LSU Center for Energy Studies





Learning Together: Building Utility and Clean Energy Industry Partnerships in the Southeast

American Solar Energy Society
National Solar Conference
Raleigh Convention Center

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LSU Center for Energy Studies

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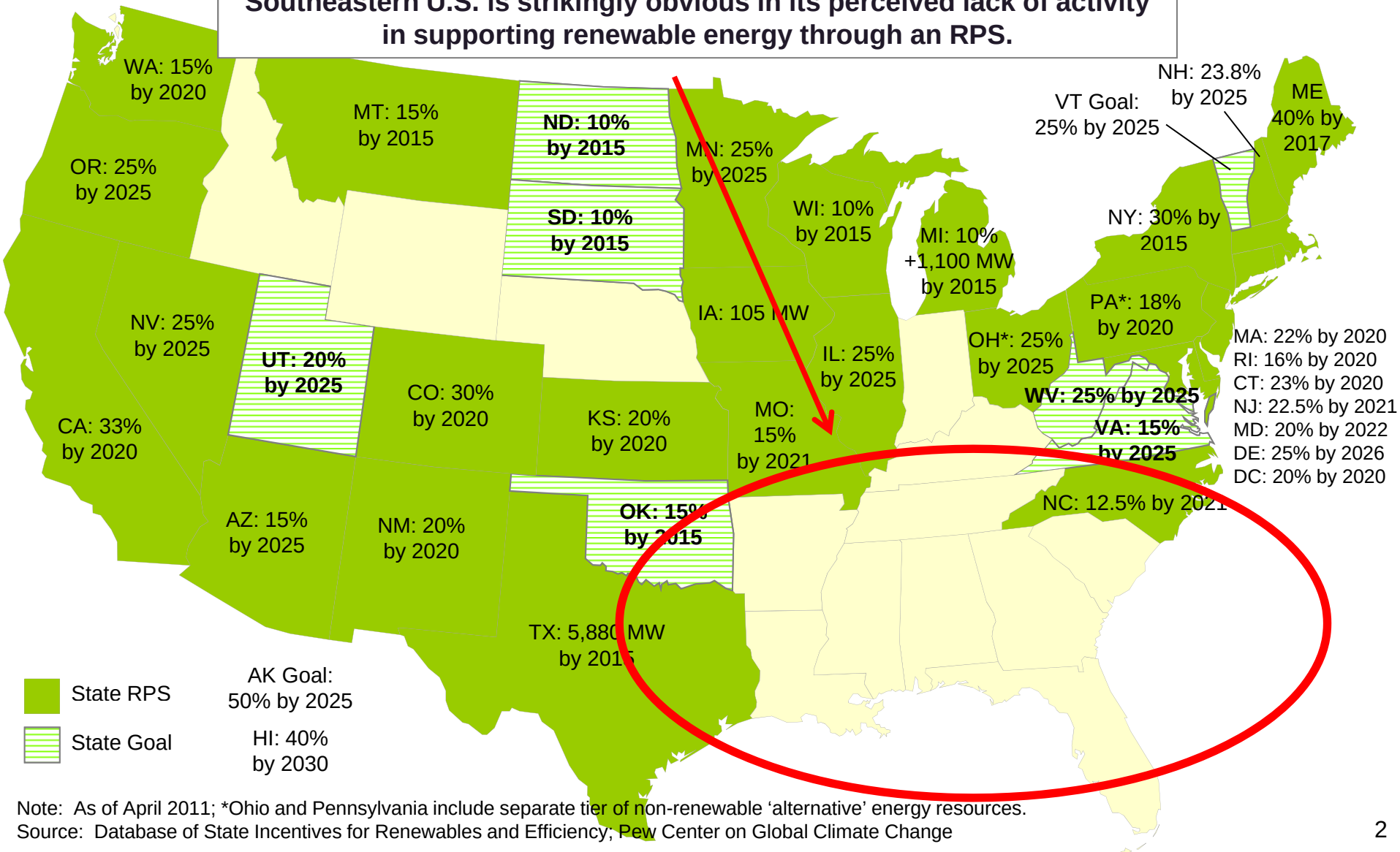
RPS States (April 2011)

Southeastern U.S. is strikingly obvious in its perceived lack of activity in supporting renewable energy through an RPS.

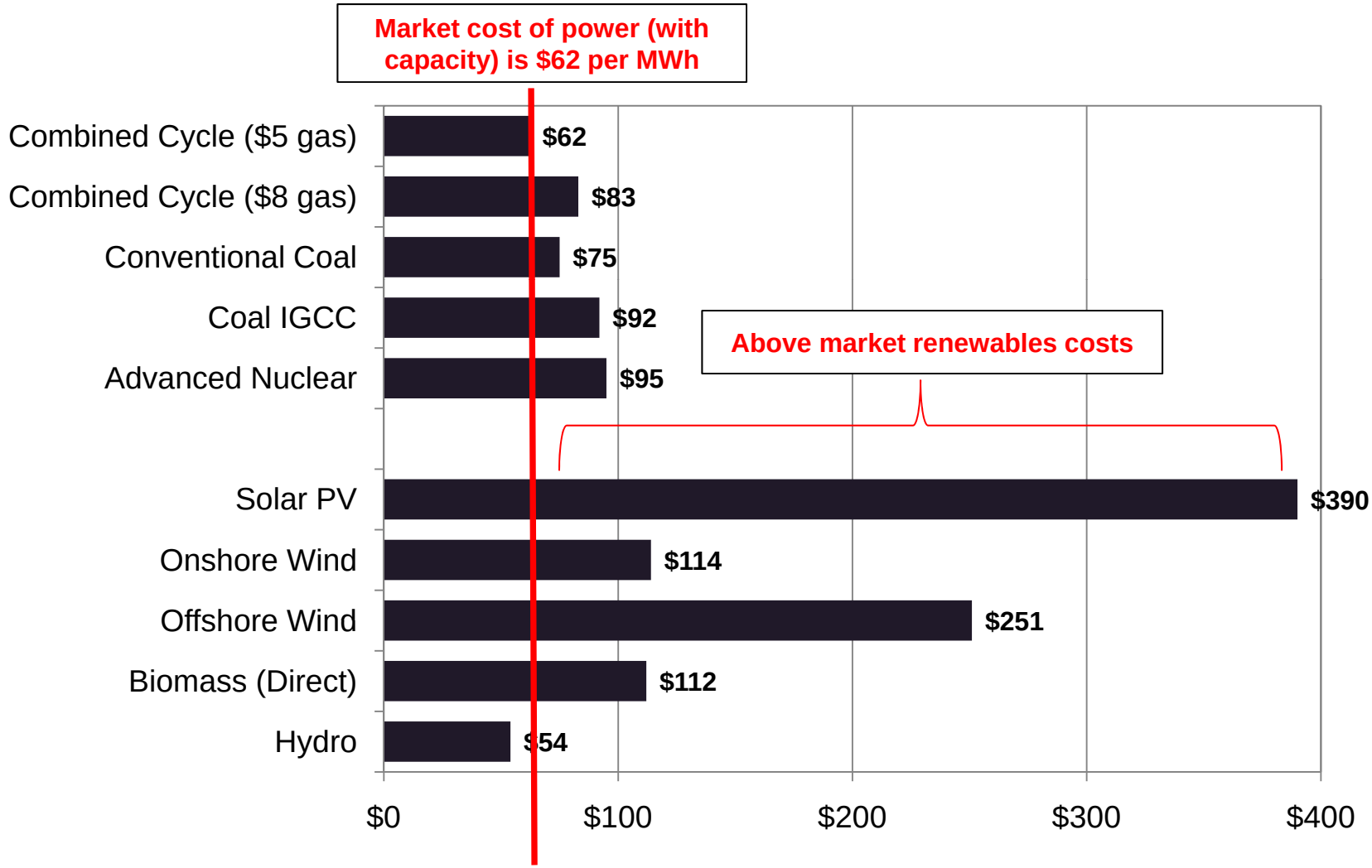


Note: As of April 2011; *Ohio and Pennsylvania include separate tier of non-renewable 'alternative' energy resources.
Source: Database of State Incentives for Renewables and Efficiency; Pew Center on Global Climate Change

Why Do We Need an RPS?

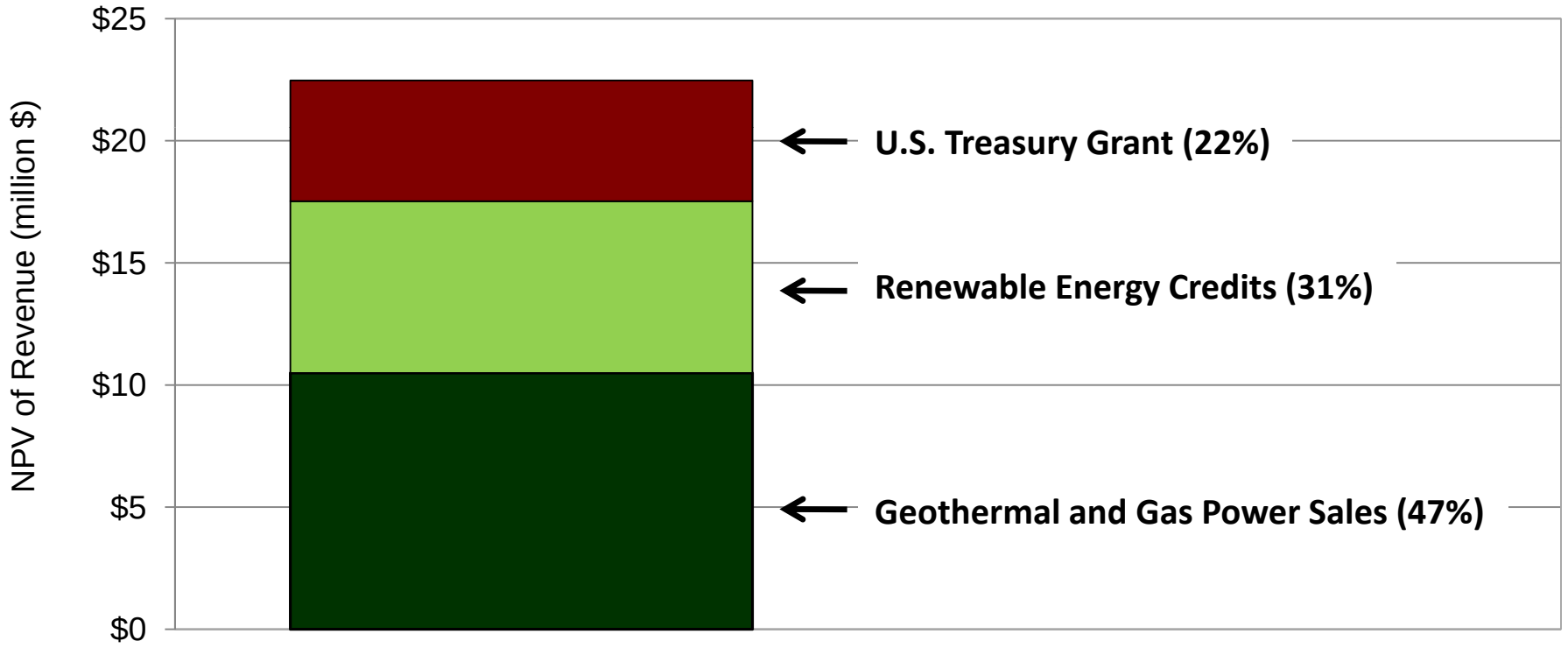
- Most all renewable energy resources have "above market" costs where market costs are set by traditional fossil-fuel power generation.
- Argument could be made that "private markets" are out of sync with "public markets" (or societal markets) – indicating the presence of an externality.
- For renewables, these externalities can be both "positive" and "negative" such as:
  - Markets failing to capture the full social opportunity cost of fossil generation.
  - Markets failing to capture the full benefits of renewable generation.
- RPS creates a property right for these renewable attributes and sets the market value, given a set of available renewable resources, associated with the environmental attributes.
- The greater the supply of renewables, the flatter the supply curve, and the lower the "renewable premium."
- Tight renewable markets will have steeper supply curves, and higher "premiums."
- So renewable costs and availability are important determinants of rate impacts.

Renewable Cost Characteristics (Levelized)



Renewable Energy Revenue Streams – Hypothetical Geothermal Project

In this example, approximately 31 percent of a geothermal project's total revenue will have to come from some state financial support mechanism either through an RPS (and REC revenues), mandatory output purchase requirement, or state tax credit.

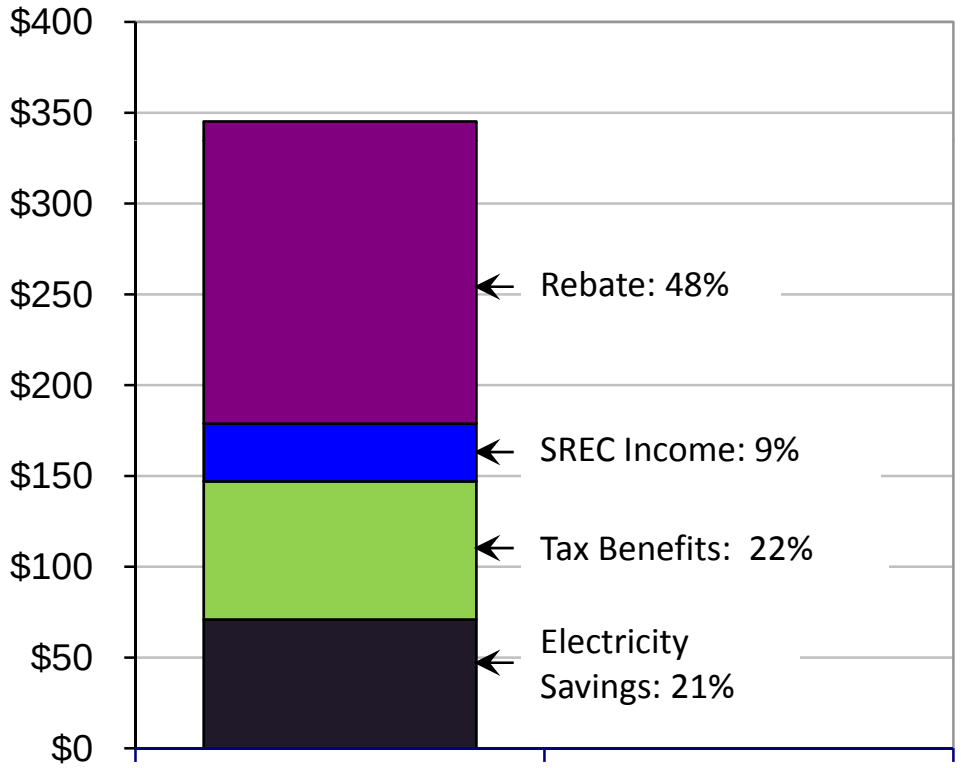


Note: Assumes a scenario of low gas prices, all generation receives RECs and a 12% IRR.

Typical Funding Streams Solar Energy (Small Scale)

In this example, approximately 9 percent of a small solar energy project's total revenue will have to come from some state financial support mechanism either through an RPS (and REC revenues), mandatory output purchase requirement, or state tax credit. Note the 48 percent rebate support already provided.

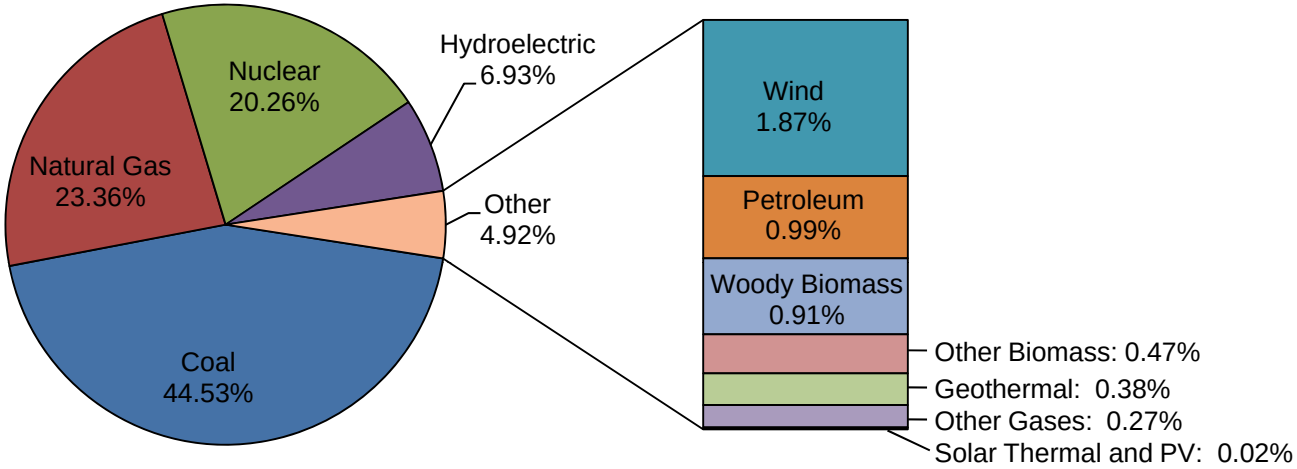
- Rebate: Total amount of rebate allowed under the Rebate-SREC model
- SREC Income: Total amount of income generated from sale of renewable energy credits.
- Tax Benefits: Total value of accelerated depreciation and investment tax credit.
- Electricity Savings: Total savings to the PV owner from not having to purchase electricity.



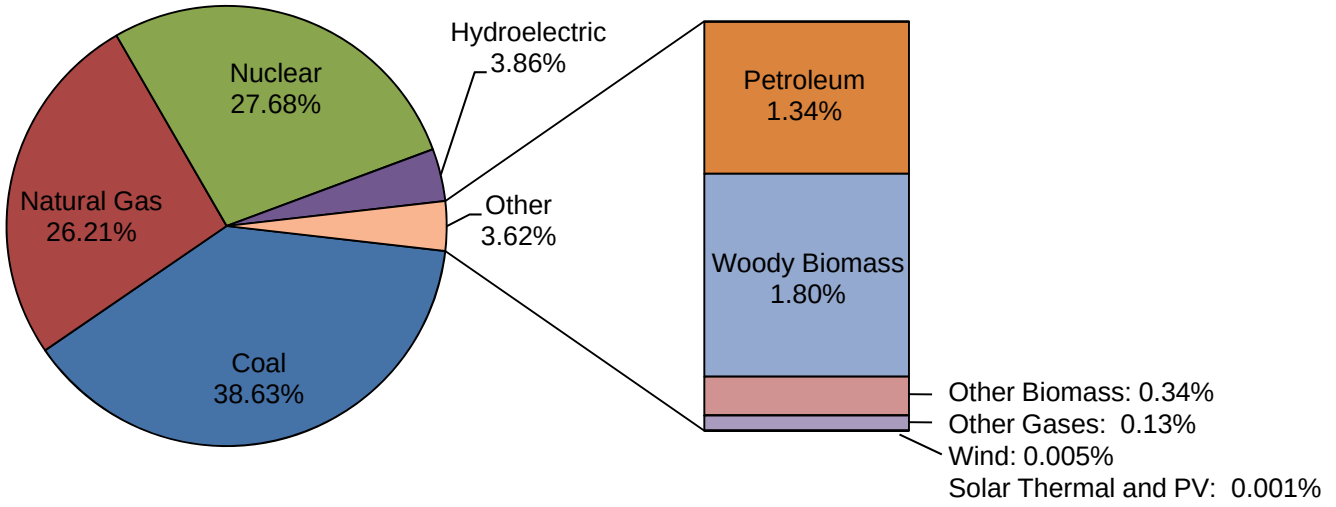
Note: The percentages are based on the Rebate-SREC model for a large private system, with a targeted IRR of 12% and rebate of $3.57 per watt. The funding amounts were discounted using a rate of 10 percent over 20 years.

Southeast Fuel Mix Compared to Overall U.S. Fuel Mix

United States Fuel Mix

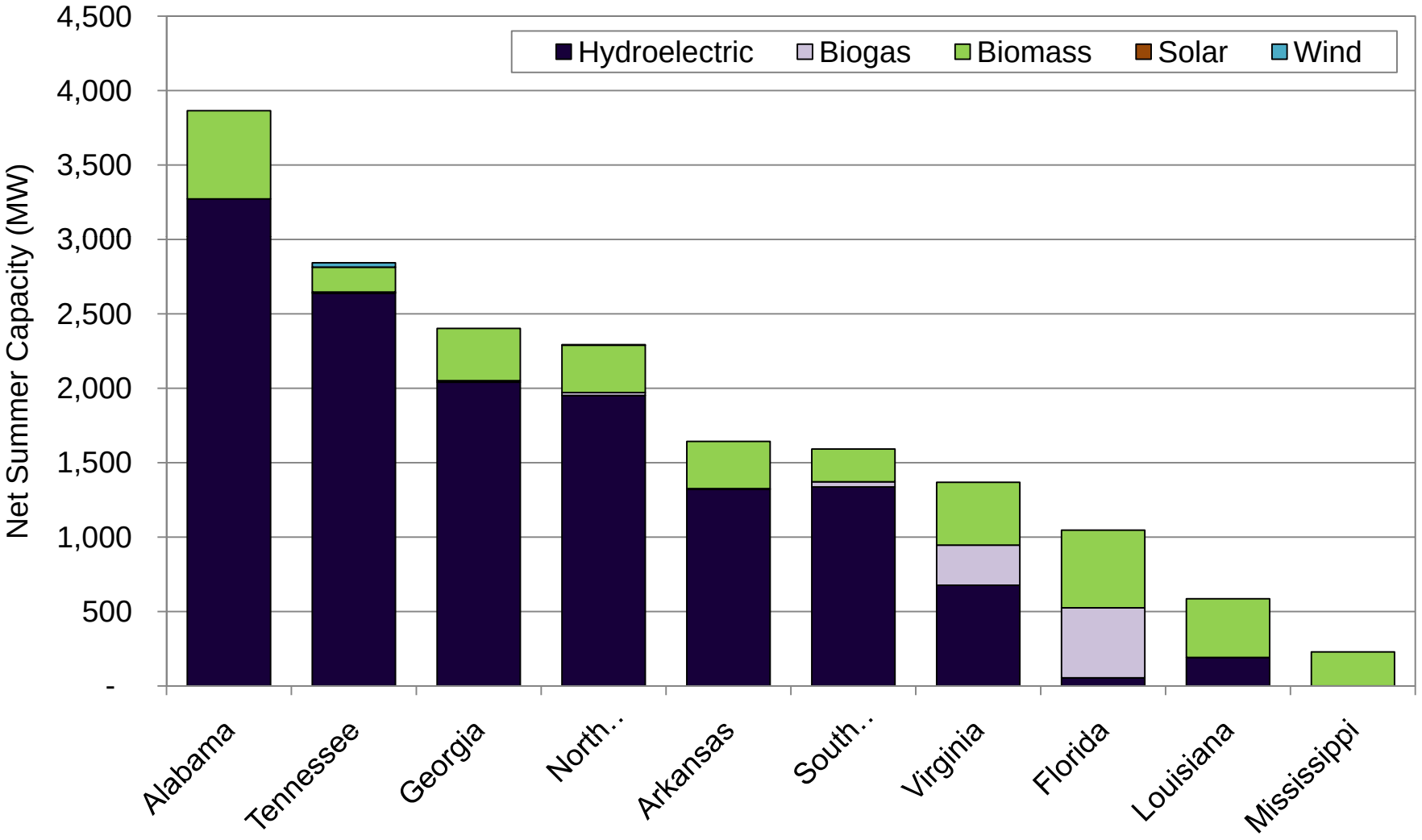


Southeast Fuel Mix



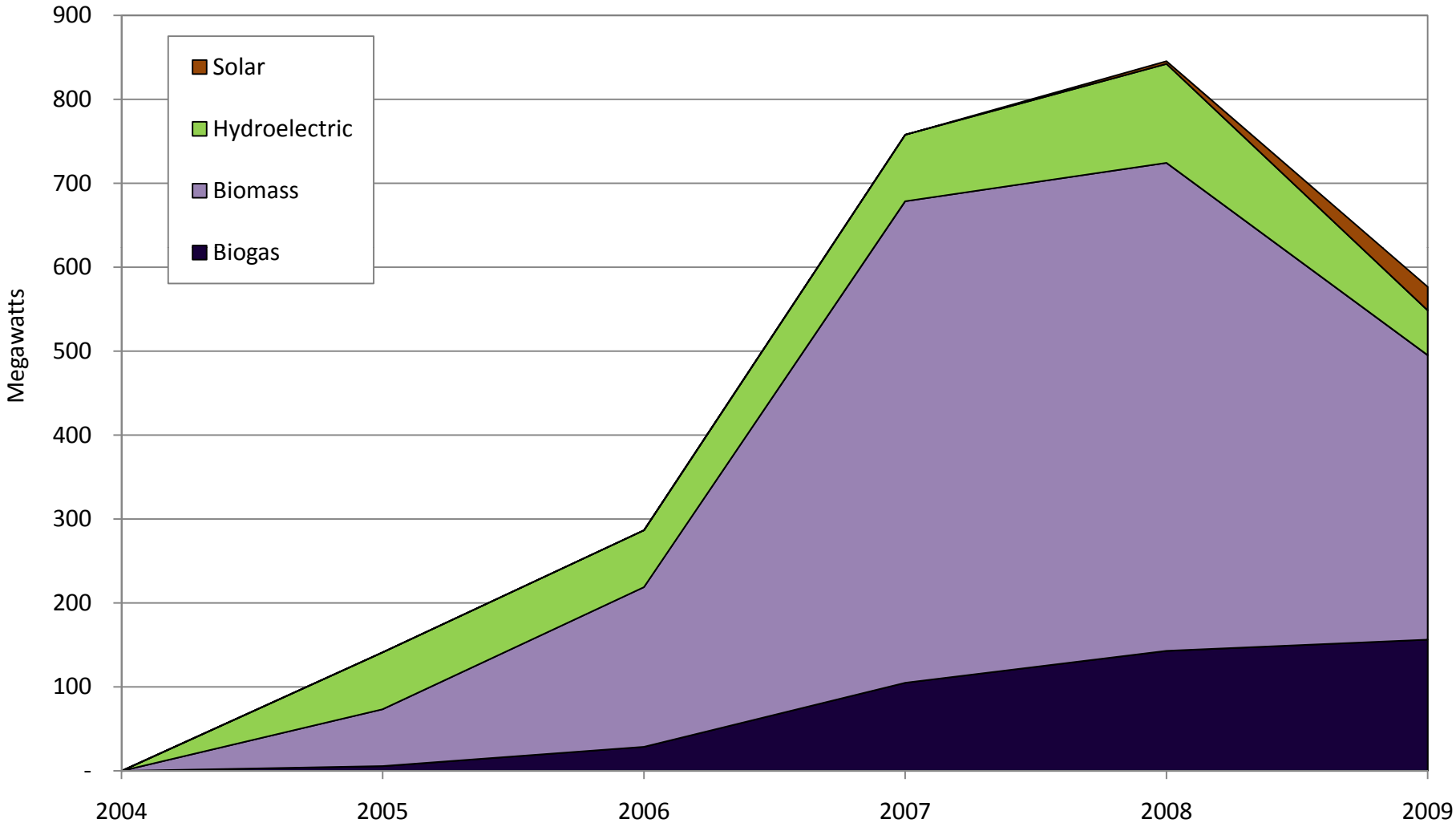
Source(s): U.S. EIA, *Electric Power Monthly*

Southeast Renewable Energy Capacity by State, 2008



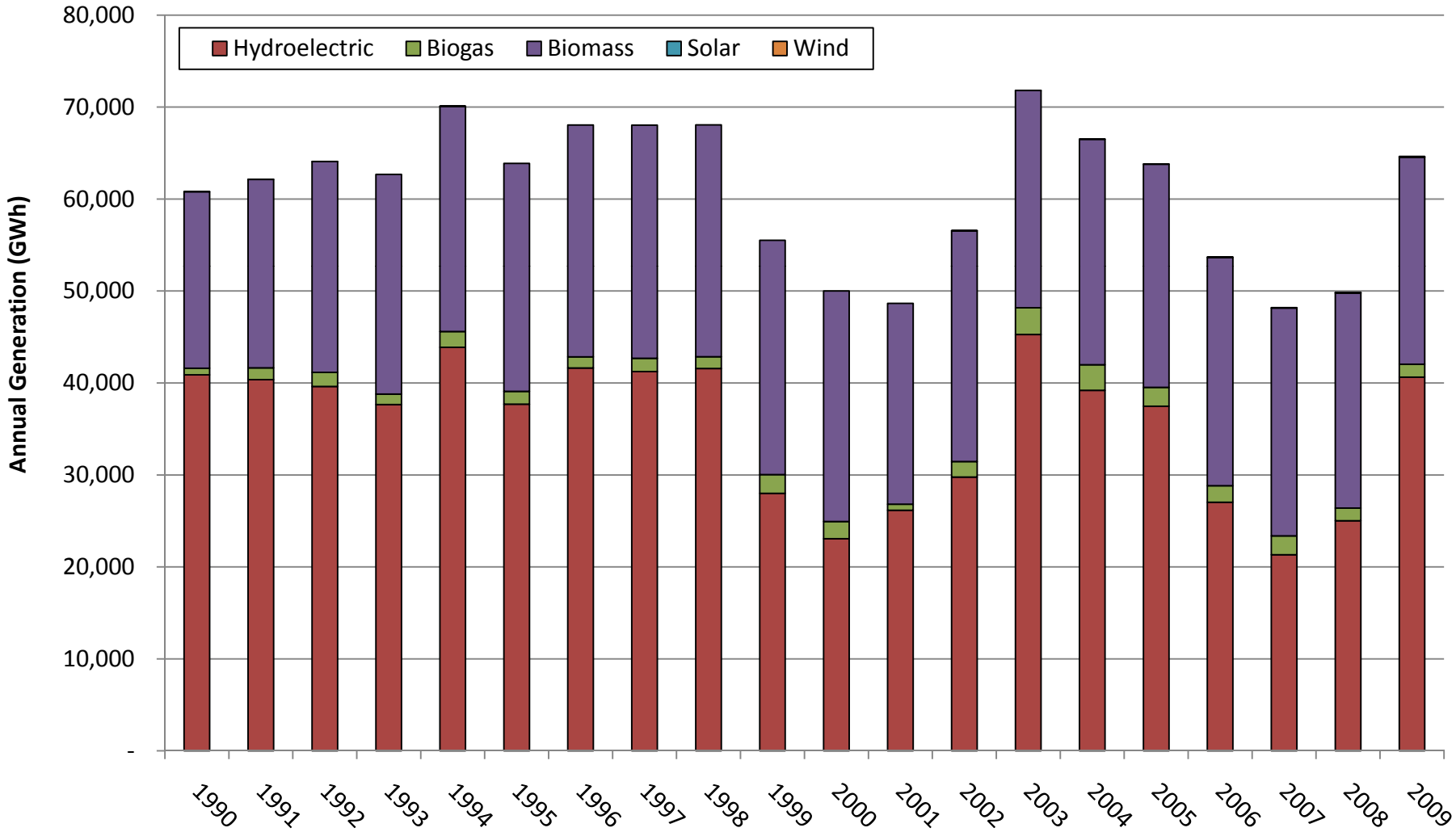
Source(s): U.S. EIA, *Renewable Energy Annual 2008*

Capacity Additions in the Southeast Region



Source(s): U.S. EIA, *EIA-860*

Annual Renewable Generation for the Southeast Region



Source(s): U.S. EIA, *Electric Power Annual*
States included: AL, AR, FL, GA, LA, MS, NC, SC, TN, and VA

How Can the Southeast Develop Renewables without an RPS?

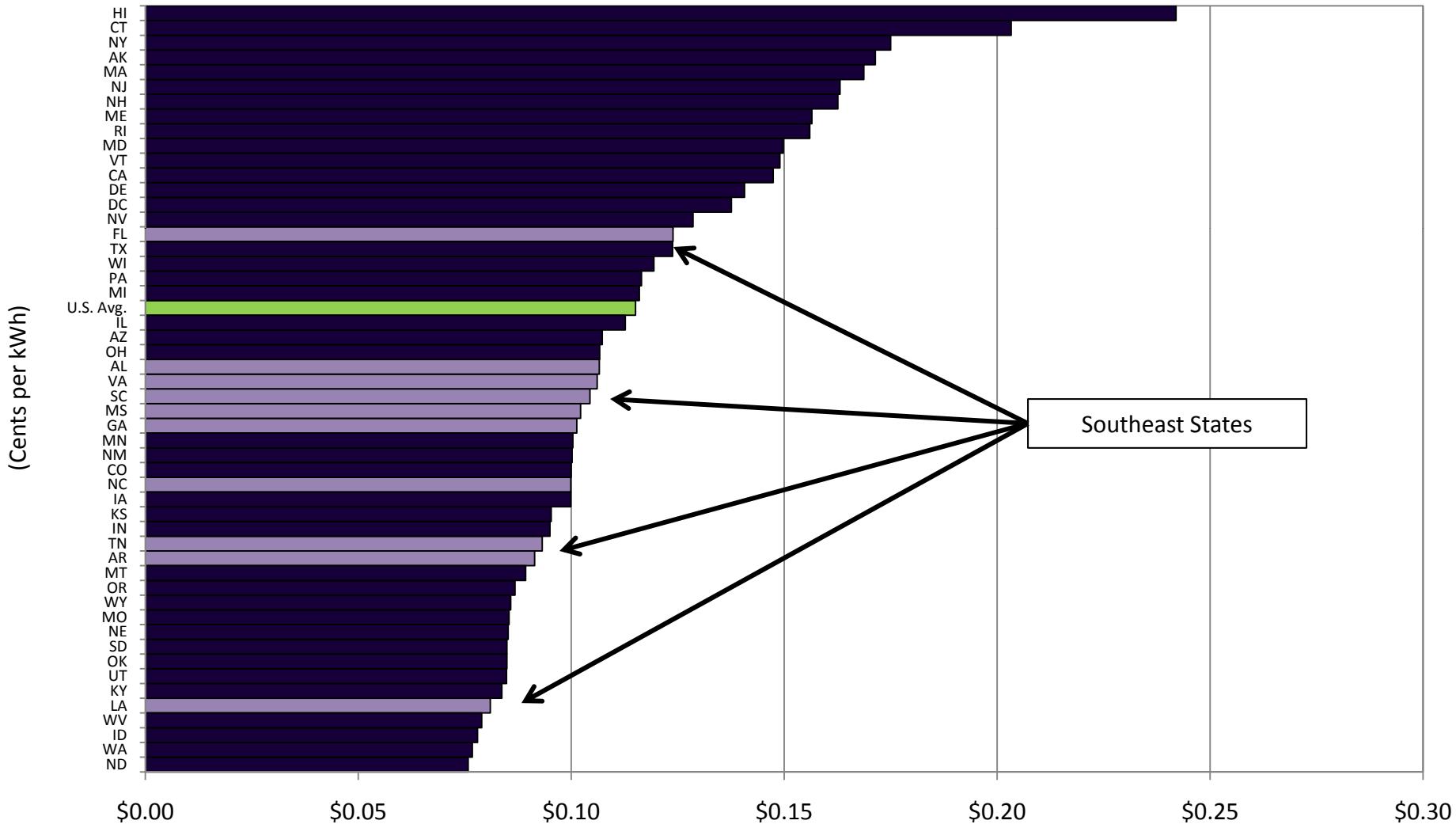
- **Perception that it will be difficult to impossible to develop renewable energy, at least at the same scale, as other RPS-based states.**
- **Perception that the south doesn't have a sufficient renewable energy resource base.**
- **However, southeastern states, while not adopting an RPS, have been taking a number of pro-active actions in promoting renewable energy, and to lesser (but growing extent) attempting to support renewable energy manufacturing capacity.**
- **The real key to moving the southeast to greater levels of renewable development is understanding both the opportunities and limitations associated with operating in these states – as well as recognizing that the southeast is not homogeneous, and each state has differing opportunities and priorities.**

Southeastern Renewable Energy Challenges

- **A region dominated by some relatively "super-large" electric utilities (Southern TVA, Entergy, Duke-Progress, FPL).**
- **Vertically-integrated, tightly regulated market.**
- **No (or limited) independent regional transmission organizations.**
- **A low-cost region that sees competitive electricity rates as critical component of economic development and the development of heavy manufacturing (automobiles, steel, chemicals, refining/processing fossil energy).**
- **Not a region known for "getting in front" of new policy issues.**

Renewable energy customers are regulators and utilities – critical to develop relationships and know limitations.

Average Residential Price of Electricity, 2009



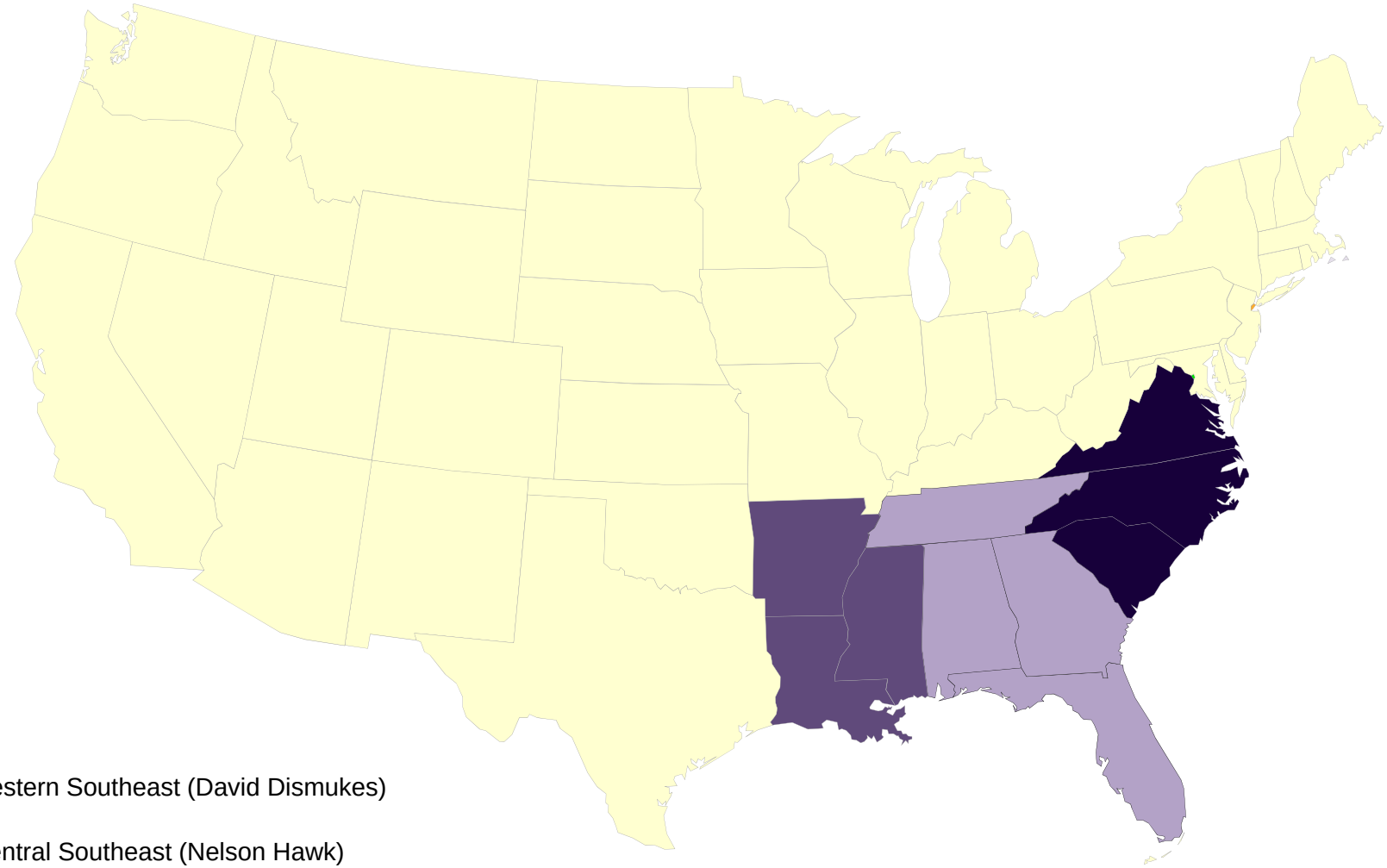
Source(s): U.S. EIA, *Electric Power Annual, 2010*

RE Potential in the Southeast

State	Onshore Wind	Offshore Wind	Solar (PV)	Small Hydro	CHP	Methane-to-Energy	**Total RE Potential**	Solid Biomass
Alabama	0%	0%	20%	2%	3%	5%	**30%**	895%
Arkansas	57%	0	19%	5%	3%	7%	**91%**	2343%
Georgia	0%	38%	31%	1%	4%	6%	**80%**	911%
Louisiana	0%	100%	23%	2%	4%	3%	**132%**	1168%
Mississippi	0%	0%	22%	2%	4%	6%	**34%**	1809%
North Carolina	2%	200%	28%	1%	4%	12%	**247%**	965%
South Carolina	1%	207%	24%	1%	4%	5%	**242%**	624%
Tennessee	1%	0%	23%	2%	3%	7%	**36%**	510%

Source(s): National Renewable Energy Labratory

Southeastern States – Regional Breakout



= Western Southeast (David Dismukes)

= Central Southeast (Nelson Hawk)

= Eastern Southeast (Ivan Urlaub)

Regulatory Initiatives: Western Southeast

Louisiana: Renewable Energy Pilot Program

- **On June 23, 2010, the Louisiana Public Service Commission ("LPSC") approved a Renewable Energy Pilot Program.**
- **Purpose**: "To be an experimental study for the purpose of determining what renewable resources can be used by LSPC-jurisdictional utilities to meet a federal or state RPS should one be imposed…"
- **Constraints**: "… ensuring that Louisiana ratepayers are protected from significant increases in rates …"
- **Goal**: "The outcome of this pilot, or study, will assist the Commission in making long term policy decisions for the State of Louisiana."
- **Two Components**:
  - **Research (IOU only)**
  - **RFP**

Source(s): LPSC General Order No. 7-21-10 (R-28271 Subdocket B); R-28271 Renewable Energy Pilot Program Implementation Plan

Louisiana: Research Component

- **Sets defined parameters for IOUs to engage in renewable energy research**
- **IOUs must choose one of two mandatory options:**
  - **Self-Build Option**
    - At least three projects.
    - No larger than 300 kW (with one exception up to 5 MW).
    - Shall cost no more than $10 million total.
    - All projects should be fully operational by the end of 2013.
  - **Standard Offer Tariff**
    - Utility will develop a Tariff and associated contract to purchase “as-available” R.E.
    - 25 kW minimum and 5 MW maximum from any single project.
    - Total limit of 30 MW of nameplate capacity.
    - All projects should be fully operational by the end of 2013.
    - 5 year commitment, then each contract will revert to standard avoided cost unless otherwise changed by Commission.
    - Price floor and ceiling of $60 and $120 per MWh, respectively.

Source(s): LPSC General Order No. 7-21-10 (R-28271 Subdocket B); R-28271 Renewable Energy Pilot Program Implementation Plan

Louisiana: RFP Component

- **Includes all LPSC jurisdictional utilities (IOUs, and COOPs)**
- Projects "that reasonably can be expected to come on line in the 2011 – 2014 time frame."
- **A total of 350 MW nameplate capacity in aggregate.**
- Share based on 2009 retail sales:
  - ELL – 143 MW (40.8 percent share)
  - EGSL – 90 MW (25.8 percent)
  - CLECO – 43 MW (12.2 percent)
  - SWEPCO – 28 MW (8.1 percent)
  - Electric Cooperatives – 46 MW (13.2 percent)

Source(s): LPSC General Order No. 7-21-10 (R-28271 Subdocket B); R-28271 Renewable Energy Pilot Program Implementation Plan

Louisiana: RFP Component

- **Contract Term:** Minimum of 10 years and maximum of 20 years.
- **Bid Thresholds:** Resource must deliver at least 2 MW to IOUs or 1 MW to Coops.
- **Who can bid?** Generally any non-affiliated developers, however there is an exception to the self-bid requirement that would allow the utility to fire biomass in a solid-fuel-fired generating unit and be exempt from the RFP.

  Each utility has to make a good faith effort to determine whether it will choose seek exemption by December 31, 2011.

  If the exemption is not granted by the Commission, the utility may submit a bid in its own RFP, but an independent monitor must be used in the RFP process.
- **Eligible Resources:** Biogas, Biomass, Black Liquor, CHP (on non-FF resources), Fuel cells, geothermal, hydropower, photovoltaic, solar thermal, wind power, wood and wood waste, urban waste.

Source(s): LPSC General Order No. 7-21-10 (R-28271 Subdocket B); R-28271 Renewable Energy Pilot Program Implementation Plan

Louisiana: Entergy RFP & Results

- **Research Component:** Elected to take the Standard Offer Tariff route, not engaging in any self-builds.

- **RFP Component:** Established an RFP website and held a Bidder's Conference August 18th, 2010.

  More than 200 people participated in person and more on the phone.

  From January 10 – 13, 2011, interested bidders formally registered.

  By January 26, 2011, registered bidders were required to submit a $5,000 fee for each proposal.

  72 proposals submitted. 7,062 MW total.
  (233 MW needed for compliance)

  Short-listed projects will be announced in July, and a due diligence phase will begin shortly thereafter.

Source(s): Entergy RFP Website: https://spofossil.entergy.com/ENTRFP/SEND/Renewable/RenIndex.html

Louisiana: SWEPCO RFP

- **RFP Component:** RFP Issued April 11th, 2011

  Pre-Bid Technical Conference April 28th, 2011

  Confidentiality Forms Due June 1st, 2011

  Proposals Due June 15th, 2011

  Notification of short-listed bidders August 1st, 2011

  Final contracts awarded TBD

  Seeking 31 MW of renewable energy resource.

  Term: 10 – 20 years
  Prices: Energy + Capacity + Environmental Attributes
  Minimum Project Size: 2 MW

Source(s): SWEPCO's RFP Website: www.swepco.com/go/rfp

SWEPCO

- **SWEPCO RFP stipulations specific to solar:**
  - Solar energy proposals must provide 8,760 hourly energy production profile.
  - May include theoretical modeling or a combination of on-site metered data and theoretical modeling.
  - Bidders must provide details on data measurement and/or methodology of theoretical modeling.
  - SWEPCO may engage an external consultant for an independent verification and evaluation of the solar resource.

Source(s): SWEPCO's RFP Website: www.swepco.com/go/rfp

Louisiana: CLECO and COOPs RFPs

- **Applied to test burn biomass at its Madison 3 unit in order to evaluate the costs of doing a self-build.** Results will be known June of 2012 and the Commission will then decide if they can engage in a self-build project, or must issue an RFP.
- **Only three of the COOPs have long-term contracts that expire during the pendency of the Pilot (2014), so only these COOPs will have to issue RFPs:**
  - Concordia COOP
  - Washington-St. Tammany Electric COOP
  - Dixie Electric COOP

Arkansas: Generic Docket

Generic Docket: Sustainable Energy Resources

- In 2008, the Arkansas Public Service Commission ("APSC") created a generic docket to explore the expanded development of sustainable energy resources within Arkansas.
- Purpose: "To develop a Sustainable Energy Resources ("SER") Action Guide for the Commission and Arkansas utilities to use in promoting SER initiatives.
- Outcome: Expanded dockets addressing smart grid projects (Docket No. 10-102-U), electric vehicles' impact on the electric grid (Docket No. 10-103-U), and energy efficiency Opportunities on the utility Side of the meter (Docket No. 10-104-U).

No actionable stipulations regarding renewable energy.

Source(s): APSC Order, Docket No. 08-144-U ("Sustainability Docket") December 12, 2010.

Tax Initiatives: Western Southeast

Louisiana

Tax Credit for Solar and Wind Energy Systems on Residential Property

- Corporate or Personal Tax Credit
- 50 percent of the first $25,000 of the cost of the system.
- Maximum incentive: $12,500.

Solar Energy System Ad Valorem (Property) Tax Exemption

- Solar systems attached to an owner-occupied residential building are 100 percent tax exempted.

La. Department of Natural Resources Renewable Energy Program

- $9.9 Million for the funding of renewable energy projects.
- Awards made to 6 projects including one Pilot Scale Solar Thermal Power Plant at the University of Louisiana – Lafayette and a Grid-tied solar PV and Wind Energy System for 1,000 billboards by Lamar Advertising.

Source(s): La. Dept. of Revenue: www.revenue.louisiana.gov/sections/FAQ/default.aspx?type=GEN&cat=WIND

Arkansas

Wind Energy Manufacturing Tax Incentive

- Up to 100 percent income tax exemption

State Loan Program

- Industrial Energy Technology Revolving Loan Fund
- Small Business Revolving Loan Fund

Renewable Technology Rebate Fund

- Currently closed, but may reopen in the near future.
- $1.63 million allocated for rebates to $4.4 million in project capital investment.
- 146 applicants.
- 1.2 GWh estimated annual production.

Source(s): www.arkansasenergy.org

Mississippi

Mississippi Clean Energy Initiative (Manufacturing)

- 100 percent exemption from income, franchise, and sales and use tax for ten years.
- Eligible technologies: solar water heat, solar thermal electric, photovoltaics, wind, biomass, hydroelectric.
- Terms: Minimum of $50 million investment and 50 new jobs created.

Energy Investment Loan Program (Corporate)

- $15,000 - $300,000
- Terms: 3 percent below prime rate, 7-year repayment.
- Technologies: solar water heat, solar space heat, solar thermal electric, solar thermal process heat, photovoltaics, land fill gas, biomass, hydroelectric, geothermal, municipal solid waste, CHP.

Source(s): Mississippi Development Authority – Global Business Division (www.mississippi.org)

Questions, Comments, & Discussion

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