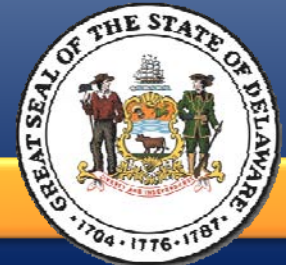
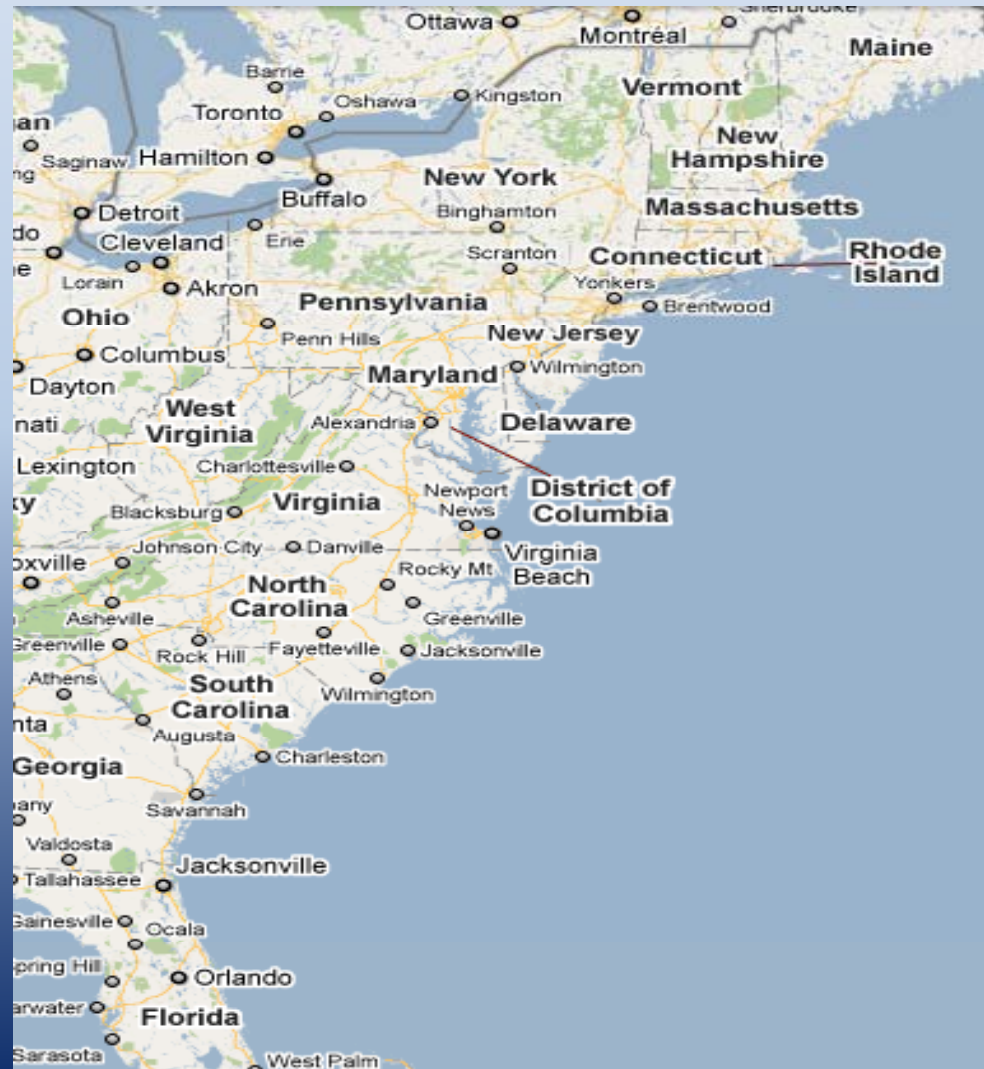


Towards a Sustainable Economy: State of Delaware

Stephanie A. McClellan, Ph.D.
Policy Advisor for Clean Energy Economy
Department of Natural Resources and
Environmental Control

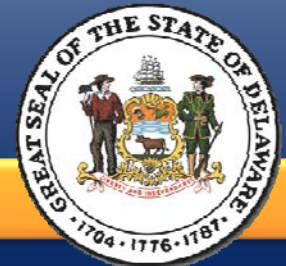


A Mid-Atlantic State



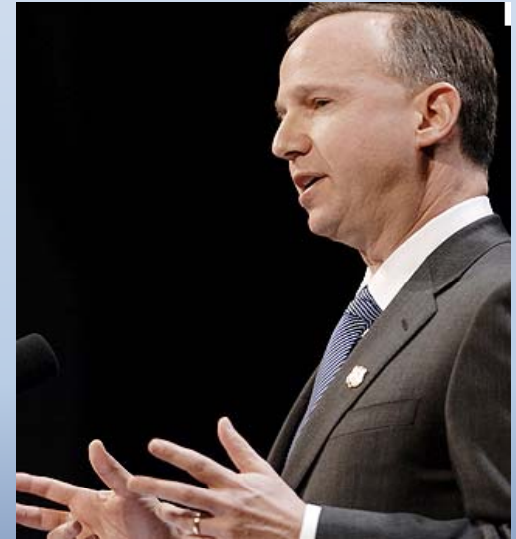
Delaware Profile

- Population: 885,122
- GDP (2010): \$62.7 billion
- GDP average annual growth rate percent (1997 – 2004): 3.0%
 - -1.8% in 2009
- Unemployment in 2011: 8.5%
- Industry Clusters:
 - Government
 - Education
 - Banking
 - Chemical and pharmaceutical
 - Healthcare
 - Automotive manufacturing
 - Agriculture
- Political subdivisions:
 - 3 counties
 - 57 incorporated cities and towns (Wilmington, Dover and Newark)



A Commitment to Jobs and Sustainability

- Governor Jack A. Markell
- Elected 2008
- Environmental platform
- Strong jobs emphasis
- Utilize environmental regulations to promote job growth and prosperity



A Framework for Prosperity and Sustainability

- Green savings
 - Increasing prosperity by reducing operating costs through reducing energy use and waste
- Green opportunities
 - Creating jobs in new markets spurred by new investment and the range of career opportunities in new industries
- Green talent
 - Preparing a world-class workforce trained to participate in this emerging sector
- Green places
 - Creating places that protect and enhance the natural and built environment that attract jobs

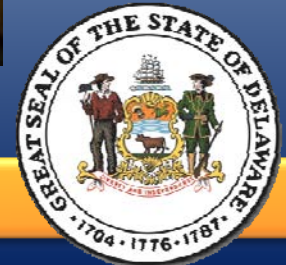




REALIZING GREEN SAVINGS

Laws to Increase Green Savings

- Senate Bill 106 created an Energy Efficiency Resource Standard (2009)
 - Reduce energy consumption in the state by 15% by 2015
- Senate Bill 234 (2010)
 - Created recycling program requiring comprehensive residential and commercial recycling programs by municipalities and waste haulers



Government's Cleaner and Greener Operations

- Executive Order Number 18
 - Reduce energy use by 30% by 2015
 - Receive 30% of electrical generation from renewable sources (already achieved)
 - Build to LEED Silver Standard
 - Divert 75% of waste from landfills
 - Reduce gas consumption and vehicle emissions by 25%
 - Environmentally responsible procurement



Helping Others to Use Energy More Efficiently



Administered by the state's
"Sustainable Energy Utility"

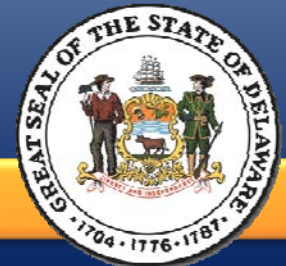
Energy Efficiency Audits and
Audit-based rebates

EnergyStar Appliance Rebate program

Rebates for CFL and
LED purchases

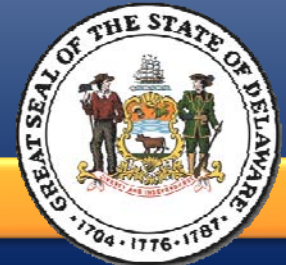
Performance contracting

Loans to businesses for large
energy efficiency retrofits



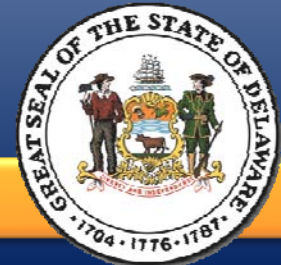
“Green for Green” Program

- State-run program
- Offering rebates for homes built to national third-party green building standards
 - Energy efficiency
 - Water conservation
 - Indoor air quality
 - Building materials
- Available only in designated growth areas
- Helped more third-party certified homes to be built in Delaware than any other state, per capita



Small Business Energy and Facilities Revolving Loan Fund

\$1 million RLF to help jump start businesses specializing in energy efficiency

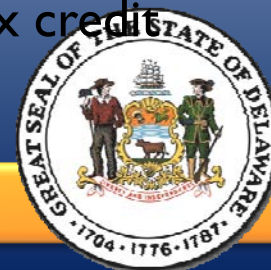




SEIZING GREEN OPPORTUNITIES

Laws to Create Green Opportunities

- **Senate Bill 49 and House Bill 70:** Prohibits deed restrictions for renewable energy installations
- **Senate Bill 153:** Establishes that V2G power from electric vehicles to the grid qualified for net metering
- **Senate Bill 106:** Requires renewable energy after energy efficiency, but before new fossil fuel generation
- **Senate Bill 119:** Increases the state's RPS to 25% by 2025 and increased "solar carveout"
 - SREC procurement program
- **Senate Bill 266:** Makes renewable energy rebates performance based and requires energy efficiency audit for participation
- **Senate Bill 267:** Expanded net metering policy (aggregate meters, community-owned systems, 3rd party owners, fuel cells)
- **Integrated Resource Planning regulations:** Climate and health considerations in energy planning
- **Senate Bill 40** (pending passage): Establishes manufacturing tax credit

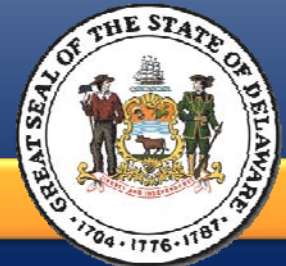


Seizing Competitive Advantages

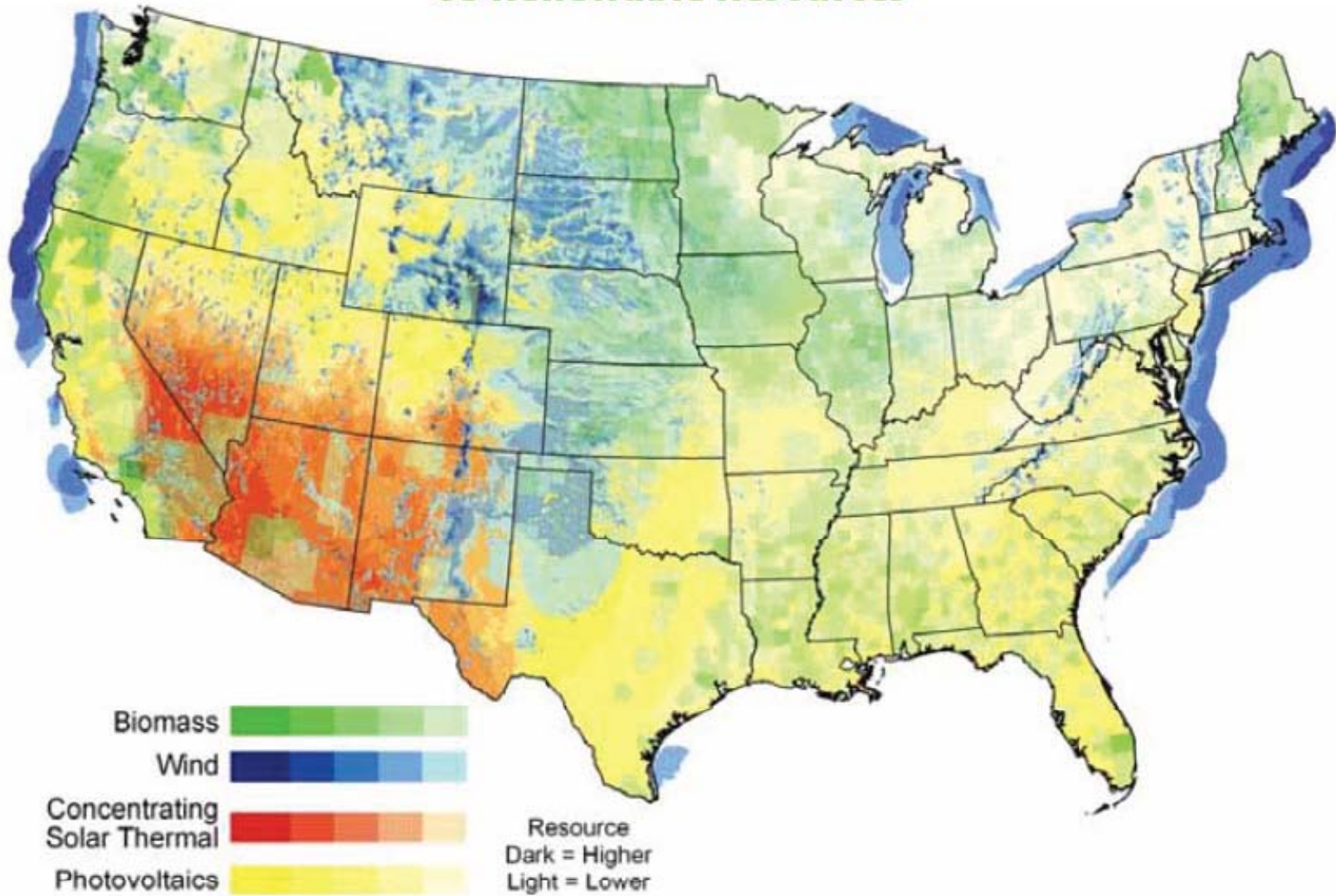
Offshore Wind

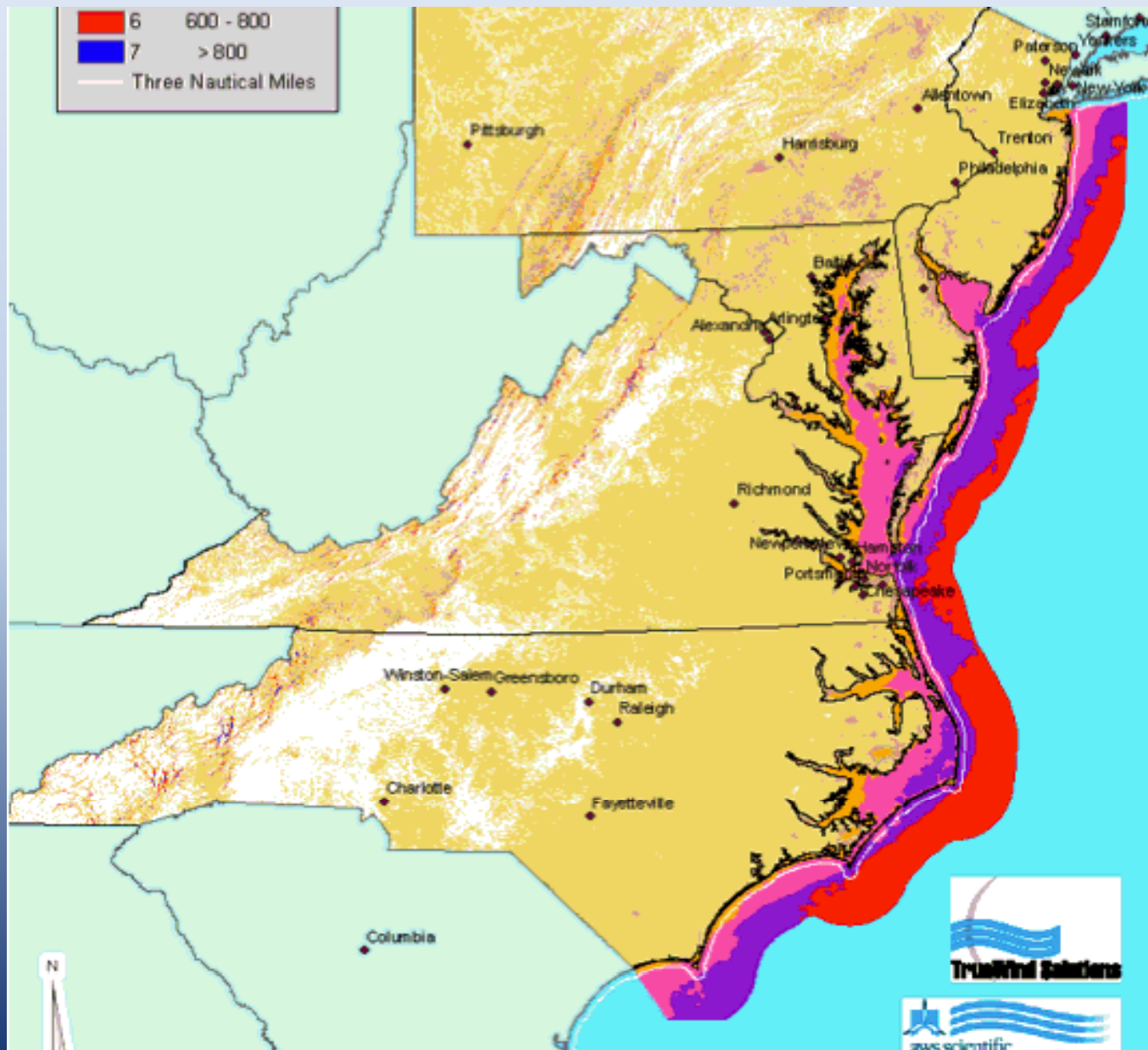
Alternative Fuel Vehicles

Sustainable Chemistry

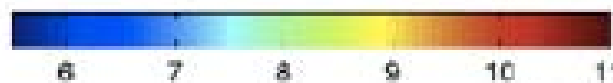


US Renewable Resources

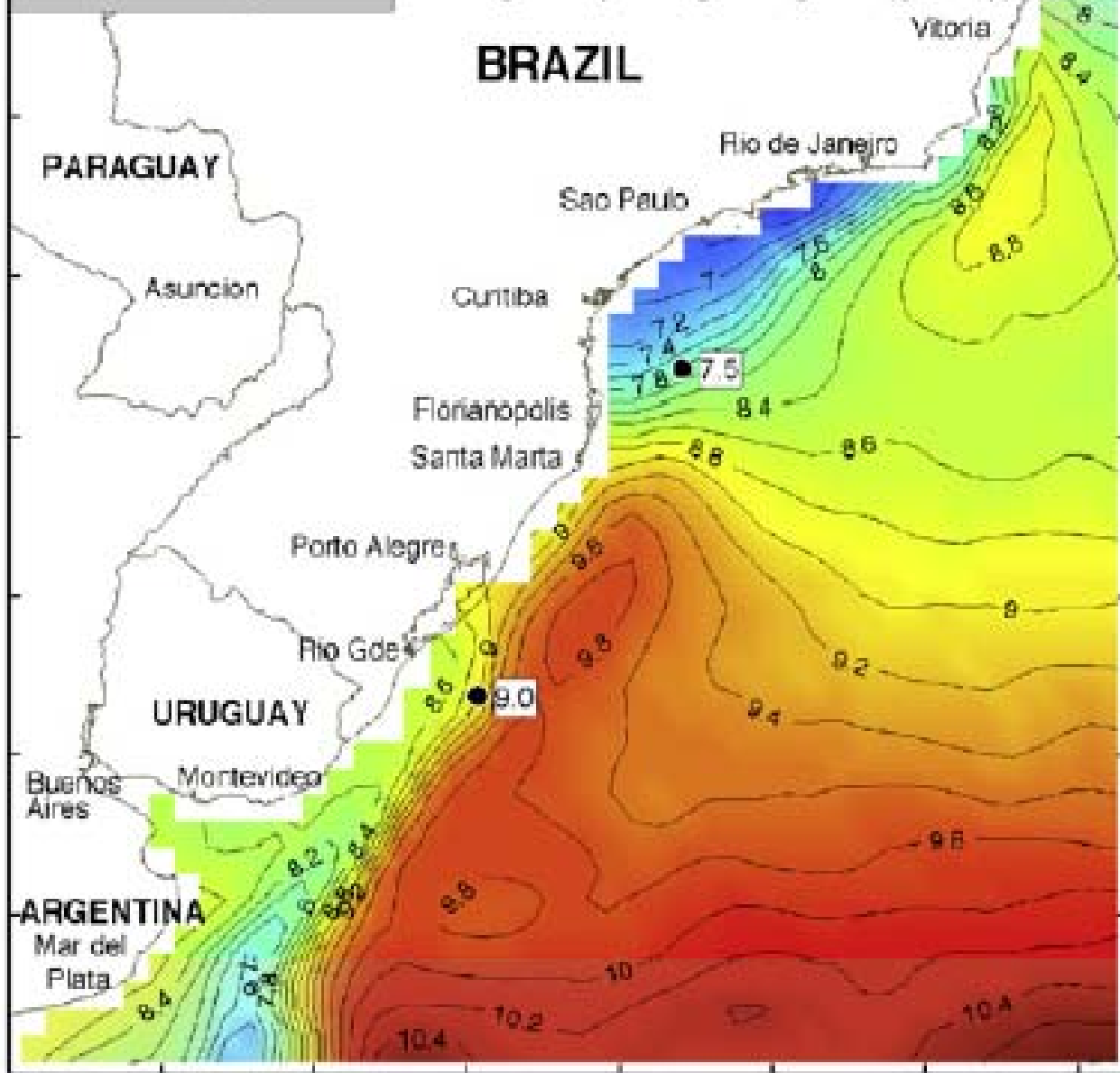




Wind speed (ms^{-1})
80 m height

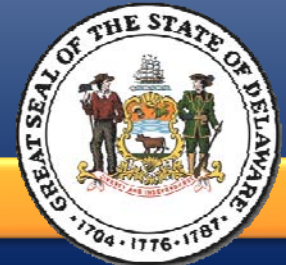


BRAZIL



The First in Offshore Wind

- First contract for offshore wind between developer and utility
- Delaware Public Service Commission first to approve an offshore wind farm and contract (450MW)
- First project to finish federal leasing process under new regulations
- University of Delaware first to offer graduate program in offshore wind



Electric Vehicles and Vehicle-to-Grid



**2,500 New
Manufacturing Jobs**



Intellectual Capital



Fuel Cell Vehicles

- Dupont
 - Gold standard polymer membrane
- Supply Chain
 - Bloom Energy
 - IonPower
 - W.L. Gore
 - Air Liquide
- University of Delaware
 - Center for Fuel Cell Research

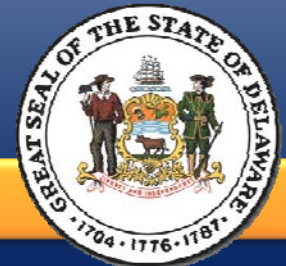


Delaware's Chemical Sector

Legacy of transformational discoveries

One of the top chemical engineering schools in US

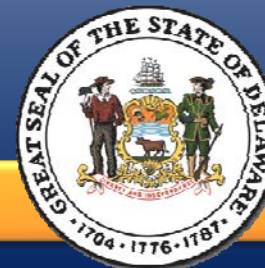
Highest per capita concentration of patents and
Ph.D.s in US





DELAWARE
SUSTAINABLE CHEMISTRY
ALLIANCE

- Efficient, safe processes and materials
- Finding design and process inspiration in nature
- Research consortium
- Collaborative grant-seeking
- State-supported initiative





CULTIVATING GREEN TALENT

Wind Turbine Operators

University of Delaware trains graduate students as wind turbine operators, using its coastal turbine which also powers its southern Delaware campus



Applied Energy Education Center

- Associate's degree for energy managers and technicians
- Certifications
 - Renewable energy, energy management, energy assessment and cost analysis, green building design and construction, hybrid and electric transportation
- Workshops for technicians, managers, residents



CREATING GREEN PLACES

Cleaner Energy Generation

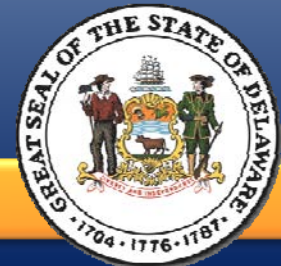
- Shut down coal-fired electrical generating unit



- Consent agreement included generating company's commitment to develop job training programs in partnership with Delaware colleges for clean energy jobs including the company's planned offshore wind park, electric vehicle infrastructure and solar technology.



- Fuel-switching from coal to natural gas



DNREC/NVF Land Deal

- Purchased 119 acres of shuttered fiber company and its accompanying multi-use buildings
- Partnering with private developers to create recreational area and mixed-use development
- Environmental clean up
- Preservation of 1920's-era buildings
- Recreation
- Economic Development



Environmental Clean Up



Historic Preservation



Towards a New Sustainable Prosperity

- Reducing energy consumption
 - Limiting CO₂ emissions and reducing GHG
 - Creating savings that are returned to the local economy
- Promoting renewable energy
 - Lowering carbon footprint
 - Attracting financial investment, creating new markets and new job opportunities
- Preparing the workforce for new opportunities
- Improving our environment to attract investment, talent

