



Clean Energy Technology Job Creation

Project Profiles and Clean Tech Jobs

The promise of renewable energy and energy efficiency to address greenhouse gas emission reductions and create new jobs is a cornerstone of the Council's approach to climate change legislation. As a coalition representing the nation's clean energy and energy efficiency technology industries, Council members have long advocated policy that provides a strong foundation for existing clean energy technology deployment.

Immediate and near-term deployment of these existing clean energy resources – such as advanced batteries, biomass, fuel cells, geothermal, hydropower (including new waterpower resources such as ocean, tidal and instream hydrokinetic) solar, wind and supply-side and demand-side energy efficiency - is critical to significantly lowering the cost of compliance, enhancing the competitiveness of the U.S. economy and creating significant numbers of new, high quality clean energy jobs. The Council, comprised of businesses and trade associations representing this suite of currently available clean energy technologies, sees significant opportunities for the creation of jobs by national climate change legislation which empowers our clean energy business sector with the right tools and policies.

Below are a few examples of the various types of clean energy technology jobs that already exist.

WESTERN REGION

Southwest Windpower

Flagstaff, AZ

85 people, manufacture of small wind turbines (100,000 around the globe)

Founder: Andy Kruse, Tel: (928) 779-9463

Cal-Denier Dairy

Galt, CA

Cal-Denier Dairy has installed a dairy digester for its 200-acre, 500 milk cow farm. Over 60 jobs were created in the design, permitting and construction of the dairy digester. Dairy digesters convert cow manure to energy, using natural organisms to break down the waste. The digester consists of a high density polyethylene cover on the manure lagoon which allows the capture of methane gas. In addition to reducing odor, it is estimated that the digester project will reduce over 5,000 tons per year of CO2 equivalent greenhouse gas. This renewable biogas produced by the digester is combusted in a 65 kW generator adjacent to the digester, producing 540 megawatt hours of green electricity enough to power over 60 homes year round. The dairy industry is a \$5 billion dollar industry in California and by creating another sustainable source of revenue through green electricity sales to the utility, this helps maintain agricultural jobs in

time of price volatility for agricultural products. Contact: Ruth MacDougall, Sacramento Municipal Utility District (SMUD) Project Manager, Tel: (916) 732-6625, rmacdou@smud.org

SRCSD Wastewater Treatment Plant

Elk Grove, CA

Sacramento Regional County Sanitation District (SRCSD) operates the regional wastewater treatment plant in Sacramento. The plant provides about 5 mega-watts of renewable biogas that augments the electricity generation in a nearby cogeneration power plant, Carson Energy. Waste heat from the cogeneration plant is used in the wastewater digesters and in an absorption chiller in the Glacier Ice plant. By using waste heat the overall power plant efficiency is increased by 10%. Under SMUD's "Leftovers to Lights" Program, designed to convert problem wastes into renewable energy, SRCSD and SMUD are partnering on a pilot test to add grease trap waste and food waste to the sewage digesters. The full scale project is expected to increase renewable energy production by 60%, supplanting fossil fuel use and reducing 8,000 tons of CO2 equivalent greenhouse gases. Over 20 jobs are created with this project. Contact: Ruth MacDougall, Sacramento Municipal Utility District (SMUD) Project Manager, Tel: (916) 732-6625, rmacdou@smud.org

Shiloh Wind Power Plant

Near Birds Landing, CA

150 MW and encompasses 6,800 acres of land leased from 25 local landowners. According to U.S. EPA, the project will help offset over 380 million pounds of carbon dioxide, over 450,000 pounds of nitrogen oxide and over 250,000 pounds of sulfur dioxide. The project provided over 95 construction jobs and continues to provide 12 ongoing O&M jobs. This GE 1.5 MW series wind turbine is a variable-speed, constant frequency design with aerodynamically designed airfoils on a 77-meter rotor. Shiloh's Customers include PG&E, Modesto Irrigation District, City of Palo Alto Utilities. Contact: Kevin Lynch, Iberdrola Renewables, Tel: (503) 796-7108

3Tier

Seattle, WA

55 jobs (oceanographers, hydrologists, and meteorologists), Provides solar, wind, hydropower resource mapping and forecasting. Contact: Ken Westrick, Founder and CEO, Tel: (206)325.1573

EASTERN REGION

Konarka Technologies Inc.

Lowell, MA

60 people, manufacture of power plastic (nanotechnology) photovoltaics or light sensitive dyes, has a 1 MW pilot facility and did the first ink jet production of photovoltaics on a Fuji Inkjet printer

Contact: Board Chairman Howard Berke, Tel: (978) 569-1400

Sentech

Bethesda, MD

75 jobs, analysis for private sector and governments on green technologies

Contact: Jon Hurwitch, VP, Tel: (240) 223-5500

Standard Solar

Gaithersburg, MD

35 people, design and installation of photovoltaics for residential and commercial applications in 5 State region

Contact: Tony Clifford, President, Tel: (301) 944-1200

PlugPower. Inc.

Lanahan, NY

350 employees, headquarters and manufacturing site of fuel cell systems

Contact: Erin Lane, Tel: (202) 484-5300

WorldWater and Solar Technologies

Ewing, NJ

125 people, photovoltaics systems from 300 kW to 5 MW ranging from agricultural irrigation systems, building refrigeration and cooling systems, and large parking lot and stand alone electric power systems

Contact: Quentin Kelly Founder and Board Chairman, Tel: (609) 818-0700

Vessels-Econergy Cambria 33

Ebensburg, PA

This project is an abandoned coal mine methane capture facility. This facility captures methane that would otherwise passively leak into the atmosphere, refines it, and sells it to a local natural gas provider. The capture of the methane provides for the creation of voluntary carbon offsets for the reduction in greenhouse gas emissions created as a result of the methane collection. The project's installation required 8-10 skilled workers over six months. Long-term it will employ one person to maintain equipment. The quality of local jobs created by this project is high.

Contact: Marisa Buchanan, Econergy, Tel: (202) 822-4980, Marisa.Buchanan@econergy.com

NativeEnergy

Charlotte, VT

22 jobs, *NativeEnergy* helps build Native American, farmer-owned, community based renewable energy projects that create social, economic, and environmental benefits. *NativeEnergy* is involved in providing exclusive carbon funding to over 35 smaller (1-20 MW) renewable energy projects throughout the U.S. Each project requires developers, designers, equipment manufacturers, installers, operations people and project verifiers for the offsets. On average – approximately 5 different jobs are supported by the installation of a methane digester and 3-10 for a wind turbine depending upon the size of the project.

Contact: Anne Hambleton, Program Director, Tel: (802) 425-3418, anne.hambleton@nativeenergy.com

West Virginia Alloys

Alloy, WV

This energy recycling project provides 30 new industrial jobs to operate a new furnace and 20 new jobs to operate the energy recycling plant. \$50 million invested in U.S. market for this project. The silicon manufacturer, by increasing its efficiency, will bring back silicon production from China to the United States.

Contact: Dick Munson, Senior Vice President, Recycled Energy Development, Tel: (630) 590-6035, dmunson@recycled-energy.com

MIDWEST REGION

ArcelorMittal Steel

East Chicago, IL

The company has dramatically reduced its energy costs and emissions by harnessing waste heat and gas to generate 220 megawatts of 100 percent clean electricity. Energy recycling is generating enough clean electricity to power almost half of the plant's operations, saving tens of millions a year in energy costs and reducing CO₂ emissions by nearly a million metric tons per year — equivalent to the emissions of 166,000 cars. These projects also generate steam that supplies the steel plant with heat and hot water. The environmental benefits of the project include about 916,000 metric tons in annual CO₂ savings, about the same as 166,000 cars and all of the grid-connected solar panels in the world. The economic benefits include up to \$100 million a year saved on energy costs, allowing ArcelorMittal to allocate **more money to jobs** and investment.

Contact: Dick Munson, Senior Vice President, Recycled Energy Development, Tel: (630) 590-6035, dmunson@recycled-energy.com

ClimateMaster

Norman, OK

700 people, manufacture of ground-coupled (also known as geo-exchange or ground-coupled heat pumps) that heat or cool buildings

Contact: Dan Ellis, CEO, Tel: 405-526-2764, dellis@climatemaster.com

Jupiter Oxygen Corporation

Schiller Park, IL

25 jobs, consulting services and business plans on clean technology implementation, transfer and deployment both in the U.S. and world-wide, products: Oxy-fuel technology licenses. Jupiter Oxygen's clean technology implementation at Jupiter Aluminum in Hammond, IN (an aluminum recycling facility) created more than \$2.5 million annual revenue from net cost savings (primarily from fuel savings, but also from other revenue streams such as nitrogen produced by the Air Separation Unit).

Contact: Thomas Weber, Vice President, Tel: (847) 928-5930, tweber@jupiteroxygen.com

Johnson Controls, Inc.

Milwaukee, WI

JCI manages heating and cooling systems in buildings nationwide. The company's building efficiency business expects to hire 60,000 workers worldwide over the next decade.

Contact: Mark Wagner, Vice-President, Government Relations, Tel: (202) 406-4061, mark.f.wagner@jci.com

SOUTHERN REGION

Solargenix Energy

Raleigh, NC

28 people in NC and 18 people at solar water heating manufacturing plant in Chicago, joint venture partner for Acciona Solar with whom they just erected a 64 MW concentrate solar facility in Boulder City, NV and a 1 MW concentrated solar unit in AZ .

Contact: John Myles, CEO, Tel: (919) 776-2000

The Business Council for Sustainable Energy is a broad-based coalition that represents companies and trade associations in the energy efficiency, renewable energy and natural gas industries. Members include power developers, equipment manufacturers, independent generators, retailers, green power marketers, and gas and electric utilities, as well as several of the primary trade associations in the renewable energy, energy efficiency and natural gas industries. The Council and its members have been working consistently with state, federal and international policymakers on market-based measures to reduce greenhouse gas emissions since its inception in the early 1990s. The coalition supports the establishment of market-based programs for clean energy technology innovation and deployment, economic efficiency and enhanced energy security.