



Virginia Governor's Conference

Richmond Convention Center – Richmond

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Topics

1. ACORE
2. Renewable Energy ~ Economic Opportunity of 21st Century
3. Policy to Harness this Opportunity

Mission and Strategy

501(c)(3) tax-exempt research & education nonprofit organization:

"…bring renewable energy into the mainstream of our economy and lifestyle"

"…be *for* renewable energy and *against* nothing"

ACORE encompasses all renewable and inexhaustible energy options:

- **Solar energy**
- **Wind power**
- **Hydropower & ocean**
- **Biomass energy and fuels**
- **Geothermal energy**
- **Waste-to-energy**

…in all forms of energy:

- **Electricity**
- **Fuels**
- **End-use thermal energy**
- **Hydrogen**

…while focusing on three strategic themes and three major activities:

- **Markets**
- **Finance**
- **Policy**
- **Research and publishing**
- **Convening and education**
- **Communications**

ACORE's 600 Organizational Members

Strategy to Assemble All the Players Necessary to Make Renewable Energy Successful in the U.S.

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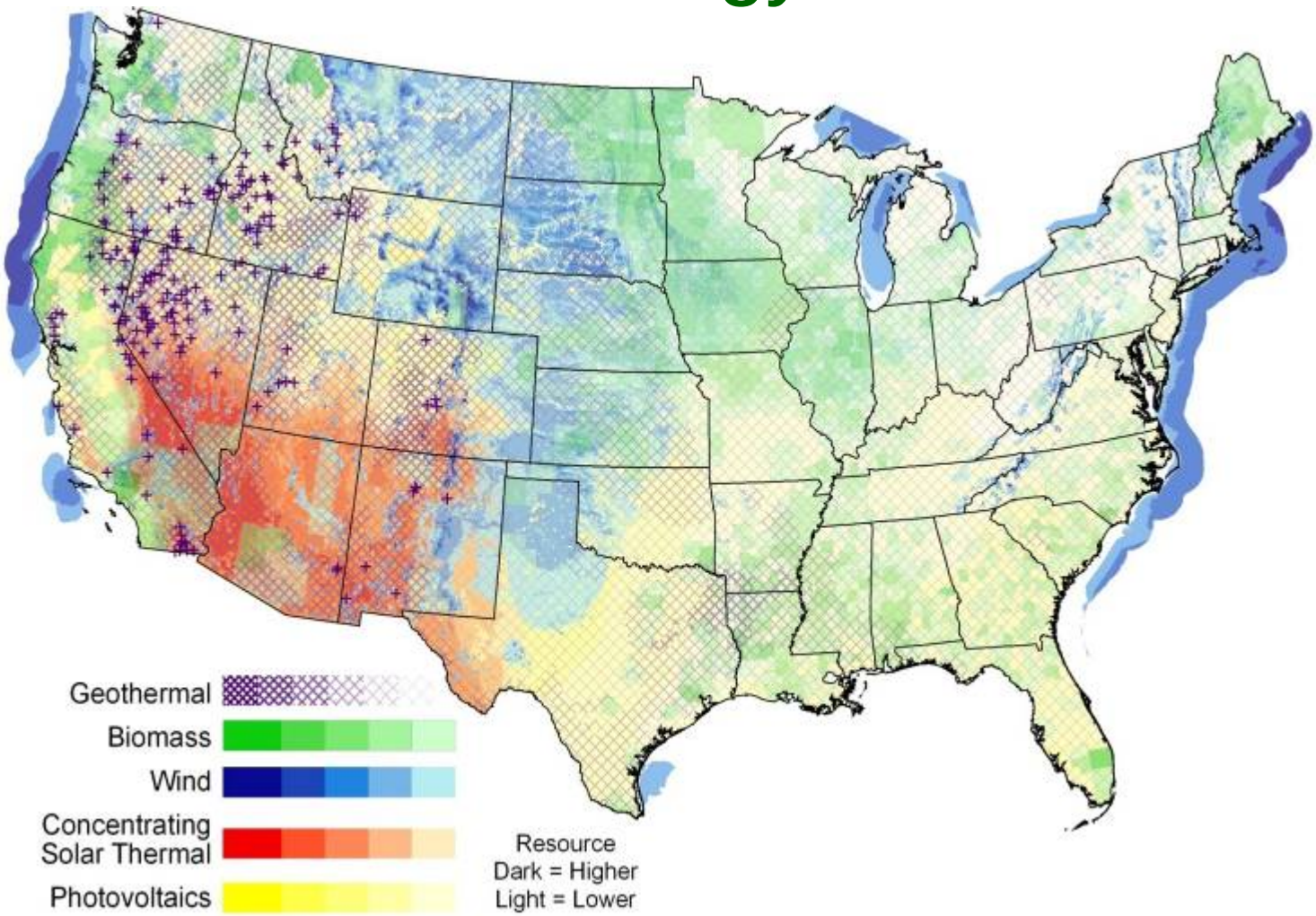
Renewable Energy~ Growth Sector 21st Century

- Global energy demand expected double or triple by 2050
- 2005-2009 global investment clean energy increased 230%
- 2009 investment CE = $162 billion
  - Decrease of 6.6% below 2008
  - Fossil fuel sector declined 19%
- Global investment RE//EE expected be $600 billion or more by 2020

(IEA, BNEF, PEW, Breakthrough Institute)

U.S. = Saudi Arabia of Renewable Energy

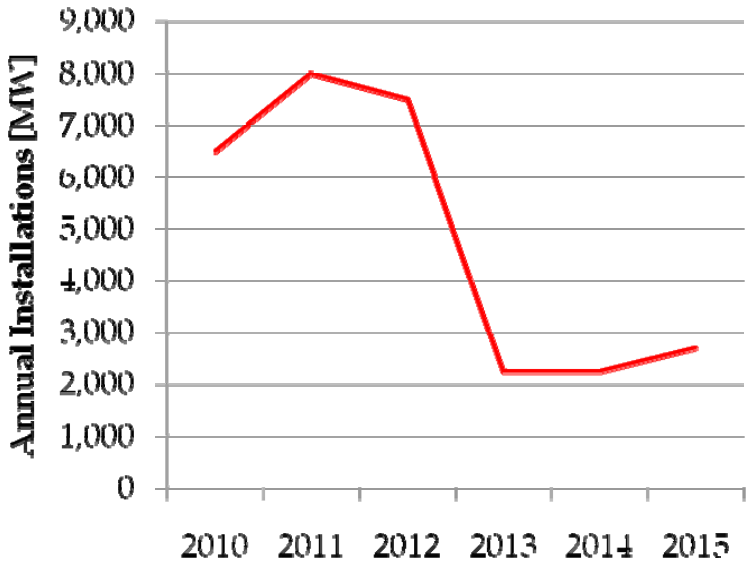


Wind Trends

- US total capacity = 35,159 MW; ~ 1.8% electricity
- 39% of new electric generating capacity 2009
- 85,000 jobs *(AWEA)*

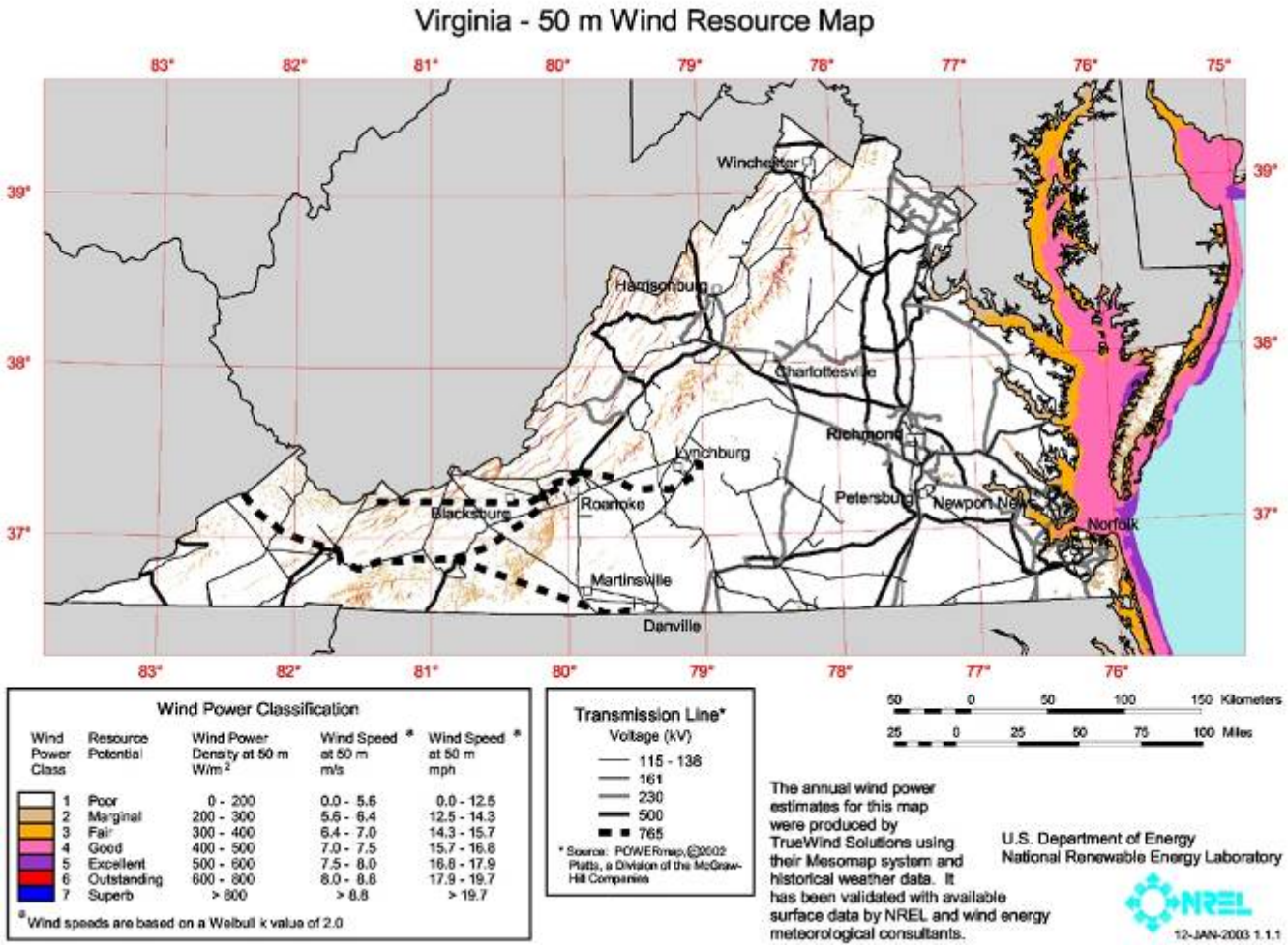
- Global wind demand expected growth ~ 34 GW annually to ~55 GW by 2014 *(Navigant Consulting)*

Annual Wind Additions Under Current Policy



(Navigant Consulting)

Virginia Wind Resources



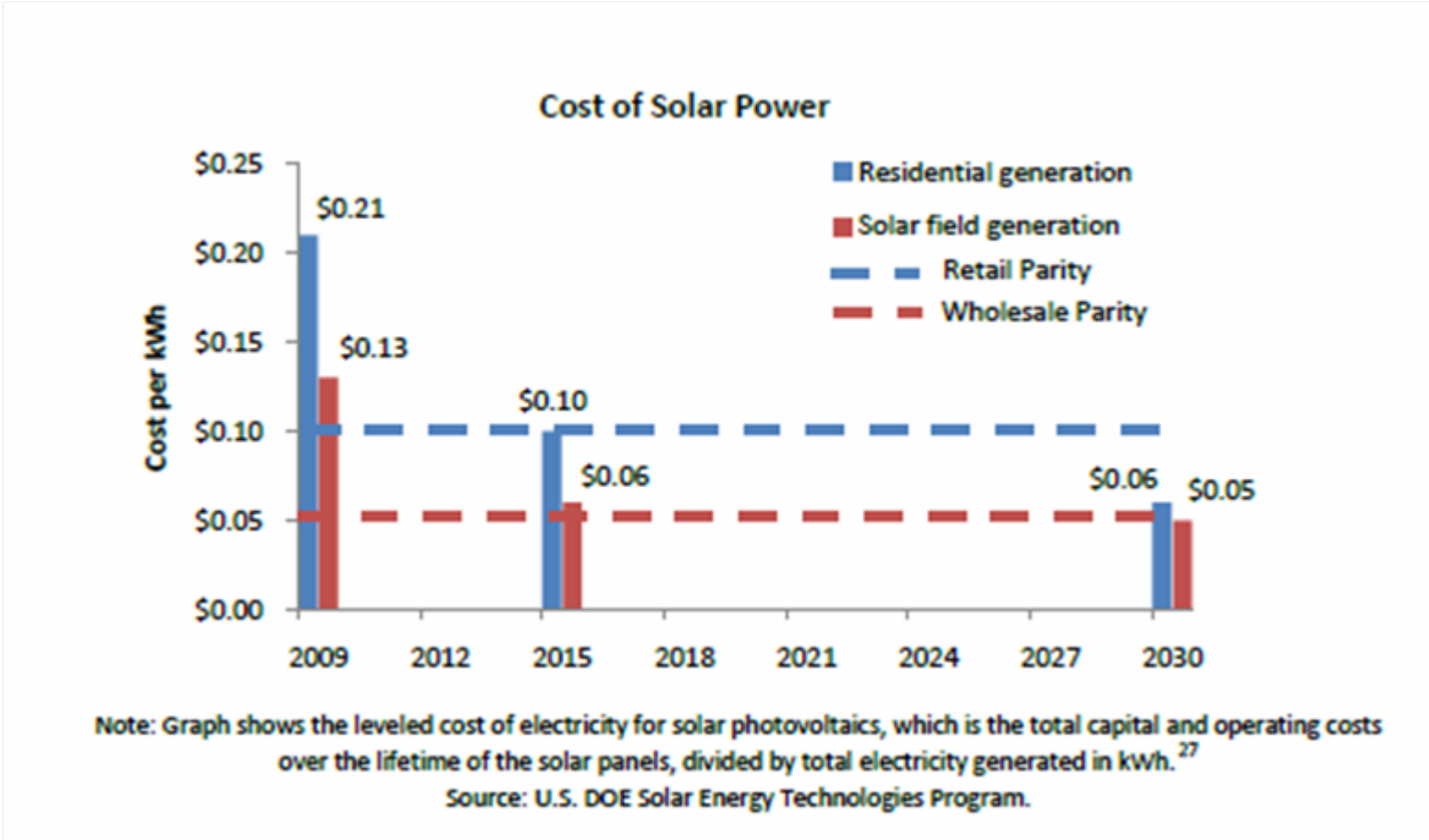
VA estimated to have 1,380 MW wind potential (AWEA)

Solar Trends

- To date:
  - U.S. solar capacity grew 37%, 431 MW 2008-2009
  - Total capacity over 2000 MW; power 350,000 homes
  - Average installed cost fell ~ 10% 2008-2009
  - 46,000 direct and indirect jobs in 2009 *(SEIA)*
- Projected:
  - 60,000 direct and indirect jobs in 2010
  - U.S. PV demand to grow between 32 – 46% over next 5 years
    - Driving market from .48 GW, 2009 to 2 – 3.2 GW,2014
  - *(Navigant Consulting, SEIA)*

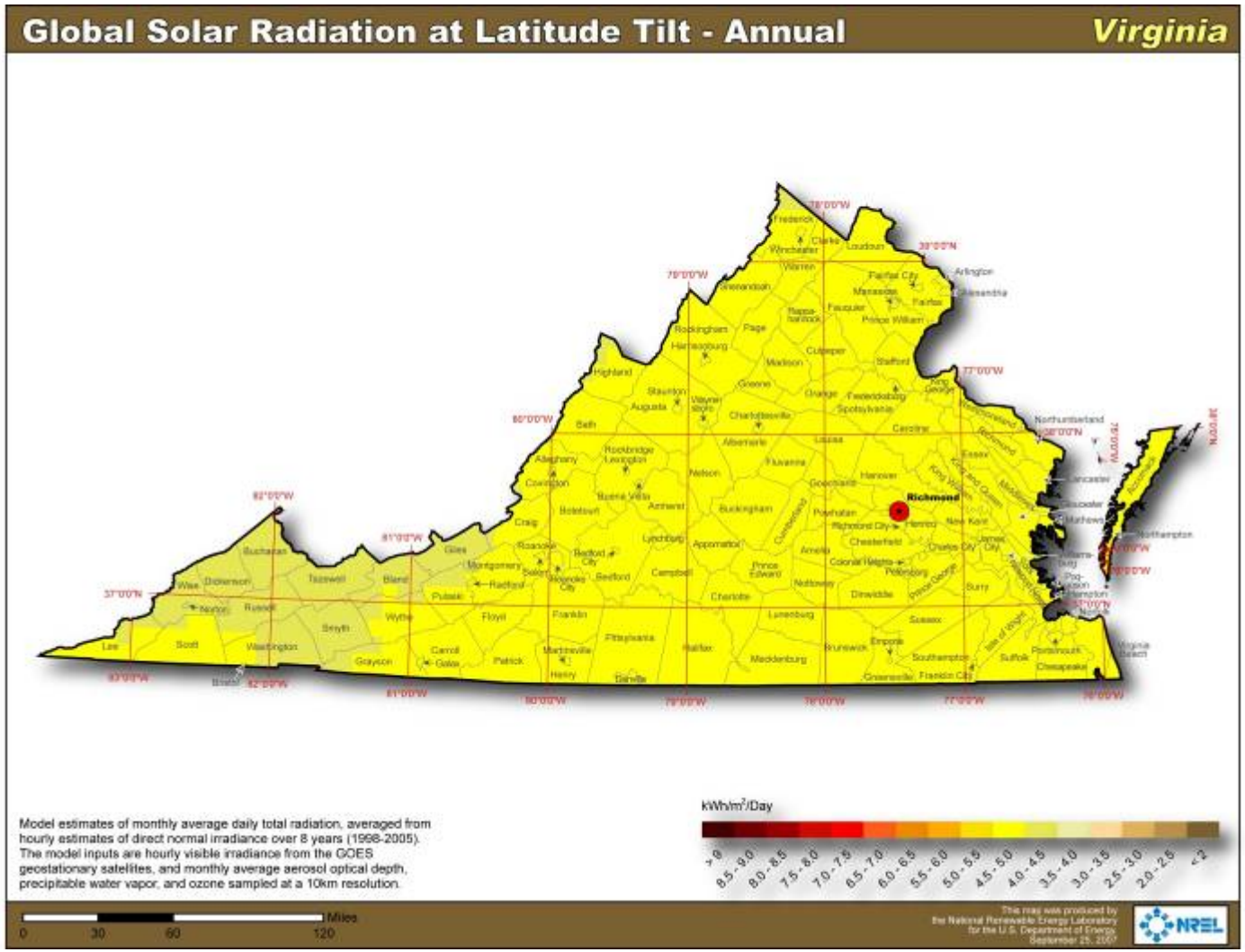
Solar Trends

- Many states even in the Northeast can approach grid parity by 2014 – 2018...only a few rate cases away.
(Navigant Consulting)



Note: Graph shows the leveled cost of electricity for solar photovoltaics, which is the total capital and operating costs over the lifetime of the solar panels, divided by total electricity generated in kWh.[27]
Source: U.S. DOE Solar Energy Technologies Program.

Virginia Solar Resources

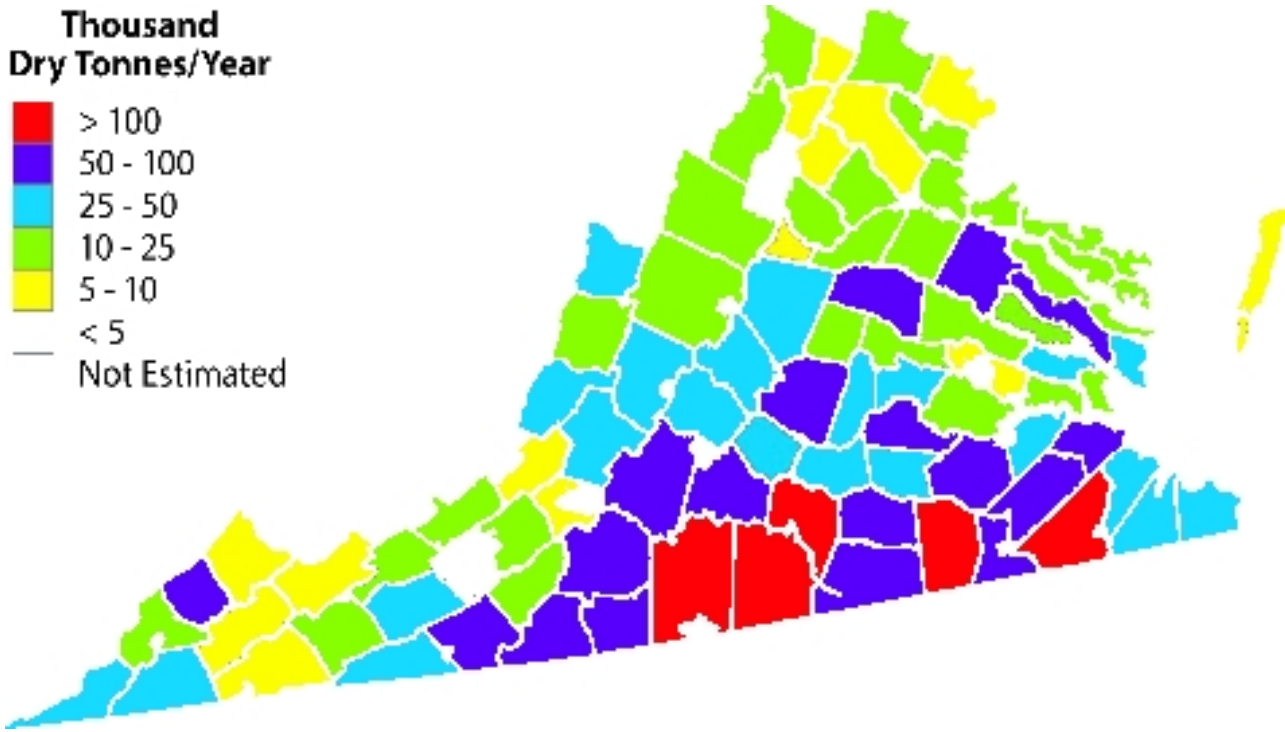


Biomass Trends

- To date:
  - US Installed Capacity- 115,459 MW
  - 196 biomass-fired plants; 72 larger than 40 MW
- Projected:
  - US - 149 biomass plants proposed; 23 in development
  - US Potential- 100,000 MW additional
    - Industrial CHP:57,000 MW
    - Utility:37,000 MW
    - Solid Waste:10,000 MW

(BNEF, ACORE)

Virginia Biomass Resources



VA ranks 8th in the nation of forest residue resources with 2,403 tones/year. *(NREL)*

Virginia Waste-to-Energy

- In 2006, VA disposed of 5,935,127 tons of MSW
  (Biocycle Magazine)
- Covanta waste-to-energy facility-Alexandria
  - 975 tons of MSW/day
  - 23 MWs to power 300,000 residents
- Covanta waste-to-energy facility- Fairfax
  - 3,000 tons MSW/day
  - 79 MWs to power 75,000 homes

(Covanta)

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Policy Context

- Energy sector– one of most heavily regulated and subsidized markets

- Issue is not free market v regulated market

  BUT

  What is minimum amount and proper mix of carrots and sticks that will unlock free market forces:
  - Market demand
  - Private sector financing

  ....within the regulated market?

Federal Policy Overview

- Current Policy
  - PTC (Expires 12/31/12)
  - ITC (Expires 12/31/16)
  - 1603 Grant in Lieu of ITC (Expires 12/31/10)
  - 48C Manufacturing Tax Credit ($2.3 allocated and spent)
- Proposed Policy
  - Extension 1603 Grant through 12/31/12
  - Additional funding 48C Tax Credit
  - National RES
  - CEDA/Green Bank
  - Transmission Reform

Texas Policy and Results

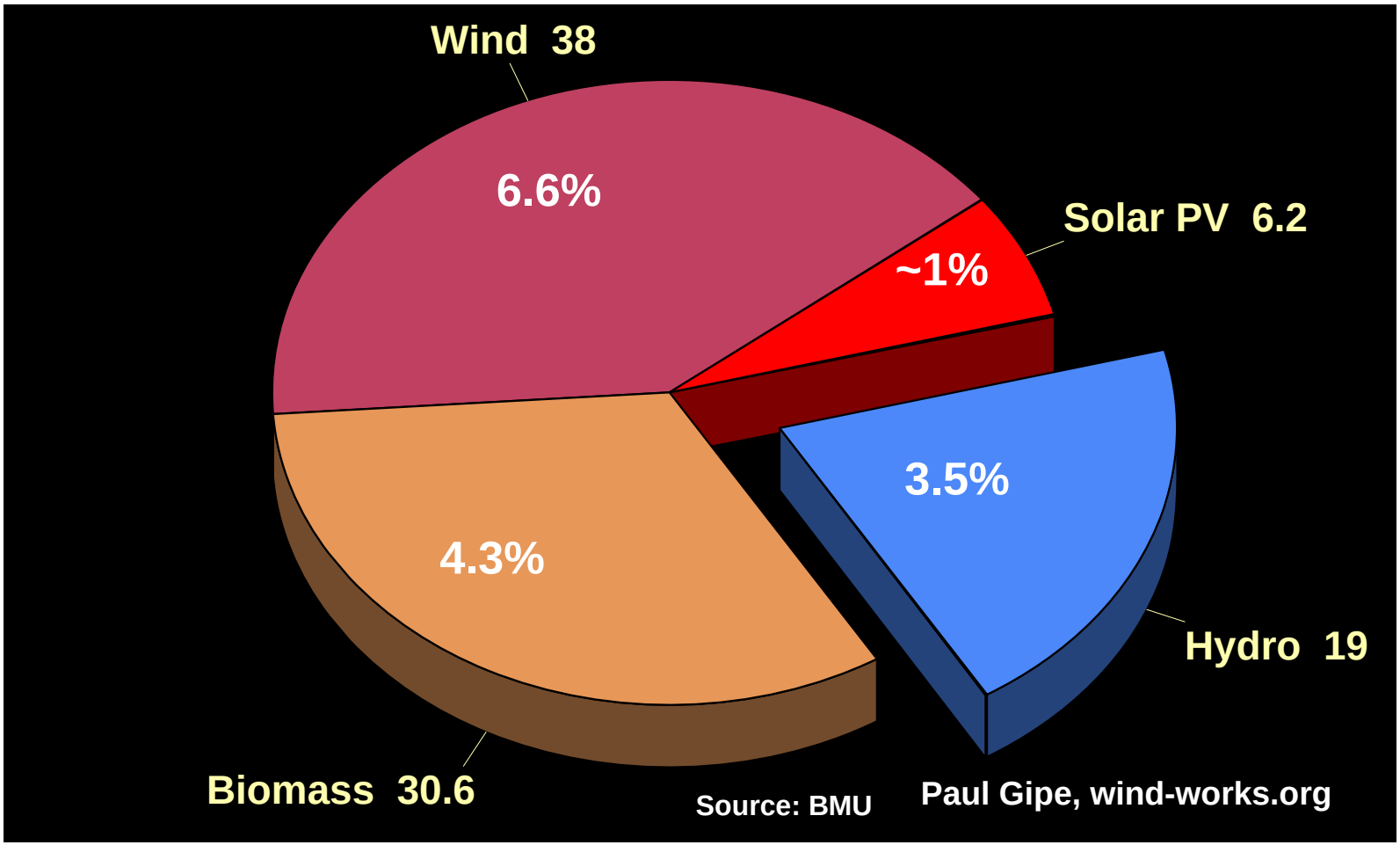
- Policy
  - Market Demand- RPS = 5,880 MW with goal of 10,000 MW of by 2025
  - Finance - Low-interest loans to public entities; repayment when construction 100% complete
- Results
  - 10,000 MW in 2009, 15 yrs ahead of schedule
    - 9,405 MW wind- largest wind market in US
  - 10,989 direct and indirect jobs
    - 275 solar; 842 bioenergy, 9,735 wind; 137 hydroelectric (Navigant Consulting, Inc.).

Germany- Policy

- Market Demand- Renewable Electricity Standard = 50% by 2050
- Finance- Feed-in-Tariff
  - Guaranteed grid connection
  - Mandatory utility purchase with standard 20 year contract
  - Fixed price for reasonable rate of return
  - Declining rates over time to reach grid parity
  - Cost rate borne by consumers ~$4/mo, $50/yr

(Deutsche Bank; Paul Gipe, Wind-works)

Germany- Policy Results



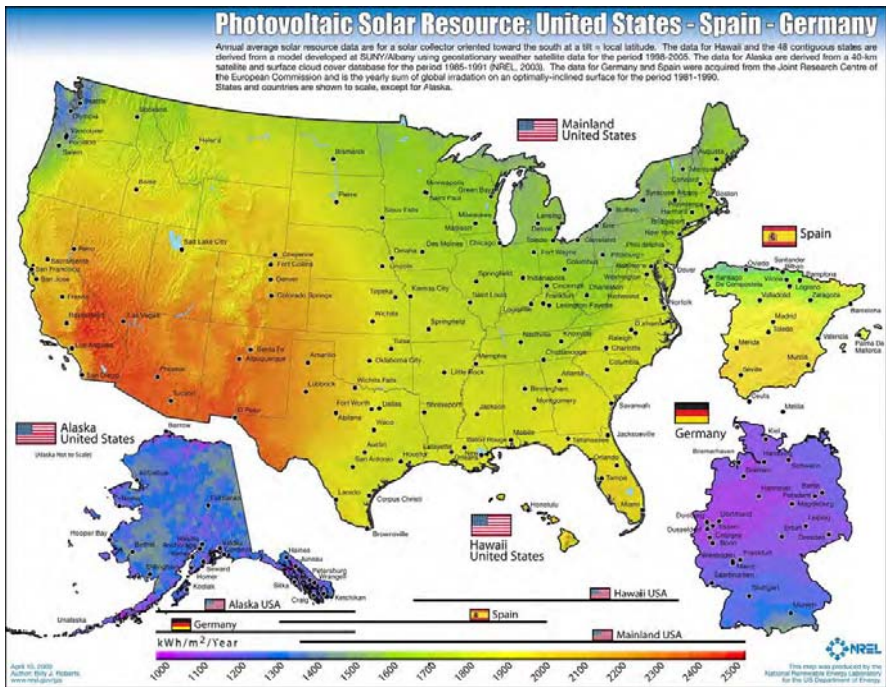
- Renewable energy = 16% electricity
- Adds almost .86% of electricity in solar in 8 months

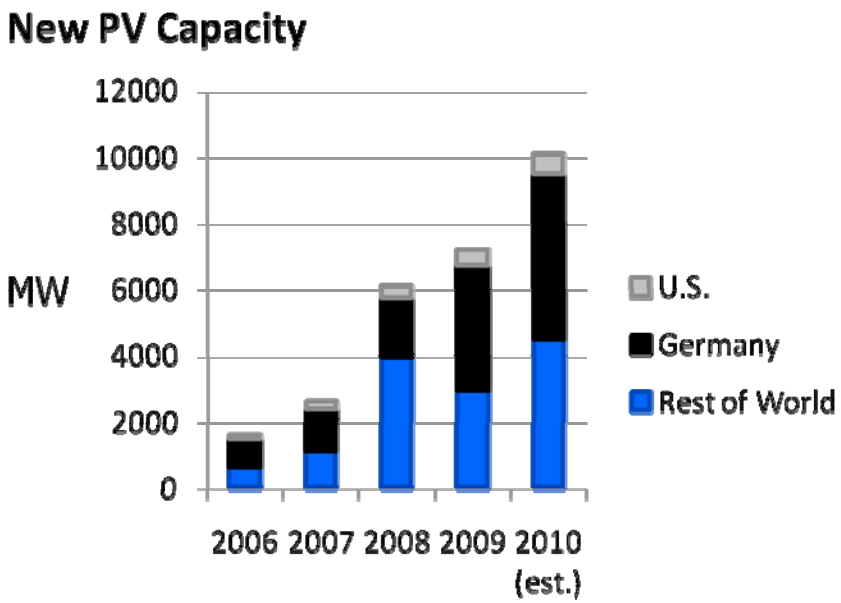
Germany- Policy Results

- Significant drop solar price
  - 10/7: Germany announced will reduce FIT price 16-17% for solar installed after April 2010
- Doubled renewable energy jobs since 2004 to 340,000 *(Bloomberg, Bundesnetzagentur)*
- New revenue for consumers
  - 3,000 MW of solar on farm roof 2009 (€15 Billion)
  - 4,000 MW of solar on home roofs 2009 (~€2 Billion/yr)

(Paul Gipes, Windworks)

U.S., Germany Solar Capacity





(EIA, AWEA, BMU, Paul Gipe Wind-works)

...and the private sector will show you the MONEY$$$$$$$$$$$$





Thank you!!!

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Renewable Energy in America: Markets, Economic and Policy in the 50 States
http://www.acore.org/publications/50states

Compendium of Best Practices: Sharing Local and State Successes in Energy Efficiency and Renewable Energy from the United States
http://www.acore.org/node/15472