

# The Business of CleanTech...

## Careers and Business Development Opportunities

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# *Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century*

**By the year 2030, the renewable energy and energy efficiency industries could generate up to \$4.5 trillion in revenue in the U.S., but only with the appropriate public policy, including a renewable portfolio standard, renewable energy incentives, public education, and R&D.**

**The 40 million jobs that could be created in renewable energy and energy efficiency by 2030 are not just engineering-related, but also include millions of new jobs in manufacturing, construction, accounting, and management.**

American Solar Energy Society, Inc. (ASES) <http://www.ases.org>

# *Agenda*

- Overview of CleanTech
- Regional Centers of Innovation
- New York State Advantage
- Career and Business Opportunities

# What is CleanTech

- Renewable Energy
- Energy Efficiency
- Infrastructure (Grid and IT)
- Sustainable Products
- Water
- Environmental Clean-Up

# Energy Generation & Storage

- Renewable Energy

Solar Technologies, Wind Technologies, BioFuels , Fuel Cell Technologies & Applications, Geothermal, Hydro Power, Hydrogen Technologies & Applications, Small Hydro & Micro turbines, Landfill Methane, Thermoelectrics, Waste-to-Energy, Wave/Tidal

# Energy Generation & Storage

- Energy Storage Solutions
  - Advanced Batteries
  - Capacitors
  - Compressed Air
  - Flywheels
  - Fuel Cells
  - Hybrid

# Energy Efficiency

- Green Buildings

Building Materials, HVAC, Insulation, Lighting, Solid-State Lighting, Sustainable Design, Windows & Glass, Biopolymers, Catalysts, Chemical, Composites, Nanotechnology

# Energy Efficiency

- Transportation

Electric, Hybrids, Alternative-fueled vehicles,  
Dual Fuel Engines, New Materials, Logistics  
(e.g. logistics software)

# Energy Efficiency

- Energy Transmission & Management  
Demand-side Management, High Capacity Cabling, Management Systems, Power quality, Smart Grid IT, Substation Automation, Super Conductivity

# Energy Efficiency

- Energy Intelligence & Controls

Automated Metering, Building Automation, Energy & Environmental IT , Energy Efficiency & Demand Management, Sensors and Sensor Systems, Wireless Technologies

# Sustainable

- Energy Conservation
- Air & Environmental Technologies
- Water Technologies
- Sustainable Products/Materials
- Materials Recovery and Recycling
- Cap & Trade, REC's, EEC's

# Green IT: Datacenters

- Datacenters are Running out of Power
- \$40 Billion Market and Growing
- 2 % of U.S. Energy Consumption
- 50% Equipment & 50% Cooling
- HW becoming more efficient
- Server Consolidation/Virtualization
- Energy Efficiency Credits

# Why will it happen now?

- Global Warming
- National Security
- Economic Development
- Social and Political Movement
- American Recovery & Reinvestment Act
- President Obama's Agenda & Budget

# Emerging CleanTech Centers of Innovation and Development

- Austin Texas: Clean Energy Capital of the World
- Chicago: Green Roof's
- Freiberg Germany: Solar
- Copenhagen: Wind & Water
- Hyderabad India: Solar and strong R&D Tradition
- Shanghai: Eco-City of Dongtan

# New York State Can Be the Leader

- New York City: Green Buildings
- Large and Growing Market
- Entrepreneurial Culture
- Great Colleges and Universities
- Research Capabilities (Public/Private)
- Manufacturing Skills and Capacity
- Access to Capital

# New York State Reports

- CleanTech: A New Engine of Economic Growth for New York State [http://www.nycif.org/sect\\_cleanotech.html](http://www.nycif.org/sect_cleanotech.html)
- The First Report of the Renewable Energy Task Force to Lieutenant Governor David A. Paterson, [http://www.state.ny.us/governor/press/lt\\_RETFreport.html](http://www.state.ny.us/governor/press/lt_RETFreport.html)
- plaNYC2030 <http://www.nyc.gov/html/planyc2030/html/plan/plan.shtml>
- NYS Recovery and Reinvestment Cabinet <http://www.economicrecovery.ny.gov/index.htm>



# ADVANCED ENERGY

RESEARCH AND TECHNOLOGY CENTER

"The Advanced Energy Research and Technology Center (AERTC) is a true partnership of Academic institutions, Research institutions, Energy providers and Industrial Corporations. Its mission is innovative energy research, education and technology deployment with a focus on efficiency, conservation, renewable energy and nanotechnology applications for new and novel sources of energy." [www.aertc.org](http://www.aertc.org)

# 2008 Advanced Energy Conference

- Almost 1,000 attendees
- 136 Speakers and Presenters from around the World including the United Nations, Japan, U.K., France, Canada, Liberia, and at least 8 different states
- Attendee make-up was about 65% industrial, 35% academic and research - great cross cultural learning for technology transfer
- Business of CleanTech Kick-off Breakfast was Standing Room Only with over 140 in attendance.
- 2009 Advanced Energy Conference will be held on 11/18 & 11/19 at Hyatt Regency Windwatch, Hauppauge, NY

# Career and Business Opportunities

- Best of Times/Worst of Times
- Education, Knowledge and Experience Matter
- New Positions: Entry Level and Re-Positioning
- Pay Attention to Business Model
- Start a Company/Join a Start-Up

# Career and Business Opportunities

- Research Trends, Companies and Job Sites
- Internships and Volunteering
- Trade & Professional Associations(s)
- Conferences, Show and Events
- Informational Interviews
- Have a Plan for Entry... More Competition

# Resources

- The CleanTech Revolution, Ron Pernick & Clint Wilder
- Profiting from Clean Energy, Richard Asplund
- [www.SustainableBusiness.com](http://www.SustainableBusiness.com) provides global news and networking services to help green business grow, covering all sectors: renewable energy, green building, sustainable investing, and organics.
- Clean Edge [www.cleanedge.com](http://www.cleanedge.com) News and free reports on various CleanTech markets
- ACORE, [www.acore.org](http://www.acore.org) The American Council On Renewable Energy (ACORE) works to bring all forms of renewable energy into the mainstream of America's economy and lifestyle.

# Resources

- [www.GreenBiz.com](http://www.GreenBiz.com) is a news and information resource on how to align environmental responsibility with business success. It offers more than 8,000 resources, including daily news and feature stories, reports, checklists, case studies, and links to organizations, technical assistance programs, government agencies, and recognition programs.
- [www.greentechmedia.com](http://www.greentechmedia.com) A go-to source for independent and insightful news in the greentech space. Our research team is adept at creating technology- and trend-focused research based on a combination of quantitative and qualitative data.

# Career and Business Opportunities

- Questions and Comments