

The “Sleeping Giant”

Offshore Wind in the Southeast



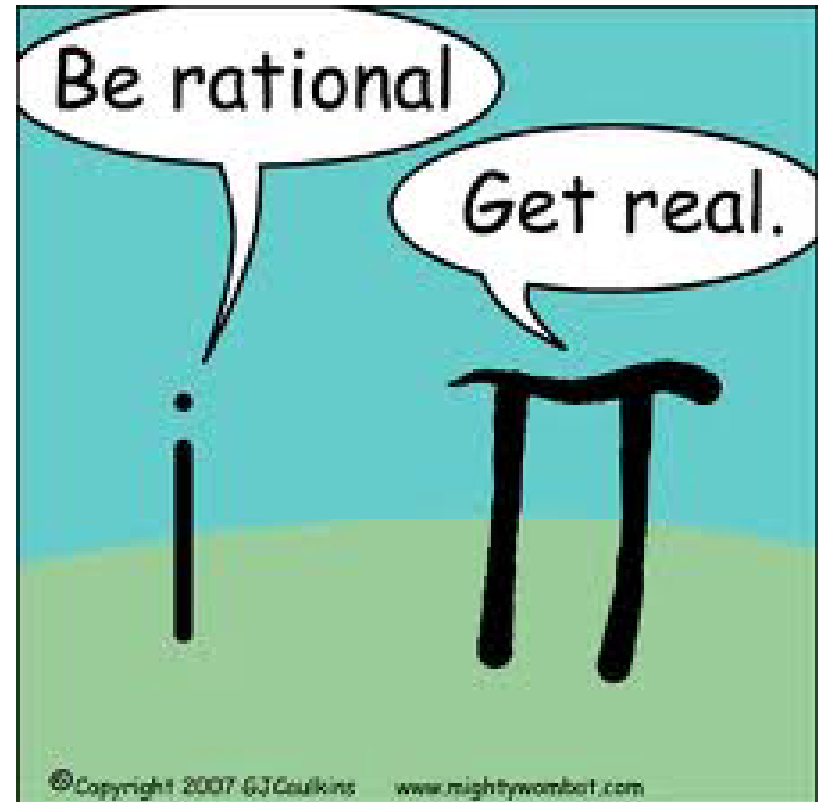
WINDPOWER 2012

June 6, 2012 – Atlanta, GA

Brian O’Hara

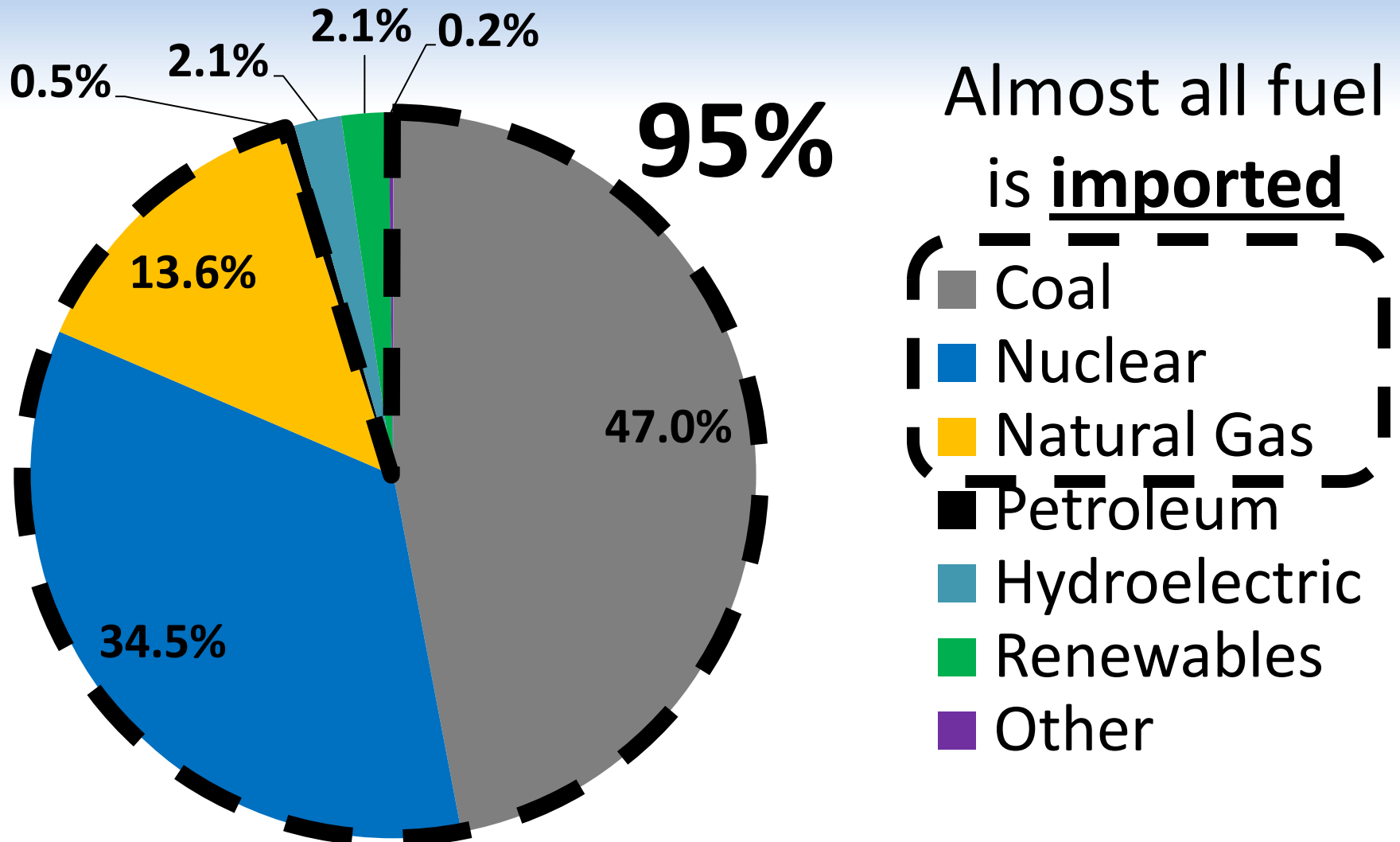
Southeastern Coastal Wind Coalition

Presented by an Engineer...



WARNING: Numbers Ahead!

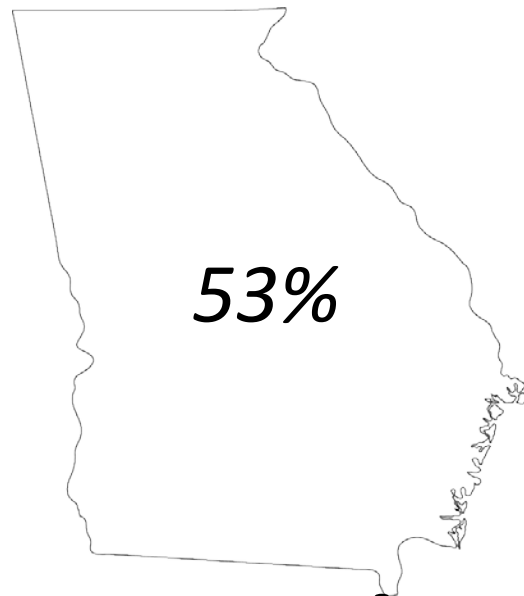
Southeast Electricity Sources



Source: US Energy Information Administration, 2010 data, includes VA, NC, SC, GA

Largest Coal Importers in the U.S.?

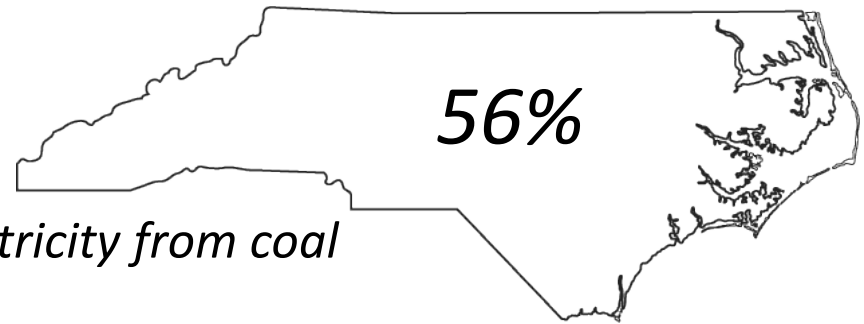
#1



Georgia

\$2.6 billion

#2



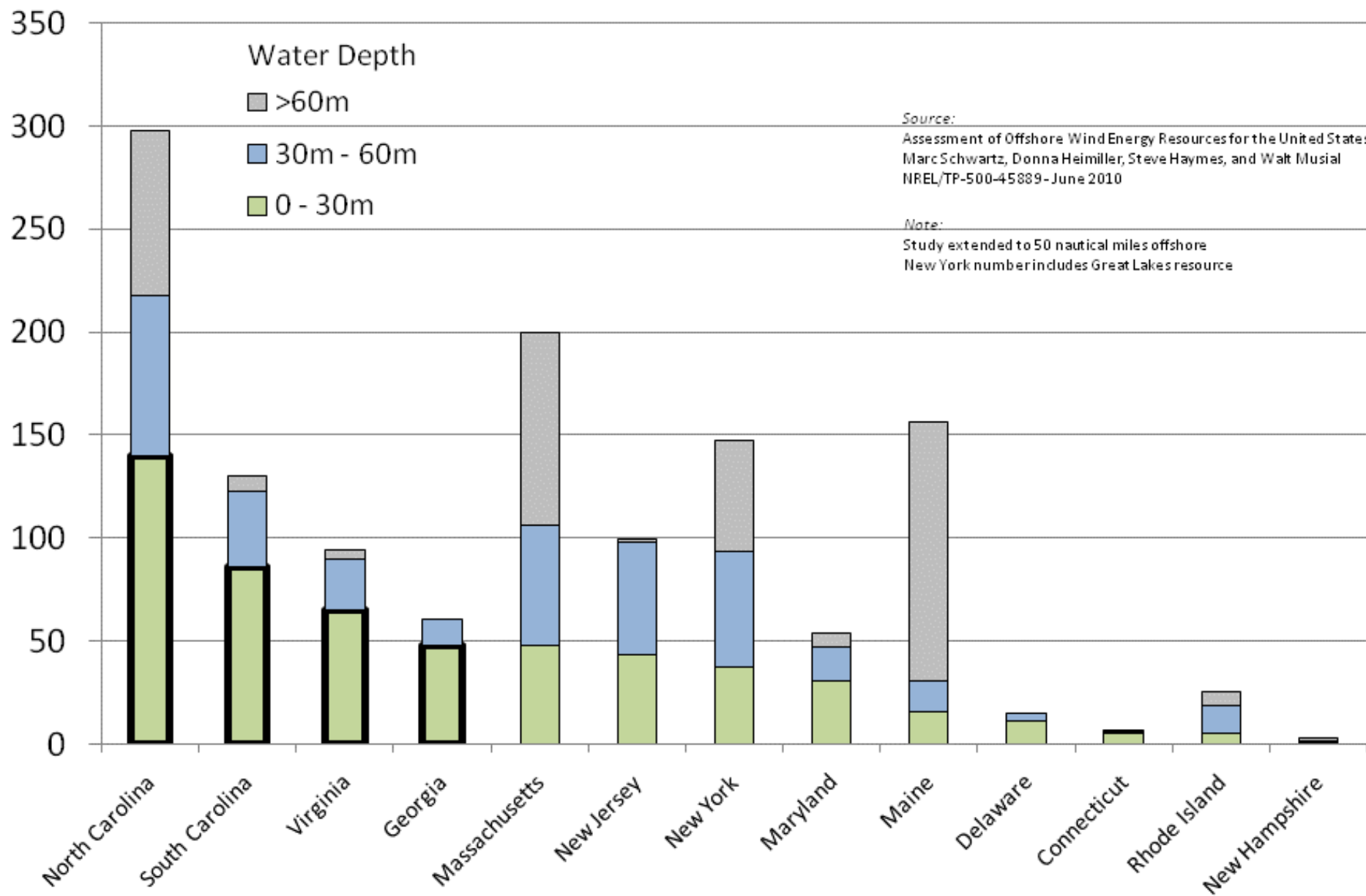
North Carolina

\$2.3 billion

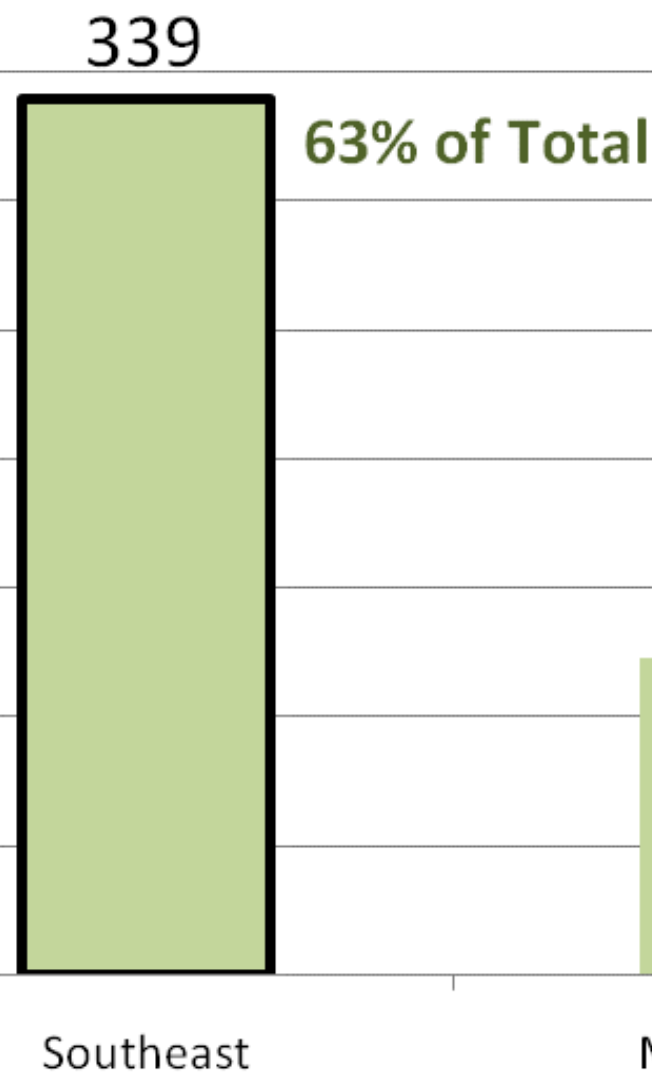
% of electricity from coal



Offshore Wind Resource Potential in Gigawatts



Offshore Wind Resource Potential Gigawatts in <30m of Water



Source:

Assessment of Offshore Wind Energy Resources for the United States
Marc Schwartz, Donna Heimiller, Steve Haymes, and Walt Musial
NREL/TP-500-45889-June 2010

Note:

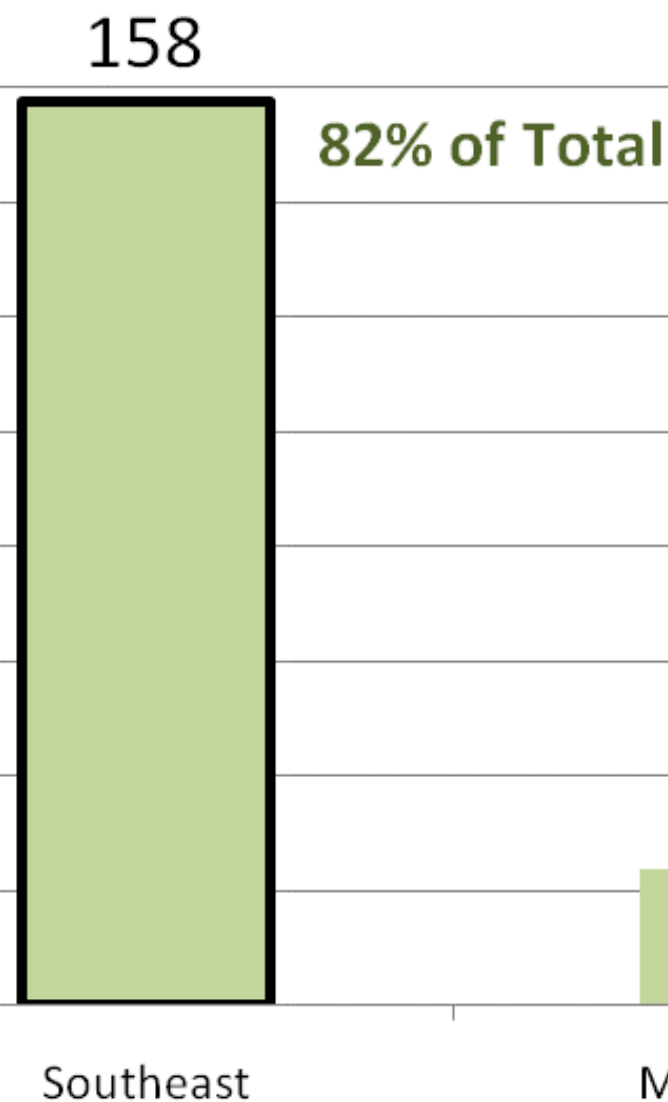
Study extended to 50 nautical miles offshore
New York number includes Great Lakes resource

WE DON'T WANT TO SEE...



Offshore Wind Resource Potential

Gigawatts in <30m of Water and >12nm Offshore



Source:

Assessment of Offshore Wind Energy Resources for the United States
Marc Schwartz, Donna Heimiller, Steve Haymes, and Walt Musial
NREL/TP-500-45889-June 2010

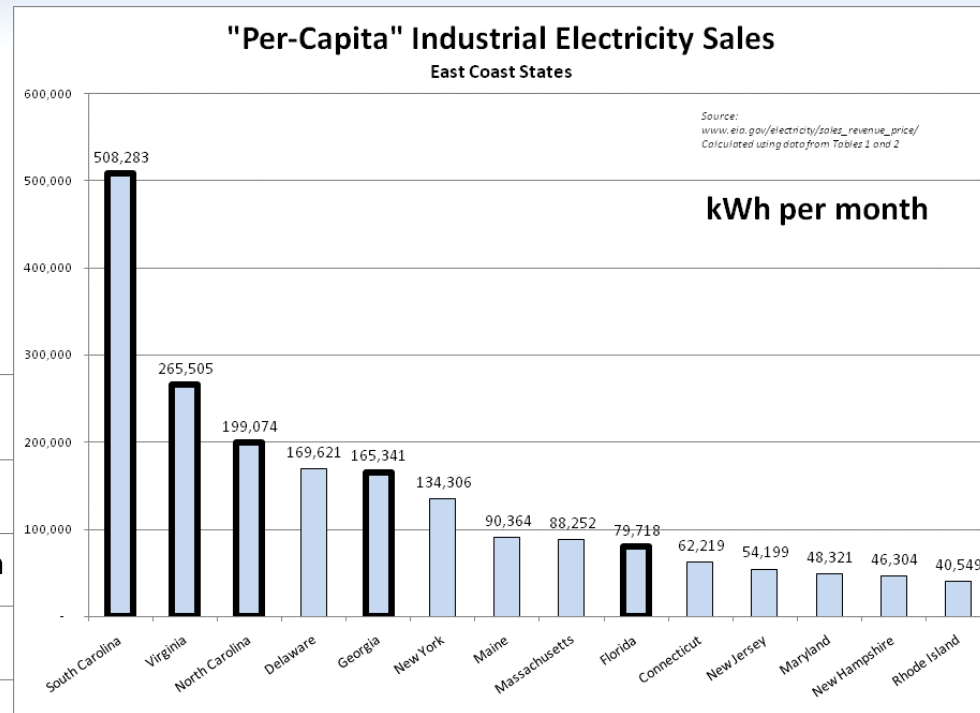
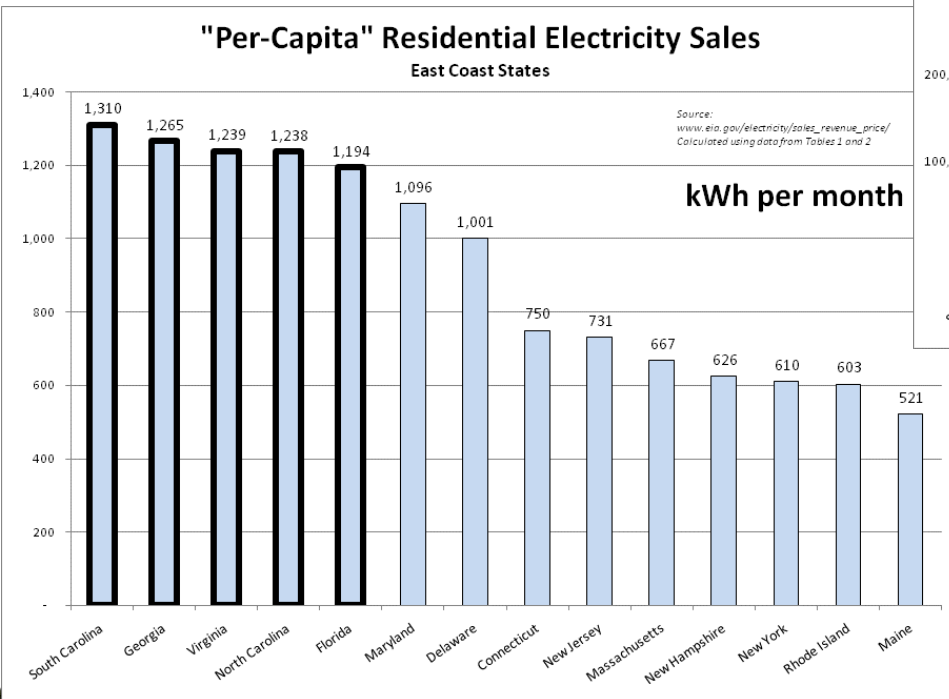
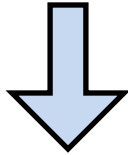
Note:

Study extended to 50 nautical miles offshore

New York number includes Great Lakes resource

High "Per Capita" Electricity Use

Residential (top 5)



Industrial (4 of top 5)

2010 Electricity Sales

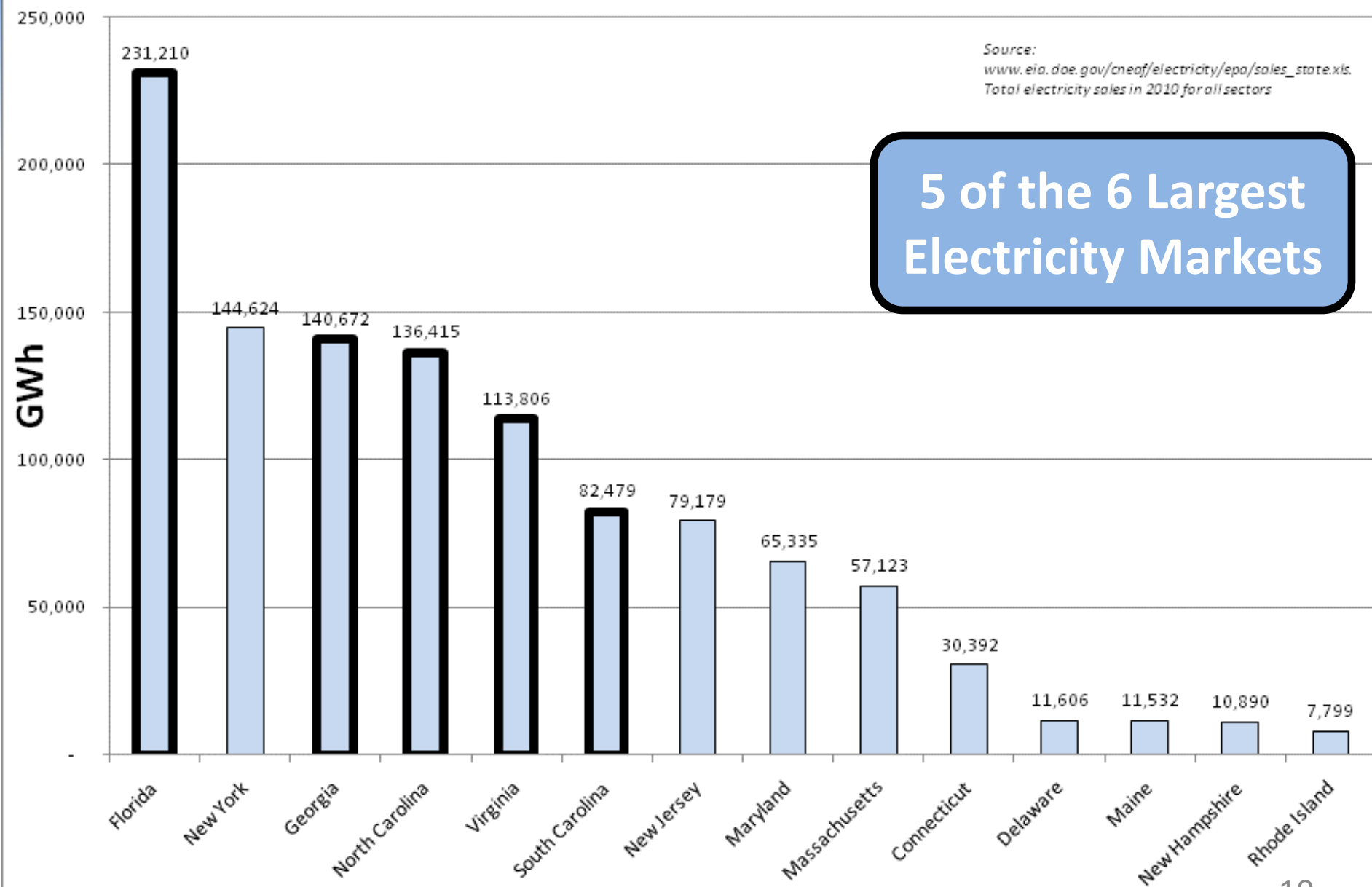
East Coast States

Source:

www.eia.doe.gov/cneaf/electricity/epo/sales_state.xls

Total electricity sales in 2010 for all sectors

5 of the 6 Largest
Electricity Markets



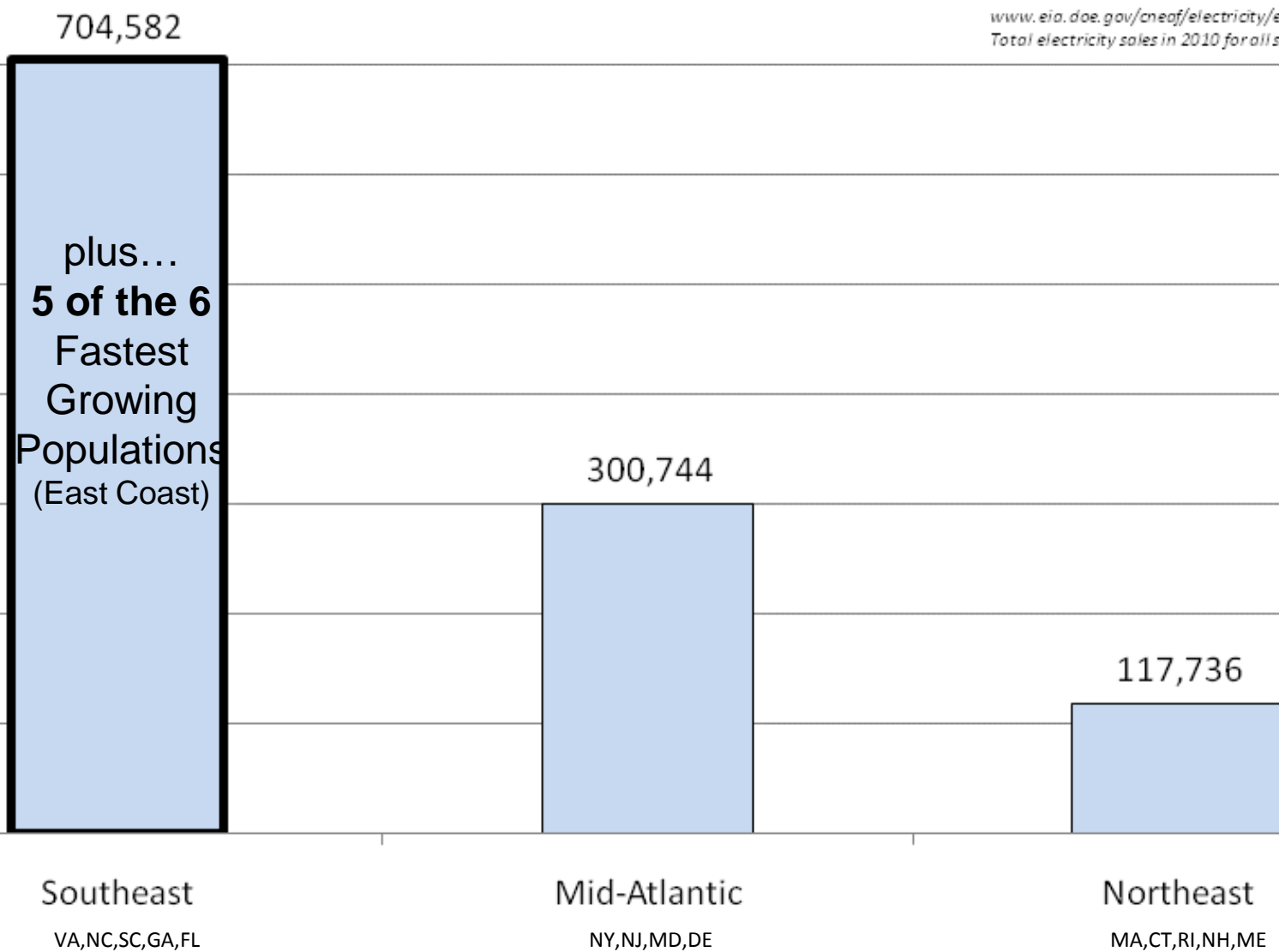
2010 Electricity Sales (GWh)

East Coast States

Source:

www.eia.doe.gov/cneaf/electricity/epo/sales_state.xls

Total electricity sales in 2010 for all sectors



Military Bases in the Southeast

Army	Navy	Air Force
<ol style="list-style-type: none"> 1. Chopawamsic Training Center (VA) 2. Fort A.P. Hill (VA) 3. Fort Belvoir (VA) 4. Fort Eustis (VA) 5. Fort Lee (VA) 6. Fort Myer (VA) 7. Fort Pickett (VA) 8. Fort Story (VA) 9. Front Royal Quartermaster Depot (VA) 10. Radford Army Ammunition Plant (VA) 11. Camp Butner (ARNG) (NC) 12. Camp Davis (NC) 13. Camp Mackall (NC) 14. Fort Bragg (NC) 15. Pope Army Airfield (NC) 16. Camp Croft (SC) 17. Fort Jackson (SC) 18. Fort Benning (GA) 19. Fort Gordon (GA) 20. Camp Merrill (GA) 21. Fort Stewart (GA) 22. Hunter Army Airfield (GA) 23. Camp Blanding (FL) 24. Daytona Beach WAC Training Center (FL) 	<ol style="list-style-type: none"> 25. Chesapeake NSGA (VA) 26. NSWCDD (VA) 27. Training Support Center Hampton Roads (VA) 28. NAB Little Creek (VA) 29. NS Norfolk (VA) 30. NAS Oceana (VA) 31. Wallops Island ASCS (VA) 32. NWS Yorktown (VA) 33. NSA Charleston (SC) 34. NAS Atlanta (GA) 35. NSB Kings Bay (GA) 36. Corry Station NTTC (FL) 37. NAS Jacksonville (FL) 38. NAS Key West (FL) 39. NS Mayport (FL) 40. NSA Orlando (FL) 41. NSA Panama City (FL) 42. NAS Pensacola (FL) 43. NAS Whiting Field (FL) 	<ol style="list-style-type: none"> 44. Langley Air Force Base (VA) 45. Pope Air Force Base (NC) 46. Seymour Johnson Air Force Base (NC) 47. Charleston Air Force Base (SC) 48. Shaw Air Force Base (SC) 49. Moody Air Force Base (GA) 50. Eglin Air Force Base (FL) 51. Hurlburt Field (FL) 52. MacDill Air Force Base (FL) 53. Patrick Air Force Base (FL) 54. Tyndall Air Force Base (FL)
		Marines
		<ol style="list-style-type: none"> 55. Henderson Hall (VA) 56. MCB Quantico (VA) 57. MCB Camp Lejeune (NC) 58. MCAS Cherry Point (NC) 59. MCAS New River (NC) 60. MCAS Beaufort (SC) 61. MCRD Parris Island (SC) 62. MCLB Albany (GA)

Source: http://en.wikipedia.org/wiki/List_of_United_States_military_bases

Average Residential Electricity Cost

East Coast States - 2010

Low Energy Cost is a Challenge and Benefit

Source: EIA - The Energy Information Administration, "Electricity Price for Bundled and Unbundled Consumers by Sector, Census Division, and State, 2010"

Challenge:

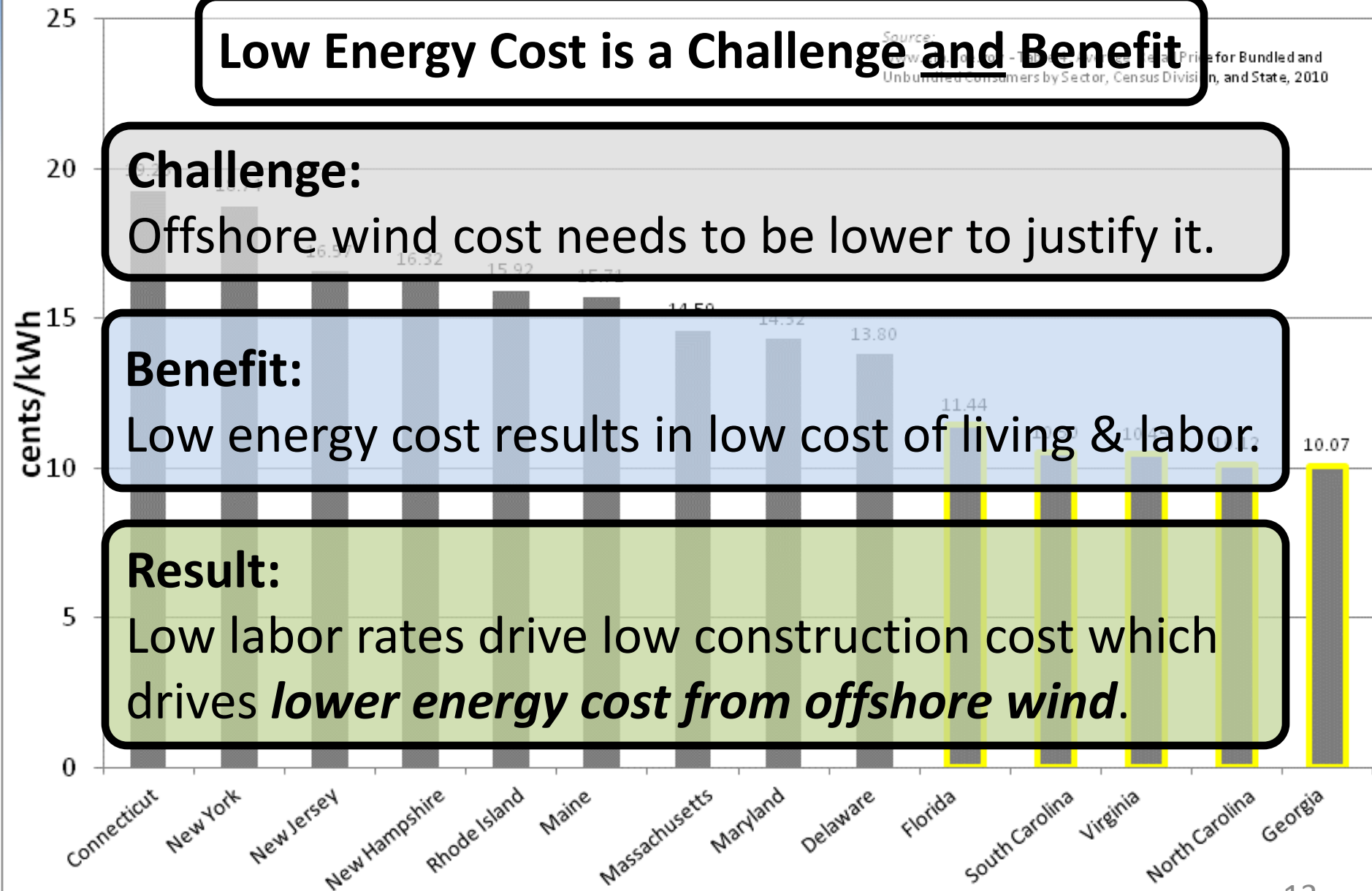
Offshore wind cost needs to be lower to justify it.

Benefit:

Low energy cost results in low cost of living & labor.

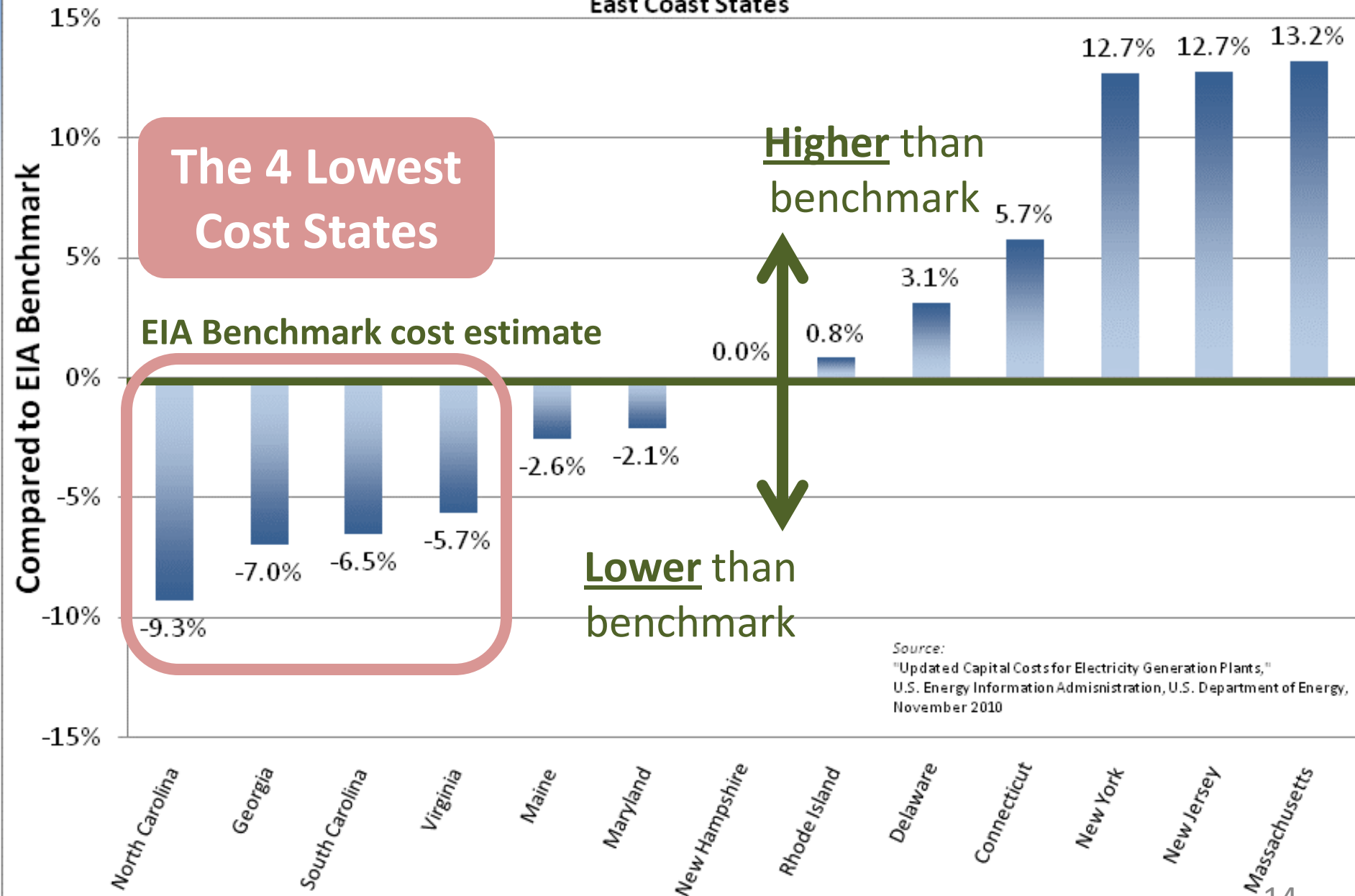
Result:

Low labor rates drive low construction cost which drives *lower energy cost from offshore wind.*



Relative Cost to Construct Offshore Wind

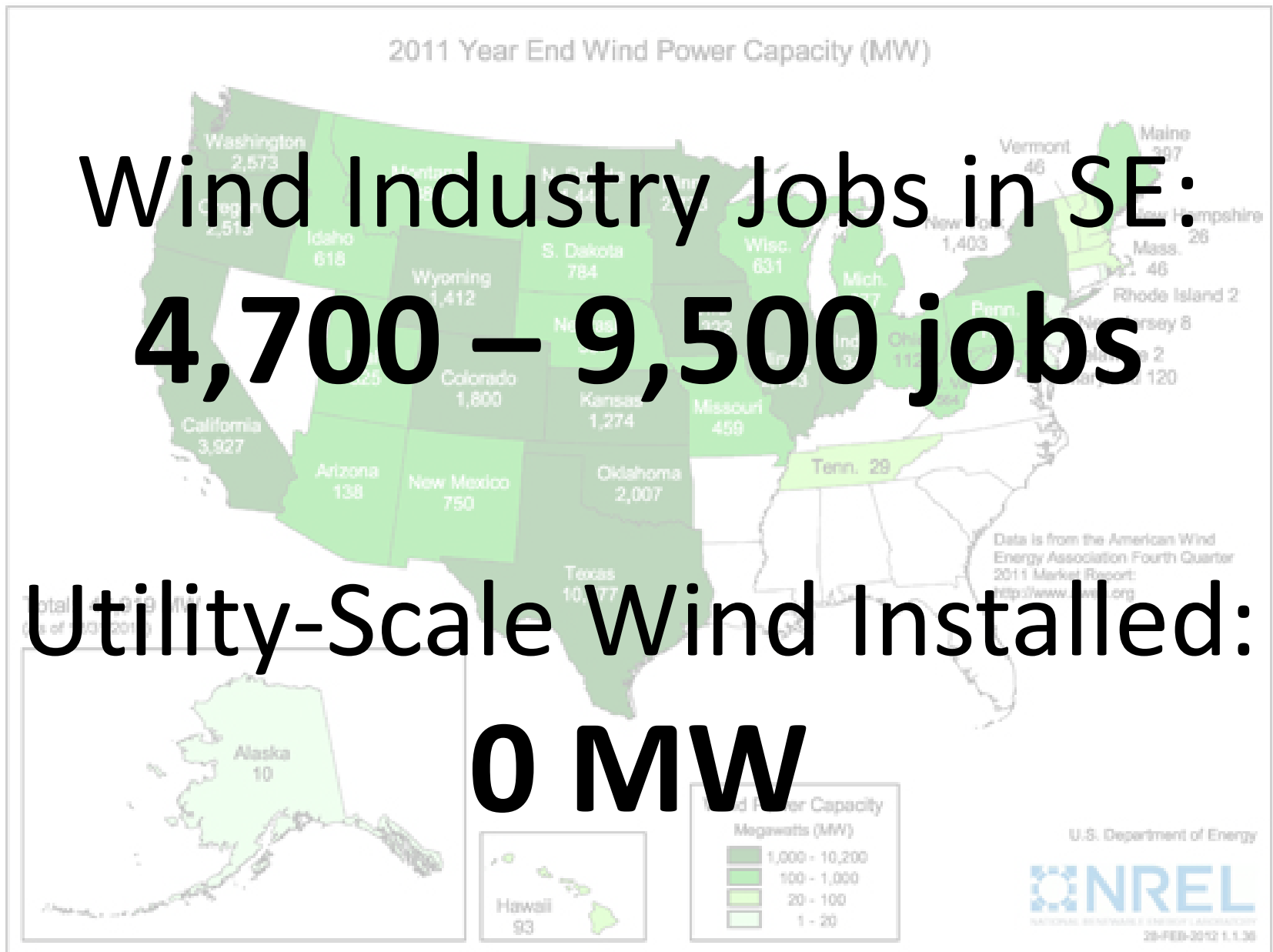
East Coast States



2011 Year End Wind Power Capacity (MW)

Wind Industry Jobs in SE:
4,700 – 9,500 jobs

Utility-Scale Wind Installed:
0 MW



Critics Say – “In the Southeast...”



It'll cost too much!

It won't work there!

Ratepayer Impact

Southeast vs. Other Regions

The Southeast Has...	Effect on \$/month Impact	Why?
Large Market Size	↓	Wider base to spread the cost
Low Construction Cost	↓	proxy for per kWh Energy Cost
Low Electricity Rates	↑	higher premium per kWh



Comparing \$/month Impact (**WAY** Oversimplified Analysis)

$$\$/\text{month} = [\text{Premium per kWh for OSW}] * [\text{kWh of OSW per month}]$$

$\$/\text{month} = [((1 + \text{Adj}\%) * W\$) - N\$] * [W\% * \text{kWh}]$, where:

Adj% - Weighted avg regional cost adjustment from EIA benchmark

W\$ - Benchmark offshore wind cost per kWh (using 20 cents here)

N\$ - Weighted average per kWh retail residential rates in the region

W% - Wind energy as a % of total regional sales

kWh - Weighted average monthly kWh usage in the region

For 5,000 MW of Offshore Wind...

Region	\$/month Impact	% of Average Bill
Southeast	\$2.31	1.8%
Mid-Atlantic	\$2.03	1.6%
Northeast	\$5.07	4.7%

Using 2010 EIA data and assuming a 38% net capacity factor

DISCLAIMER: This is intended to compare order of magnitude between regions and is not intended to represent an accurate estimate of \$/month ratepayer impacts.



In Summary, The Southeast Has:

- The largest shallow water resource
- The lowest construction cost
- The largest electricity markets
- The fastest growing populations
- A supportive public and leadership

**An enormous opportunity for clean energy,
jobs, and economic development.**





SOUTHEASTERN COASTAL WIND

C O A L I T I O N

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