



Solar Energy in Tennessee

TN Renewable Energy & Economic Development Council

Fall Creek Falls State Park

Pikeville, TN

June 10, 2009

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Renewable Energy Technology

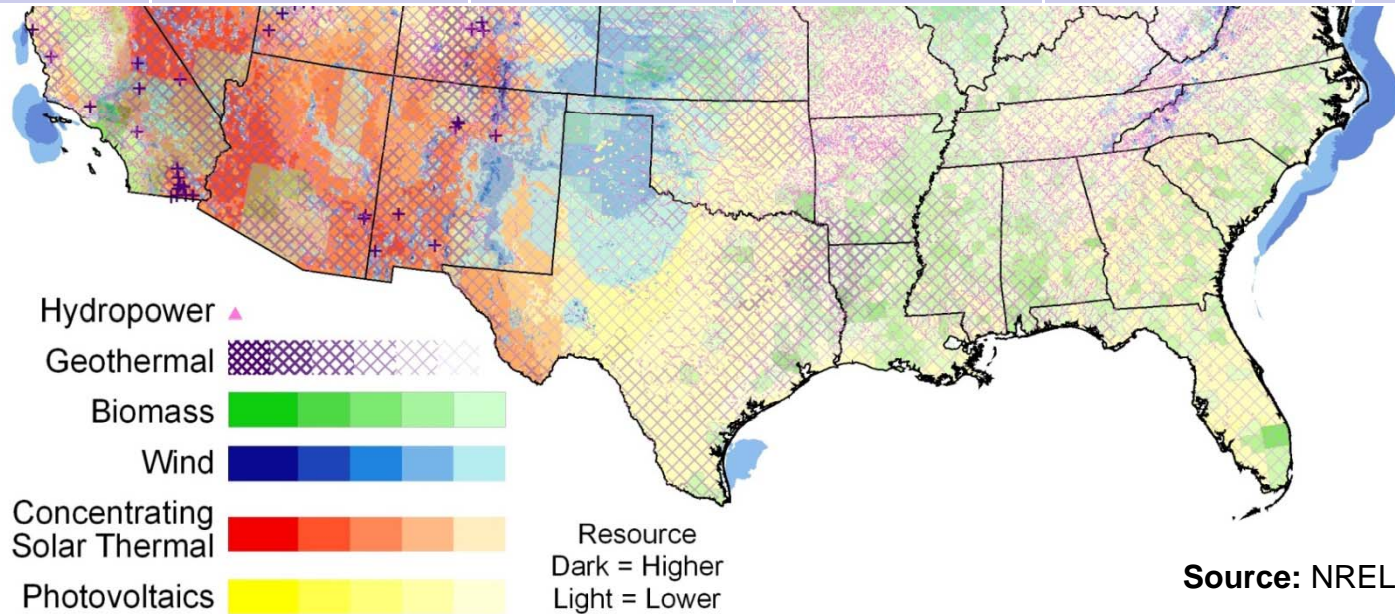
TVA End-Use Generation & Storage



**Do we have the resources
in the Southeast to utilize
renewable energy?**

TVA U.S. Renewable Energy Resources

Resource	Solar	Wind	Geothermal	Hydropower	Biomass
Theoretical Potential	206,000 GW (Photovoltaics)	8,000 GW (onshore)	563 GW	140 GW	78 GW
	11,100GW (Concentrating Solar Thermal)	2,200 GW (offshore to 50 nm)			

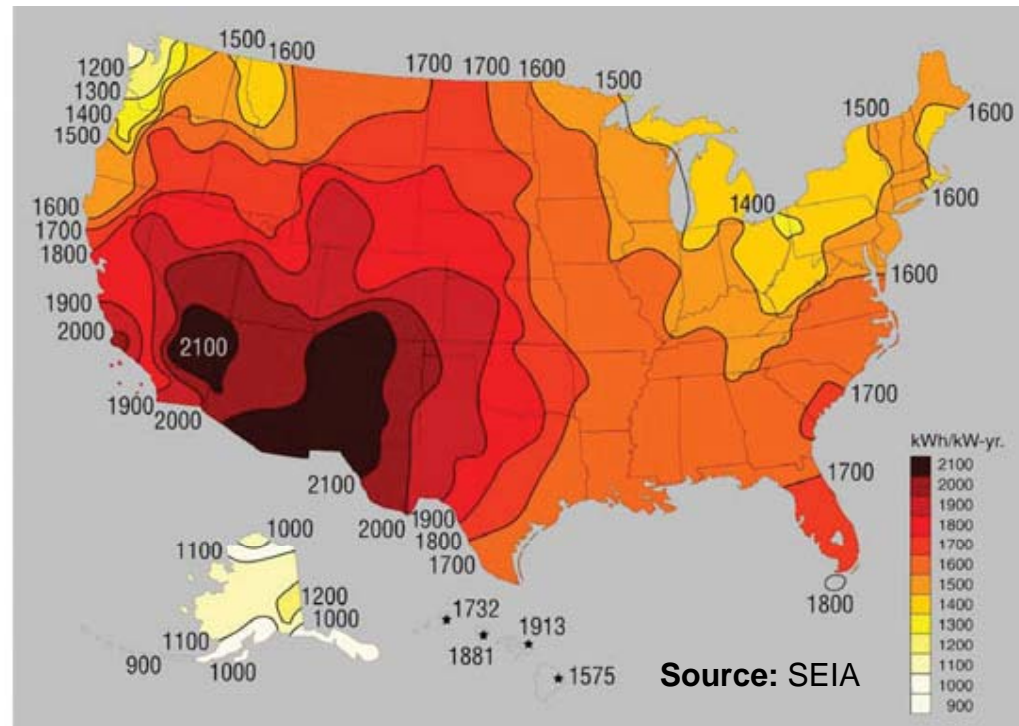
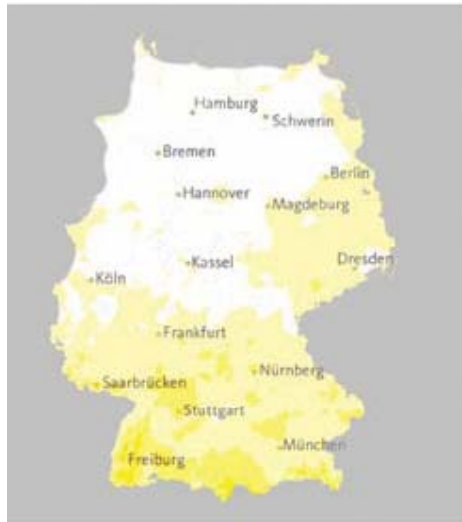


Source: NREL

Updated: 05/2009

TVA Solar Potential: U.S. vs. Germany

Germany



Facts about Germany:

- 4% of US land area
- More that 3x the quantity of US installed PV

With the same amount of solar panels, the U.S. Southeast can produce 50-60% more solar energy than Germany!

TVA Renewable Energy Programs

- **Green Power Switch[®] Program**



Offers consumers a choice to buy renewable energy

- Helps customer support environmental stewardship
- Provides an alternative to high upfront cost of renewable generation
- Requires participation of local power distributor
- Customer purchases blocks of clean energy on a monthly basis
 - 1 block = 150 kWh = \$ 4

Rate Class	Minimum Purchase
GSA-1	5 blocks per month (\$20 per month)
GSA-2	25 blocks per month (\$100 per month) or *5% of load, whichever is higher
GSA-3	250 blocks per month (\$1000 per month)
GSB, GSC, GSD	375 blocks per month (\$1500 per month)

TVA Renewable Energy Programs Cont'd

- **Generation Partners[®] Program**

Offers consumers the ability to generate renewable energy on site

- Qualifying resources: solar, wind, low-impact hydro, biomass (i.e. woody, agricultural, animal or other organic waste, landfill gas and wastewater methane)
- Requires participation of local power distributor
- Upfront incentives:
 - \$1,000 consumer incentive toward system cost
 - Metering installation and inspection fee incentives
- Generation incentives:
 - TVA purchases 100% of renewable energy generation
 - Premium values above utility rate:
 - \$0.12/kWh for solar
 - \$0.03/kWh for all other renewable

Solar Example: \$0.08 utility cost + \$0.12 solar incentive = \$0.20/kWh

TVA Renewable Incentives

• Solar PV Incentives

Incentive Description	Incentive Amount	Market Sectors		
		Commercial Industrial	Agricultural	Residential
Federal				
U.S. Department of Treasury - Renewable Energy Grants	30%	X	X	
USDA - Rural Energy for America Program (REAP) Grants	25%		X	
Business Energy Investment Tax Credit (ITC)	30%	X		
Residential Renewable Energy Tax Credit	30%			X
State - TN				
Tennessee Clean Energy Technology Grant	40%	X	X business only	

DSIRE – Database of State Incentives for Renewables & Efficiency

www.dsireusa.org

• American Recovery & Reinvestment Act (AARA)

- Energy Efficiency and Conservation Block Grant (Formula Grant)
 - Allocations distributed in TN to:
 - 17 cities
 - 10 counties

TVA PV Financial Calculations Without Incentives

Typical System Cost	
System Size (kW)	50
System Cost (\$/kW)	\$8,000
PV System Cost	\$400,000

TVA Incentives Description	
Upfront Incentive	\$1,000
Utility Rate (\$/kWh)	\$0.08
Solar Premium (\$/kWh)	\$0.12
Total Incentive Rate (\$/kWh)	\$0.20
Solar Production Values	
System Size (kW)	50
Annual Solar Production (h)	1225
Annual Solar Energy Production (kWh)	61,250

Production Incentive Values	
Total Incentive Rate (\$/kWh)	\$0.20
Annual Solar Energy Production (kWh)	61,250
Annual TVA Generation Payment (\$)	\$12,250
Generation Incentive Term (years)	10
Total TVA payment	\$122,500
Upfront Incentive	\$1,000
Total TVA payment	\$123,500

Cities and counties can use block grant money to fund upfront PV cost

50 kW PV System Size



Solar PV Initiative Ideas

- **Help increase public awareness**
 - Choose a site which is visible to the public
- **Help educate the public**
 - Display educational information at the site
- **Establish a revolving fund program**
 - Fund energy efficiency and renewable energy initiatives
 - 1) Make energy efficient investments in govt. buildings
 - 2) Investment in Green Power Switch Program
 - 3) Residential/Commercial Energy Efficiency competition to fund the purchase or further solar generation



**For more information
please visit:**

www.gpsgenpartners.com