



Energy R&D in Virginia

Listening Session for 2014 Virginia Energy Plan

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No VA Community College
Annandale, VA

Prof. Saifur Rahman
Virginia Tech – Advanced Research Institute



Current and Potential Sources of Energy in Virginia

Coal
Nuclear
Natural gas
Hydropower
Biomass
Geothermal
Alternative fuels
Solar photovoltaics
Wind – onshore and offshore
Coastal energy – tide/wave



Mature technologies

- Coal
- Nuclear
- Natural gas
- Hydropower
- Biomass
- Geothermal
- Alternative fuel

Virginia universities, federal government and the private sector are already engaged in R&D in these areas

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Where the Commonwealth Can Make a Difference

Leadership at the state level:

- Energy efficiency
- Solar photovoltaics
- Off-shore wind

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Building Energy Efficiency

Buildings consume over 40% of the total energy in the US

90% of commercial buildings are small (<5,000 sq ft) or medium-sized (<50,000 sq ft)

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Academic building in Alexandria



Park facility in Arlington



Retail building in Blacksburg

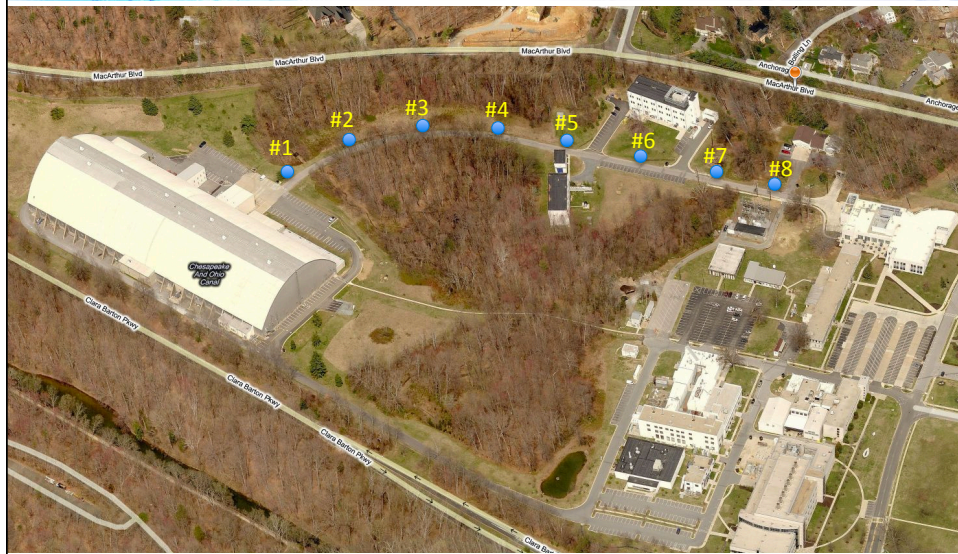
Opportunities and Benefits of Energy Efficiency

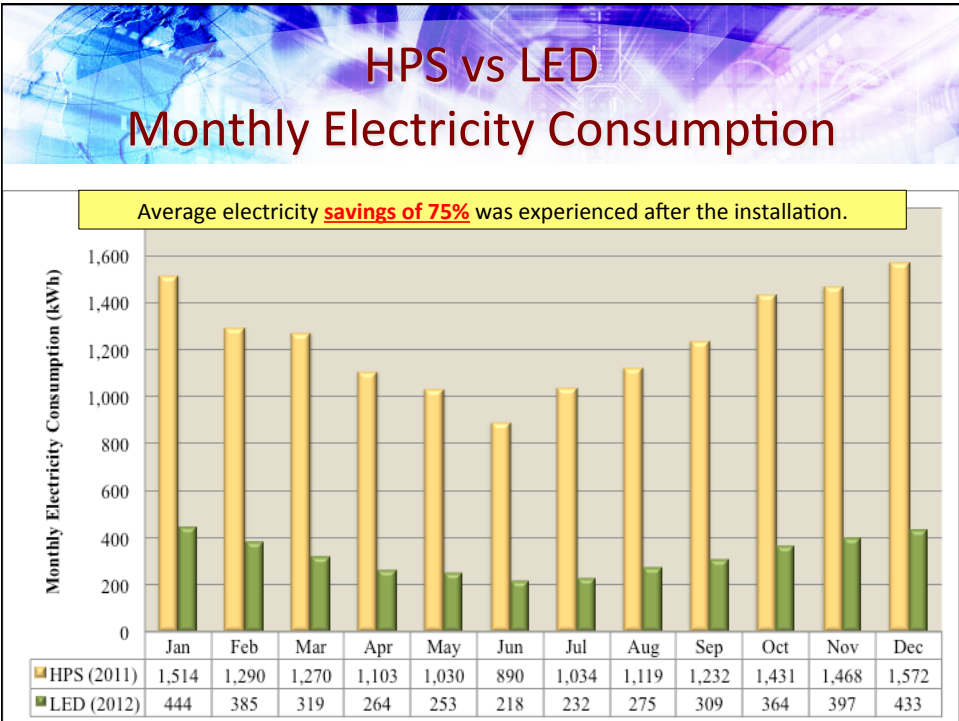
These buildings typically do not use building automation systems to make these buildings energy efficient

Policies encouraging building energy efficiency can reduce energy consumption and encourage product development and job opportunities in the service sector

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LED Lighting Project @ US Navy Research Center







LED Street Lights in Arlington



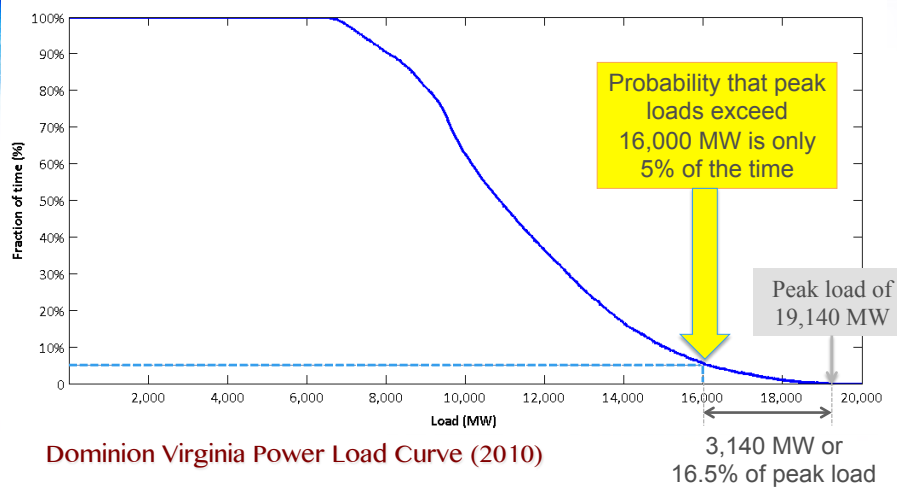
California Title 24

Lighting power in buildings larger than 10,000 sqft shall be capable of being automatically reduced in response to a Demand Response signal. Building total lighting power can be lowered by a minimum of 15%.

URL: <http://www.energy.ca.gov/title24>

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Electric Utility Efficiency Improvement



Electric utility peak load reduction through pricing, awareness and customer participation

Smart grid including smart meters will play a role



Solar Photovoltaics



Roof-top Solar at Virginia Tech Arlington Research Center



Dominion Virginia Power's Solar Photovoltaic Facility at a Canon Facility in Gloucester



Growing Renewable Energy in the Commonwealth

Source: www.dom.com



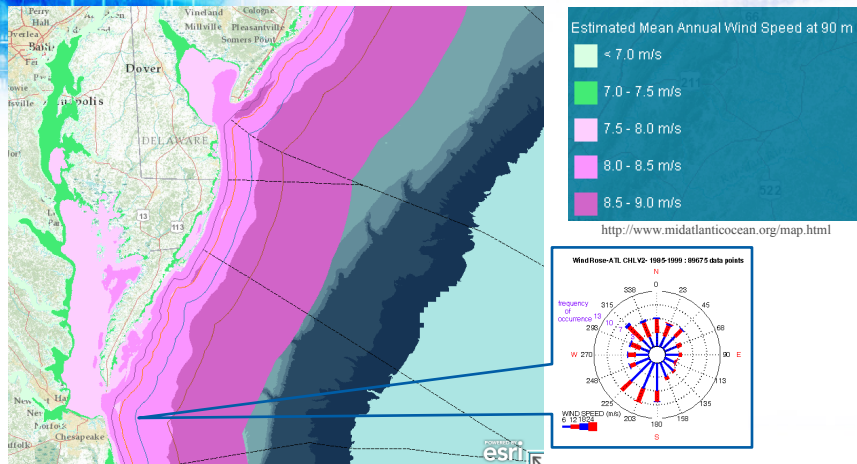
**Roof-top and Central Station
Solar Photovoltaics**

Policy Support
Net metering
Feed-in tariff
Renewable energy credit

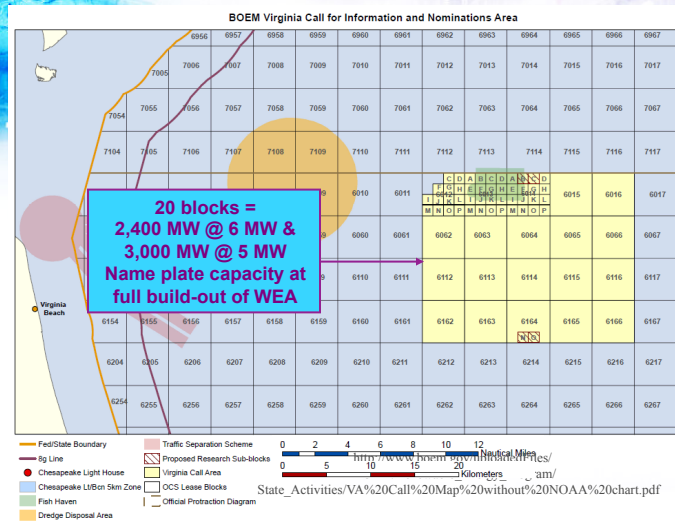



**Mid-Atlantic Off-shore
Wind Resource**

Mid-Atlantic Wind Resource



Virginia Wind Area of Potential





Virginia can be a leader in off-shore wind energy in the United States

Huge technology development and
new skilled job opportunities

“In Europe off-shore wind turbines support 58,000 jobs
and generate enough electricity to power six million
homes”



Thank You

Dr. Saifur Rahman

Professor and Director
Advanced Research Institute
Virginia Tech
Arlington, VA
srahman@vt.edu