none"> • Proliferation of micro-grids • Smart homes able to support integration of energy storage and non-electric (water? Gas? Other?) utility functions 	<ul style="list-style-type: none"> • Smart Homes automatically optimize demand response, storage, dist. gen. & other functions to the customer's benefit as well as the grid.

Desired End States

- Every consumer has access to their home energy information, controls access to it, and is confident that their information is secure.
- Consumers, approved service providers and their smart home devices can easily access relevant, reliable and timely external information to support their energy use decisions.

A wide range of competitively-priced technical components of the smart home are readily-available in which vehicles, appliances, home generation and other components can interoperate with each other. These components are easily deployable by consumers with little or no assistance.

Every consumer has the option of choosing from many products, services and pricing options, and understands and receives the value of these choices. The value of these individual choices are aligned with the needs of the system and the economy.