

## **Bringing Clean Energy to the Southeastern United States**

### **Achieving the Federal Renewable Energy Standard**

Revised February 2008

**The Southeast has the ingenuity and renewable energy resources to become more energy independent when our utilities meet a modest federal renewable energy standard. As defined in the energy bill passed by the U.S. House of Representatives in December 2007, eight southeastern utilities would be affected by the standard. These eight southeastern utilities represent:**

- **Total electricity sales of about 470,000 GWh (gigawatt-hours)**
- **Out-of-region renewable generation of about 5,000 GWh**
- **The opportunity to implement energy efficiency exceeding the 20 – 25,000 GWh that may be used to meet the federal standard**
- **Future demand for about 60,000 GWh of renewable energy generation in order to meet the federal standard**

**Our summary of existing data demonstrates that these eight utilities have access to over 135,000 GWh of feasible renewable resources for electricity generation – more than twice the amount needed to meet the 15 percent standard.**

On December 6, 2007 the U.S. House of Representatives approved a comprehensive energy bill. The legislation included a provision mandating a 15 percent national Renewable Energy Standard (RES) by the year 2020, which passed by a vote of 241 to 172 as an amendment. This provision failed to gain the necessary support in the Senate and was removed before the bill became law, but this provision may be reconsidered by Congress as a separate bill in 2008.

The House-passed RES provision:

- Requires that 2.75 percent of electricity generated by utilities in the year 2010 must come from renewable energy sources, gradually increasing to 15 percent by 2020 and through 2039.
- Allows utilities to achieve 4 percent of the 15 percent requirement through energy efficiency measures.
- Allows the use of existing renewable energy generation, other than hydroelectric plants, for compliance but not for trading.
- Establishes the base amount as retail sales less existing hydropower and MSW incineration.
- Excludes federal, state, city, and rural cooperatives, and utilities selling less than 1 million MWh (megawatt-hours).

Establishing an RES is an important step in reducing global warming pollution while helping to preserve our natural resources and bolster our regional economies. In fact, 13 of the 50 states – representing approximately one-third of the U.S. population – currently have an RES that equals or exceeds the RES provision in the House-passed bill.

## Impact of the Federal Renewable Portfolio Standard on Southeastern Utilities

Southern utilities would be required to add about 60,000 GWh of renewable generation by 2020. Utilities representing about 40 percent of electricity demand are excluded from the RES requirements; most of these are affiliated with the Tennessee Valley Authority. As illustrated in Table 1, eight large investor-owned utilities in the Southeast would be required to comply with the standard, representing about 60 percent of electricity demand in the Southeast.

**Table 1: 2005 Regional Electricity Sales Compared to 2020 Estimated Renewable Requirement**

<b>RES Affected: Large, Investor-owned Utilities</b>	<b>Electricity Sales (GWh)</b>	<b>Estimated Renewable Requirement (GWh)</b>
Dominion	4,214 *	537
Duke Energy	77,413 *	10,841
Entergy	13,341 *	1,896
FPL	101,980	9,761 †
Progress Energy	83,325	11,760
SCANA	21,877	3,104
Southern Company	147,800	20,299
Tampa Electric	18,912	2,688
<b>Total</b>	<b>468,862</b>	<b>60,886</b>
<b>RES Excluded: Public-owned &amp; Small Investor-owned Utilities</b>		
Alabama	33,518	—
Florida	64,909	—
Georgia	48,853	—
Mississippi	23,857	—
North Carolina	31,706	—
South Carolina	30,231	—
Tennessee	102,292	—
<b>Total</b>	<b>335,365</b>	<b>—</b>

Notes: Utilities indicated by “\*” have service areas extending beyond the Southeast for compliance purposes. The base amount, against which the percentage of existing credits are calculated, is total utility electricity sales less hydroelectric generation built prior to 2001, assuming 2 percent annual load growth for all utilities adjusted for 4 percent energy efficiency. Base amounts are not presented in the table above to avoid confusion but are available on request. FPL (†) requirement is adjusted for the 4,733 GWh in wind energy generated outside the Southeast where it does not have retail sales.

Source: Energy Information Administration, “Electric Sales, Revenue and Average Price 2005,” Table 10, November 2006; and “2005 EIA-906/920 Monthly Time Series File,” October 2006.

**Florida Power & Light (FPL)** may have to make significantly less effort than the other six utilities to meet the standard because the House-passed RES gives non-tradable credits for existing renewable generation, regardless of location. FPL generated 4,733 GWh (2005) from 13 wind farms and one hydroelectric plant at locations outside the Southeast. This level of generation is sufficient for FPL to meet the standard through 2013. Other than existing hydroelectric plants, which do not qualify for non-tradable credits, the remaining affected utilities have minimal existing renewable energy infrastructure relative to their total national electricity sales and would need to build or acquire new generation by 2010.

It is also reasonable to assume that utilities will fully utilize the option to meet up to 4 percent of the 15 percent RES using energy efficiency<sup>1</sup>. After accounting for the existing renewable generation of the eight utilities,<sup>2</sup> use of the energy efficiency option and load growth of about 2 percent per year, the data indicate that southern utilities would be required to add 60,000 GWh of renewable generation by 2020.

In the RES debate, the Southeast is portrayed as a region with scarce access to renewable energy sources, thus facing difficulty in meeting a national RES. *This view is simply inaccurate*. According to our past experience and current analysis, there is tremendous potential for renewable energy throughout the Southeast from a wide variety of sources – especially wind, biomass and hydroelectric.

**Table 2: Renewable Energy Resources in the Southeast**

<b>Near-term renewable resources<sup>3</sup></b>	<b>Maximum Feasible Generation (GWh)</b>
Bioenergy	95,630
Onshore wind	20,385
Low-impact hydroelectric	19,998
Solar (PV plus thermal generation pilot plants)	1,178
<b>Total</b>	<b>137,191</b>
<b>Medium-term renewable resources<sup>4</sup></b>	
Offshore wind	338,742
Solar (thermal generation)	9,723
<b>Total</b>	<b>348,465</b>

See appendix for sources and methods.

Near-term, economically and technically feasible renewable energy resources in the Southeast can supply more than twice the 60,000 GWh of renewable electricity needed to meet the standard by 2020. Medium-term renewable resources that depend on addressing technology, permitting and cost questions provide the assurance that near-term resources do not represent the only option for utilities to meet the standard. It is also important to note that utilities have the option to develop renewable resources in other parts of the country for compliance purposes. These eight utilities have not only ample resources to comply but also flexibility to select a strategy appropriate for each utility's particular situation.

<sup>1</sup> Munns, D and J Rogers, Leadership Group co-chairs, *National Action Plan for Energy Efficiency*, US Environmental Protection Agency and US Department of Energy, July 2006, p. ES-4.

<sup>2</sup> Utilities are also eligible to receive credits for existing generation provided under contract by another. However, this is not likely to significantly affect these estimates.

<sup>3</sup> Near-term renewable resources are those that may feasibly be brought online within the next five to seven years based on studies that identify site-specific resource potential or project announcements such as the Florida Power & Light 300 MW solar thermal generation plant.

<sup>4</sup> Medium-term renewable resources are those that are feasible to bring online within the next 10 to 15 years based on studies and assumptions identifying accessible resources that can be developed using market-ready technology, such as offshore wind farms off the coasts of Georgia and the Carolinas.

## **The Southeast Benefits from a Meaningful Renewable Portfolio Standard**

With its abundant renewable energy resources, a meaningful Renewable Portfolio Standard is not just achievable in the Southeast; it will actually benefit the region.

Renewable energy resources are distributed more evenly than fossil fuel reserves across the United States. Residents of Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina and Tennessee currently export more than half of their energy dollars to import fuel from other states and countries, primarily as coal, uranium and natural gas. By those measures, the Southeast is transferring a significant portion of its wealth out of the region to purchase the energy it needs.

It also means we are at the mercy of market forces outside of our control. Recent dramatic swings in the price of fossil fuels demonstrate the downside of relying on imported energy sources for our electricity. Passing the federal standard would help the Southeast generate more of its own power from clean energy sources, allowing our citizens to keep their wealth in the region, investing those dollars in our own communities and jobs for our own citizens.

Finally, the Southeast has the most to lose if climate change is not addressed. Much of our economy is centered on the region's abundant coastlines. The damage that global warming would cause to the region's coastline through rising sea levels, more frequent and intense storm activity, and changing weather patterns all suggest that the Southeast should be leading the effort to reduce global warming pollution and transition toward a clean and renewable energy economy.

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Southern Alliance for Clean Energy (SACE) is a nonprofit, nonpartisan organization that promotes responsible energy choices that create global warming solutions and ensure clean, safe and healthy communities throughout the Southeast.

Since 1985 SACE has been working on behalf of citizens in the Southeast to provide independent analysis of the energy supply system in the region, help state utility commissions evaluate proposed energy projects, work with state and local governments to develop new programs to improve the energy efficiency of government facilities and vehicles, and support the siting and development of clean, renewable energy sources in our region.

SACE has been a leading voice for energy reform protecting our communities and our region's natural resources for more than 20 years with offices and staff throughout the Southeast.

## **Appendix: Sources and Methods for Estimate of Renewable Energy Potential**

We relied primarily on government or other authoritative studies of renewable energy in the Southeast.

### **Bioenergy resource assessment**

Bioenergy estimates are typically generated by calculating the quantity of economically and technically feasible resources available, followed by estimating the amount of electricity that could be generated using widely-available technology. For the purposes of this assessment, bioenergy is defined to include the following resources.

- Agricultural wastes such as crop residues
- Agricultural energy crops such as switchgrass and hybrid poplar
- Forest residues
- Urban and industrial wood waste
- Landfill gas (methane)

Because estimates vary in terms of scope of resources included, this assessment integrates data from a number of sources to ensure as much consistency as possible.

### **Wind energy resource assessment**

Wind energy estimates are typically generated by calculating the annual wind energy available per acre of land or offshore area. Areas are then excluded based on factors that affect the practicality or feasibility of construction, such as environmental and aesthetic protection, proximity to transmission and site-specific considerations. The amount of electricity that can be generated in a given location is then calculated based on technological and economic factors.

Because of permitting uncertainties and near-term cost limitations, offshore wind is considered a medium-term resource. European projects have demonstrated the value of offshore wind. Furthermore, the uncertainty of offshore wind energy estimates is somewhat greater than that of other resources because the data have only recently been compiled.

### **Hydroelectric resource assessment**

Southeastern utilities can access additional hydroelectric generation from upgrades of existing generation and from new, less intrusive “low head” hydroelectric power stations that do not require development of large-scale dam impoundments. Because these small facilities are smaller than utilities prefer to own and operate, “low head” systems are generally operated by third-party contractors. Small-scale hydro systems are environmentally superior as they impact water quality and the ecology of the surrounding environment much less. All of these data are drawn from the Idaho National Laboratory.

### **Solar energy resource assessment**

Most of the solar energy resources presented in this report represent the recent announcement by Florida Power & Light that it will construct a 300 MW solar thermal electric generation plant in Florida. The remaining near-term resources are the low-end estimates included in a study of rooftop photovoltaic (PV) solar electric generation.

Medium-term solar energy resources represent an assumption that FPL’s pilot plant will be successful and that additional plants will be built by 2020. There is a notable lack of resource and market potential studies for solar energy based on available or emerging technology.

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