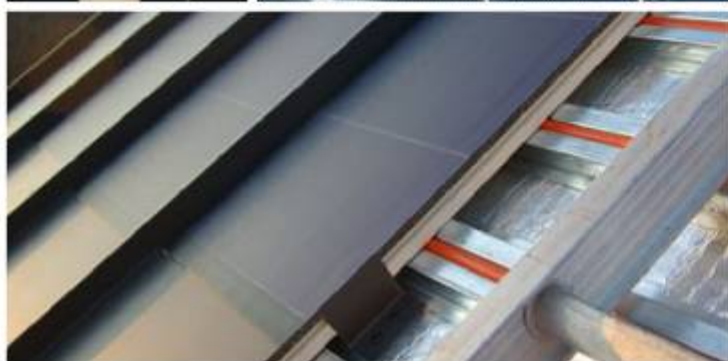




Solar Energy

Creating Good Jobs and
Affordable Energy for a
Stronger Virginia using our
Sustainable Natural Resources

October 14, 2010



Continuum

Energy Solutions

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Continuum Energy Solutions

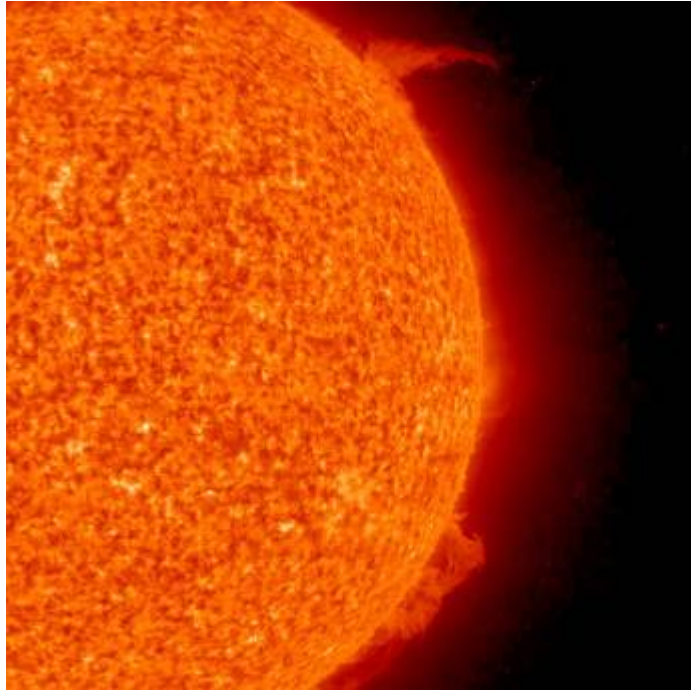
- **Founded in 2007 to holistically address our energy challenges**
- **First we reduce energy use and improve efficiency with a professional energy audit, remediation work, and designing and installing solar hot water systems**
- **Second we design and install solar electric systems (Photovoltaic/PV)**
- **Our solutions significantly reduce or eliminate electric, gas, and oil bills**
- **Class A Licensed Contractor in VA, MD, & DC - Serving Residential and Commercial clients**



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Solar Energy

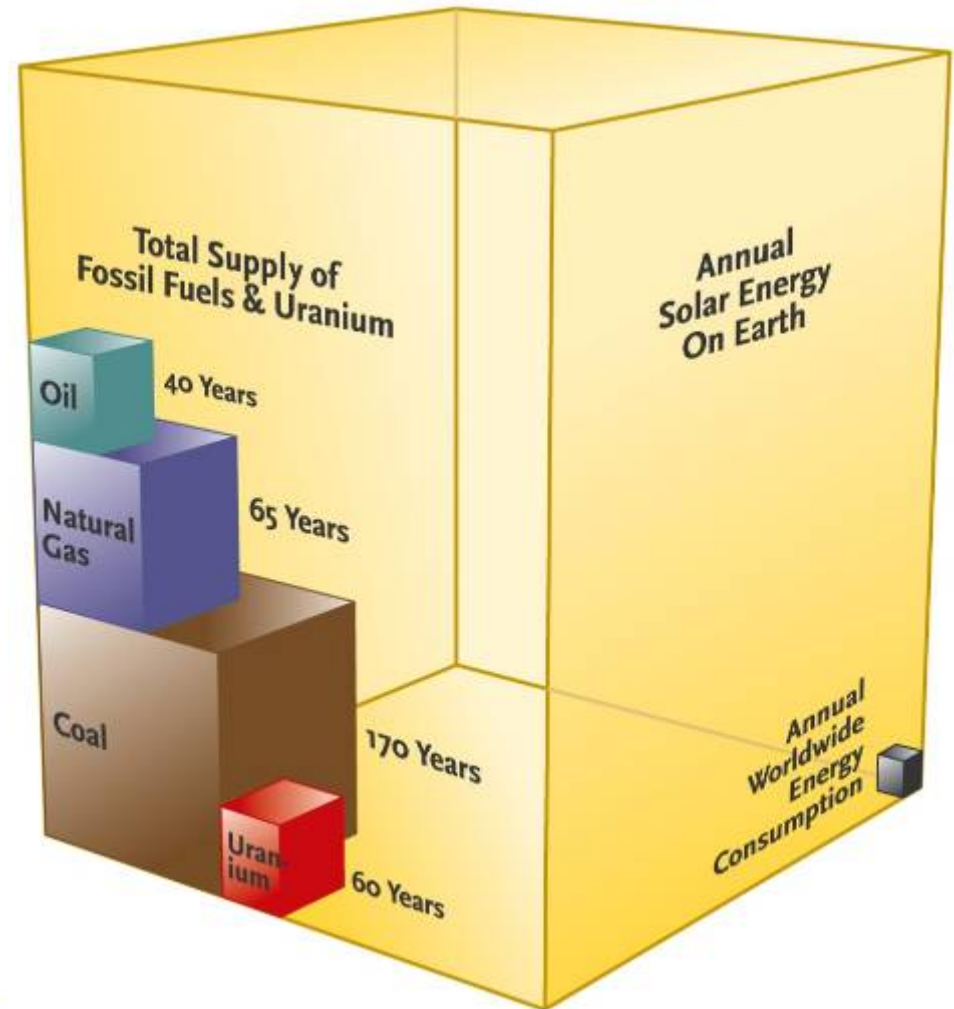


- Solar energy is the solar radiation emitted from our sun comprised of heat & light
- Sustainable energy resource
- 100 sf of surface in VA can produce 57,000,000 BTUs of energy each year for heating water
- 100 sf of surface in VA can produce about 1,300 kwh of electricity each year - PV
- In one minute enough solar energy reaches the earth to meet the world's energy needs for one year!



Annual Solar Potential vs Total Fossil Fuel Potential

- Annual solar energy available dwarfs total known fossil fuel reserves.



TWO types of *Active* Solar Energy Systems

1. **Solar Thermal/Solar Hot Water**

The radiant heat from the sun is captured in a collector to heat water or a non-freezing glycol mix (food additive) as it is pumped across a dark heat absorbing plate.

2. **Photovoltaic (PV) - Electricity generating**

Uses the light from the sun to release electrons in a silicone or other photovoltaic cell which are then collected to produce DC power. An inverter changes it to AC power



Solar Hot Water Systems



- Transfers the sun's *heat* energy from roof collectors to heat about 80% of your domestic hot water
- 15-25% of a home's energy use goes to heating the domestic hot water -2nd largest load after heating and air conditioning
- The most economical solar system choice with a low price & 5 year average payback: 20% ROI and savings continue 25-35 more years
- Annual payments of \$550/year for the value of the green energy now available through aggregators of State Renewable Energy Credits (SREC's)



Flat Plate Thermal Collectors & Solar Powered Roof Vent

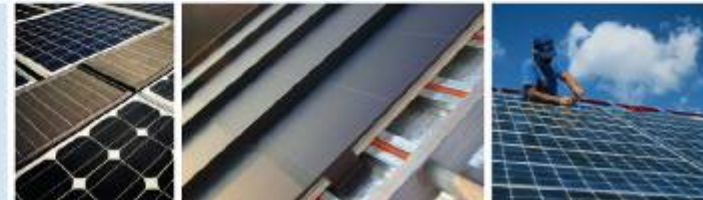


- Reaches temperatures of 120F in winter, 180F summer
- Temperatures of 85F often allow for collecting the free heat energy from the sun
- Requires 4-5 hours of sun
- Works on an East/West roof
- Does not require much roof space, often 32 to 64 sf



Solar Photovoltaics (PV)

- Produces Electricity from sun *light*
- 100% Renewable and Sustainable
- Clean – No pollution
- Silent
- No moving parts
- Zero carbon emissions
- Energy price never goes up, always FREE
- Become your own power plant
- Modules last 40-50 years
- Distributed power – 1kwh = 1kwh, not 3.3kwh = 1kwh
- SREC annual payments available now



Photovoltaic Panels and Solar Thermal



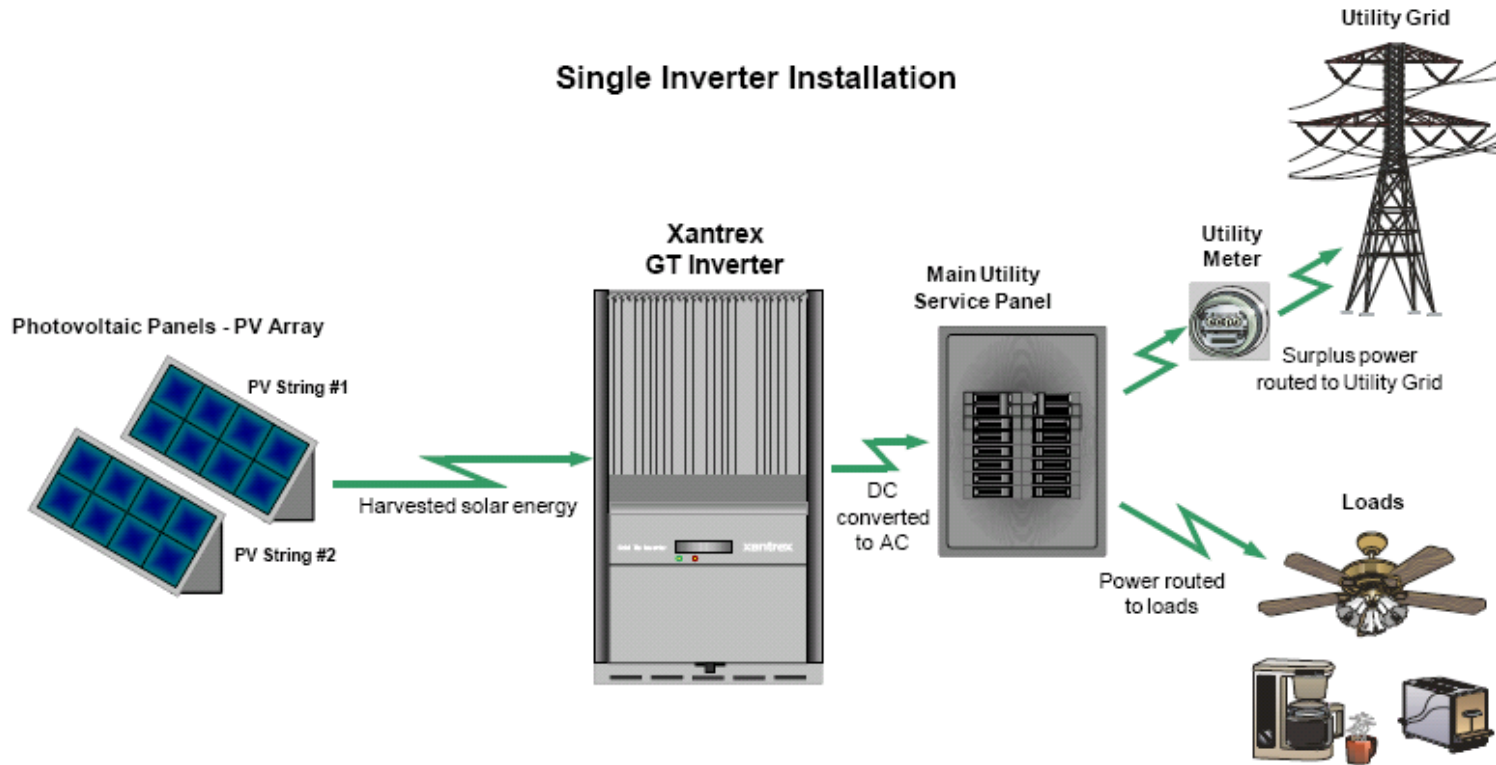
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Grid-tied PV System

Single Inverter Installation



New Technology! - Enphase Microinverters



- One inverter behind each panel- many benefits!
- Cheaper to install with no central inverter location needed
- Reduces effects of shading increasing efficiency
- Cheaper to expand systems
- Excellent individual panel data monitoring
- Enables quicker repair and troubleshooting



Solar is a unique investment

- Solar is the only financial investment which reduces risk. Electricity bills are reduced or eliminated and the risk of paying increased future utility rates is avoided
- With battery back up, solar can provide energy during times of power outages, increasing our national security and making communities more self reliant
- Solar produces power during times of day when peak loads are experienced reducing the need for peaking power plants
- Solar hot water systems reduce loads at night as stored hot water avoids the need for heating elements to run
- Solar systems can be small and are an option for individuals who can choose their energy source and lock in a reduced electric bill

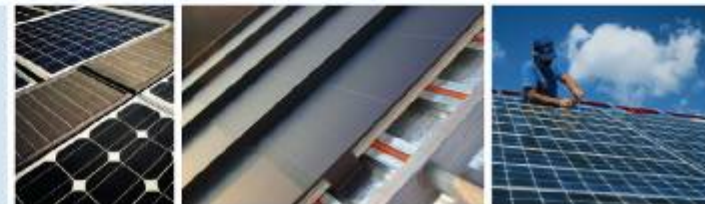


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Solar Demand in Virginia is strong

- **Recent federal stimulus money in Virginia was quickly oversubscribed**
- **Combined with a federal 30% no cap tax credit & SRECS, state incentives make solar very financially attractive**
- **Additional education of the public on the economics and benefits of solar is needed**



2009 State of the U.S. industry

- **Overall up 36% in a down economy!**
- **Residential market doubled for PV**
- **Residential market rose 10% for Solar Thermal**
- **10,000 new jobs created and 7,000 induced jobs gave a total economic impact of 17,000 jobs**



Solar Business Economics

- **Creates good sustainable jobs**
- **Promotes affordable free energy**
- **Continued growth is forecast in the industry**
- **Pricing for products continues to fall**
- **I see tremendous growth in my own business, but much of it is in MD and DC**



Leadership by other states:

- **NJ Public Service Electric and Gas has proposed to invest in, own, and operate 120MW of PV at distributed school and government facilities, low income housing sites and other rooftops.**
- **Duke Energy of NC plans to put 20 MW of PV over hundreds of distributed rooftops.**
- **PA Solar capacity set to triple with 23 million in grants & loans.**
- **VT just passed a Feed in tariff (FIT) law which will pay producers of clean energy for each kWh produced for 25 years**
- **MD has a strong Renewable Portfolio Standard (RPS)with a mandatory goal of 1500MW of Solar by 2022 : With a 8% average state incentive systems are 80% off in some counties. Annual SREC payments are much higher in states with a mandatory RPS**
- **DC has a strong (RPS) which is paying for the \$ in the grant/rebate program: Systems are 90% off**
- **Decoupling has happened in CA, NY, NJ, and DE where profits for utilities are tied to energy savings.**



Support Solar Incentives – Solar is unique!

- **Solar Energy is FREE!**
- **The Solar resource in Virginia and most places on earth is tremendous!**
- **Solar Creates Jobs, Income for System Owners, and Increases our National Security**
- **Solar is good for our community & Virginia!**



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