



Energy Smart Community

Energy Smart Community

Building the utility of the future to support the community of the future

Foundational investments in people, processes, and technology....



....working with a world class research institution...



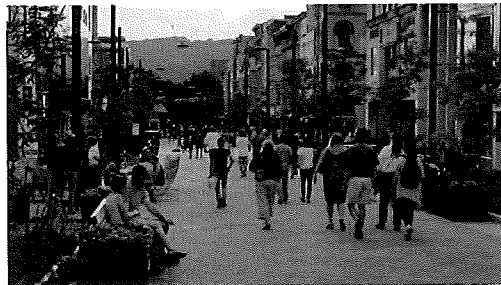
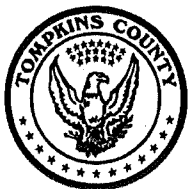
Cornell University



Cornell University
Cooperative Extension
Tompkins County



....within a very active community with strong energy and sustainability goals....



....coming together within the policy context of NY's Reforming the Energy Vision.



Reforming the
Energy Vision

Energy Smart Community

A test-bed for the next generation utility

Project Objectives

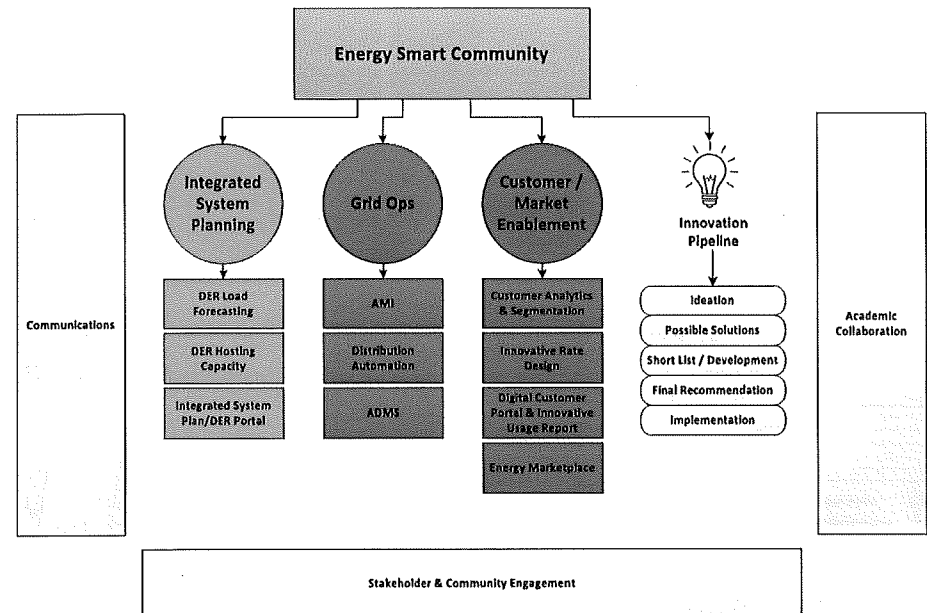
- **Testing** utility of the future systems and concepts
- Listening to and **learning** from customers
- Creating an environment of **collaboration**: Community stakeholders; academic institutions; market partners
- Launch-pad for **innovation**

Project Funding

- \$31 million project funding approved in June 2016 by the Public Service Commission as part of rate case

11 Project elements:

- Grid upgrades to substations, circuits, meters and grid management software
- Advances in planning systems and tools to include distributed clean energy and to provide information to public planners and private developers (“hosting capacity”)
- New customer-facing products, services, information and rates to allow for greater customer choice, control and customization
- Ongoing innovation and development

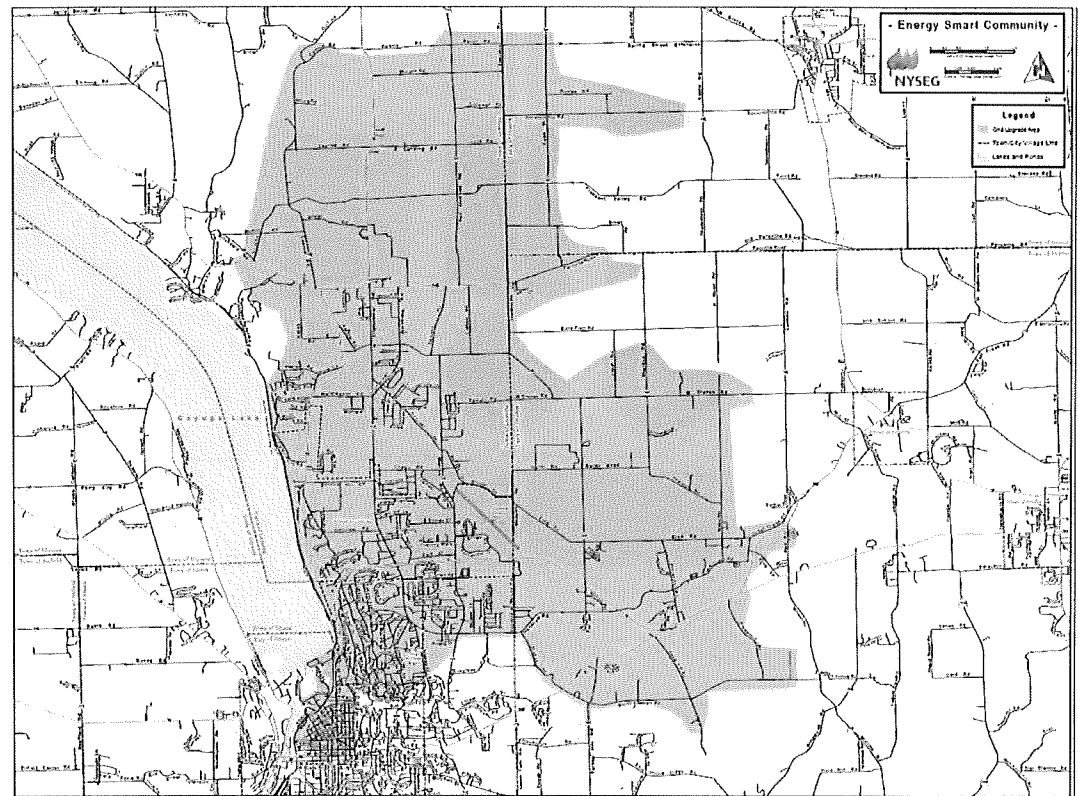


ESC Grid Upgrade Area: 4 Substations, 15 Circuits

- Automate substation and circuits – telecommunications system
- Deploy advanced grid management system
- Implement advanced planning systems and publish “hosting capacity”
- Install smart meters (12,400 electric, 7,300 gas)

Customer Class	% of Customers	% of load demand	% on Competitive Supply
Residential	84%	37%	18%
Commercial	14%	41%	40%
Municipal	2%	13%	66%
Industrial	<1%	9%	64%

Civil Division	%
C. Ithaca	27%
T. Ithaca	11%
V. Cayuga Heights	11%
T. Lansing	19%
V. Lansing	17%
T. Dryden	14%
T. Groton	1%
Total	



ESC Timeline

Timeline		2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase 1	Project Planning & Preparations	█															
Phase 2	Detailed Planning & Early Actions		█														
Phase 3	Enabling Technologies					█	█	█	█	█							
Phase 4	Platform Operations & Identification of New Programs						█	█	█	█	█	█	█	█	█	█	█



H1 2016

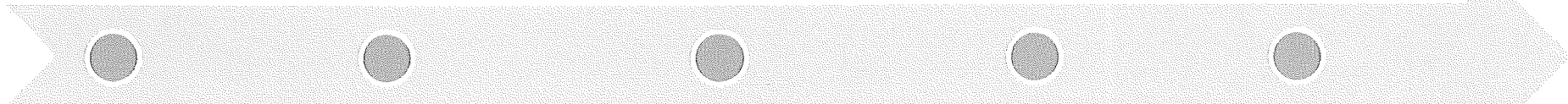
- Project Approved

H1 2017

- Customer solar and energy efficiency marketplace
- Grid upgrades: Automation, Telecommunications, Smart Meters
- Hosting Capacity

2018

- Continued Innovation and New Technologies



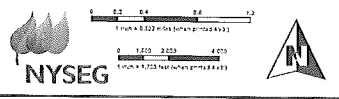
H2 2016

- Implementation Planning
- Market Research

H2 2017

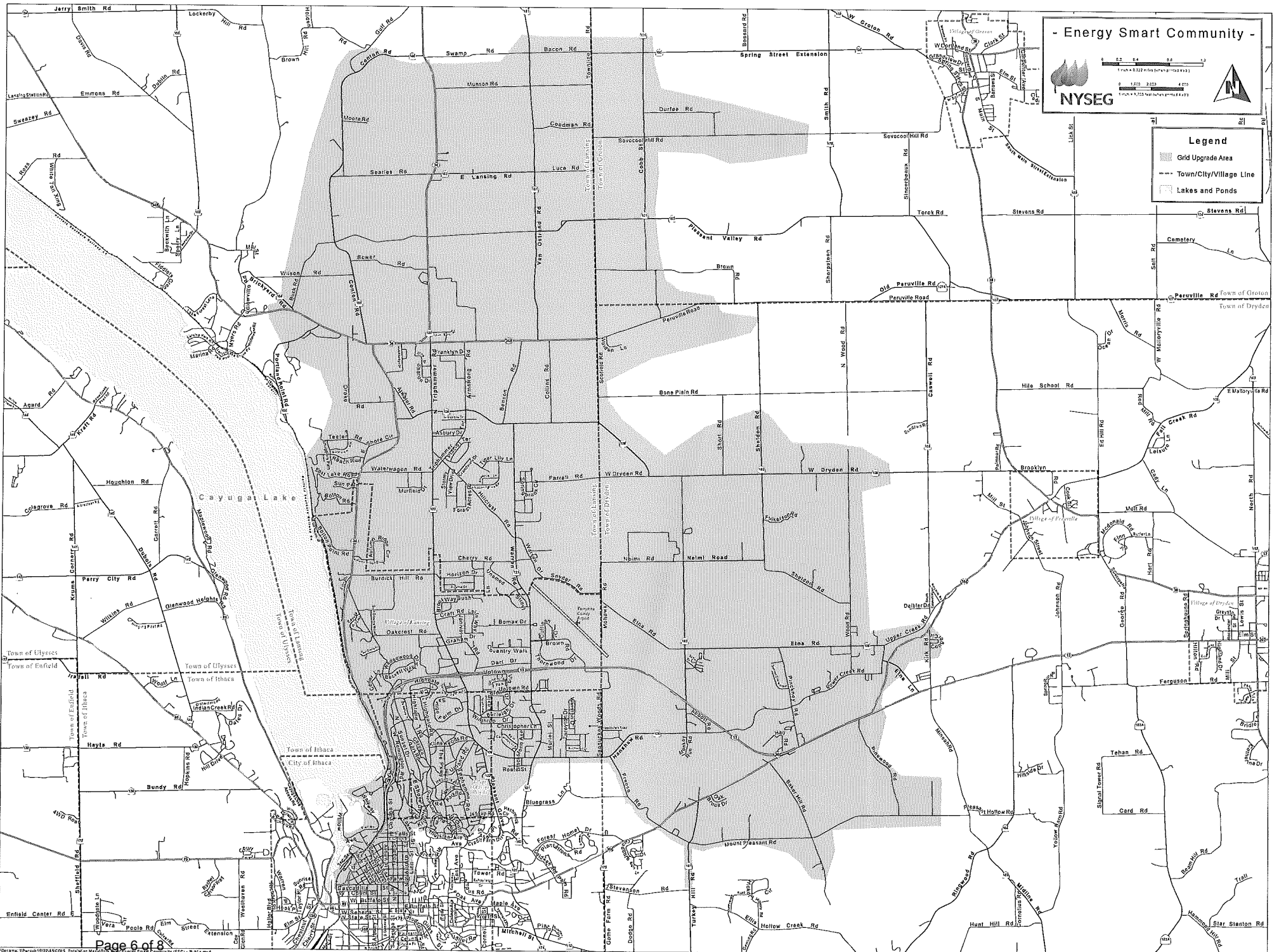
- Customer Portal & Usage Report
- New rate options

- Energy Smart Community -



Legend

- Grid Upgrade Area
- Town/City/Village Line
- Lakes and Ponds



Energy Smart Community Overview

Energy in the 21st Century

Since its inception about 140 years ago, America's model for generating and selling electricity has operated on the basis of building centralized generators to supply growing demand. Now, all over the United States significant changes are happening in how electricity is generated, distributed, managed, and consumed. These changes are required because we face new challenges and opportunities that come with the need to reduce the carbon footprint of our energy production and to maintain, or even improve, reliability while keeping energy affordable. There is a need to incorporate renewables such as solar and wind into the electricity grid, modernize our electric infrastructure, and offer customers more control and choice.

Reforming the Energy Vision in NYS

Taking up the task of transforming energy production and consumption, in NYS Governor Cuomo launched an initiative called Reforming the Energy Vision (REV). This initiative is fundamentally about utilities, customers, and third-party service providers having more knowledge about energy generation and usage, with the intention of creating new choices for customers as well as new business opportunities. One of the main goals of REV is to integrate renewables into the grid so that by 2030, 50 percent of NYS electricity will be generated through renewable resources. By the same year, there is a larger goal of reducing NYS greenhouse gas emissions by 40 percent from 1990s levels.

The Energy Smart Community

AVANGRID, the parent company of NYSEG, created the Energy Smart Community to develop and test the technologies, markets, and choices that will advance our own and NYS's clean energy goals before rolling them out across our service area. The Energy Smart Community strongly aligns with Tompkins County's ambitious energy plans, and provides the foundational technology and infrastructure to help support the county's goals. NYSEG will draw upon the expertise of its affiliates in the U.S. and in Europe, where Iberdrola (our global parent company) is a leader in smart grids and utility innovation. The initiative is comprised of two major elements: grid upgrades and enabling greater customer engagement.

1) Grid Upgrades

NYSEG is installing advanced grid sensing, controls, and system management on the electric distribution system to enhance reliability and to integrate greater levels of local, small scale, clean energy generation. Advanced planning tools are being implemented to provide more information to clean energy developers for siting community and commercial scale solar, wind and/or other clean energy sources. These grid investments will, collectively, provide one of the most advanced and innovative platforms for energy services and consumer engagement in the U.S.

2) Enabling Customer Engagement

The Energy Smart Community focuses on engaging customers and moving them toward being empowered and active participants of the energy ecosystem. New tools and technologies will provide customers with more choices and greater control over their energy use. NYSEG will offer new energy products, services and time of use rate options tailored to fit customers' lifestyles and energy goals.

Beginning in early 2017, NYSEG will launch a website for all customers in Tompkins County to make it easy for them to connect with third-party providers who offer energy efficiency services and residential roof-top and community solar PV installations. The marketplace will be expanded in later phases of the program to include energy efficiency products (e.g. smart thermostats) and additional services (e.g. home energy management systems).

NYSEG will install 12,400 smart electricity meters on selected electric distribution circuits in Tompkins County to provide the data needed to support the deployment of these advanced technologies and services. For example, customers with smart meters will have access to an online portal to view their electricity usage from the prior day, and set thresholds and alerts to help them manage their usage and bills. They will be provided with visual, engaging ways to better understand their current usage patterns, and tailored tips and recommendations on how they can take action to reduce their use. Customers can also choose to share their use data with external third parties who will offer even more enhanced choices and options. NYSEG will offer smart-home and other time of use pricing packages that could help customers' reduce their peak energy use and reduce their overall cost.

Any of the homes receiving a smart meter that also use natural gas will receive a smart gas meter. The gas meters will allow NYSEG to better understand gas usage which will inform future projects to improve customer service and reduce demand for natural gas.

About 65 million electricity smart meters have already been installed in the US. Baseline market research in Tompkins County indicates that 50% of customers are interested in a time of use plan that would be enabled by smart meters. More than 75% of customers are interested in the new information and management tools described above.

Cooperative Extension of Tompkins County and NYSEG have been hosting focus groups to listen to customer questions and concerns. We are working together to provide information, resources, forums and public meetings to address common questions about privacy, security, health and safety.

A Cornell University team is testing how battery storage, combined with time-of-use pricing and home energy management systems can further reduce peak demand.

We look forward to continuing our collaboration with Tompkins County and other stakeholders in the community, sharing information and increasing understanding, so that we can identify and make progress on shared goals.