AGILe

NEW YORK STATE | Advanced Grid Innovation Laboratory for Energy

Fueling Innovation

Smart Solutions for Exploring an Affordable, Resilient, and Reliable Future Grid

Catalog of Services

For ISOs, Electric Utilities, Industry, Government and Academic R&D

A Digital Service of the New York Power Authority

AGILe

Advanced

Grid

Innovation

Laboratory for

energy

Meet AGILe

Best of the Best New York State Grid Models are at AGILe

We have vetted and benchmarked our grid models against others so you'll get quality results. With AGILe, you'll have access to a rich variety of statewide, high-fidelity models that are integrated for your use in one place—AGILe—to give you confidence in your results.

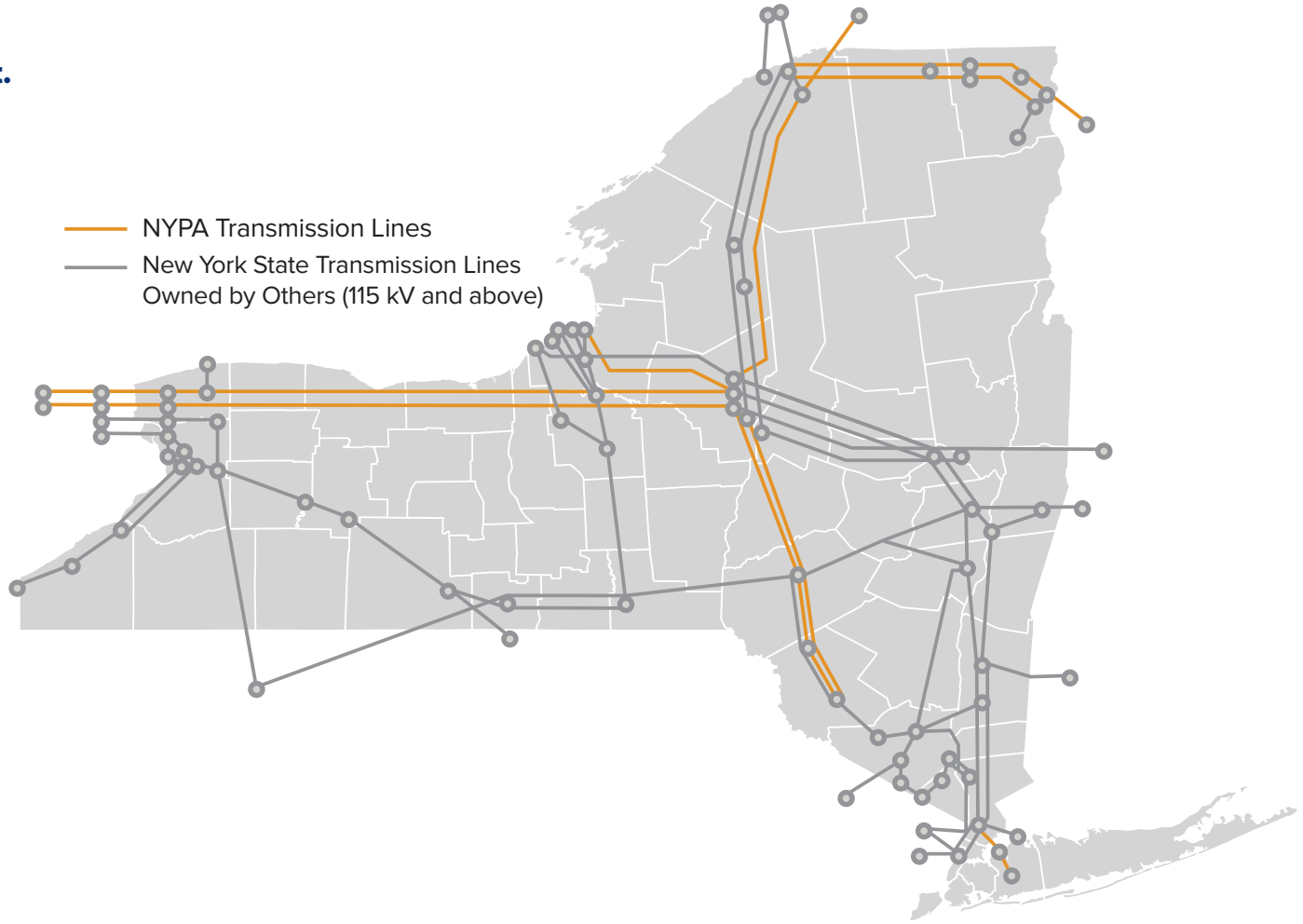
Located in Albany, NY and created by the NY Power Authority—the nation's largest statewide public electric utility and the first electric utility to receive ISO55001 recognition for Asset Management.

Use AGILe to advance your clean energy research and testing using **cost-effective, safe and practical** methods.

Cost-Saving Eliminate the need to invest in expensive grid-development software and hardware. AGILe's experts provide a high tech modeling environment and hands-on experience.

Safe Testing in digital simulations is a safer environment to reduce or eliminate field testing risks.

Practical AGILe provides access to its simulation technology on a pay-per-use basis, for cyber-physical systems analysis using validated and high-quality data sources, models, advanced software, and hardware tools.



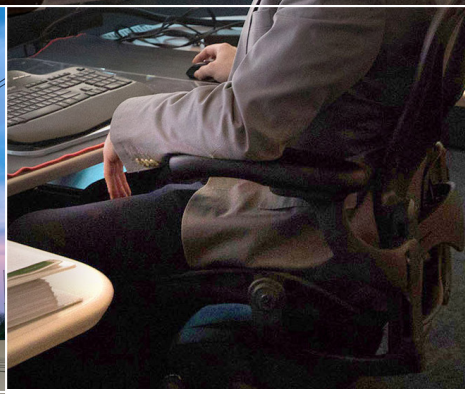
AGILe Provides Two-Way Testing

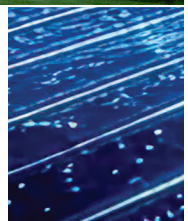
Reduce Your Risks Before Going Live

AGILe fills the gap between your new or existing technology and the New York State grid using accurate digital representations of grid operations, giving you better quality data safely and at less cost than field testing.

Capturing Data in Two Directions

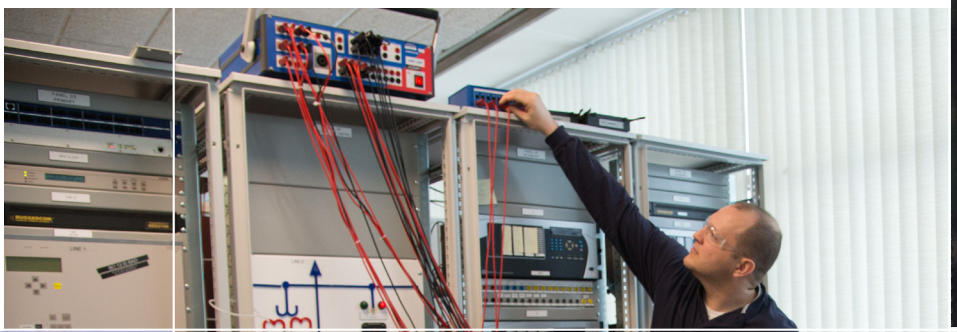
- Advanced technologies tested at AGILe receive performance data and insights on New York State grid operations.
- By analyzing field measurements, AGILe also provides insights to industry stakeholders by validating and confirming assumptions on developing technologies.





Research Topics Maximized by Using AGILe

- Grid Modeling & Simulation at Different Timescales & Domains
- Real-time Hardware & Software-in-the-Loop Simulation
- Communication Network Emulation
- Economic Analysis
- Application Development
- Hardware Testing



AGILe Tools

Modeling Software Assets

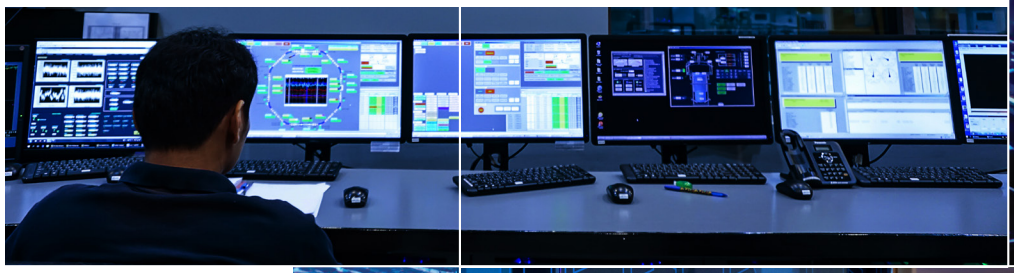
A state-of-the-art portfolio of technology is available for your use without investing valuable research resources.

Modeling Software Available

- PSS/E
- PSCAD
- LabVIEW
- MATLAB
- ePHASORSIM
- CYME
- HYPERSIM
- RSCAD
- EMTP
- EXata
- DSA Tools
- GE-MAPS
- ASPEN

Software Stack Already Utilized for New York State Grid Models

- RSCAD
- PSS/E
- ePHASORSIM
- ASPEN
- HYPERSIM
- DSA-Tools
- EMTP
- GE-MAPS
- OpenDSS



Hardware Assets

- Digital Real-Time Simulators
- Intelligent Electronic Devices
- Substation Mockup
- Amplifiers
- Protection & Control Devices
- Communication Network Emulator
- Cyber Intrusion Detection System
- Precise Time and Networking Equipment
- Physical and Virtual Workstations

Services

For Independent System Operators (ISOs)

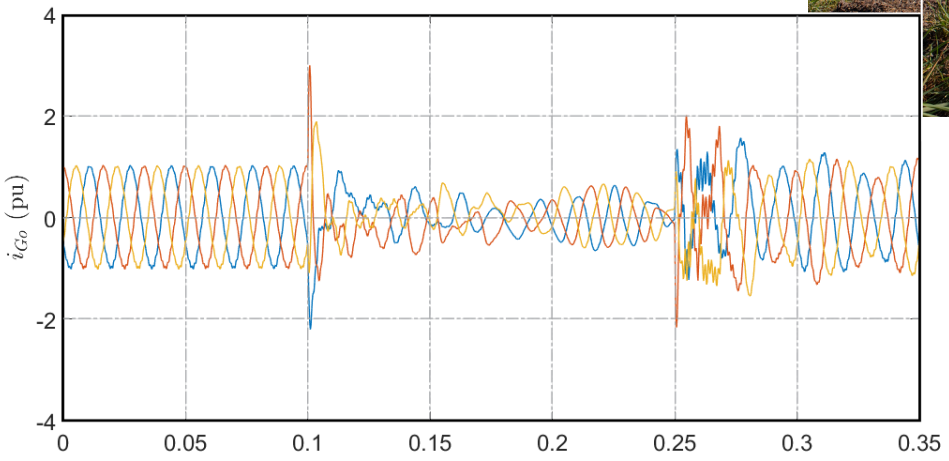
AGILe performs analyses using electromagnetic transient (EMT) simulations.

Inverter-Based Resource (IBR) Interconnection Studies

Helps refine new technologies and develop strategies, connecting renewable energy resources like wind and solar power generation with the electric grid.

Parametric EMT Studies for Switching and Insulation Coordination

Provides a shield between the electric grid and your device under testing to determine acceptable voltage levels.



For Electric Utilities

Advanced Computer Aided Studies for Power System Analysis and Design

AGILe provides multiple service options in different disciplines for electric utilities, including Planning, Protection & Control, Operations, Engineering, and Cyber Security.

Planning

Performing more accurate EMT studies using a full model of the New York State grid to analyze system-wide phenomenon

- Planning for high-impact low frequency events
- Transmission harmonics planning
- Transmission transient analysis
- Sub-synchronous oscillation (SSO)
- IBR-related studies (LROV, inrush, ferro-resonance)

Protection & Control

- Real-time HIL relay testing for protection and control applications
- Impact of IBR/DER on protective relay performance and coordination
- Sub-synchronous control interaction and SSR protection

Operations

- Real-time simulations for testing asset health monitoring systems
- Planning the impact of future renewable installations on the expected life of existing assets and associated costs

Engineering

- HIL testing for generator controller tuning
- Special Design Studies (TRV for lines, frequency scans, switching surges, capacitor switching, transformer energisation, lightning transients)

Cyber Security

Power system cyber security studies using a realistic and virtual industrial control system platform

- Power system malware detection & mitigation
- Artificial intelligence for cyber threat behavior analysis
- Cyber-attack detection hardware for IT/OT systems
- Cyber security education for utility staff

Key advantage: The virtual test platform enables tests without a need for actual IT/OT connectivity, thus reducing unnecessary operational outages or impacts

For Industrial, Government & Academic R&D

A One Stop Laboratory for Comprehensive Development and Testing

AGILe offers a wide variety of technology stack fused with validated NYS Grid Models for private and public organizations as well as academic institutions.

Realistic testing environment

Test & validation of R&D solutions before field deployment using:

- Real-time HIL test
- Realistic plug-and-play model of the New York State power system to enable system-level impacts of a new technology

Renewables integration

Running studies by use of laboratory-scale renewable resources and providing next generation tool chain development to address simulation needs in a future renewables-dominated power system

- Digital twin of the New York State grid
- Large-scale Transmission & Distribution co-simulation platform for studying futuristic large-scale DER integration scenarios
- ISO/DSO co-simulation platform
- Software automation tools for multi time-scale power system analysis

Cyber security studies

- Power and communication system real-time co-simulation platform
- HIL testing using industrial communication protocols for vulnerability assessment studies

AGILe provides access to its technology stack on a pay-per-use basis

- Commonly-used power system simulation software
- New York State grid model in different time scales
- Hardware equipment
  - Digital Real-Time Simulators
  - Power amplifiers
  - Protection and control equipment
  - Cyber intrusion detection system
  - Precise time and networking equipment
- Virtual laboratory for remote access to a variety of modeling tools

AGILe for Clean Energy Work

Make AGILe Your Choice.

The key advantage of AGILe's virtual test platform is the ability to test without any need for actual grid connectivity, eliminating negative impacts and outages.

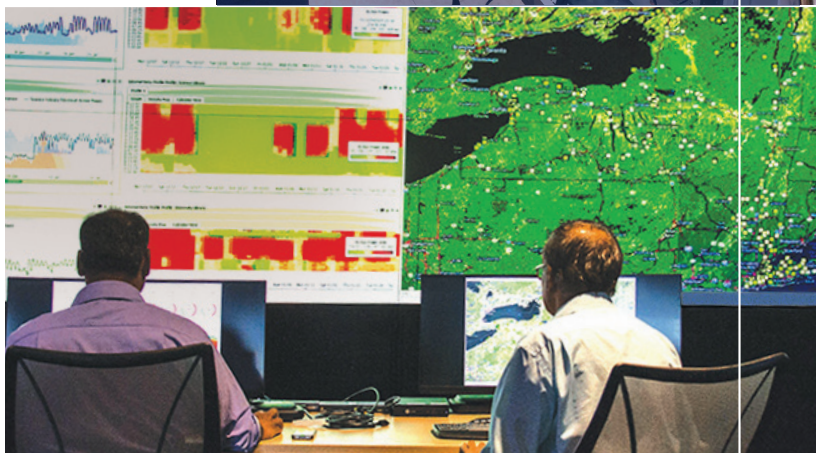
AGILe hosts a wide variety of technology that caters to all aspects of ISO/RTO, electric utilities, industry, government, and academic needs including:

- Commonly-used power system simulation software
- New York State grid model in different time scales
- Hardware equipment
- Virtual laboratory for remote access

Learn how AGILe can advance your clean energy work.

Launched in 2017 by the NY Power Authority—the largest state public electric utility in the nation—the main capabilities of AGILe include conducting real-time simulations for grid and hardware-in-the-loop testing.

Rigorous testing using the wide range of AGILe tools evaluates integrated grid solutions for future clean energy applications to accelerate the adoption and development of new and off-the-shelf clean energy technologies.



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For more information, contact us at
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