

HAMPTON ROADS ENERGY OPTIONS PART 2- ENERGY IN HAMPTON ROADS 11.15.2012



James Clary: HRPDC Economist

Three Goals of Regional Energy Policy

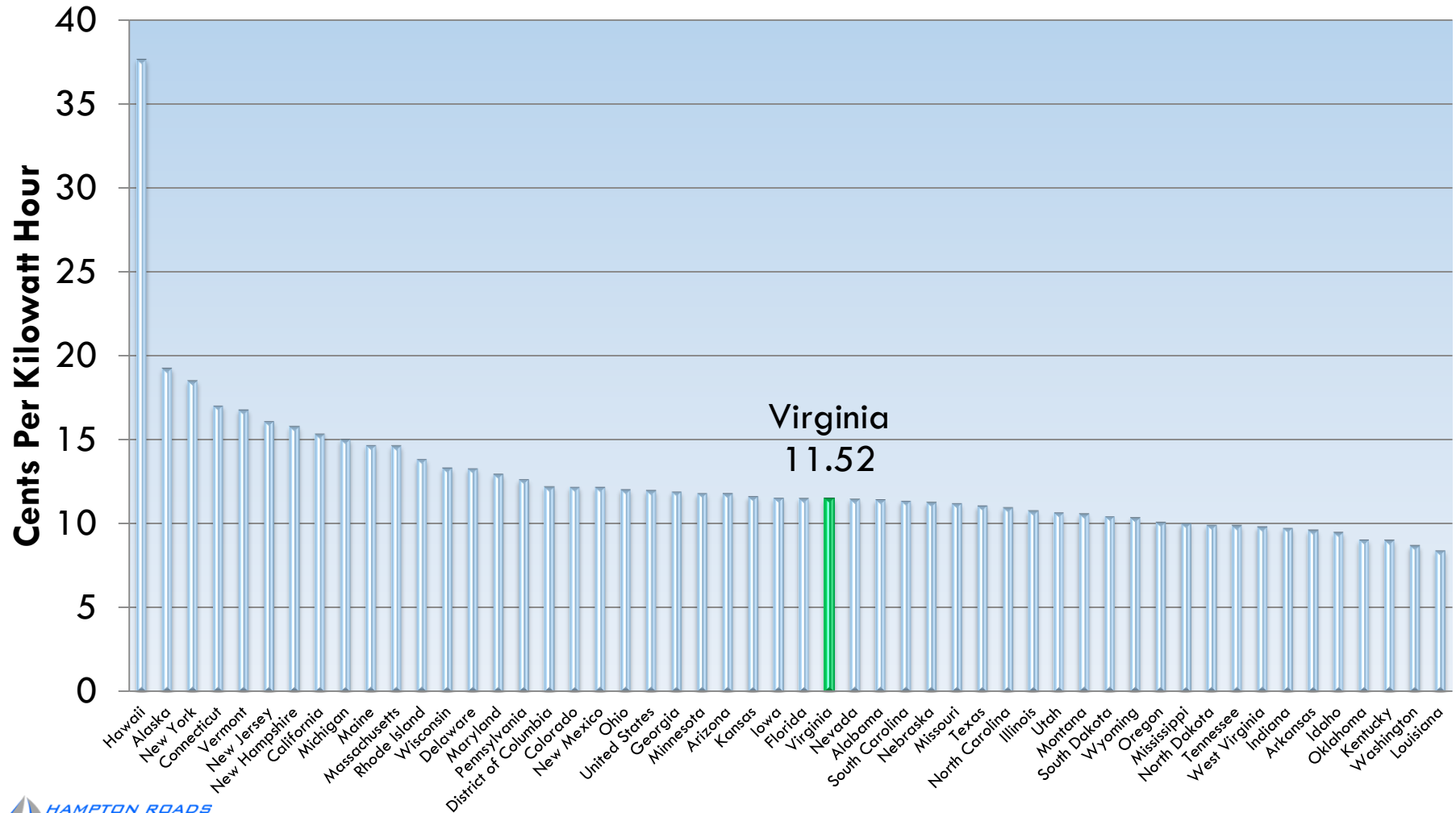
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1. High Energy Surety
2. Low Energy Costs
3. Increasing Energy Jobs

➤ Energy Security is also a priority in Hampton Roads

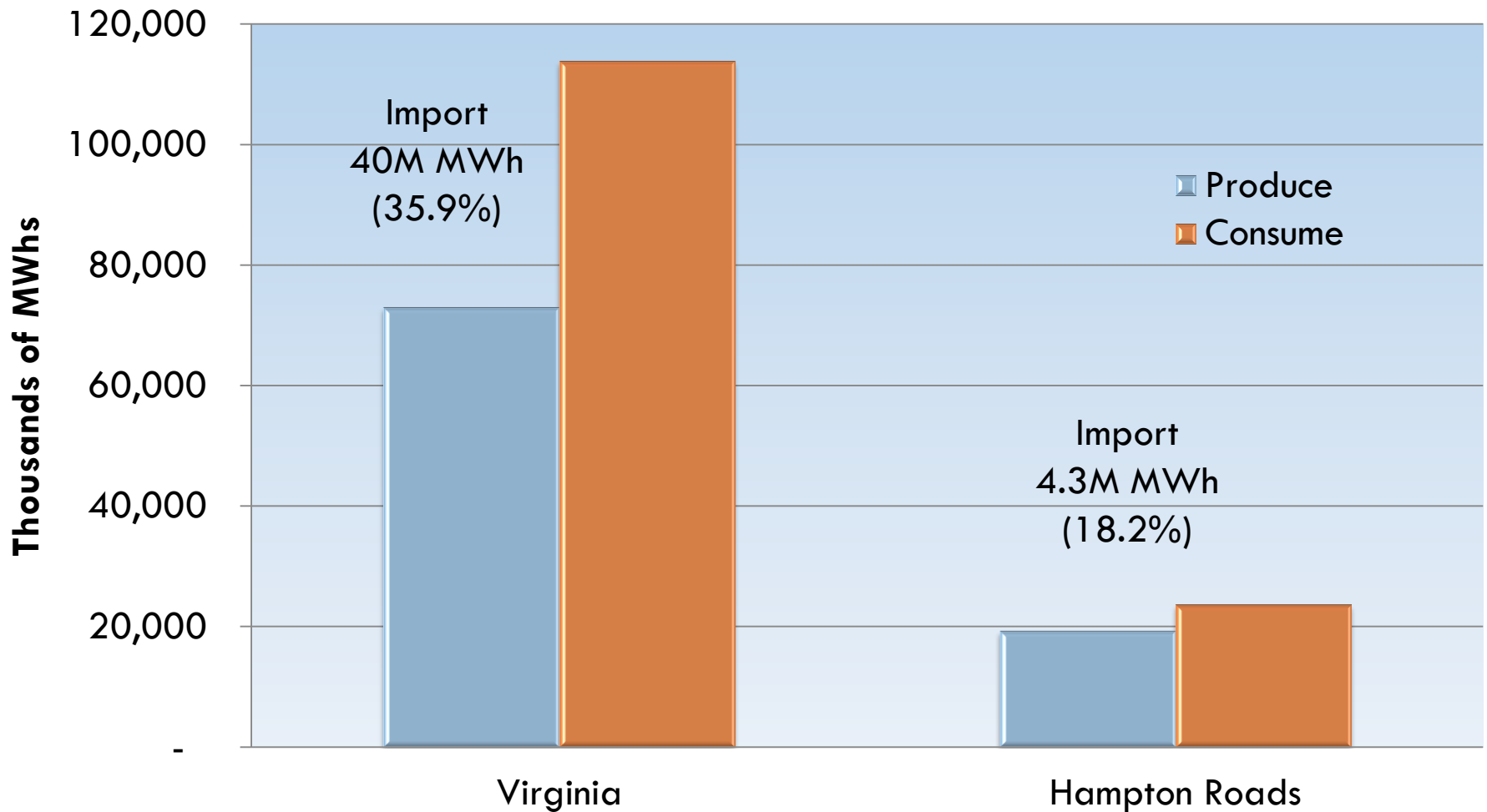
Electricity Prices by State, July 2012

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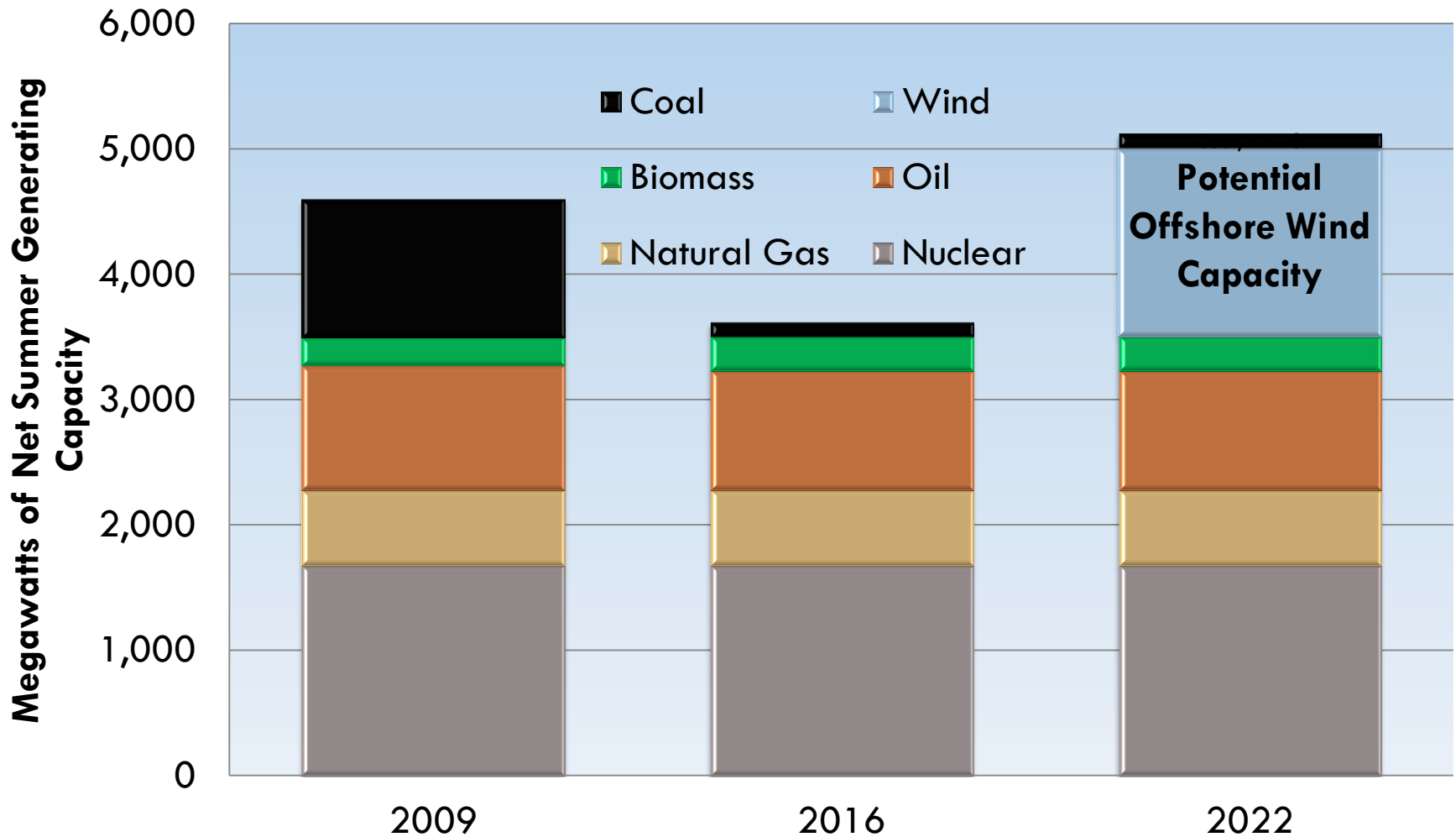
Electricity Use vs Generation in H.R.

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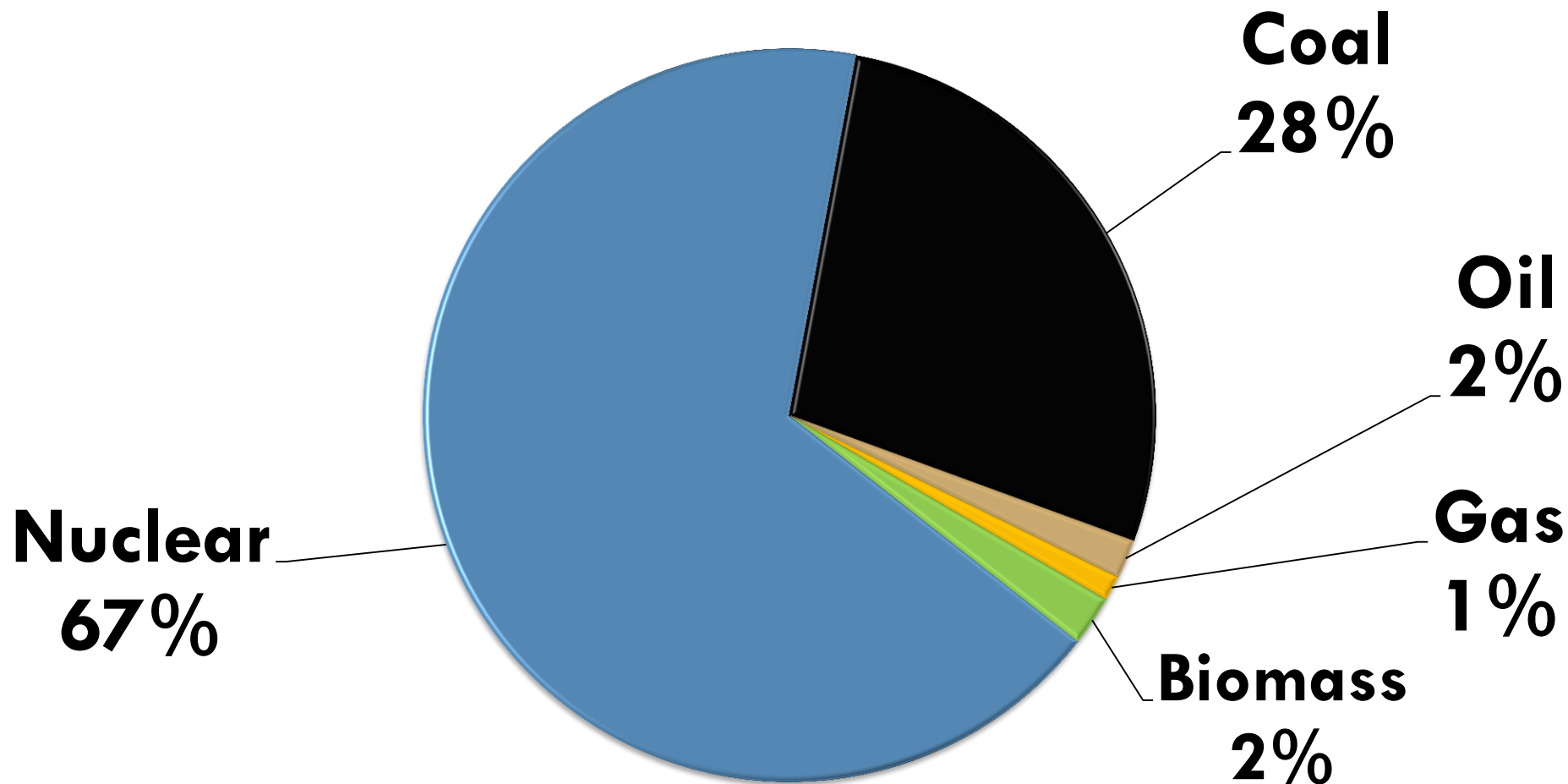
Current Capacity and Outlook in H.R.

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Net Generation in Hampton Roads, 2009

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Source: Energy Information Administration eGrid 2012, HRPDC

Potential Energy Technologies in Hampton Roads

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✗ Biomass and Biofuels

✓ Offshore Oil & Gas

✓ Coal

✗ Natural Gas

✗ Onshore Wind

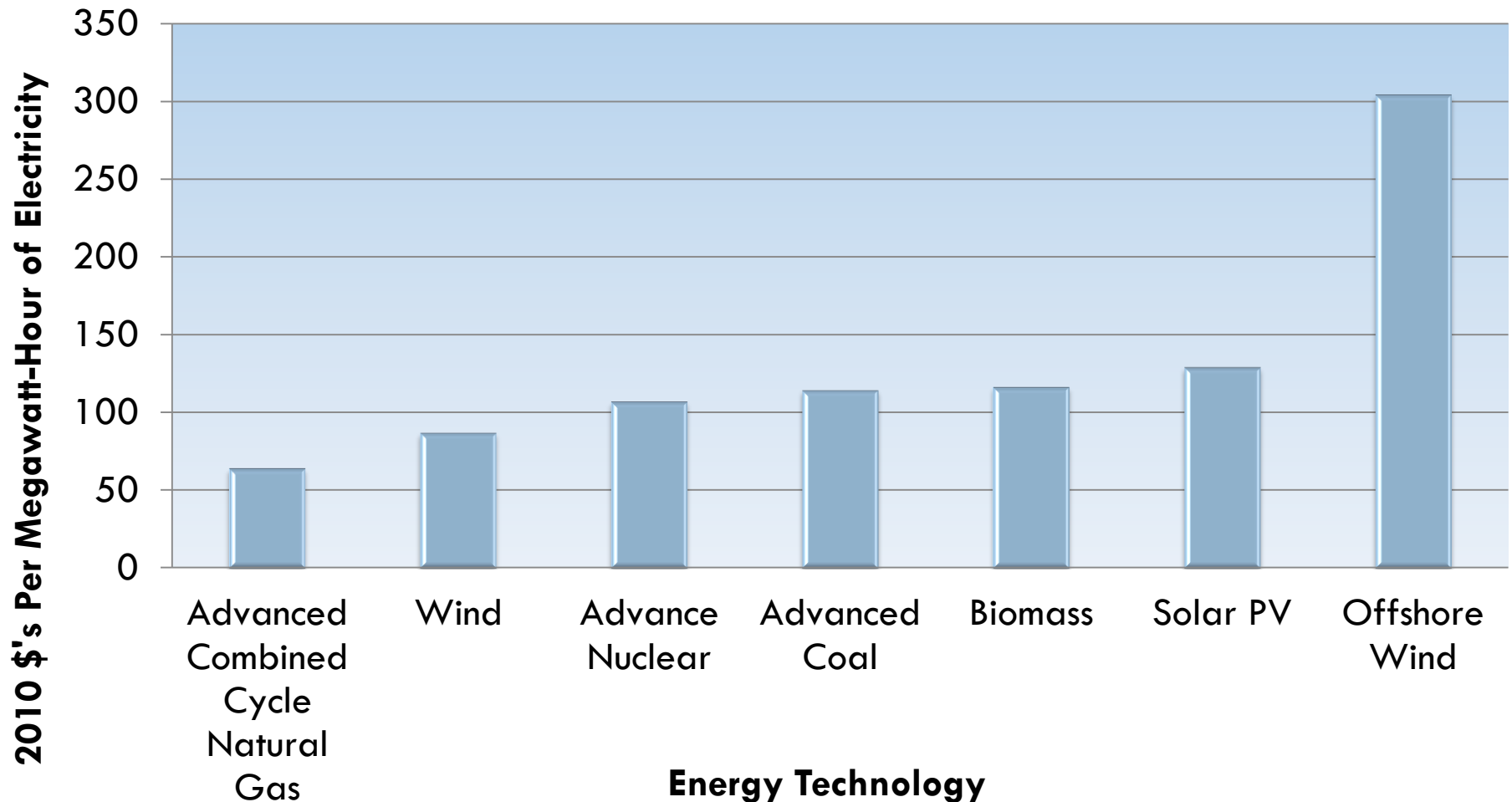
✓ Nuclear

✓ Offshore Wind

✗ Solar

Levelized Cost of New Electricity Generation Capacity Installed in Virginia and Carolina's in 2017

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Coal

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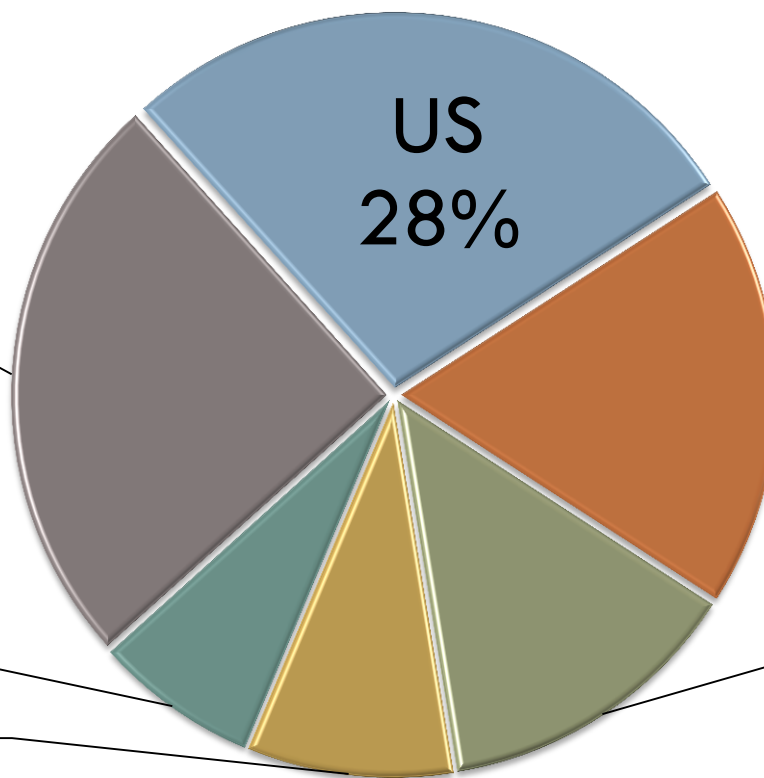
Source: The Virginian-Pilot

Coal Reserves

Rest of
World
25%

India
7%

Australia
9%



Years of Reserves at
Current Rate Production

US	239
Russian Federation	471
China	33
Australia	184
India	103

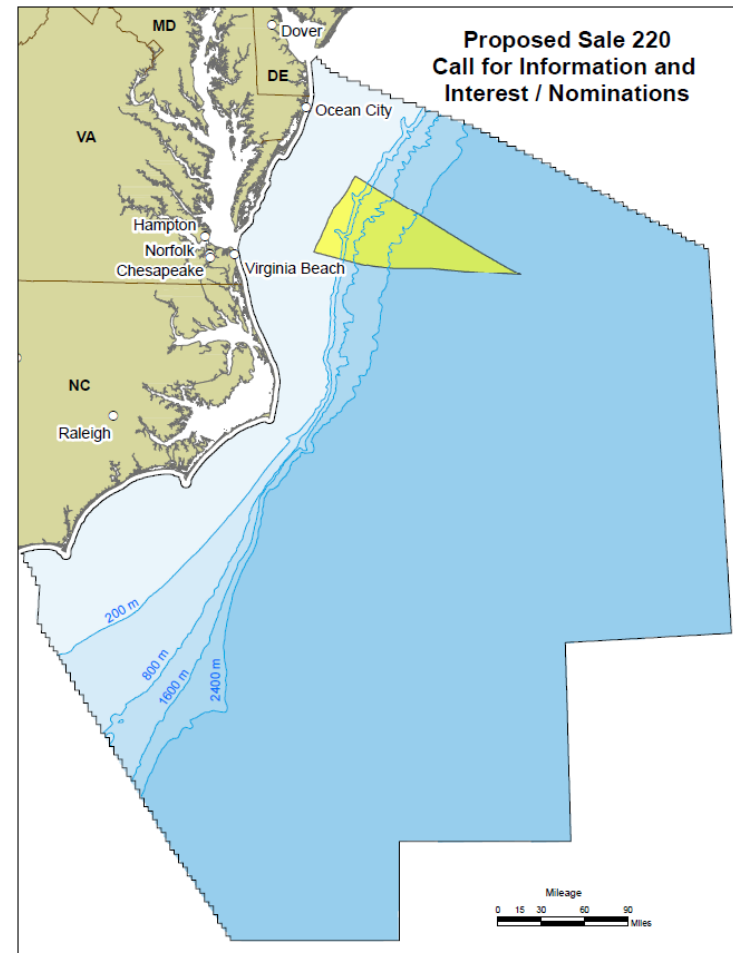
Russia
18%

China
13%

Offshore Natural Gas and Oil

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- BOEM Lease Sale 220
- Estimated
 - ▣ 130 barrels of oil
 - ▣ 1.14 trillion cubic feet of gas
- Citi estimates mid-Atlantic offshore development could not be online until 2022
- Many unknowns

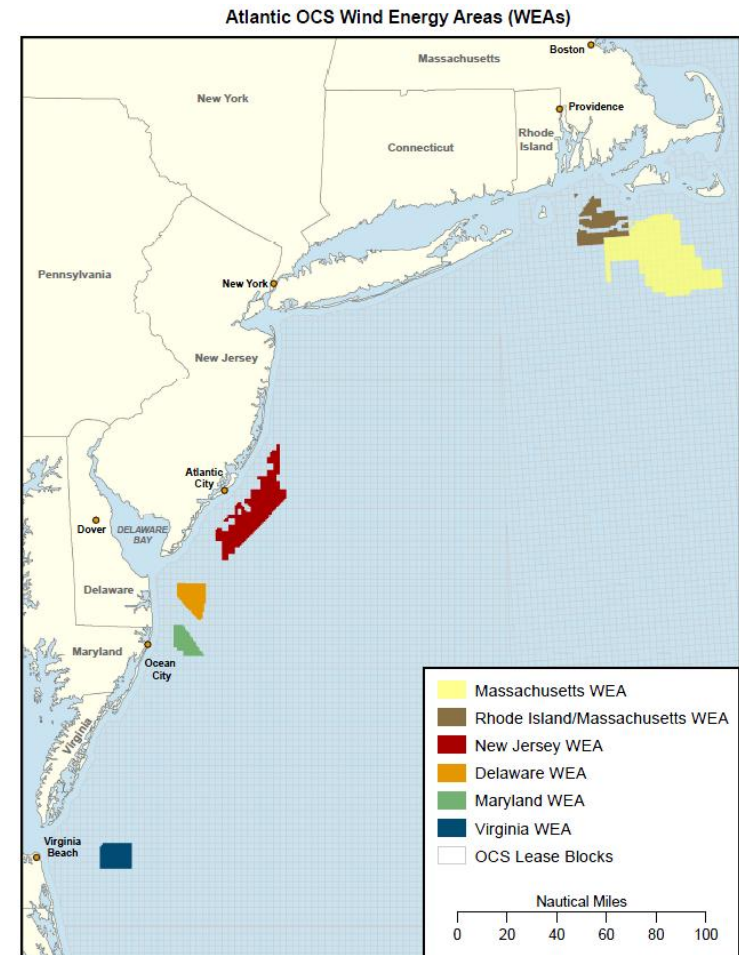


Source: Bureau of Ocean
Energy Management

Offshore Wind- Manufacturing Potential

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- No first mover advantage
- Cape Wind
- Deepwater (Rhode Island)
- All mid-Atlantic sites proceeding at the same pace

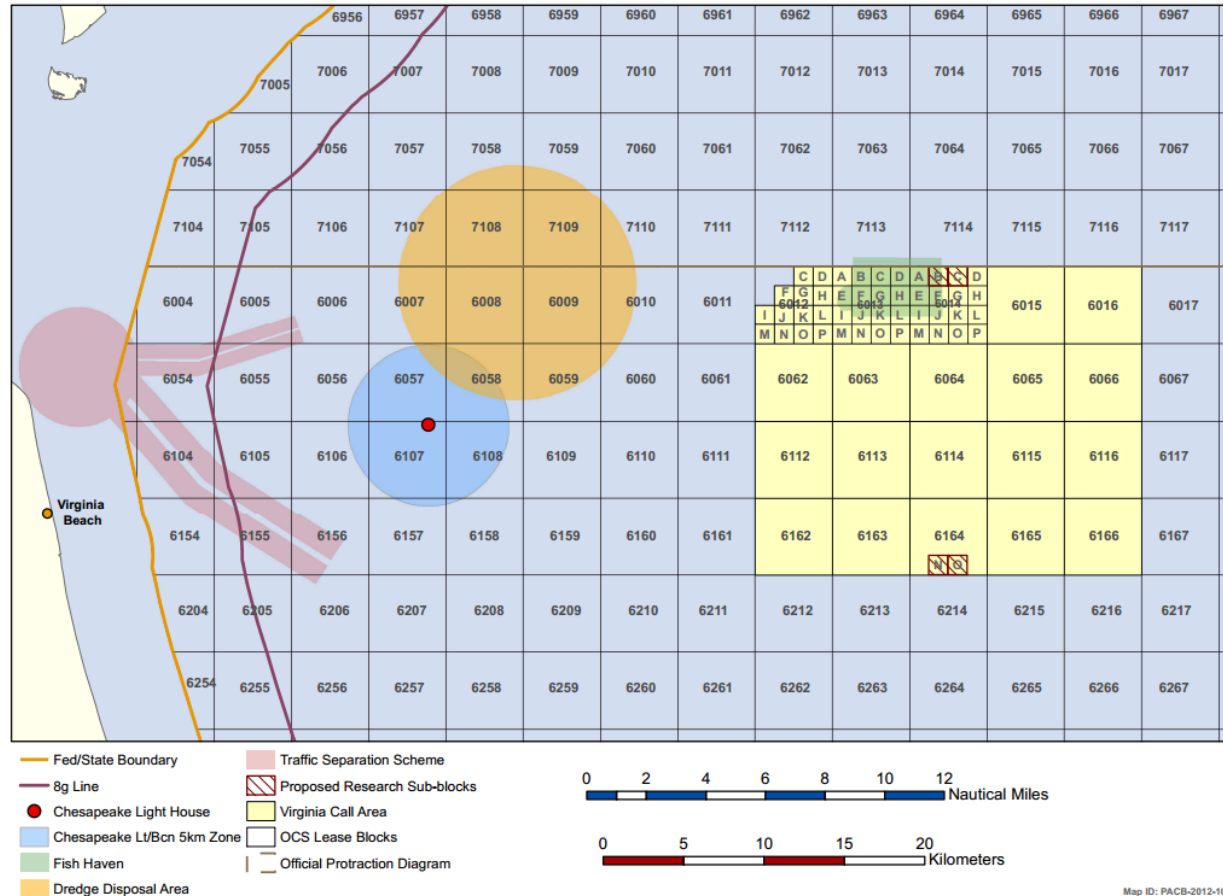


Source: Bureau of Ocean
Energy Management

Offshore Wind

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BOEM Virginia Call for Information and Nominations Area



- Atlantic Wind Connection 2021
- Dominion would not use Atlantic Wind Connection
- Probably no turbine construction prior to 2018 at the earliest.
- Turbines are still very expensive-levelized cost of ~\$340/MWh

Source: Bureau of Ocean Energy Management

Offshore Wind

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Potential Virginia Employment Impact from a 2000 Megawatt Offshore Wind Farm

Phase	Per MW	Total
Turbine Components	1	2,000
Wind Farm Installation	11	<u>22,000</u>
Total from Construction		24,000
Yearly Operation and Maintenance	0.7	1,400

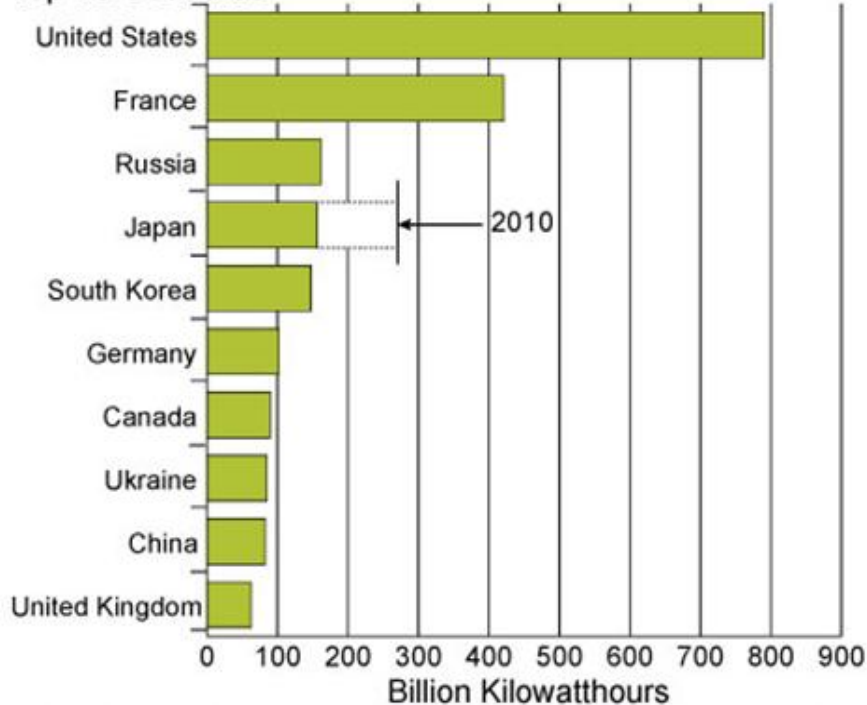
Source: South Carolina Wind Energy Supply Chain Survey and Offshore Wind Economic Impact Study, HRPDC

Nuclear

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Nuclear Generation, 2011

Top 10 Countries



Note: The remaining twenty-one other countries account for 417 billion KWh (17% of the total world nuclear generation).

Source: International Atomic Energy Agency, Power Reactor Information System File.

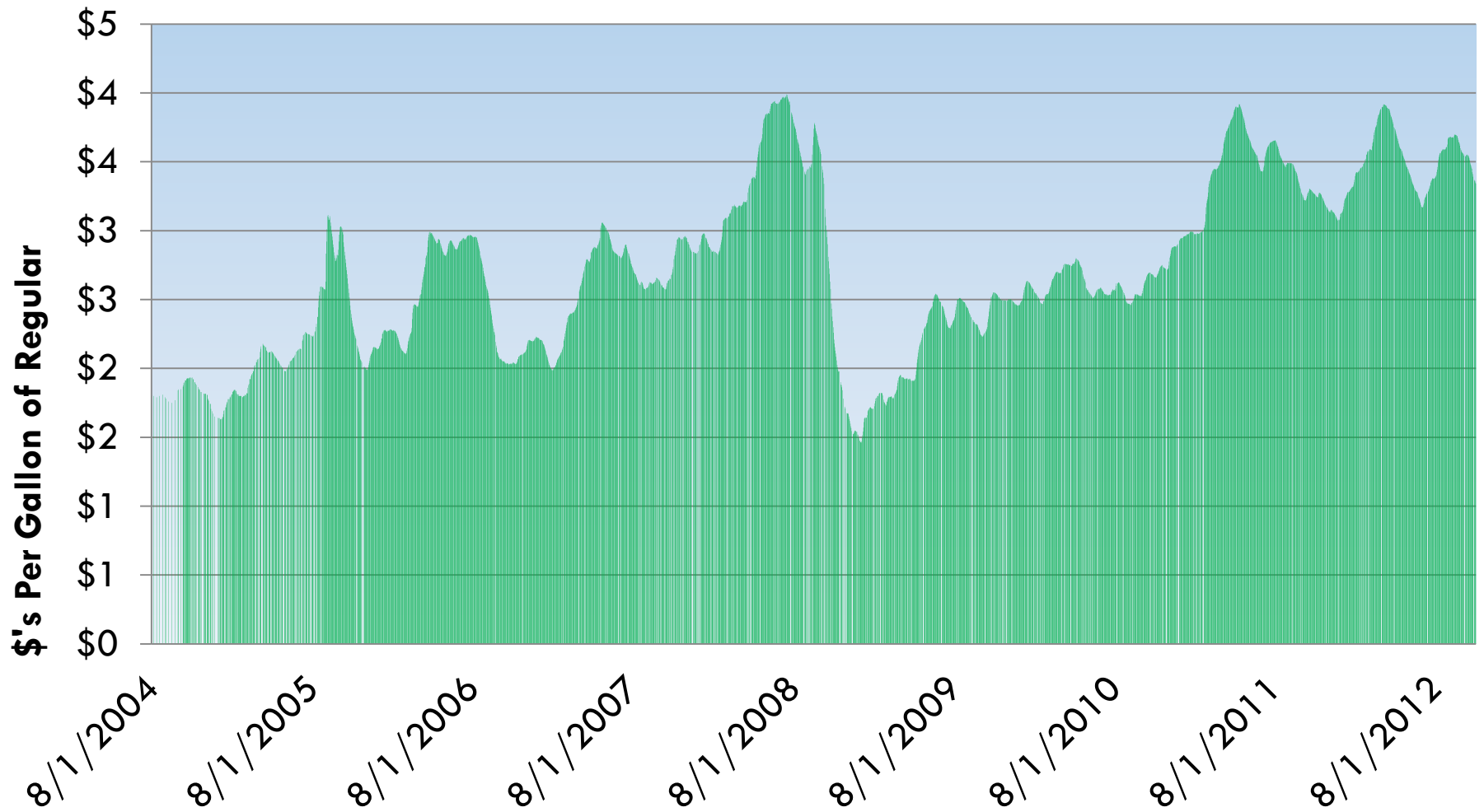


Surry Power Station

Source: Dominion Resources

Gas Prices in Hampton Roads

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Policy Recommendations

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- ❑ ***Avoid the temptation to pick winners***
- ❑ ***Energy efficiency is the most cost effective way to meet energy needs***
- ❑ ***Maintain simple permitting processes for distributed energy technologies***
- ❑ ***Recognize that some questions are policy questions and not economic or energy questions***
- ❑ ***Support the Hampton Roads Energy Corridor***
 - ❑ ***Multi-tiered rate structure***

Energy Options

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- Approval of “Hampton Roads Energy Options” is Consent Agenda Item 9F

Comments