



Merrillville Town Hall Goes Green

About Photovoltaics



Photovoltaics, Commonly referred to as PV, is a technology that converts energy from light into usable electricity. The technology is not new; having been discovered in 1839 by French physicist Edmund Becquerel. The technology had little use for over a hundred years, including some experimentation with it by Albert Einstein in the early 1900's. In 1954, Bell

Laboratory researchers found a practical use for PV as a power source for remote communication stations. During the 1970's energy crisis, interest in PV grew. Increased manufacturing brought solar cell costs down from around \$1000 per watt in the 1960's to today's costs of about \$4 per watt. Prices are expected to decrease further with increased production efficiencies and consumer demand. A 30% federal tax credit is available to decrease up-front materials and installation costs.

System Performance

The Merrillville Town Hall system will consist of 30 Wanxiang 165 watt mono-crystalline silicon modules for a total DC electrical output of 4950 (roughly 5 kilowatts) watts. A SMA Sunny Boy 5000US Inverter will be used to transform the electricity generated from DC into usable AC voltage. Mono-crystalline silicon is the highest efficiency, commercially available panels for wattage created per square foot. Additionally, our inverter has a 96.8 efficiency rating. This adds up to a highly efficient system that will generate electricity for years to come.

The Sunny Boy 5000US inverter is directly connected into the Town Hall's sub panel, feeding electricity throughout the building. The Town Hall system will consist of three series strings of ten panels mounted on a racking structure at an angle of 38 degrees, facing due south. This setup will optimize energy output from the solar panels throughout the year.

When the sun is shining, the building will first use the electricity generated from the panels, offsetting power that would otherwise be provided by the electrical utility. During a power outage the inverter will automatically shut down. This "anti-islanding" feature is required of inverters tied to the utility grid to avoid sending current back through the grid thereby creating an electrocution hazard to utility workers.

It is our hope that this project will showcase all the benefits of solar energy (and other forms of sustainable energy development) to region residents and businesses. Through our partnerships with the building trade unions; contractors will be available to install similar systems throughout Northwest Indiana. Together, we can help create new, high paying jobs, protect our environment, and save on energy costs. We can make a difference.

Thank you to the following contributors:

Labor, Installation, and Engineering donated by:
International Brotherhood of Electrical Workers Local 697 and Apprenticeship Program
Northwest Indiana Roofers Local 26 and Apprenticeship Program

Materials and supplies donated by:
Sheet Metal Workers Local 20 and Apprenticeship Program

Gexpro	Emcor/Hyre Electric
Steiner Electric Supply	Sweeney Electric
Ctiy Electric Supply	MCS Electric
Hobart Home Depot	Continental Electric
All Phase Electric	All Services Electric
Sargent Electric	L&S Electric

A special thanks to Councilman Tom Goralczyk, Environmental Affairs Committee Chairman for providing support and leadership for "green" energy.

A special thanks goes out to Tracy Hall; who's tireless dedication, visionary thinking, electrical expertise, and resource coordination made this project a success. Also, a special thanks to Keith Vitkovitch who helped design the system installation and coordinated the labor for the roofer apprentices. This project would not have been possible without these two individuals.

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Solar Photovoltaics Panels



Together, We Can Make A Difference!

Environmentally Friendly

Decreases dependence on, non-renewable fossil fuels

Reduces energy costs over time





Clean and non-polluting



The environmental benefits of Solar Energy are vast. It does not pollute the air by releasing harmful chemicals and green house gases common from traditional forms of electrical generation processes that use fossil fuels. These chemicals and gases (i.e. carbon dioxide, nitrogen oxide,

sulphur dioxide, and mercury) in excess have significant negative effects on public health, quality of living, and the environment.

Creating electricity from solar energy creates zero emissions and a positive carbon footprint, thus helping to decrease the effects of global warming and environmental damage. In fact, the Town Hall system will offset approximately 5 tons of carbon dioxide from the atmosphere annually. The use of Solar Energy reduces our dependence on foreign oil and fossil fuels. These traditional sources are influenced by natural disasters and international events, which contribute to highly fluctuating energy prices. Solar energy is renewable and clean, thus contributing to a sustainable future.

Saves Money and Creates New Jobs



After the initial investment, the cost of energy production with a solar system is virtually free.; and the federal government

provides financial incentives and tax breaks to offset costs. Once installed, solar energy systems require minimal maintenance and will last for decades. The energy cost savings are immediate and will be for years to come.

Investing in solar energy has a positive impact on the local economy. The installation of these systems are performed by local building trade contractors, engineers, electricians, roofers, etc. With a national energy policy encouraging renewable uses, contractors with the skills and training to install and maintain these systems will be in high demand. Northwest Indiana can be at the forefront of a new economic engine for our local and national economy.

Local Decisions.....

The Town of Merrillville, in partnership with the International Brotherhood of Electrical Workers Local 697, Northwest Indiana Roofers Local 26 Apprentice Program, the Sheet Metal Workers Local 20, and the Sheet Metal Contractors Association are installing a 5kW Photovoltaic Solar Panel system on the Merrillville Town Hall Roof. This project was funded by a grant from the Indiana Offices of Energy and Development, and donations from private contracting supply houses, local electrical contractors, and the generous support and assistance from the building trade unions.

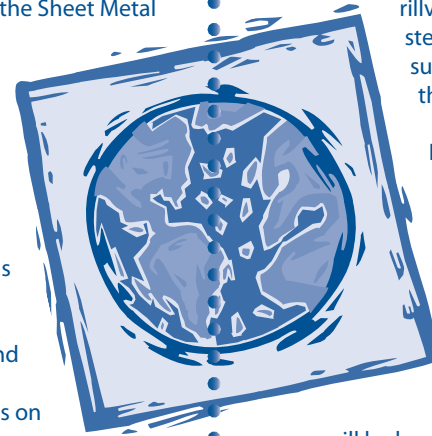
Merrillville representatives and elected officials view this project as a prime opportunity to educate residents on the advantages of renewable and environmentally friendly energy development practices. This highly visible pilot project hopes to encourage residents and businesses to install similar systems that will increase the supply of renewable energy and reduce the communities dependence on traditional, non-sustainable approaches. The public / private partnership between the Town and the building trades unions kept project costs minimal and provides

educational opportunities to contractors on the installation and technical proficiency needed to install these systems. Overall, the Town of Merrillville sees this partnership as a major first step in advancing the practice of sustainable energy development throughout the community.

The International Brotherhood of Electrical workers Local 697 will use this installation as a training session to augment its commitment on continuing education for its journeyman electricians. The course curriculum will include site assessment, design, code compliant installation and maintenance issues involved in a photovoltaic system.

Northwest Indiana Roofers Local 26

will be learning the implications of a photovoltaic system installed on a flat EPDM rubber roof; including but not limited to weight and wind loading, proper techniques for mounting a racking structure, and sealing penetrations for the rack mount and wiring. Local building inspectors will be invited to observe various stages of the project and learn code compliance issues involved with installing a roof mounted photovoltaic system.



Global Impact

..... Together, We Can Make A Difference!!

The green energy movement has the potential to transform our national economy by providing high paying, high tech career jobs. The American Solar Energy Society estimated a total of 37 million jobs in renewable and energy efficiency industries by 2030; assuming an aggressive "green" based energy policy. A University of California report concluded that solar Photovoltaics create more jobs per megawatt of electricity generated than any other energy technology. The renewable energy industry has already realized these benefits, as evidenced by its growth. According to a report from the American Solar Energy Society, the industry is growing at three times the rate of the us economy (2007 numbers). And solar is one of the hottest growth sectors in renewable energy.

