

POWER

in New York's Capital Region



Port of Albany

New York's Capital Region has been shaping the nation's power landscape for more than a century, from the first steam generator at General Electric's Schenectady plant in 1901 to hydrogen fuel cells now made by Plug Power in Latham and offshore wind tower components that will soon be assembled at Albany County ports. Backed by world-class R&D capabilities at GE Research and renewable energy laboratories at the University at Albany, Rensselaer Polytechnic Institute and SUNY Polytechnic Institute, the region's Power Cluster includes energy storage, fuel cells, power machinery and electronics, steam turbine and generator manufacturing, photovoltaics, offshore wind, and nanoelectronics. The region is already a renewable energy innovation hub. In 2020, Capital Region businesses were awarded \$18.6 million for renewable energy R&D from the U.S. Department of Energy (DOE) and the New York State Energy Research and Development Authority (NYSERDA), through its administration of National Offshore Wind R&D Consortium. That same year, one in 12 wind energy patents awarded by the U.S. Patent and Trademark Office listed an inventor from the Capital Region. The region also has unique nuclear assets. There is a naval nuclear propulsion technology R&D facility at Knolls Atomic Power Laboratory.

EMPLOYMENT (2020)

- ▶ **4,647** Power Cluster jobs
(manufacturing and power generation)

Supported by

- ▶ **5,880** R&D jobs
(physical, engineering, and life sciences)

TALENT PIPELINE (2020)

- ▶ **7** colleges and universities with engineering programs
- ▶ **1,400** engineering and engineering technologies degrees awarded



GE Research



Plug Power

ASSETS

- ▶ **R&D**
 - **Center for Future Energy Systems**, RPI
 - **Center for Fuel Cell and Hydrogen Research**, RPI
 - **GE Renewable Energy**, Schenectady
 - **GE Research**, Niskayuna
 - **Institute for Energy, the Built Environment, and Smart Systems**, RPI
 - **NYS Center of Excellence in Weather & Climate Analytics**, UAlbany
 - **NYS Center of Excellence Nanoelectronics and Nanotechnology**, SUNY Poly
 - **Renewable Energy Applications Laboratory (REAL) Lab**, UAlbany
- ▶ **NATIONAL OFFSHORE WIND RESEARCH AND DEVELOPMENT CONSORTIUM**
 - **NYSERDA**
 - **GE Research**
- ▶ **NUCLEAR**
 - **Knolls Atomic Power Laboratory**, Niskayuna
 - **Kenneth A. Kesselring Site**, Milton
- ▶ **ENERGY STORAGE**
 - **Distributed Solar Development**, Schenectady: one-stop shop for large-scale, custom solar PV and energy storage solutions
 - **Environmental One**, Niskayuna: utility-scale zinc hybrid cathode batteries
 - **Key Capture Energy**, Albany: large-scale energy storage projects
 - **MeOH Power**, Latham: direct methanol fuel cells
 - **Plug Power**, Latham: hydrogen fuel cell systems
- ▶ **NANOTECHNOLOGY**
 - **FastWatt**, Clifton Park: compact power converters for direct-drive renewable energy generators
 - **NOMIS Power Group**, Albany: silicon carbide semiconductor and module development
 - **Melno Microsystems**, Albany: electronic switches
 - **Pallidus**, Albany: silicon carbide ingots and wafers for power device applications
 - **Thermoaura**, Cohoes: thermoelectronics
 - **Magnolia Solar**, Albany: nanotechnology-based, high-efficiency, thin-film technology for high-efficiency solar cells
- ▶ **ONSHORE & OFFSHORE WIND ENERGY**
 - **AWS Truepower**, Colonie: renewable energy services for project advisory, performance engineering, due diligence, information services and grid solutions
 - **Endeavos Innovations**, Clifton Park: product development R&D, including multi-domain system dynamics modeling and finite element analysis for wind turbines and parts
 - **Marmen Welcon (Equinor)**, Albany: Offshore wind tower and transition pieces
 - **GE Renewable Energy**, Schenectady: onshore and offshore wind R&D
 - **Riggs Distler (Ørsted & Eversource)**, Albany: advanced offshore wind foundation components
 - **WRI Energy**, Glens Falls: weather forecasting and routing for offshore wind
- ▶ **EV/HYDROGEN INSTALLERS**
 - **The Standard Hydrogen Corporation**, Albany: development of multi-functional, onsite produced renewable hydrogen stations
 - **Livingston Energy**, Schenectady: EV charging station installation
 - **Aries Power**, Albany: EV charging stations and micro-grid solutions
 - **Cogen Power Technologies**, Latham: planning, developing, and operating cogeneration systems
- ▶ **PORTS**
 - **Port of Albany**
 - **Port of Coeymans**
- ▶ **POWER MACHINERY, ELECTRONICS, SUPPLIES & EQUIPMENT**
 - **Automated Dynamics**, Niskayuna: reinforced electrofusion couplers for oil and gas pipelines
 - **Blasch Precision Ceramics**, Menands: abrasion-resistant silicon carbide products for power generation
 - **Eonix**, Albany: advanced ionic liquid electrolytes for ultracapacitors
 - **Espey Mfg. & Electronics**, Saratoga Springs: military and industrial power supplies and transformers
 - **Free Form Fibers**, Saratoga Springs: laser-driven chemical vapor deposition technology for alternative nuclear fuels
 - **GE Power**, Schenectady: steam turbines and generators
 - **Combined Energies**, Latham: power conversion system with a DC to DC boost converter for energy storage and electric vehicles
 - **Orion Polymer**, Cohoes: anion exchange membrane (AEM) polymers and membranes for hydrogen electrolyzers, fuel cells and electric vehicles
 - **Mohawk Innovative Technology**, Albany: high-efficiency, oil-free rotating machinery products that include renewable energy turbogenerators, oil-free turbocompressors/blowers and electric motors
 - **MTI Instruments**, Albany: turbine engine/ rotating machine measurement and balancing systems
 - **SuperPower**, Glenville: high-temperature superconducting wires
- ▶ **SOFTWARE**
 - **Achillea Research**, Schenectady: analytics for extracting operational insights using smart meter data
 - **Ecolong**, Albany: secure peer-to-peer transactive platform using blockchain technology for real-time trading of renewable energy
 - **Flow Active**, Troy: AI-powered water leak monitoring IoT
 - **Kitware**, Clifton Park: advanced software solution for energy applications
 - **Siemens Power Technologies International**, Schenectady: North America Training Center for all of Siemens Power Transmission and Distribution
 - **Simmetrix**, Clifton Park: mesh generation tools for energy applications



GE Power