

16th Annual Symposium on Energy in the 21st Century

Integration of Renewables into the NY Grid

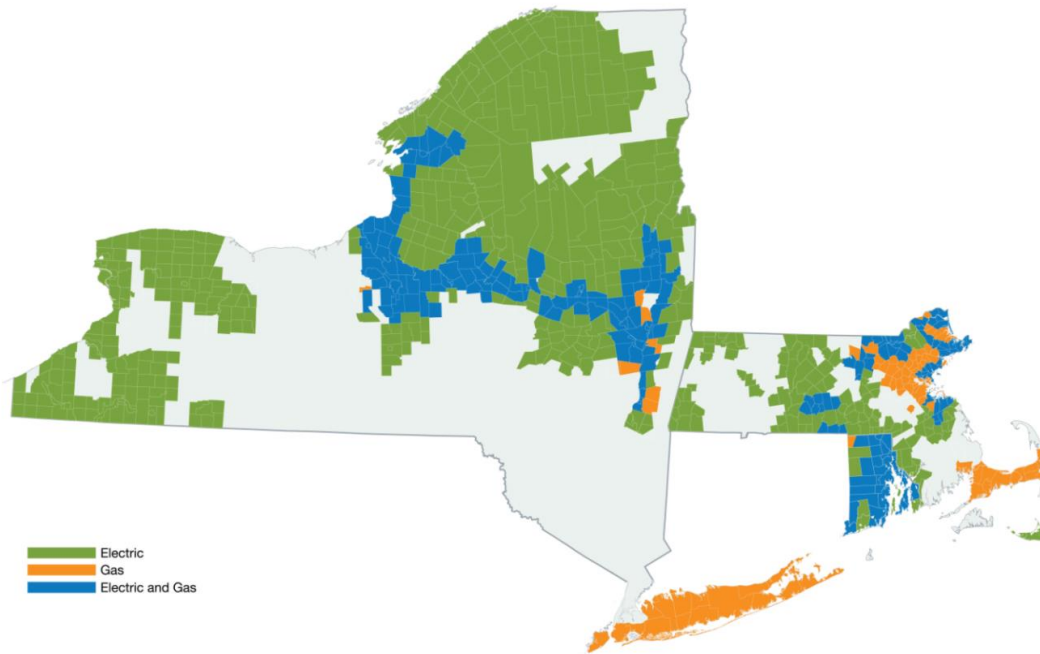
Chris Kelly

10/26/20

nationalgrid



National Grid's US Electric & Gas Service Territories

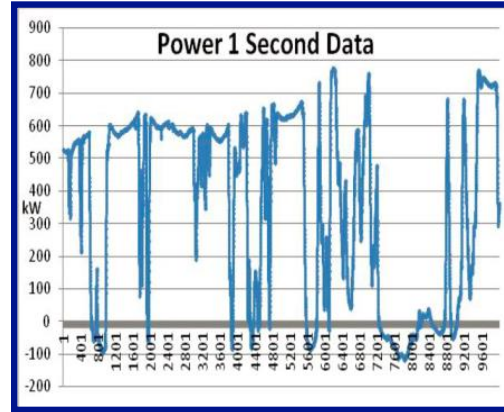
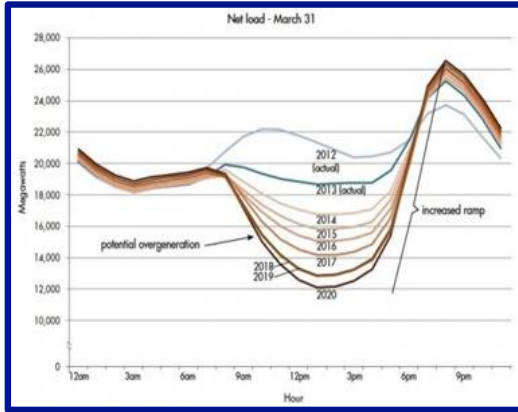


By the Numbers: Our Upstate NY Electric Business

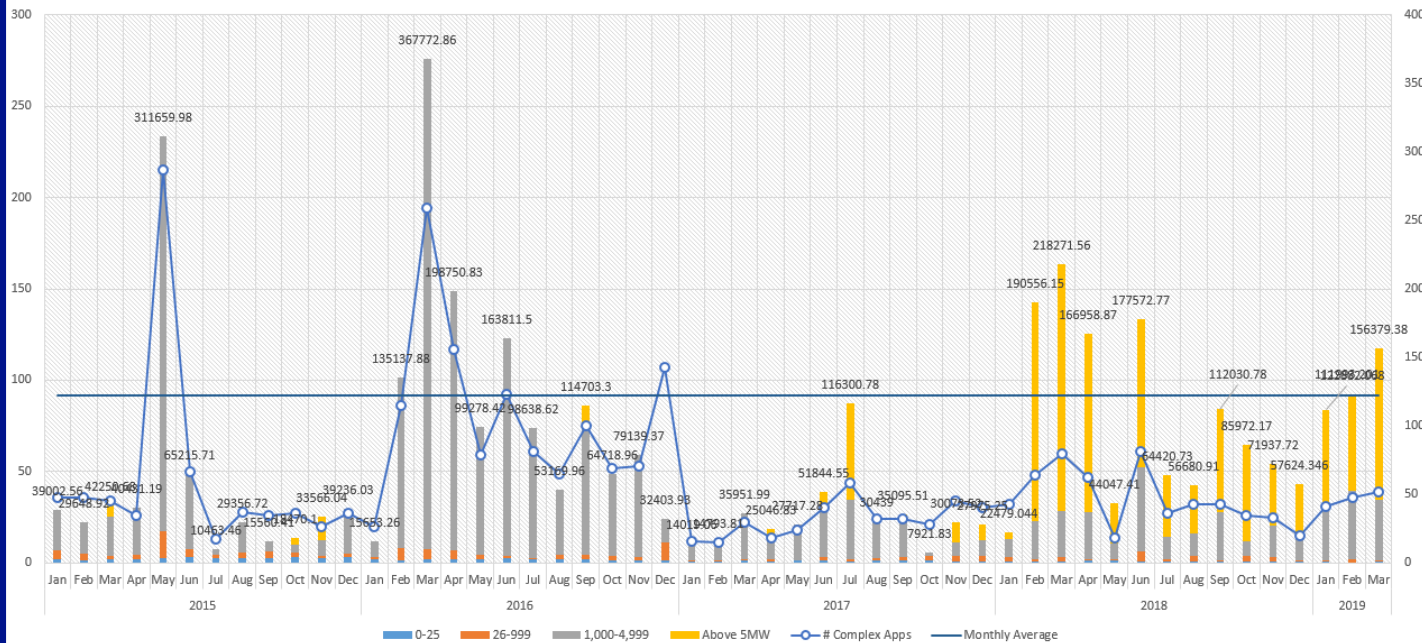
| | |
|---------|------------------------|
| 1.6M | Customers |
| 25,000 | Square miles |
| 5,000+ | Transmission miles |
| 3,000+ | Sub-transmission miles |
| 40,000+ | Distribution miles |
| 700+ | Substations |
| 2,000+ | Distribution feeders |

The Challenges of Renewable Energy

It is time to change our mindset, if something is always unpredictable that means it can be predicted!



DG Applications Received in NY since 2015



Average system size for complex applications: 5MW

Applications received in NY: 59,900

Connected: 22,000 projects/ 667 MW

In queue: 2.2GW

Keys to Integration of Renewables

Planning

- Forecasting distributed generation trends
- NYISO collaboration
- System planning

Funding

- Cost allocation for system modifications
- Multi-value projects

Communicating

- KPIs scorecard to measure performance
- Internal - key stakeholders/departments
- External – regulators, developers, municipalities

Connecting

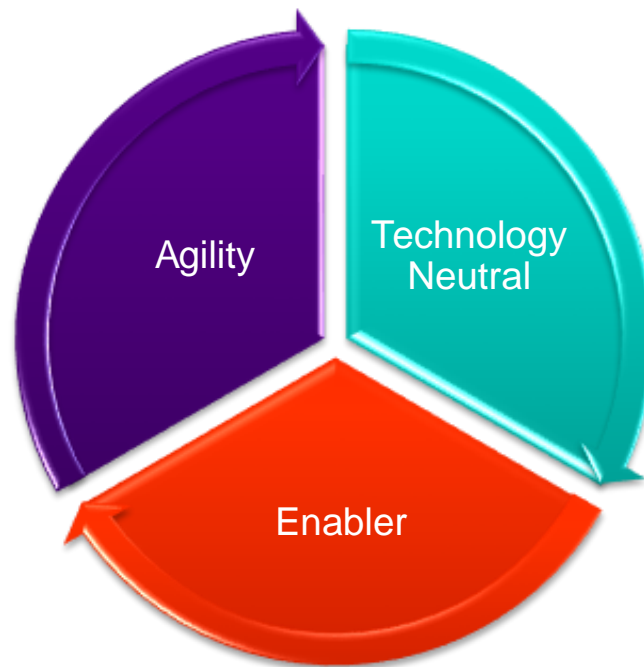
- System data transparency / hosting capacity maps
- Automation in application processing and study work
- Process efficiencies and improvements

Operating

- Progressing the Distributed System Platform
- Grid modernization
- R&D of emerging technologies with industry leaders

National Grid Strategy

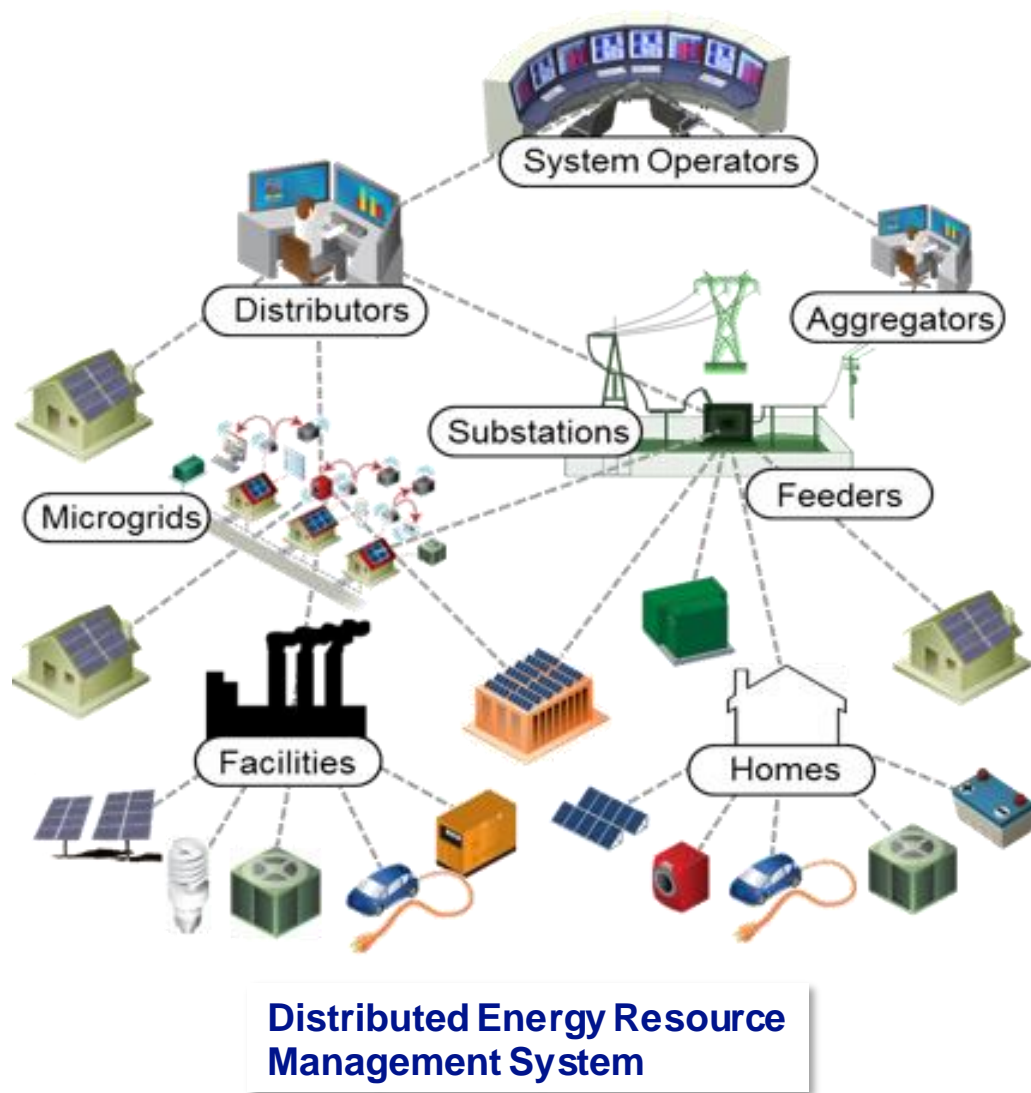
- Enable and optimize distributed generation –part of National Grid’s *Net Zero by 2050* framework.
- Adopt to the changes in technologies and location, and act as an enabler to state and customers’ needs.
- Continue to work with Distributed Energy Resource developers to offer new creative ways to integrate DER into our system.



Enable the energy transition for all by helping to achieve NY’s Climate targets (**CLCPA**), delivering and enabling cost-effective clean-energy solutions, improving our ability to integrate a greater portfolio of Distributed Energy Resources, and delivering a future **Distribution System Platform** model.

The Role of Integration

- Integration will be one of the key enablers of Net Zero.
- Grid management will become more granular - considering near real-time impacts, and specific locational values and constraints - to reliably manage an increasingly complex and dynamic distribution system.
- The modern grid operator will use integrated processes and tools to leverage Distributed Energy Resources as an efficient resource for customers and the resiliency of the grid.



Future is here

National Grid is investing hundreds of millions in our clean energy future and we're integrating learnings from across our US operations to help support this race against time.

Market Services

Non-Wires Alternatives
Electric Vehicles
Energy Storage



DER

Interconnections

Streamline
Interconnections



Information Sharing

System Data
Customer Data

Grid Mod

Investments

Field Deployments
AMI
CC Enhancements
Operational Data Mgmt

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