

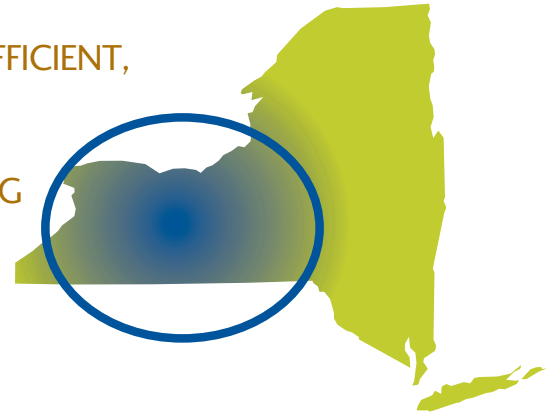
Powerful reasons

Solar Photovoltaic and
Solar Thermal Energy Assets in
the Greater Rochester, NY Region



Powerful reasons to choose the Greater Rochester, NY Region

OUR FUTURE DEPENDS ON OUR ABILITY TO DEVELOP EFFICIENT, AFFORDABLE AND SUSTAINABLE GREEN TECHNOLOGY ENERGY SOLUTIONS. THAT'S WHY COMPANIES LOOKING TO BE AT THE FOREFRONT OF THESE EMERGING TECHNOLOGIES ARE LOOKING TO LOCATE OR EXPAND IN THE GREATER ROCHESTER, NY REGION.



THE REASON IS SIMPLE: THE GREATER ROCHESTER, NY REGION HAS THE FINANCIAL INCENTIVES, RESEARCH AND DEVELOPMENT FACILITIES, READY RESOURCES, AND EXCEPTIONAL WORKFORCE ESSENTIAL FOR SUCCESS IN THE GREEN TECH FIELD.

Strong Incentives

We offer unique programs designed to encourage investment in solar and other green technologies.

- **Empire State Development Corporation's Solar Grade Silicon Metal Incentive.** Provides solar grade silicon at discounted rates for New York State businesses involved in the manufacturing of photovoltaic solar cells, integrated circuit chips and electronic semiconductors. New York State has allocated 1,000 metric tons or 25% of silicon produced by Globe Specialty Metals available annually at discounts up to 15%.
- **Clean Energy Technology Manufacturing Incentive Program.** This New York State Energy Research and Development Authority (NYSERDA) program provides funding for clean energy technology manufacturers to develop or expand a facility to produce innovative clean energy technology products. Clean energy technologies encompass "green" and "renewable energy" such as wind, solar (thermal electric and photovoltaic), hydro, biomass, and wave/tidal energy, and enabling or emerging energy-efficient technologies. Qualifying technologies include renewable PV, solar-thermal electric, wind, bio-electric, hydroelectric and wave/tidal.
- **Low-cost Hydropower.** Reserved by New York State law for companies planning to build or expand in parts of the Greater Rochester, NY Region, this program offers hydroelectric power at an extremely affordable cost. Allocations depend on project size and scope and, in particular, new job creation.
- **New York State Empire Zone Program.** Empire Zones are geographically defined areas where businesses have access to vacant land, existing industrial and commercial infrastructure, a skilled workforce, and abundant resources such as power and water supplies. Empire Zones offer numerous tax incentives for qualifying businesses located within the zone.

New York State Renewable Portfolio Standard requires that electricity providers obtain 24% of their power from renewable energy resources by 2013

Ready Resources

UPSTATE NY COMPANIES PRODUCE THE SPECIALIZED MATERIALS TO SUPPORT EVERY LINK IN THE SOLAR PHOTOVOLTAIC SUPPLY CHAIN.

Aluminum Extrusion

Alumi-Tech LLC [www.alumi-tech.net]
Keymark Corporation [www.keymarkcorp.com]
Klein Steel [www.kleinsteel.com]
Rochester Aluminum Smelting
[www.rochesteraluminum.com]

Diagnostics & Automation

Meikle Automation [www.meikleautomation.com]
Solar Sentry [www.solarsentry.com]

Industrial Gases

Linde Gas [www.lindegas.com]
Praxair [www.praxair.com]

Installations

Quality Solar Concepts [www.solar4me.com]
Rochester Solar Technologies [www.solarrochester.com]

Lamination & Advanced Coatings

Applied Coatings [www.appliedcoatingsgroup.com]
Eastman Kodak [www.kodak.com]
EMF Corporation [www.emf-corp.com]
Saint-Gobain Technical Fabrics [www.sgtf.com]

Low-iron Float Glass

Corning [www.corning.com]
Guardian Glass [www.guardian.com]
Rochester Insulated Glass
[www.rochesterinsulatedglass.com]

Machined Graphite Products

MWI [www.mwiedm.com]

Polyvinyl Fluoride Products

DuPont [www.dupont.com]

Solar Grade Silicon Metal

Globe Specialty Metals [www.glbsm.com]
Kayex [www.kayex.com]

Solar Tapping Ribbon

Indium Corporation [www.indium.com]



Precision and Advanced Manufacturing

THE GREATER ROCHESTER, NY REGION HAS A RICH HISTORY OF HIGH-TECH MANUFACTURING AND A PROVEN COMMITMENT TO EXCELLENCE.

The birthplace of groundbreaking companies like Kodak, Xerox and Bausch & Lomb as well as numerous small- and medium-sized technology firms, the region is home to a significant network of suppliers, vendors and service providers that support these types of companies.

- The Progressive Policy Institute ranks Rochester 12th among U.S. metropolitan regions in the number of high-tech jobs
- More than 77,000 people are employed in the Greater Rochester, NY Region's manufacturing industries, representing 14% of the workforce
- High percentage of the total manufacturing workforce is employed in high-tech precision manufacturing with experience building complex, electro-mechanical systems
- The Upstate Tooling and Manufacturing Association is regarded as one of the most technologically advanced and diverse clusters of contract machining and manufacturing associations in the U.S.

Foreign Trade Zones

There are two General Purpose Foreign Trade Zones (FTZ) in the Greater Rochester, NY Region designed to assist local companies engaged in international trade-related activities. They offer the following benefits:

- Elimination of duties on items exported directly from FTZ
- Elimination of duty drawback
- Reduction of duties/tariff inversion – allowing for the payment of duties on final products vs. raw materials components
- Quota handling
- Reduction of weekly entry
- Duty deferral – duty only assessed when entered into commerce
- Less initial cash outlay
- Partial draw allowing you to use only what you need
- No time limit on merchandise to be stored in the Zone
- Current Foreign Trade Zones located in Downtown Rochester and at the Rochester Technology Park

Transportation Infrastructure

LOCATING HERE PUTS YOU CLOSE TO MAJOR DOMESTIC AND INTERNATIONAL MARKETS WITHOUT THE MAJOR MARKET COSTS. MORE THAN ONE-THIRD OF THE COMBINED POPULATION OF THE U.S. AND CANADA LIVE WITHIN 500 MILES OF ROCHESTER, NY.

Air

- The Greater Rochester International Airport provides over 200 flights per day to more than 20 cities/22 airports, annually serving more than 2.5 million passengers

Ground

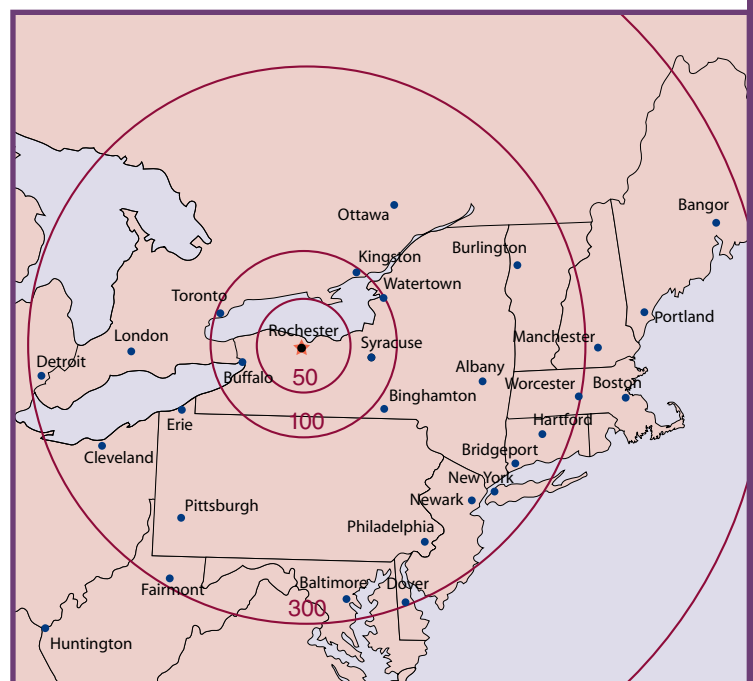
- Mean travel time to work is 20.5 minutes
- Highly-ranked among 30 peer cities for least congested freeway lane miles

Rail

- Three Class I freight carriers
- Ten Class III shortline railroads provide services throughout the region
- Railroad route capacity is about 50–60 freight/passenger trains per day

Water

- Seaport access at the Port of Rochester connects the region to the entire Great Lakes St. Lawrence Seaway System



Competitive Wages



AVERAGE WAGES IN THE GREATER ROCHESTER, NY REGION MAKE THE REGION EXCEPTIONALLY COMPETITIVE, WITH MANY KEY OCCUPATIONS PROVIDING LOW-COST ADVANTAGES COMPARED TO OTHER SOLAR AND GREEN TECH REGIONS.

Wage Comparison	Rochester, NY	Albuquerque, NM	Baltimore, MD	Boston, MA	Phoenix / Scottsdale, AZ	Portland, OR	San Diego, CA	San Jose, CA	Toledo, OH
Chemical Engineers	\$78,460	\$94,270	\$98,120	\$89,400	\$78,780	\$81,130	\$89,810	\$118,680	\$72,570
Electrical Engineers	\$74,160	\$87,160	\$89,240	\$89,240	\$82,050	\$86,640	\$94,250	\$105,570	\$61,180
Mechanical Engineers	\$67,860	\$93,260	\$86,780	\$87,650	\$74,650	\$78,520	\$81,370	\$101,840	\$68,380
Engineering Technicians, Except Drafters, All Other	\$45,390	\$55,750	\$60,930	\$56,650	\$57,740	\$51,220	\$59,380	\$64,430	\$46,670
Electrical and Electronic Equipment Assemblers	\$26,940	\$28,330	\$35,190	\$33,070	\$36,270	\$28,090	\$27,110	\$36,210	\$30,810
Maintenance and Repair Workers, General	\$34,780	\$31,410	\$37,350	\$41,960	\$35,250	\$37,820	\$36,740	\$46,550	\$37,670
Inspectors, Testers, Sorters, Samplers, Weighers	\$33,930	\$36,350	\$40,030	\$38,780	\$33,580	\$36,730	\$34,880	\$40,310	\$39,490

Source: Bureau of Labor Statistics: Occupational Employment Statistics, May 2008

Local Workforce

THE GREATER ROCHESTER, NY REGION IS CONSISTENTLY RECOGNIZED FOR THE HIGH QUALITY OF ITS WORKFORCE.

- Approximately 29,200 unemployed persons actively seeking work
- 30,900 currently employed workers have indicated an interest in changing jobs
- Roughly 14,400 people, neither employed nor seeking work, might re-enter the workforce for the proper job
- In total, the Finger Lakes area has 74,500 available workers for new or expanding businesses

Source: *The New York Finger Lakes Area Labor Availability Report, January 2006*

World Leader in Optics and Photonics

THE GREATER ROCHESTER, NY REGION IS A WORLD LEADER IN OPTICS AND ROLL-TO-ROLL FILM MANUFACTURING, KEY ENABLERS FOR NEXT GENERATION SOLAR APPLICATIONS.

- More than 50 optics companies in Rochester, including Bausch & Lomb, CooperVision, Pictometry and ITT
- World-class optics education programs, research labs and facilities
- 55% of the world's optics PhD degrees were conferred by University of Rochester

Green Tech Educational Initiatives

The Greater Rochester Clean Energy Education Partnership is a collaboration between the Rochester Institute of Technology (RIT) and Monroe Community College (MCC), with support from the New York State Energy Research and Development Authority (NYSERDA). This collaboration:

- seeks to fill a number of gaps in the education and training continuum for installation and engineering professionals working with clean energy technologies in New York
- is establishing the necessary facilities, and creating a common body of knowledge derived from collaboration between industry and faculty from the two academic institutions
- has created certificates, coursework and training programs for engineers and building trades professionals in photovoltaics, wind power, solar thermal systems and fuel cells
 - includes concentrations and certificates in Clean Energy Power Systems for undergraduate engineering and engineering technology students course modules for electricians and HVAC professionals on the installation of clean energy technologies



Research and Development and Education

Rochester Institute of Technology

RIT's Golisano Institute for Sustainability (GIS) consists of a team of tenure and tenure-track faculty, research faculty, engineers, technicians, project managers and students, all dedicated to an interdisciplinary approach to removing barriers to achieving sustainable production systems.

Research centers with the Golisano Institute of Sustainability include:

- NanoPower Research Labs – dedicated to the creation and utilization of nano devices and materials for power generation and storage
- National Center for Remanufacturing and Resource Recovery – internationally recognized as a leading center for applied research in remanufacturing
- Center for Sustainable Production – dedicated to enhancing the environmental and economic performance of products and processes
- Center for Sustainable Mobility – evaluates the environmental and economic impact of different alternative fuel and propulsion technologies on the entire U.S. public transportation system
- Systems Modernization and Sustainment Center – develops technologies for optimal life cycle design, management and modernization of large equipment systems
- New York State Pollution Prevention Institute – designed to enhance understanding of pollution prevention techniques while also disseminating technologies to enhance these efforts

NYSERDA Partnership: A new Research and Education Collaboration between NYSERDA and RIT:

- Promotes Upstate New York as a clean energy hub
- Enhances development of alternative energy technologies
- Expands research initiatives in hydrogen fuel technology
- Promotes development of a clean energy incubator
- Makes possible the creation of a clean energy research and training center

University of Rochester

University of Rochester's Energy Research Initiative was created to meet the challenge of energy for sustainable development and global prosperity delivered with responsible environmental stewardship. New science acquired through research will form the basis for future technologies and wide-scale improvement of existing approaches. The Initiative is focused on the following research areas:

- Solar Energy
- Hydrogen Fuel
- Fusion Energy
- Energy Efficiency and Conservation
- Economic and Public Policy

U of R's Chemical Engineering Lab is home to several world-class researchers, including Dr. Ching Tang, widely recognized for the invention of high-efficiency Organic Light Emitting Diodes (OLEDs), as well as several foundational inventions in the area of thin-film solar cells.

Cornell University

Cornell Center for Materials Research is a National Science Foundation funded research center working on new materials for solar, fuel cell and other energy-related applications

Cornell University's College of Engineering focuses on solar energy research, encompassing inorganic, organic and related materials.

- The development of multi-junction solar cells based on lattice mismatched systems such as AlInN and GaInN solar cells
 - Discovered at Cornell, these systems have shown to be perfectly matched to the solar spectrum
- Pursuing organic donor/acceptor blends and heterojunctions as low-cost solar cell alternatives by combining synchrotron x-ray scattering and multiscale modeling to understand the connection between structure and properties in prototypical systems such as pentacene/fullerene junctions
- Efforts in hybrid cells include dye-sensitized cells with self-assembled titania networks, and systems based on semiconductor nanoparticles with tailored energy bands and high multiexciton generation efficiency
- Solar energy research also involves the production of hydrogen by splitting water directly using wide bandgap semiconductors in both the single crystal and powder form

Alfred University

Center for Environmental & Energy Research at Alfred University is a multidisciplinary research and education program which utilizes Alfred's expertise in ceramic engineering, materials science/engineering and related programs to develop new materials, processes, products and programs that promote environmental sustainability.

University of Buffalo

Using new approaches to photochemistry, University of Buffalo chemists are developing novel, self-assembly techniques for fabricating inorganic nanomaterials that may play a role in creating more efficient solar cells. Researchers are studying and characterizing photo-induced surface electron transfer reactions occurring within self-assembled inorganic nanomaterials, the reactions that drive solar cells and photocatalysts. In addition, researches are developing a self-assembly technique for attaching quantum dots to metal oxide films, and improving upon the targeted patterning could lead to the increased efficiency of light harvesting.

Community Colleges

Monroe Community College, Genesee Community College and Finger Lakes Community College provide certificate and associate's degree programs in precision machining and tooling, optics, engineering and other technical fields and have the proven capacity to customize programs to the needs of local businesses.

Syracuse Center of Excellence in Environmental and Energy Systems

The SyracuseCoE is an industry-university collaborative enterprise that creates environmental and energy innovations for a sustainable future. Members address global challenges in three focus areas: clean and renewable energy, indoor environmental quality, and water resources.

Semiconductor Industry

Leading semiconductor companies from around the globe are choosing to invest their futures here, tapping into the New York market, one of the largest and richest consumer and business markets in the world. As home to IBM's most technologically advanced 300-mm fab, Sematech North and Tokyo Electron's newest research and development facility, New York has assembled the assets necessary for semiconductor technology to thrive. The following companies either have existing or planned operations in New York or partner with our research institutions:



In addition to the semiconductor industry activity taking place throughout New York State, there are also several important assets located within and around the Greater Rochester, NY Region. These resources include:

RIT's Semiconductor & Microsystems Fabrication Lab

Rochester Institute of Technology started the nation's first Bachelor of Science program in Microelectronic Engineering in 1982, and since then the program has kept pace with the rapid advancements in semiconductor technology.

The program has constantly advanced its integrated circuit fabrication laboratory in order to graduate students with state-of-the-art knowledge, becoming immediate and efficient contributors to their company or graduate program.

Today, the program serves as a key resource for research in semiconductor devices, processes, MEMS, nanotechnology and microsystems.

Infotonics Technology Center

Infotonics is a world-class semiconductor and microsystems research, development and pilot production facility.

With 22,000 sq. ft. of cleanroom space, featuring 10,000 sq. ft. of Class 100 space and 12,000 sq. ft. of Class 1000 space, Infotonics delivers complete solutions tailored to specific needs and requirements, including:

- Concept development
- Prototyping
- Packaging
- Pilot production
- Low volume manufacturing
- Business development

The Greater Rochester, NY Region has the IDQ your business needs to succeed.

INTELLECTUAL DENSITY QUOTIENT (IDQ) IS DERIVED THROUGH A COMPARISON OF A REGION'S POPULATION TO ITS RANKINGS IN A CORE LIST OF RECOGNIZED STANDARDS OF SUCCESS AND ACHIEVEMENT:

- The number of advanced degree holders
- The number of patents issued per worker
- The number of workers trained to excel in our knowledge-based economy

A high IDQ is an indication of a region's potential for productivity and sustainable economic health, and it helps perpetuate a pervasive and contagious culture of success.

THE GREATER ROCHESTER, NY REGION HAS AN IDQ THAT IS COMPETITIVE WITH ANY REGION AROUND THE COUNTRY.

- We outperform well-known high-tech regions that are up to 5 times our size
- We produce more patents per worker (2.77) than San Jose and Austin
- A greater percentage of our population is classified as knowledge workforce (38.6%) than Raleigh or Seattle
- 5.1% of our population is enrolled in college – a higher percentage than Boston or San Francisco
- We're the only community in the country to be home to the Best Small, Medium and Large Companies to Work for in America (ranked by the Great Place to Work Institute)

Match us up against other regions around the country and you'll see we have the resources, the incentives and the IDQ you need to succeed in the green tech field.





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