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## **Subcommittee Recommendations Requiring Legislative/Regulatory Action**

## Recommendation for Changing the Review and Adoption Process of the Energy Code in South Carolina

**Challenge:** Move the amendment and adoption of the International Energy Conservation Code (IECC) back to the Building Codes Council (BCC) so this important code is reviewed, promulgated, and adopted on the same cycle and with the same criteria as the other model building codes in the state.

**Background:** In 2009, Governor Sanford signed H.3550 into law which mandates the 2006 IECC for all new and renovated buildings, effective July 1, 2009, but removes the code from the normal adoption process. Future updated versions must also be adopted by statutory amendment through the Energy Advisory Council of the State Regulation of PURC. Also, importantly, the law removed a residential compliance option that weakened the energy savings achievable through the 2006 IECC by allowing homes to meet state code through a method of achieving four prescriptive R-values that are comparable to homes built using the 1992 Model Energy Code. Furthermore, the BCC cannot apply the energy efficiency chapter of the International Residential Code (IRC), which has been deleted in the 2003 version of the IRC with state-specific modifications that South Carolina adopted.

Through passage of Act 143, signed by the Governor, the South Carolina General Assembly updated the energy code to the 2009 IECC during the 2012 legislative session. The changes to the review and adoption process of the IECC were made by the homebuilders to reduce the requirements on residential building. However, these changes have had a significant impact on the state's ability both to ensure that public buildings are designed and constructed to up-to-date codes and standards and to benefit from the cost savings of operating and maintaining public properties built to the latest edition of the IECC.

**Approach:** Convene a task force of building design and construction professionals, building owners and major tenants, local and state elected officials, general commercial contractors, commercial sub-contractors, homebuilders, insurers, lenders, and the conservation community. This task force will begin investigating the impact of the adoption of the most current building efficiency standards (2015 IECC and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE Standard 90.1-2013) and identify the impact of outdated energy codes on the public's health, safety, and wellness and on the cost to the public and private sector to operate and maintain the buildings they own or lease.

**Timeframe:** Begin immediately.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 19

## Converted EE Manufactured Housing Tax Credit to Direct Rebate

**Challenge:** Low participation in the current program

**Background:** South Carolina has a \$750 tax credit program for the purchase of energy-efficient manufactured housing. This rebate has little participation, largely due to the low tax burdens of potential participants. To qualify for the nonrefundable \$750 tax credit, an individual must purchase either 1) a manufactured home that meets or exceeds the EPA's and the DOE's energy-saving efficiency requirements or 2) a manufactured home that meets or exceeds energy efficiency requirements under the ENERGY STAR program. In addition, the individual must purchase the home from a retail dealership licensed by the South Carolina Manufactured Housing Board and use the manufactured home in South Carolina. Increasing the energy efficiency of housing for low- to middle-income communities will help decrease electricity bills and help free income for low-to-moderate income sectors, while helping the state meet energy efficiency goals. Additional information is available at [www.energy.sc.gov/files/TaxIncentives\\_for\\_ManufacturedHomesORS.pdf](http://www.energy.sc.gov/files/TaxIncentives_for_ManufacturedHomesORS.pdf) and [www.energy.sc.gov/files/view/EnStarManufHomeCreditFormORS.pdf](http://www.energy.sc.gov/files/view/EnStarManufHomeCreditFormORS.pdf).

**Approach:** It is our recommendation that the current tax credit program for energy-efficient manufactured housing be converted to a direct rebate. This will widen participation within the program and increase energy efficiency in residential structures.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 20

## Create a state tax credit for energy efficiency for residential homeowners

**Challenge:** Minimal state incentives for existing home owners or landlords to complete energy efficiency upgrades on housing. This is particularly important for manufactured housing.

**Background:** The federal government currently allows a 10% tax credit, up to \$500 for energy efficiency upgrades to existing principal residences. No similar programs exist at the state level for energy efficiency. By expanding the credit to the state level, we will encourage broader participation in EE programs.  
[www.energystar.gov/about/federal\\_tax\\_credits](http://www.energystar.gov/about/federal_tax_credits)

**Approach:** Adoption of state tax credits for energy efficiency upgrades for existing residences.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 21

## Multifamily Housing EE

**Challenge:** The multifamily community is underserved by existing energy efficiency programs due to minimal incentives issued and funding sources. In addition, many properties are extremely inefficient, and it is difficult to get landlords to make sure properties have affordable energy costs — especially since in many cases they are not the ones paying the electric bill.

**Background:** Energy efficiency initiatives are becoming more commonly implemented on owner-occupied structures due to increased awareness as well as existing funding and resources for work in owner-occupied residences. However, rental units and public housing projects often face difficulties in implementing energy efficiency initiatives due to funding restrictions of existing programs.

Energy efficiency efforts have been shown to be some of the lowest cost options to reduce residential energy bills, and utilities have programs to incentivize landlords and building managers that implement energy efficiency improvements at their properties. Implementation of these incentives requires both upfront capital and often a recognized payback period. As a result, landlords and public housing facilities lack an incentive to undertake substantial efficiency enhancements because the savings flow to the ratepayer rather than the property owner.

State tax incentives would be a great way to incentivize this segment. The federal government currently allows a 10% tax credit, up to \$500 for energy efficiency upgrades to existing principal residences. No similar programs exist at the state level for energy efficiency. Expanding the credit to rentals and multifamily housing will encourage expansion of energy efficiency measures to the structures that would be least likely to see improvements or upgrades. [www.energystar.gov/about/federal\\_tax\\_credits](http://www.energystar.gov/about/federal_tax_credits).

Rental codes are another way to address this issue. The City of Memphis passed a rental energy code ordinance that establishes minimum standards that properties must meet in order to be rented out. These requirements include acceptable windows, sealing, weather stripping, and sufficient insulation. <http://programs.dsireusa.org/system/program/detail/3687>.

A program is also available for the low-income population segment called Energy Efficiency for All. This initiative has developed best practices for programs focused on affordable multifamily housing. <http://energyefficiencyforall.org/>.

Enhanced incentives and programs for local governments and NGOs that aim to improve, expand, and enhance efficiency initiatives in rental and public housing projects would also fulfill a need in the energy efficiency space. Multiple groups and organizations are well suited to assist with these activities, but they require additional resources and incentives to ensure that payback and/or cost recovery occurs.

**Approach:** It is suggested that the multifamily issues can be addressed in four ways:

1. Adoption of state tax credits for energy efficiency upgrades for rentals and multi-family housing.
2. Convene a working group of interested stakeholders to discuss state-level legislation to require minimum energy efficiency standards for all rental properties.
3. The utilities should continue to investigate the implementation and improvement of programs for multifamily through their collaborative groups.
4. Establish a study committee to examine opportunities to provide incentives and resources to local governments and NGOs to expand energy efficiency initiatives to rental and public housing projects. Recommendations from the study committee should be incorporated into future Energy

Plan revisions and implemented as appropriate.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 22

## Encourage On-Bill Financing Programs

**Challenge:** Expand the availability of on-bill financing of energy efficiency program.

**Background:** State law allows electrical utilities to offer on-bill financing of energy-efficient home improvements to their customers. SC Code Section 58-37-50. Consumer interest rates on the loans are capped at 4% above the one-year Treasury rate. The loans are tied to the meter, instead of the customer, so the obligation of repayment is passed on to subsequent account holders who also enjoy the benefits of the energy-efficient home improvement. The Help My House pilot administered by Central Electric Power Cooperative has been successful. The co-op targeted high energy users for this program and feel it is a very beneficial program. The pilot included 125 homes that realized an average annual energy savings of 11,000 kWh each. Participants reported that their homes were more comfortable, and the electricity bills were reduced.

**Approach:** A committee should examine whether changes to the on-bill financing statute and program design could encourage expansion of the programs. In particular, the Energy Office should study whether the existing interest rate limit is too low to make on-bill financing programs economically viable, and whether low-interest sources of financing may be available to utilities that want to make these programs available to their customers.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 24

## Public Benefits Fund

**Challenge:** The State lacks a revenue stream to advance energy efficiency and renewable energy opportunities that support policy goals.

**Background:** PBFs exist in 27 states, with some of them providing funds for both energy efficiency and renewable energy. PBFs are funded through a surcharge on utility bills (not a utility charge) or through other payments collected from utilities. [www.c2es.org/us-states-regions/policy-maps/public-benefit-funds](http://www.c2es.org/us-states-regions/policy-maps/public-benefit-funds)

**Approach:** The ORS should convene a stakeholder working group to explore best practices and the possibility of rolling out the PBF, if appropriate, and associated surcharges. The group will ensure that those who will have access to the funds are clearly noted. The funds should be used for energy efficiency upgrades for electric and natural gas customers and not be reappropriated. The funds should be used for their intended purpose. In addition, the group should develop a plan for customer outreach and ensure that it includes information noting this is not a utility charge.

**Timeframe:** Convene the working group within six months of presenting the State Energy Plan to the PURC.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 26

## EE Use/Potential Studies

**Challenge:** Outdated and inadequate energy efficiency potential studies undermine the utilities' ability to establish plans that maximize the benefits of DSM.

**Background:** A critical part of DSM planning is the completion of robust energy efficiency potential studies that examine technical, economic and achievable potential across several different incentive- level scenarios. Because the circumstances underlying potential studies can change in a short number of years, it is important to update the potential studies regularly.

**Approach:** A stakeholder group should be convened that includes local and national experts, such as ACEEE, to discuss best practices for energy efficiency potential studies. In addition, utilities should be required to submit new energy efficiency potential studies to the South Carolina PSC at least once every three years.

**Timeframe:** Convene stakeholder group within six months of the passage of this policy and require utilities to submit their first update potential studies based on best practices in their 2018 DSM cost-recovery filings.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 26

## Energy Efficiency Portfolio Standards

**Challenge:** South Carolina utilities do not currently have any energy-savings targets.

**Background:** As of August 2014, 24 states had implemented energy-savings targets or portfolio standards. Massachusetts, Rhode Island, and Vermont had some of the strongest standards that required roughly 2.5% annual incremental savings.

**Approach:** The South Carolina General Assembly should set preliminary energy-savings targets of 1.5% by 2019 for all utilities, with a provision to update future requirements based on potential studies. Following the results of updated energy efficiency potential studies, the ORS should convene a working group to develop a timeline with annual targets building toward capture of all achievable cost-effective potential.

**Timeframe:** Include legislation in the State Energy Plan and convene the working group by the end of 2018.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 27

## Enhanced Energy Efficiency Incentives in Rental and Public Housing Projects

**Challenge:** Energy efficiency initiatives are less common in rental housing and public housing projects due to requirements and restrictions associated with existing funding sources.

**Background:** Energy efficiency initiatives are becoming more commonly implemented on owner-occupied structures due to increased awareness as well as existing funding and resources for work in owner-occupied residences. However, rental units and public housing projects often face difficulties in implementing energy efficiency initiatives due to funding restrictions of existing programs.

Energy efficiency efforts have been shown to be some of the lowest-cost options to reduce residential energy bills, but implementation of these incentives requires both upfront capital and often a recognized payback period. As a result, landlords and public housing facilities lack an incentive to undertake substantial efficiency enhancements because the savings flow to the ratepayer rather than to the property owner. As a result, enhanced incentives and programs for local governments and NGOs that aim to improve, expand, and enhance efficiency initiatives in rental and public housing projects would fulfill a need in the energy efficiency space. Multiple groups and organizations are well-suited to assist with these activities but require additional resources and incentives to ensure that payback and/or cost recovery occurs.

**Approach:** Establish a study committee to examine opportunities to provide incentives and resources to local government and NGOs to expand energy efficiency initiatives to rental and public housing projects. Recommendations from the study committee should be incorporated into future State Energy Plan revisions and implemented as appropriate.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** This recommendation has been combined with the consensus multifamily recommendation from the DSM-DR-EE committee.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 30

## Establish a Long-Term Renewable Energy Target

**Challenge:** To identify components of a sustainable and balanced long-term energy mix that take into consideration improving technology and low- or no-cost fuel options.

**Background:** Maintaining a balanced and diverse energy mix in South Carolina is key to ensuring a wide range of energy options and reasonable costs to all South Carolina residents. Renewable energy should be a core component of this long-term mix of sources. Currently, South Carolina requires that renewables represent at least 2% of the energy mix from investor-owned utilities (based on the 5-year average peak demand). While some incentives exist for renewable generation beyond the 2% requirement, no overarching goals or targets exist for renewable energy generation from all utilities within South Carolina over a long-term timeframe (20+ years). With this situation in mind, a long-term renewable energy target for all utilities in the state should be considered.

Over 29 states have enacted Renewable Portfolio Standards (RPS) that establish targets (both binding and non-binding) for renewable energy. Nationwide, it has been found that RPS led to the creation of 200,000 gross domestic renewable energy jobs, drove over \$20 billion in GDP, reduced consumer electric bills by up to \$0.012 per kWh, and reduced natural gas prices by up to \$0.14 per MMBtu (or equivalent of up to \$0.037 per kWh ([https://emp.lbl.gov/sites/all/files/lbnl-1003961\\_factsheet.pdf](https://emp.lbl.gov/sites/all/files/lbnl-1003961_factsheet.pdf))).

Establishing a long-term target for renewable energy generation will assist in creating a reliable, versatile, resilient, clean, and cost-effective energy system for all citizens of South Carolina.

**Approach:** South Carolina should establish a long-term renewable energy target of 20% of its energy portfolio by 2035 in order to provide reliable energy supplies at affordable costs.

**Subcommittee Outcome:** This recommendation was transferred to the Renewables subcommittee (and subsequently designated non-consensus).

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 31

## Workforce Development

**Challenge:** Low-income energy efficiency programs sometimes struggle to find enough local qualified contractors, and vulnerable communities are in need of new job opportunities.

**Background:** Incorporating local workforce development into low-income energy efficiency programs has proved to be a successful model through examples like the Knoxville Extreme Energy Makeovers program, which trains at-risk youth to recruit workshop participants door-to-door while distributing LED bulbs and educational materials. Their efforts increased participation several-fold in the community workshops, which are required to receive the free home retrofits administered by the local weatherization office with funding from the TVA.

Currently, several energy efficiency training and certification programs are available in SC— for example, the Sustainability Institute's Green Corps or the Technical College of the Lowcountry's North American Board of Certified Energy Practitioners certification program. However, they are not always accessible to or well known by vulnerable community members living in areas where energy efficiency contractors are needed; untapped opportunities to coordinate with energy efficiency program administrators may exist. The Governor's Office has partnered with the South Carolina Technical College System to establish seven Energy Efficiency Training Centers across the state. This partnership provides an excellent opportunity to explore ways that workforce development can collaborate with energy efficiency programs to advance shared goals that improve environmental justice.

**Approach:** Form a study committee of interested stakeholders to 1) explore ways to integrate workforce development and energy efficiency efforts through an environmental justice lens and 2) to consider what additional resources are needed.

**Timeframe:** Form the study group within six months.

**Subcommittee Outcome:** The recommendation requires additional research.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 32

## Funding for Low-Income Residential Energy Efficiency Upgrades

**Challenge:** Lack of consistent, financing capital for residential energy efficiency programs in low-to-moderate income communities — South Carolina ranks 19th nationally and 1st in the Southeast in “Average Retail Price of Electricity to Residential Sector” (source EIA, March 2016).

**Background:** Many low-income rate payers live in older homes with inefficient HVAC systems, inadequate insulation, aging duct work, and significant air leakage, all of which can lead to extremely high energy bills. Lacking the disposable income to make efficiency upgrades and structural repairs to their homes, low-income families are left to deal with skyrocketing energy costs, and entire communities become further mired in poverty and financial insecurity.

Embedded in many of these underserved communities are Community Development Corporations (CDCs) that manage residential energy efficiency programs and provide efficiency upgrades and emergency repairs for low-income homeowners at no cost to them. Traditionally, these CDCs have relied on the South Carolina Housing Trust Fund as the most consistent source of funding for these programs, yet the Trust Fund cannot provide every participating group with the level of funding needed to meet the now overwhelming need in their respective communities. With few federal or state resources available to support these programs, the waiting lists in these communities have become “depressingly long” as one CDC representative put it. Some CDCs have considered shelving the programs entirely until they find enough funding to meet the demand.

### Approach:

1. Create a statewide Energy Efficiency Financing Fund to complement the State Housing Trust Fund in providing grant capital for residential programs throughout the state:
  - a. Could be managed by the ORS or in partnership with a statewide non-profit entity
  - b. Utilities and co-ops could apply for funds to support existing or establish new on bill financing
2. Create incentive programs for utilities and co-ops to expand existing and create new OBF programs:
  - a. Billing can be managed by a Community Development Financial Institutions Fund (CDFI) like the successful model in Kentucky (How\$martKY)
  - b. Kentucky’s How\$martKY : Four rural utilities have partnered with the CDFI Mountain Association for Community Economic Development to administer energy efficiency improvements for 200-300 homes with just \$2 million in initial loan capital. Going forward, the program will be sustained through a mix of government and private capital and loan repayment – all channeled through the CDFI.

**Timeframe:** Begin developing a task force or steering committee by 2017.

**Subcommittee Outcome:** This recommendation was deemed to require additional research. It subsequently was folded into the Top-Tier Funding recommendation.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 33

## Statutory Facilitation of Second License Renewal for Nuclear Plants

**Challenge:** Second License Renewal is being pursued for nuclear plants throughout the industry. For example, Oconee Nuclear Station represents 2,538 MW of capacity and currently provides approximately 22% of the energy consumed by Duke Energy Carolinas (DEC) customers. Obviously, Oconee is a critical component of the DEC generation system.

**Background:** US nuclear power plants are licensed to operate for 40 years, as specified in the Atomic Energy Act of 1954. Congress selected a 40-year period for nuclear plant licenses because this period was a typical amortization period for an electric power plant. The 40-year license term is not based on safety, technical or environmental factors. An NRC rule allows licensees to apply for multiple extensions of up to 20 years after the initial 40-year license. The company must demonstrate to the NRC that it will manage aging issues effectively during the renewal term, thus ensuring equipment safety and functionality.

Renewing the licenses for the nuclear power plants serving South Carolina for another 20 years is good for our customers, South Carolina and the environment. For our customers: safe, reliable and low-cost electricity will continue for over 30 more years because our nuclear stations are among the most efficient and most reliable sources of electricity that we operate.

**Approach:** The Energy Plan should include a recommendation that lawmakers identify or create the necessary statutory provisions to facilitate the extension of the lives of assets serving South Carolina customers and any associated investment necessary to effectuate requirements of Second License Renewal.

**Timeframe:** Second License Renewal is being pursued for nuclear plants throughout the industry. Exelon and Dominion have announced their intention to pursue second license renewal for Peach Bottom Nuclear Station and Surry Nuclear Station, respectively.

**Subcommittee Outcome:** Consensus

**Note:** Although not a member of this subcommittee, the South Carolina Chapter of the Sierra Club filed comments objecting to this policy recommendation, subsequent to the consensus outcome.

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 40

## Electric Portfolio Standard

**Challenge:** Lack of a planning mechanism that ensures utilities are deploying resources “at the lowest practical environmental and economic cost.”

**Background:** Various types of quantitative analysis – including but not limited to integrated resource planning, energy efficiency potential studies, and economic impact modeling – have the potential to demonstrate that deploying clean energy resources such as energy efficiency and renewable energy would be expected to reduce environmental and economic costs and risks, and also to enhance economic development in South Carolina. However, absent a strong utility motivation to pursue these resources, they may not be deployed. Establishing binding targets for these types of resources, based on quantitative analysis, would ensure that the goals of the State Energy Plan are being met. Notably, in 2008 the South Carolina Climate, Energy, and Commerce Advisory Committee recommended, by super majority, development of energy portfolio standards.

**Approach:** As part of coordinating “the preparation of an integrated resource plan for the State” (SC Code 58-37-40(D)), the ORS Energy Office should identify and recommend energy portfolio targets for adoption by the PSC.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 42

## Property-Assessed Clean Energy Programs

**Challenge:** Utility customers are often challenged or unable to access financing for renewable energy and energy efficiency.

**Background:** PACE is one approach that can help certain customers access affordable financing for renewable energy and energy efficiency. PACE programs are implemented by local governments and provide for repayment of financing through property tax assessments. Nearly 30 states have passed enabling legislation for PACE.

Some concern exists with residential PACE because it may place a lien on real estate and cause issues with Fannie Mae, Freddie Mac, HUD, and the Department of Veterans Affairs (VA). Through the federal government's Clean Energy for All Americans Initiative a press release dated July 19, 2016 states that "HUD and VA are releasing new guidance to unlock residential PACE financing by outlining how properties with PACE assessments can be purchased and refinanced with FHA mortgage insurance and by welcoming the use of PACE financing for VA insured mortgages." This press release also states that the "DOE is releasing a draft of their Best Practices Guidelines for Residential PACE Financing for public comment."

**Approach:** The State Energy Plan should call for commercial and residential PACE legislation and provide implementation guidance to local governments. The legislation and implementation guidance should provide for financing of renewable energy and energy efficiency upgrades.

**Timeframe:** Call for legislation in the next session and annually update local guidance information on a state webpage following passage.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 57

## Renewable Portfolio Standard Study Group

**Challenge:** To address future energy needs in a low-cost and environmentally responsible way, it is important to set goals for increasing the utilization of clean renewable energy.

**Background:** Climate change and other environmental pressures necessitate an increase in clean renewable energy. Fortunately, the dramatic drop in the cost of renewables has also made it an attractive way to reduce utility costs and cost effectively hedge against fuel price uncertainty. Currently, South Carolina does not have a policy in place or any report establishing a plan for how much of the state's electricity should be generated from renewable resources. Twenty-nine states and Washington DC have implemented RPS as a way to increase the use of renewable energy.

**Approach:** Convene a study group to discuss the possibility of establishing a RPS and whether there should be carve-outs for specific renewable resources, including those that directly benefit low-income communities.

**Timeframe:** Convene the study group within six months after completion of the State Energy Plan

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 58

## Develop State Support and Implementation of Offshore Wind Resources

**Challenge:** South Carolina has the second largest offshore wind resource on the east coast and is uniquely positioned to take advantage of an industry that is set to grow rapidly in the US over the next decade. However, state policy is a critical driver of offshore wind adoption in the US. The northeastern states have begun to make significant commitments to offshore wind in their state energy plans, thereby securing a foothold in attracting hundreds of millions of dollars in investment and tens of thousands of potential jobs. Those states that are first movers will be able not only to capture the learning curve for development and operation but also to provide the ports that will manufacture, transport, and service this new large-scale industry. South Carolina has the ports, manufacturing expertise, and competitive labor markets that make it an ideal base for the industry.

**Background:** Although the offshore wind industry is in its very early stages in the US, it is a well-established industry across the globe, with significant development in Europe and China. Offshore wind power provides electricity generation with a load profile that typically follows daytime peak usage, is located off coasts where load requirements are greatest, and provides an emissions-free source of electricity. As the US moves to reduce overall carbon output, this resource is one that South Carolina can leverage to provide renewable, home-grown electricity to the citizens of our state.

South Carolina has over 130,000 MW of wind power capacity potential within 90 nautical miles of our coast. The economic development opportunities from offshore wind to create manufacturing, maintenance, port operations, ship building, and other jobs are unparalleled.

**Approach:** Establish a state offshore wind installation target that will encourage the industry to locate manufacturing and operations at South Carolina ports. Both an offshore wind capacity target as well as guaranteed rate recovery by South Carolina utilities would be required to bring offshore wind development to the state. This electricity would be utilized to meet South Carolina energy needs, contribute to energy independence, and provide a major driver to the economy of South Carolina.

**Timeframe:** Begin upon approval

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 59

## Establish a Long-Term Renewable Energy Target

**Challenge:** To identify components of a sustainable and balanced long-term energy mix that take into consideration improving technology and low- or no-cost fuel options.

**Background:** Maintaining a balanced and diverse energy mix in South Carolina is key to ensuring a wide range of energy options and reasonable costs to all South Carolina residents. Renewable energy should be a core component of this long-term mix of sources. Currently, South Carolina requires that renewables represent at least 2% of the energy mix from investor-owned utilities (based on the five year average peak demand). While some incentives exist for renewable generation beyond the 2% requirement, overarching goals or targets for renewable energy generation from all utilities within South Carolina over a long-term timeframe (20+ years) do not exist. With this in mind, a long-term renewable energy target for all utilities in the state should be considered.

Over 29 states have enacted RPS that establish targets (both binding and non-binding) for renewable energy. Nationwide, it has been found that RPS led to creation of 200,000 gross domestic renewable energy jobs, drove over \$20 billion in GDP, reduced consumer electric bills by up to \$0.012 per kWh, and reduced natural gas prices by up to \$0.14 per MMBtu (or equivalent of up to \$0.037 per kWh ([https://emp.lbl.gov/sites/all/files/lbnl-1003961\\_factsheet.pdf](https://emp.lbl.gov/sites/all/files/lbnl-1003961_factsheet.pdf))).

Establishing a long-term target for renewable energy generation will assist in creating a reliable, versatile, resilient, clean, and cost effective energy system for all citizens of South Carolina.

**Approach:** South Carolina should establish a long-term renewable energy target of 20% of its energy portfolio by 2035 in order to ensure provide reliable energy supplies at affordable costs.

**Timeframe:** Begin upon approval

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 59

## Solar Property Tax

**Challenge:** How to address issues related to business or personal property tax assessed on solar property?

**Background:** Rules and regulations for determining property tax liability on solar equipment are complex and have been adapted from existing practices that originally did not contemplate solar technologies. Ownership structure affects both who assesses solar energy assets (SC Department of Revenue or Local Auditor) as well as the valuation methods. Implementation of these valuation methods may vary based on differing practices among the assessors, which can create inequities from project to project. Depending on the ownership structure, PPA term, and other transaction terms, property taxes are estimated to range from \$14/MWh to \$27/MWh. All of these values are substantially higher than property taxes paid by investor-owned electric utilities, which are on the order of \$5/MWh as calculated using publicly available information from IRP filings and EIA-posted data on MWhs sold and from fact sheets available on the IOUs' websites regarding self-reported property tax payments.

**Approach:** State legislation should assign the responsibility for assessing solar energy assets to the SC Department of Revenue. Legislation should direct the SC Department of Revenue to adopt a valuation method that provides a consistent tax payment regardless of ownership structure, PPA term, or other transaction terms, and that results in a tax rate that is comparable to that paid by electric utilities. The process to introduce this legislation is already underway.

**Timeframe:** Continue efforts already underway

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 60

## Incentives for State Entities

**Challenge:** Inability to make renewable energy and energy efficiency projects economically viable and sustainable

**Background:** State schools, government and public buildings, or state entities are not eligible for tax incentives or any kind of rebates for renewable energy projects/installations. Private entities can receive about 55% of tax incentives (both federal and state) for renewable energy productions.

Clemson University has committed to a goal of carbon neutrality by 2030. To go carbon-neutral, Clemson needs to install solar photovoltaic or wind-energy projects on campus; with no current incentive and low utility rates, these types of projects are not financially viable. The following chart shows the financial comparison of one public entity (Clemson University) with private entities receiving tax incentives:

	Clemson / Public Entities	Private entities with tax incentives	
Utility rate	0.07	0.11	Per kWh
Photovoltaic installation cost	2.35	1.0575	Per kWh (after tax incentives)
Simple payback	33.57	9.61	Years

Although universities and other state entities may pay lower utility rates, they lack financial incentives in support of renewable energy. With some minimal assistance, the universities can install renewable energy and meet established carbon neutrality goals.

**Approach:** Create a study committee to research the following options:

- State incentives or grants for renewable energy and energy efficiency projects
- 2-5% renewable energy production policy/goal. (To promote green energy projects)
- Create a state contract with solar photovoltaic companies that can lower the cost of photovoltaic/wind installation, or have a special loan period from the SC Treasurer's Office
- Allow performance-based partnerships for renewable energy projects with private entities

**Timeframe:** Begin upon approval

**Subcommittee Outcome:** Consensus

**Subcommittee:** State Government Energy Use

**Corresponding Page in Energy Plan Appendices:** pg. 62

## Energy Audits

**Challenge:** State agencies have a need to prequalify and contract directly with qualified firms to obtain energy audits on state buildings.

**Background:** Many state agencies are unable to go through the lengthy process of a Guaranteed Energy Savings Contract due to their uncertainty of the process, lack of personnel resources, and lack of knowledge of the required qualifications of firms performing the work. OSE has the expertise to select qualified firms and put them on state contract available to all state agencies. However, for the OSE to take this action, a SFAA policy must be in place (similar to other existing policies) that will allow OSE to contract with multiple firms for an extended period, without a cap on spending.

**Approach:** The OSE is proposing the attached policy to be submitted to the SFAA for approval. If approved, the OSE will proceed with the qualification-based selection and contracting of firms qualified to perform energy audits on state buildings.

**Timeframe:** Begin as soon as the policy is approved by the SFAA

**Subcommittee Outcome:** Consensus

**Subcommittee:** State Government Energy Use

**Corresponding Page in Energy Plan Appendices:** pg. 63

## Energy and Water Conservation Through More Effective Measurement and Analysis of Use

**Challenge:** State agencies may not be able to identify opportunities to conserve energy and water or measure the effects of conservation measures already installed because several buildings owned by a single agency may share energy or water meters. It is difficult to accurately assess energy and water use in the buildings, or to measure the effects of energy and water efficiency measures.

**Background:** It is quite common for a state agency, college, or public school to share water and energy meters across several buildings. Very few older projects have been equipped with separate meters, which means that data for energy and water use cannot be accurately assigned to individual buildings. Often energy and facility managers have allocated energy use among buildings sharing a meter, but it is not an ideal way to determine current energy or water use. Moreover, the lack of individual meters impedes even the use of national benchmarking software such as Portfolio Manager, which is strongly supported by the DOE.

The newest version of Leadership in Energy and Environmental Design (LEED), LEED v4, which must be implemented by November 1, 2016, will require that new buildings have individual meters. This is not true for other certification programs, or for buildings which have not been substantially renovated. In addition, it does not address the problem of assessing the effectiveness of energy retrofits or even benchmarking energy use in existing buildings.

SECTION 48-52-620 (B) (1) of the SC Code of Laws states:

(A) (1) In order to monitor energy consumption, the State Energy Office must determine those state buildings that require individual metering. Metering must be installed by the agency, the cost of which must be borne by the agency responsible for the utility bill for the building.

A number of years ago, the ORS Energy Office evaluated the cost of this measure and found it to be too high for agencies to implement without supplemental funding. No further effort was made to require agencies to install separate meters. However, the recent requirement for agencies to reduce energy use by 20% has focused attention on energy-use benchmarking and has opened the door to a possible interim measure.

**Approach:** Encourage installation of individual building meters (or submeters if multiple tenants are involved) to assist in efforts to conserve energy and water through more effective assessment and management strategies, encourage installation of individual building meters (or submeters if multiple tenants are involved). Meters should not be required for very small structures such as small storage sheds. This action should be accomplished by:

1. A letter from the Office of Regulatory Staff to all agencies reminding them of the value of individual metering and requesting that they retrofit buildings with individual meters whenever possible.
2. Amendment of the Energy Independence and Sustainable Construction Act of 2007 (48- 52-810 et seq.) to require that when a building undergoes a major facility construction or renovation project, as defined by the Act, a separate meter for each electricity, natural gas, fuel oil, and water utility shall be installed.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** State Government Energy Use

**Corresponding Page in Energy Plan Appendices:** pg. 65

## PSCFC/South Carolina Electric Auto Association

**Challenge:** Current state statute does not provide an income-tax credit for the purchase of an all-electric vehicle.

**Background:** There are three basic electric-drive vehicles currently produced. These include hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles. The distinction in these types relates to how they are powered. Hybrid electric vehicles are powered by an internal combustion engine (using conventional or alternative fuels) supplemented by an electric motor charged through regenerative braking (for example, Toyota Prius). plug-in hybrid electric vehicles use batteries to power an electric motor and use another fuel, such as gasoline, to power an internal combustion engine. These are often referred to as extended-range electric vehicles. These vehicles can either run on a battery or the internal combustion engine (for example, Chevy Volt). All-electric vehicles use only a battery to store the electric energy that powers the motor (for example, Nissan Leaf/Tesla).

On June 19, 2007, by act of the Governor, Act No. 83 was signed into law that provided a state income-tax credit for plug-in hybrid vehicles. This legislation was revised and extended in 2012. The current state statute provides a state income-tax credit to a taxpayer purchasing or leasing a plug-in hybrid vehicle in South Carolina. The credit is \$667 per vehicle, plus \$111 if the vehicle has at least 5 kWh of battery capacity and an additional \$111 for each kWh of battery capacity in excess of 5 kWh. The maximum credit is \$2,000 per vehicle. Any unused credit may be carried forward five years. A plug-in hybrid vehicle is a vehicle that (a) shares the same benefits as an internal combustion and electric engine with an all-electric range of nine miles or more (b) has four or more wheels (c) draws propulsion using a traction battery (d) has at least 4 kWh of battery capacity and (e) uses an external source of energy to recharge the battery. The current credit is capped at \$200,000 each calendar year for all eligible taxpayers. If the cap is exceeded, the credit is claimed on a first come basis as determined by the SC Department of Revenue. The credit is claimed on Form TC-48, "Plug-in Hybrid Vehicle Tax Credit," and the taxpayer must provide sufficient documentation to the SC Department of Revenue to substantiate the credit. However, the credit applies only to plug-in hybrid vehicles. With the advent of new vehicle technology, many have recognized the limitation in this tax credit, in that it does not apply to all-electric vehicles as described above.

On February 11, 2016, a bill sponsored by Representatives Smith, Merrill, McLeod, Rutherford, Stavrinakis, Bernstein, Simrill, Quinn, and Bingham was introduced into the South Carolina House of Representatives. This bill (H. 4942) was referred to Committee on Ways and Means. H. 4942 proposed to amend SC Code Ann Section 12-6-3376 to add a pure-battery electric vehicle in the description of eligible vehicles, to add a tax credit for pure-battery electric vehicles, and to extend the time the tax credit is allowed (from 2017 to 2020). This legislation did not pass out of committee during the 2016/2017 session.

**Approach:** Revise existing statute to include that all-electric vehicles are qualifying vehicles eligible for the state income tax credit. In addition, continue the work begun last year to provide incentives to encourage use of all types of alternative fuels in the state.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

**Corresponding Page in Energy Plan Appendices:** pg. 72

<sup>9</sup> Statewide Transit Plan as starting document: <http://www.scdot.org/Multimodal/default.aspx>

<sup>10</sup> Statewide Transit Plan as starting document: <http://www.scdot.org/Multimodal/default.aspx>



## Active Subcommittee Recommendations

## Building Energy Efficiency

**Challenge:** To maximize efficiencies in South Carolina city buildings

**Background:** Many ways have been identified to initiate more efficient use of resources in large buildings in downtown business districts. Envision Charlotte - <http://envisioncharlotte.com/> - is a public/ private-plus collaborative that leads Charlotte's progress as a global Smart City through innovations that strengthen economic competitiveness, environmental sustainability, and positive community impacts. Four areas of focus are waste, water, air, and energy. Please see the website for details. Duke Energy's Smart Energy in Offices energy efficiency program provides the foundational support for the energy savings efforts. – [www.smartenergyinoffices.com](http://www.smartenergyinoffices.com).

**Approach:** Convene a task force to develop an approach for engaging city leaders and others needed to implement a similar program in certain South Carolina cities to be identified.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 19

## Trade Ally Certification to Maximize Efficiency Gains

**Challenge:** Need to ensure that energy efficiency savings achieved from installed efficiency measures are maximized through quality installation by trade allies.

**Background:** Utility programs and other efficiency efforts such as weatherization have a demonstrated track record of being able to reach customers and convince them to make energy efficiency investments and upgrades. One of the biggest challenges that these efforts face is the supply of knowledgeable, properly trained, and certified installers. If a high efficiency piece of equipment is installed improperly or hooked up to an inefficient existing system, the energy savings that were used to justify the investment will not be realized. For example, if a high efficiency air conditioner is not properly sized for the building it is installed on, the unit will neither operate efficiently nor provide the optimal savings to the customer. While there are certainly certified and trained contractors out there, the availability and quantity of them available to perform quality installations is far less certain.

**Approach:** Develop a South Carolina trade-ally certification process. The state of South Carolina develops and provides training to trade allies that would result in a certification and periodic recertification to ensure that technological advancements are understood. This certification could be used by trade allies to differentiate themselves in the market, and utility programs could potentially only allow installations that are performed by a trade ally with the state certification to participate in their respective energy efficiency programs. The utility company refers qualified contractors to a customer looking to have HVAC work/installation performed; the referral is based on an algorithm that give priority to contractors that have been verified to perform quality installation, install high efficiency equipment, and have a strong customer satisfaction rating.

**Timeframe:** In the next six months, develop a stakeholder group that includes trade allies to discuss the establishment of the certification process and begin to assess the potential state budgetary requirements to establish and run such a program.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 20

## Building Energy Labeling

**Challenge:** There is a lack of information in real estate markets on building energy use.

**Background:** Building energy expenses are a significant cost for residents and businesses, and energy-efficient buildings can have significantly lower energy expenses compared to inefficient buildings. Nonetheless, real estate listings rarely include information on building energy use. As a consequence, neither buyers nor renters have a clear vision of the likely energy expenses of properties they are considering. Standards for assessing and disclosing residential and commercial building energy use would increase the information that market participants consider when purchasing or leasing a property. Established standards would also create a market incentive for building owners to invest in efficiency measures.

**Approach:** The ORS Energy Office should convene a task force—engaging real estate representatives and home builders, state and local officials, and efficiency advocates—to identify model energy-labeling approaches and propose an approach that would address this challenge in South Carolina.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 21

## Opt-Outs for Industrial Customers

**Challenge:** To maximize competition in South Carolina, it is important to make sure that industrial customers' needs are met when it comes to energy efficiency.

**Background:** Energy efficiency is a critical element for industry in South Carolina when it comes to competing with companies across the country and abroad. By leveraging utility system benefits, the investor-owned utilities are able to offer economical industrial energy efficiency incentive programs, which large customers are permitted to "opt out" of, along with the associated rate rider.

The investor-owned utilities currently meet with stakeholders on a quarterly basis through their energy efficiency collaborative groups, where program performance and best practices are discussed. However, variation exists among the current IOU collaborative programs. In addition, the electric cooperatives generally do not have processes like this for engaging stakeholders in regular meetings.

Many large industrial customers have opted out of the investor-owned utilities' energy efficiency programs, with some reporting that the programs are not economical for them. SCE&G surveyed its opted-out customers and found that (1) 21% were unaware of SCE&G's energy efficiency programs (2) 22% were not aware they had opted out and (3) only 52% of respondents said they opted out because they implemented their own measures at a lower cost.

To opt out of the DSM rider, large industrial customers are required to state that they have implemented their own measures; however, no system is currently in place to verify which measures they have actually put in place. Therefore, a verification process or request for additional information from customers might be needed. Incremental opportunities may exist to enhance the current programs or the emerging best practices for new program designs to help South Carolina's industrial customers better compete with companies across the country and abroad.

**Approach:** Maintain opt-out as an option and convene a statewide study committee of interested stakeholders to study best practices.

*Questions for study committee:*

1. What are the existing barriers that limit industrial customers' EE investments and how can we assist in removing them?
2. How can the incentives and/or costs to industrial customers be improved to make participation in existing programs more attractive?
3. What information (if any) should customers be required to provide when they elect to opt out?
4. How long should customers be required to stay opted in after receiving an incentive?
5. How can utilities address customer concerns about data confidentiality?
6. What other beneficial services and delivery channels could the utilities provide to industrial customers?
7. What is the expected financial impact to all ratepayers if several industrial companies opt in to the EE program?
8. How will these issues affect industrial customers that operate in both North and South Carolina?

**Timeframe:** Convene a stakeholder group within six months of the passage of this policy.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 23

## Offshore Wind Development in South Carolina

**Challenge:** With some encouragement, offshore wind has the potential to provide economic development benefits.

**Background:** South Carolina has gigawatt-scale offshore wind potential that could power our coastal areas and beyond, reduce environmental impacts, and result in significant local economic development. A Clemson University study estimated that a 1,000 MW offshore wind farm would generate an average of over 3,800 jobs annually over the 10-year construction period, with hundreds of ongoing post-construction O&M jobs.<sup>1</sup> While offshore wind is currently not cost-competitive for commercial-scale deployment, a demonstration-scale installation would help reduce costs going forward, familiarize South Carolina utilities with the technology, and act as a powerful signal to wind developers and OEMs that our state is looking at wind in the state.<sup>2</sup> Further background on the wind energy capabilities of South Carolina is available in the 2014 Concurrent Resolution on Wind. The DOE has estimated that South Carolina has the lowest offshore wind construction cost in the country, thus giving us a unique edge as this industry takes hold in the US. South Carolina's wind-energy supply chain already supports over 1,100 jobs statewide, and the CURI Wind Turbine Drivetrain Test facility in North Charleston is another asset for attracting companies to locate in South Carolina. Offshore wind development in South Carolina enjoys local support in the Grand Strand Energy Capabilities of South Carolina legislation, passed by the General Assembly [www.scstatehouse.gov/sess120\\_2013-2014/bills/757.htm](http://www.scstatehouse.gov/sess120_2013-2014/bills/757.htm).

Legislation for wind-development cost recovery was introduced in the South Carolina General Assembly in 2015 [www.scstatehouse.gov/sess121\\_2015-2016/prever/166\\_20141203.htm](http://www.scstatehouse.gov/sess121_2015-2016/prever/166_20141203.htm).

**Approach:** Early-stage resource development activities, such as a demonstration project, could be achieved through cost sharing among in-state and regional utility partnerships and through US DOE grant opportunities. A new or existing task force should provide the locus for exploring such an opportunity. In addition, as offshore wind becomes more likely, workforce development programs should be established to maximize in-state employment impacts and opportunities for environmental justice communities.

**Timeframe:** Integrate these issues into ongoing work of the Coastal Clean Energy Task Force.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 28

<sup>1</sup> See "SC Wind Energy Supply Chain Survey & Offshore Wind Economic Impact Study" at [http://sti.clemson.edu/publications-mainmenu-38/commentaries-mainmenu-211/cat\\_view/293-regional-economic-analysis-laboratory](http://sti.clemson.edu/publications-mainmenu-38/commentaries-mainmenu-211/cat_view/293-regional-economic-analysis-laboratory)

<sup>2</sup> Clemson PRTM marine recreationists survey: <https://www.clemson.edu/centers-institutes/tourism/documents/brownlee,-hallo--jodice-2012.pdf>; City of North Myrtle Beach resolution: <http://northstrandcoastalwindteam.org/city-of-north-myrtle-beach-offshore-wind-energy-resolution/>

## Environmental Justice Assessment

*Note: This recommendation is a combination of four separate recommendations submitted to the subcommittee that address siting, waste disposal, rights-of-way development and maintenance, and an overarching committee to focus on environmental justice. The recommendation was among the top-tier recommendations singled out for initial action. The original language was modified for consistency with other top-tier recommendations. The original recommendations appear at the end as Modified Policy Recommendations.*

**Challenge:** Decisions for energy and transportation facilities may inadvertently affect environmental justice communities because of compounding impacts and/or cumulative effects of various stressors. Multiple agencies may have responsibilities in this arena, with minimal coordination among them.

**Background:** Impacts of energy and transportation infrastructure — including waste disposal, rights-of-way location and management, and transmission corridors on environmental justice communities — are varied. They may range from emissions and depositions of pollutants to the more intangible “disrupting the cohesiveness of a community.” While many agencies have responsibilities to evaluate environmental justice considerations, both the methodology and the parameters of the analysis vary. To ensure a continued commitment toward addressing environmental justice issues, an adaptive management framework for identifying, recommending, and implementing environmental justice policies and solutions should be established.

**Approach:** Establish a statewide environmental justice advisory panel that will serve as a “think tank” and resource center for environmental justice issues. The advisory panel will work with and advise all entities throughout the state on environmental justice issues. It will develop and submit additional policy recommendations on environmental justice issues for consideration in future Energy Plan revisions. The panel can also consider necessary changes in state policy related to energy and environmental justice.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 29

## Workforce Development

**Challenge:** Low-income energy efficiency programs sometimes struggle to find enough local qualified contractors, and vulnerable communities are in need of new job opportunities.

**Background:** Incorporating local workforce development into low-income energy efficiency programs has proved to be a successful model through examples like the Knoxville Extreme Energy Makeovers program, which trains at-risk youth to recruit workshop participants door-to-door while distributing LED bulbs and educational materials. Their efforts increased participation several-fold in the community workshops, which are required to receive the free home retrofits administered by the local weatherization office with funding from the TVA.

Currently, several energy efficiency training and certification programs are available in SC— for example, the Sustainability Institute's Green Corps or the Technical College of the Lowcountry's North American Board of Certified Energy Practitioners certification program. However, they are not always accessible to or well known by vulnerable community members living in areas where energy efficiency contractors are needed; untapped opportunities to coordinate with energy efficiency program administrators may exist. The Governor's Office has partnered with the South Carolina Technical College System to establish seven Energy Efficiency Training Centers across the state. This partnership provides an excellent opportunity to explore ways that workforce development can collaborate with energy efficiency programs to advance shared goals that improve environmental justice.

**Approach:** Form a study committee of interested stakeholders to 1) explore ways to integrate workforce development and energy efficiency efforts through an environmental justice lens and 2) to consider what additional resources are needed.

**Timeframe:** Form the study group within six months.

**Subcommittee Outcome:** This recommendation requires additional research.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 32

## Enhancing Inter-Organization Collaboration through a Weatherization Assistance "One-Stop Shop"

**Challenge:** Weatherization Assistance Programs (WAP) may face barriers to implementation of key projects due to a variety of unforeseen circumstances (poor roof conditions for solar installation, for example). Enhanced inter-organizational and inter-agency collaboration through a "one-stop shop" for WAP projects could bring together a wide range of affordable housing assistance programs to capitalize on collective efforts.

**Background:** The federal WAP is implemented at the local level, and funds are disbursed to local agencies by the SC Office of Executive Policy and Programs. Unforeseen site conditions can increase project costs and present unforeseen barriers to project implementation. Forming an inter-organization "one-stop shop" for building retrofits for affordable housing may increase resources available for holistic projects and improve timing and efficiency of implementation schedules. Such a collaborative could increase funding for prerequisite structures and assist at overcoming other barriers for successful project implementation on potential project sites.

Many entities that are actively engaged in affordable housing and energy efficiency could come together under the "one-stop shop" collaboration. A working group is necessary to explore the logistics and structure necessary to convene a "one-stop shop" and move the concept to a concrete proposal phase.

**Approach:** Convene a working group to develop a low-income "one-stop shop" program in partnership with local agencies that combine WAP funds with utility-run incentives and education efforts. The program would provide for cost recovery of prudent administrative costs incurred by utilities.

**Timeframe:** Convene the working group immediately and implement the program within two years.

**Subcommittee Outcome:** This recommendation requires additional research.

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 32

## Electric Grid Modernization

**Challenge:** South Carolina's electric grid is aging and needs to be modernized for the dynamic needs of the future.

**Background:** The nation's electric delivery system design is more than 100 years old, and much of the equipment installed across the country has been in place for decades (for example, transformers, capacitors, and regulators). This delivery system, or electric grid, was designed to transport electricity from large centralized generation plants to customers across the Carolinas, sometimes hundreds of miles away. This fundamental infrastructure is still the basis for an electricity grid in the US that is almost 100% reliable. Although it has served South Carolina well, the existing electric grid was not designed to support the diverse and dynamic demands that are increasingly being placed on it, such as increased distributed energy resources, reliability challenges, and grid hardening/security requirements.

The existing grid is limited in its capability to integrate large amounts of renewable energy sources. Keeping the grid running reliably is a balancing act, where the amount of power put into the grid must equal the amount taken out. The utility's control systems continuously ramp generating units up or down to meet electric demand of the customers it serves. With the variability of renewable energy sources, like wind or solar power, this balance becomes increasingly difficult to maintain. In South Carolina this becomes especially important with the passage of Act 236 and the expansion of distributed energy resources already expressed in the policy and statutes.

The continued safe and reliable operation of the grid is critical, and given the adoption of digital consumer and commercial technologies, outages can have a more widespread impact if they occur. While the utilities have been commended for excellent restoration in South Carolina considering the severe weather seen in this state in recent years, challenges to the grid make restoration an increasingly difficult task (for example, the winter storm of February 2014). Homes, hospitals, businesses, and schools all depend on a reliable power supply. Reliability is also important to the economy of South Carolina as large manufacturers could lose entire production runs if they are out of power. Reliability is key for economic development and vital for businesses contemplating South Carolina locations.

Significant grid enhancements have taken place in South Carolina. However, utilities foresee the need for growing such investments. Meeting customer expectations for power 24x7, and immediate restoration when an outage does occur, requires enhancements and improvements in the South Carolina infrastructure. A modernization and hardening of the existing infrastructure will also allow the integration of new forms of technologies such as battery storage and microgrids.

The modernization of the grid includes the application of information technology and digital equipment that provide remote monitoring, remote control, and expanded intelligence capabilities, including smart meters at the homes of consumers. Smart meters, as reported by the Economic and Demographic Subcommittee, lay the foundation for customer programs and data that provide more transparency and control to consumers over their usage and, ultimately, their bill. Examples include Time-of-Use (TOU) rate programs that provide customers with variable usage charges based on the time of day to encourage optimal usage patterns, and pre-pay programs. All of the needs described above require communications among grid equipment and with centralized systems. Tomorrow's grid will operate with increased efficiency, easily integrate renewable sources of generation, and provide South Carolina consumers and utilities with near real-time data and greater monitoring capabilities.

Furthermore, it has become clear through the development of this Energy Plan that electric utilities are

facing expanding customer expectations, increasing environmental regulation, and new technologies that have to be integrated seamlessly into the grid. The grid of the rapidly approaching future will function in ways never imagined when the original wires were installed. If South Carolina is to participate in the innovation coming to fruition in the electric sector, (for example, solar panels, wind turbines, electric vehicles, battery storage, and microgrids) then the state will require an advanced, integrated grid to manage and optimize the increasingly dynamic flow of electricity.

**Approach:**

1. Policies in South Carolina should continue to support the upgrade to leading-edge grid and metering technology while supporting the continued recovery of the asset life of the older equipment being replaced.
2. Categories of grid investment should be identified and updated in subsequent Energy Plans since modernization of the grid is more diverse than central station generation investment. Utilities should be encouraged to bring their major grid modernization projects before the PSC.

**Timeframe:** Adopt recommendation in 2016 Energy Plan

**Subcommittee Outcome:** Consensus

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 38

## Corporations Seek Renewable Energy Purchases

**Challenge:** A subset of South Carolina electricity consumers, primarily multinational corporations with “green” or “carbon-free” goals, seek “greener” energy mix through large purchases of renewable and/or carbon-free or carbon-neutral energy.

**Background:** Sixty percent of Fortune 100 companies and nearly two-thirds of Global 100 companies have set renewable energy and/or greenhouse-gas goals and therefore demand access to renewable energy in the places where they do business. These goals are driven by cost considerations and locking in long-term energy pricing, fuel supply diversification, and environmental stewardship. Access to renewable energy is now a factor in economic development recruitment and retention. When large employers scout locations for new facilities, power is a major consideration — reliability, price, and whether or not it is renewable. A recent example in South Carolina is Boeing in North Charleston. They demanded renewable energy to power their facility, and their demands were met.

Renewable energy technology is evolving rapidly, and South Carolina needs to adapt to this progression. Current Net Energy Metering regulations limit capacity to 1 MWac, and customers may not have the land or roof space to integrate the necessary capacities to offset meaningful load. Rate structures with high demand charges and low energy charges create challenging economics for solar projects, and solar-plus-storage projects for peak shaving are not yet viable.

### Approach:

- The Plan should encourage continued utility investment in or procurement of renewable and/or carbon-free or carbon-neutral energy for specific customers’ voluntary environmental goals.
- The Plan should reiterate that such “voluntary” offers have the potential to enhance the state’s attraction and retention of corporations and manufacturers.
- The Plan should emphasize that there is not a “one size fits all” product; utilities should exercise flexibility in product design and resource investment/procurement to meet the needs of economic development customers in a timely manner.
- The Plan should emphasize that if and when the South Carolina PSC examines these offerings to large customers, care should be taken to balance the needs of the subscribing customer with the imperative to insulate non-subscribing customers from any rate impacts.
- Continue to work with the DOC, other stakeholders, and industry to evaluate additional tools and policy options such as encouraging the use of utility green-power buying programs and the development of renewable energy projects.
- Utilize the existing DER Collaborative Groups, augmented with other stakeholders as appropriate, to start discussing green-source rider programs and the promotion and continued development of voluntary Renewable Energy Certificate programs.
- Evaluate and disseminate Power Purchase Agreements (PPA) best-practices recommendations for utilities and renewable energy facilities.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 48

## Develop State Support and Implementation of Purposely Grown Crops for Biofuels and Bioenergy

**Challenge:** Purposely grown crops produced for biofuels and bioenergy can serve a significant role in meeting the state’s liquid and solid fuel energy needs. The challenge will be to identify which biomass crops will be most sustainable for production in South Carolina and to determine the most profitable means to harvest, transport, and store the biomass while minimizing its carbon footprint. It will be necessary for the costs associated with biomass crops to be competitive with the costs associated with fossil fuels.

**Background:** Biomass produced in South Carolina represents significant economic opportunities for the state’s rural landowners and farmers by creating jobs and tax revenues in the agricultural and forestry sector, the current largest industries in the state. Bioenergy crops are generally more drought-tolerant and require fewer inputs to produce than traditional food crops; they are also well suited for production by limited-resource farmers. They are more suitable for production on the state’s many marginal, sandy soils and are safer for the environment than most food crops. Current research efforts are focused on finding additional “bio-product” uses for biomass crops, with the expectation that bio-products will result in another revenue stream for farmers and landowners. Several of the biomass crops offer environmental benefits such as improving soil quality, water quality, and wildlife habitat, compared to traditional agriculture and forestry land uses.

**Approach:** Work with Clemson University to develop recommendations and a plan for the use of biomass crops such as purposely grown trees, perennial grasses, annual sorghum crops, and, to a lesser extent, food crop residues to be utilized to meet South Carolina energy needs and contribute to the state’s energy independence and economy.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 52

## Shared Solar Program Implementation

**Challenge:** To make sure South Carolina utilities' shared solar programs are successful and accessible.

**Background:** Many South Carolinians interested in solar power face limitations to installing their own rooftop solar systems. Shared solar programs (also called community solar) provide an option for clean, renewable energy generation for homeowners and businesses unable to install rooftop solar because of issues like building orientation, shade, or rental status. Many of the state's electric utilities have already committed to developing shared solar projects. For example, Duke Energy and SCE&G have committed to shared solar programs under their Act 236 Distributed Energy Resource Programs. A majority of the state's electric cooperatives have also recently announced plans to pursue shared solar projects. Santee Cooper already has a solar share program available for their customers ([www. santeecooper.com/about-santee-cooper/news-releases/news-items/santee-cooper-board-increases- incentives%2C-sets-april-1-as-launch-for-community%2C-rooftop-solar-programs.aspx](http://www.santeecooper.com/about-santee-cooper/news-releases/news-items/santee-cooper-board-increases-incentives%2C-sets-april-1-as-launch-for-community%2C-rooftop-solar-programs.aspx)). The next steps should include seeing through existing utility commitments to shared solar programs, ensuring that program designs align with national and regional best practices, and encouraging all South Carolina utilities to develop successful shared solar programs. Shared solar programs specifically aimed at low-to-moderate income customers should also be encouraged. One way to do this is through a low-to-moderate income community solar carve-out, which has been done in states like Colorado and Maryland. A carve-out could be legislatively required (as in Colorado and Maryland) or committed to voluntarily by individual utilities.

**Approach:** Compile updates from South Carolina electric utilities on existing plans and status of shared solar programs. In addition, compile shared solar program resources — including resources on low-to-moderate income shared solar programs — to provide to South Carolina utilities that are in the planning stages of shared solar programs, to utilities that have not yet committed to such programs, and to regulators and legislators that are interested in shared solar. If the Energy Office is willing to lead the compilation, it could provide the list as an annual update, similar to existing annual energy efficiency reports.

**Timeframe:** Compile updates from South Carolina electric utilities on existing plans and status of shared solar programs. Compile and share list of additional shared solar resources such as model documents and reports.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 54

## Consumer Protections and Renewables to Tax Exempt Entities

**Challenge:** How to ensure consumer protections and best practices are maintained and how to bring more renewables to entities that do not pay taxes.

**Background:** It is important that industry professionals properly present cost/benefit analysis and financing programs to customers. The ORS currently has oversight on solar leasing companies. As market penetration increases, it is important that the highest construction standards are maintained for safety and reliability. South Carolina utilities have seen and experienced poor construction practices related to interconnection.

In addition, it is important to ensure that everyone, including entities that do not pay taxes— such as non-profits, local governments, and schools— have access to renewables. IRS guidance does not allow for the flow of tax benefits to the system owner for operating leases with non-profit counterparts. Generous DER programs have been established to try to incentivize the development of these projects, but struggles remain with capital allocations for these types of entities.

**Approach:** Utilize the existing DER Collaborative Groups, augmented with other stakeholders as appropriate, to establish best practices manuals that can be shared with groups such as the ORS, utilities, industry trade groups, and Chambers of Commerce. These groups also can be used to discuss how to make it easier to access renewables for entities that do not pay taxes.

**Timeframe:** 2017

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 57

## Complete Subcommittee Recommendations

## EE Use/Potential Studies

**Challenge:** Outdated and inadequate energy efficiency potential studies undermine the utilities' ability to establish plans that maximize the benefits of DSM.

**Background:** A critical part of DSM planning is the completion of robust energy efficiency potential studies that examine technical, economic and achievable potential across several different incentive- level scenarios. Because the circumstances underlying potential studies can change in a short number of years, it is important to update the potential studies regularly.

**Approach:** A stakeholder group should be convened that includes local and national experts, such as ACEEE, to discuss best practices for energy efficiency potential studies. In addition, utilities should be required to submit new energy efficiency potential studies to the South Carolina PSC at least once every three years.

**Timeframe:** Convene stakeholder group within six months of the passage of this policy and require utilities to submit their first update potential studies based on best practices in their 2018 DSM cost-recovery filings.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 26

## IRP Metrics

**Challenge:** Electric utility IRPs do not demonstrate that the scenario selected would ensure “access to energy supplies at the lowest practical environmental and economic cost.”

**Background:** Electric utility IRPs vary across utility, and some IRPs do not contain any form of cost estimate for the selected plan or for alternative plans that were not selected. Similarly, IRPs do not contain relevant environmental impact projections for the selected plan or alternative plans. Without including, as part of IRP documents, cost and environmental impact metrics for multiple possible resource plans, it is unclear whether environmental quality is being maximized, and whether the cost of energy is being minimized. See, for example, 2015 IRPs at [www.energy.sc.gov/utilities](http://www.energy.sc.gov/utilities).

**Approach:** Requirements should be established to ensure that IRP documents include economic and environmental outcome metrics. These metrics should be presented for the selected plan and for alternative plans that were not selected.

**Timeframe:** The recommendations should be applied within 2017 IRP filings.

**Authorities:** SC Code 58-37-10 and 58-37-40 define “integrated resource plan” and require utilities to prepare them. The State Energy Plan would include recommendations on metrics to include in IRPs, and the PSC and Santee Cooper board would adopt those recommendations to require inclusion of these metrics in IRPs. The statutory definition of IRP provides for comparing options, and 58-37-40 lays out what the ORS Energy Office shall and shall not do with respect to IRPs. No statutory changes would be needed to implement this recommendation.

**Funding:** Utilities already pay for software licenses and trained FTEs to do the necessary modeling. This approach would continue as is, with additional model runs being performed at minimal, if any, additional cost. Documentation of modeling results in IRPs should also add minimal, if any, additional cost. Including environmental impact metrics that are not already provided by utility software could add costs.

**Subcommittee Outcome:** Consensus and therefore this item will be sent to an IRP study committee.

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 35

## IRP Resource Portfolios

**Challenge:** Electric utility IRPs do not demonstrate that the scenario selected would ensure “access to energy supplies at the lowest practical environmental and economic cost” or that “demand-side options are pursued wherever economically and environmentally practical.”

**Background:** Electric utility IRPs vary across utility and generally do not evaluate relevant alternative resource portfolios that are expected to result in lower environmental and economic costs. In particular, IRP documents do not consider alternative resource portfolios that feature aggressive deployment of demand-side energy efficiency, or resource portfolios that feature greater procurement of viable renewable resources compared to the selected plan. Without analyzing and including, as part of IRP documents, alternative resource portfolios featuring more aggressive adoption of efficiency and renewables, it is unclear whether environmental quality is being maximized and whether the cost of energy is being minimized. See, for example, 2015 IRPs at [www.energy.sc.gov/utilities](http://www.energy.sc.gov/utilities).

**Approach:** A set of relevant alternative resource portfolios should be established and updated annually, and utilities should include, at a minimum, this set of portfolios as part of their IRP analysis and public documentation. Examples are a portfolio featuring annual energy savings at 1.5% of retail sales and a portfolio featuring a cumulative goal by 2025 of generating 10% of annual energy production from solar photovoltaics.

**Timeframe:** The recommendations should be applied within 2017 IRP filings.

**Authorities:** SC Code 58-37-10 and 58-37-40 define “integrated resource plan” and require utilities to prepare them. The State Energy Plan would include recommendations on alternative resource portfolios to include (at a minimum) in IRPs, and the PSC and Santee Cooper board would adopt those recommendations to require inclusion of these alternative resource portfolios in IRPs. The statutory definition of IRP provides for comparing options, and 58-37-40 lays out what the ORS Energy Office shall and shall not do with respect to IRPs. No statutory changes would be needed to implement this recommendation.

**Funding:** Utilities already pay for software licenses and trained FTEs to do the necessary modeling. This would continue as is, with additional model runs being performed at minimal, if any, additional cost.

**Subcommittee Outcome:** Consensus and therefore this item will be sent to an IRP study committee.

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 36

## IRP Scenario Analysis

**Challenge:** Electric utility IRPs do not demonstrate that the scenario selected would ensure “access to energy supplies at the lowest practical environmental and economic cost.”

**Background:** Electric utility IRPs vary across utility, and some IRPs do not contain any form of scenario analysis for the selected plan or for alternative plans that were not selected. Scenario analysis is commonly used to test the performance of a resource plan under multiple possible future scenarios. By testing each candidate resource portfolio under several relevant scenarios, planners obtain information on how robust a resource plan is across a range of future conditions. Without including scenario analysis for the resource plans evaluated as part of IRP documents, it is unclear whether environmental quality is being maximized and whether the cost of energy is being minimized. See, for example, 2015 IRPs at [www.energy.sc.gov/utilities](http://www.energy.sc.gov/utilities).

**Approach:** A set of relevant scenarios should be established and updated annually, and utilities should include, at a minimum, this set of scenarios as part of their IRP analysis and public documentation. Examples are a scenario featuring a mass-based CPP approach and elevated natural gas prices and a scenario featuring additional delays in completion of V.C. Summer Units 2 and 3.

**Timeframe:** The recommendations should be applied within 2017 IRP filings.

**Authorities:** SC Code 58-37-10 and 58-37-40 define “integrated resource plan” and require utilities to prepare them. The State Energy Plan would include recommendations on scenario analysis to include (at a minimum) in IRPs, and the PSC and Santee Cooper board would adopt those recommendations to require inclusion of these scenarios in IRPs. The statutory definition of IRP provides for comparing options, and 58-37-40 lays out what the ORS Energy Office shall and shall not do with respect to IRPs. No statutory changes would be needed to implement this recommendation.

**Funding:** Utilities already pay for software licenses and trained FTEs to do the necessary modeling. This would continue as is, with additional model runs being performed at minimal, if any, additional cost.

**Subcommittee Outcome:** Consensus. This item will be sent to an IRP study committee.

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 37

## Natural Gas and Propane Efficiency Programs

**Challenge:** Lack of clarity regarding the potential for demand-side efficiency programs to reduce natural gas and propane consumption.

**Background:** While demand-side incentives for high-efficiency natural gas-consuming equipment are available, South Carolina has not systematically evaluated the cost-effective potential of demand-side efficiency programs to reduce natural gas or propane consumption across the state.

**Approach:** A requirement should be established for producing and updating efficiency potential studies for natural gas and propane at reasonable intervals, and all cost-effective efficiency potential should be pursued.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 42

## Natural Gas Infrastructure

**Challenge:** Ensure that natural gas is a viable energy option for residential, commercial, industrial, and power-generation customers across South Carolina, thus putting the state in a better position to continue to attract economic development prospects.

**Background:** Natural gas is a cost effective<sup>3</sup>, reliable<sup>4</sup>, clean<sup>5</sup>, and domestic<sup>6</sup> source of energy for residential, commercial, industrial, and power-generation customers in South Carolina. In addition, natural gas supports a balanced approach to electric generation in the state.

Because natural gas is not produced in South Carolina, all natural gas is transported into South Carolina by three underground interstate pipelines: DCGT, Transco, and SNG. The natural gas is then delivered to local distribution companies, municipalities, power generators, and industrial customers.

Interstate natural gas transmission pipelines are regulated by the FERC, the PHMSA, and other federal and state agencies.

South Carolina has thousands of miles of underground transmission pipelines that bring and move natural gas across the state. These pipelines serve energy needs for industrial, commercial, and residential customers. Natural gas is in high-demand due to the increased availability of low-cost, domestic natural gas; the implementation of the CPP (if approved); and manufacturing and population growth in South Carolina<sup>7</sup>. Consequently, new investment or capacity expansion within the existing pipelines will need to occur.

In order to continue to serve the growing demand for natural gas in South Carolina, additional natural gas transmission pipeline capacity is needed. The process for planning for additional natural gas pipeline capacity begins only when necessary end-user commitments have been finalized. Construction does not begin until the pipeline has been reviewed and approved by all required regulatory bodies. The process to submit and receive approval to expand or construct a pipeline system can take several years.

### Approach:

1. A study committee should be convened in 2017 to consider issues that prevent natural gas from being an option for many South Carolina energy consumers. The goals of the committee should include the following:
  - a. Expand education of current natural gas infrastructure and potential new infrastructure to policy advisors, business development professionals, and legislative/community stakeholders.
  - b. Determine/further evaluate the potential government efforts/programs that may encourage or assist with the subsidy/recovery of development costs to encourage gas infrastructure growth in rural or underserved areas<sup>8</sup>.
2. To increase statewide access to natural gas, to expand natural gas pipelines to rural or underserved areas and to enhance future economic development, South Carolina will need to encourage and support firm transportation capacity contracts from creditworthy customers to support 1) natural gas-fired electric generation 2) residential and commercial growth served via municipal utilities and distribution companies and 3) additional industrial consumption to existing and prospective companies.
3. Recognizing the constraints on the current interstate natural gas pipeline systems and the capital costs and risks required to construct new infrastructure for new or expanded pipelines to provide potential service to underserved markets, the state/ utilities/municipalities/industrial and

commercial customers could contract for new or expanded pipeline expansion projects to serve regions of the state for future economic development prospects. Taking this action could position new areas of the state to have infrastructure in place to market and compete for future economic development prospects. Interstate pipeline expansion projects typically take four or more years to implement, so these costs would likely not be seen in customer rates until 2020 or later. As these prospects are secured, the capacity obligations (if assumed by the state) could be shifted to the applicable entities providing service. Annual costs would then be dependent on the amount of capacity for which each respective company contracted.

4. As future economic development projects have participants which seek and utilize natural gas, the applicable state/utility/municipality/industrial customer/ commercial customer would have flexibility to manage and optimize any unutilized or uncommitted capacity by looking for opportunities to minimize costs by releasing portions of its firm capacity, if possible, based on the prospects' timing. As a result, parties would have opportunities to support expanded infrastructure projects while looking for opportunities to minimize cost over time.
  - a. Review existing regulations and policies to determine if opportunities exist to enhance current policy or regulations to further help expedite infrastructure enhancement.
  - b. Determine the gas infrastructure project(s) that are desired and then determine the necessary coalitions required to make the projects a reality. Note: with new infrastructure projects taking four years or more to implement, each day of delay further affects the opportunity for future economic development in new and underserved areas.
5. Interstate natural gas pipeline companies, as a matter of practice, routinely conduct open seasons for expansions. These open seasons provide a mechanism for identifying market interest. Open seasons can be binding or non-binding. Generally, binding open seasons are held when a specific project and anchor customer(s) have already been identified. Nonbinding open seasons are more general solicitations of interest to help identify potential future capacity needs. The ultimate goal of open seasons is to develop and construct infrastructure that serves the greatest need in the most cost-effective way. A prudent approach for new infrastructure development in South Carolina would be to hold an open season; gather potential participants; determine where new infrastructure is desired and how much incremental capacity is needed, and then design the most cost-effective pipeline project(s) to meet those needs.
6. Ultimately, the key issue will be to determine which entity(ies) will be the contracting party(ies) and serve as the anchor customer(s). A binding open season could then be held to further enhance the project economics by attracting additional participants. It is recommended that the state work with South Carolina entities in this initial phase of evaluation.

**Timeframe:** Begin conversations with the natural gas transmission companies immediately. The review process for new pipelines can take many months/years before it is approved. Convene the study committee to review issues that prevent access to natural gas in the first quarter of 2017.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 43

<sup>3</sup>U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook. N.p., n.d. Web. 04 Aug. 2016.

<sup>4</sup>"PHMSA - FAQs - General Pipeline FAQs." PHMSA - FAQs - General Pipeline FAQs. N.p., n.d. Web. 04 Aug. 2016.

<sup>5</sup>U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." How Much Carbon Dioxide Is Produced per Kilowatthour When Generating Electricity with Fossil Fuels? N.p., n.d. Web. 04 Aug. 2016.

<sup>6</sup>U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." U.S. States. N.p., n.d. Web. 04 Aug. 2016.

<sup>7</sup>U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Short-Term Energy Outlook. N.p., n.d. Web. 04 Aug. 2016.

<sup>8</sup>For example, during the 2015 North Carolina Legislative Session, legislation was passed to provide recovery of capital-related costs incurred by a natural gas company for constructing natural gas infrastructure for a large manufacturing employer. Cost recovery for natural gas economic development infrastructure (§ 62 -133.15. General Assembly of North Carolina).

## Solar Farm Siting

**Challenge:** Lack of regulatory oversight for siting and decommissioning of solar farms in SC.

**Background:** Recent legislation has resulted in a significant increase in large-scale solar installations (farms) in South Carolina, thus prompting a number of questions:

- What should be considered in siting for a solar farm? Factors for consideration could include natural resources; amount of site prep required (land clearing, grading, access roads); wetlands/streams; protection of riparian or wetland buffers (will adjacent forests need to be cleared or cut back due to shading effects on panels?); floodplains; threatened, endangered or rare species/habitat inventory check with the DNR and/or Fish and Wildlife Service; and slope.
- What do best management practices for siting in South Carolina look like? Examples could include a simple storm water plan for each site detailing any concentration of flow with erosion measures outlined; construction erosion control plan; protection of topsoil; recommended plantings of native warm-season grasses (little bluestem, big bluestem, Indian grass) and/or low-growing pollinator species; minimum height panels need to be above ground; fencing or planted vegetative buffer required around the solar arrays; maintenance of the site (herbicides, mowing periodicity); gravel required on certain slopes, if trees in adjacent areas need to be removed; BMPs on type of clearing (hand clearing or specify means of mechanical clearing?).
- Several specific natural resources-related issues need to be further explored and researched. One is the lake effect for waterfowl and other wading birds who may mistake an array of solar panels for water, causing mortality, as well as other potential concerns of insects attracted to panels that may also attract bats in a similar manner. Also, the potential effect of panels on gopher tortoises in certain areas of South Carolina needs further research. Establish a protocol for reporting gopher tortoises for relocation and/or an excessive amount of wildlife damage as a result of solar panels.
- What does reclamation look like? What happens to the land when the lease with the landowner is up in 25 years? Who is required to return the land to its original state, and is it required to be returned to its original state? Are there financial assurances set up in the lease agreements with the “solar prospectors” and the landowners to ensure the integrity of the land is returned? Who is responsible if the developer leaves panels in place or leaves large concrete or gravel pads, wiring, and so forth?
- What happens if a landowner dies, goes bankrupt, loses the land — who is then responsible for the solar site? Are protocols and financial assurances in place to deal with abandonment of a solar site?
- Is there an opportunity to collaborate and have a review process with the South Carolina PSC in reviewing these sites or with the utilities as they review the proposals?

**Approach:** Create a committee to address the issues raised above. The committee will include representatives from state agencies, non-profits, municipalities and utility companies to develop recommended best management practices for siting, development, and reclamation of solar farm sites in South Carolina. Encourage utility companies to adopt the usage of this guidance in their RFPs for solar development.

**Timeframe:** Begin immediately to establish interested parties for the development of the committee.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 49

## Act 236 – DER 2.0, Net Energy Metering 3.0

**Challenge:** To determine the needs of the state moving forward with Act 236 and beyond.

**Background:** Recognized nationally as landmark legislation, the Act 236 was passed unanimously by the South Carolina General Assembly and signed into law by the Governor in 2014. Designed collaboratively by policy makers, investor owned utilities, electric cooperatives, the Office of Regulatory Staff, environmental and conservation groups, renewable energy developers and installers, large energy users, and other stakeholders in the state, this legislation represents multiple public policies to support the adoption and integration of various types of renewable energy in South Carolina — from small customer-generators like rooftop solar to large, “central plant” renewable generation, and distributed energy resources like energy storage.

Over the past two years, much has been accomplished under Act 236. Regulators and investor-owned utilities have put in place programs that poise South Carolina for significant growth in renewable generation with the installation of more than 200 MW of capacity by 2020. The law is an important step toward realizing the full potential of local renewable energy resources and is consistent with the State Energy Plan’s encouragement of “the development and use of clean energy resources, including nuclear energy, energy conservation and efficiency, and indigenous, renewable energy resources.”

To build on the growing South Carolina solar industry, we need to look at how to continue to incorporate more renewables into future IRPs or through legislative actions that allow the utilities to operate their grids safely and reliably while not shifting cost burden across different rate classes and rate payers.

As the price of solar continues to fall and the industry grows and matures, it is important for consumers to understand the economics of their purchasing decisions. This understanding is especially important for consumers engaging solar financing options. Some of these financing options have price escalators that assume full retail compensation for excess energy exports that will continue past 2025.

**Approach:** Recommend that cooperation among interested stakeholders continue through the individual DEP, DEC, and SCE&G DER advisory groups, augmented with other stakeholders as appropriate. Also recommend that a joint meeting be held across those stakeholders in 2017 to not only discuss the progress each utility has made toward fulfilling the goals of Act 236 but also to determine whether:

- Program modifications are required for an advanced, integrated grid to manage and optimize the increasingly dynamic flow of electricity such as energy storage, microgrids, electric vehicles, power quality, and system security; and
- Opportunities exist to enhance current policy or regulations to further help expedite infrastructure modernization, expansion, and service reliability.

**Timeframe:** Begin within the first six months of 2017

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 53

## Renewable Energy Cost Data Tracking

**Challenge:** With the rapid and dramatic decline in the cost of renewable energy in recent years, it is critical to stay as current as possible on project and PPA prices when making energy policy and resource planning decisions.

**Background:** The state does not have a public process in place for keeping track of the most current cost of renewable energy projects across the country. Fortunately, the LBNL publishes accurate reports on renewable energy prices (including annual PPA reviews) that could significantly improve South Carolina's ability to respond quickly to a changing marketplace and make sure ratepayers are able to benefit from low-cost, clean, renewable energy.

**Approach:** The ORS should link to LBNL reports and annual updates on the cost of renewable energy on its website.

**Timeframe:** Launch the webpage within six months after completion of the State Energy Plan

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 54

## Incorporating Regulated and Non-Regulated Utility Ownership of Solar Assets

**Challenge:** How to incorporate regulated and non-regulated utility ownership of solar assets?

**Background:** Regulated utilities are not allotted the same tax efficiencies provided by federal investment tax credit and depreciation rules as developers/customers are. Considerations need to be evaluated that allow utilities to invest in solar assets post Act 236 while being careful not to discriminate against customer- and developer-owned assets.

**Approach:** Utilize the existing DER Collaborative Groups, augmented with other stakeholders as appropriate, to start discussing South Carolina's approach to post DER utility-owned solar assets.

**Timeframe:** Begin within the first six months of 2017

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 55

## Qualified Facilities' Rights

**Challenge:** How to continue to protect the rights of Qualified Facilities (QF) under the Public Utility Regulatory Policy Act (PURPA)?

**Background:** PURPA regulates how Qualified Facilities should be treated, but it leaves the duties of implementing and enforcing the law to the states. The utilities have introduced, and the PSC has approved, standard contract options for QFs to deliver power to the grid.

**Approach:** The SC Solar Business Alliance will continue to monitor updated tariff filings to review/evaluate avoided cost methodologies and calculations.

**Timeframe:** Ongoing

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 56

## Public Awareness

**Challenge:** To reduce energy used in transportation, create public awareness of the importance of clean fuel technologies and multi-modal solutions and support for their adoption in South Carolina and create a workforce that can create, manage, and maintain these technologies.

**Background:** The impact of air pollution and the dependence on fossil fuels threatens the health and security of the people of the US and of South Carolina. A recent report in the Annals of The American Thoracic Society shows that pollution in the Greenville Metropolitan area causes 29,768 illnesses a year and kills 15 people in just Greenville every year. In its report “Beyond Traffic,” the US DOT notes that without effective policies and regulations, growing freight movements will increase greenhouse-gas emissions and will affect human health in neighborhoods along freight corridors. Nationally, trucking accounts for about 9% of all highway miles traveled, but it is the source of 20% of all transportation- sector greenhouse-gas emissions. It is also the largest source of freight movement in South Carolina and projected to grow in leaps and bounds.

Recognizing this threat, the federal government has put forth aggressive measures to curb emissions related to transportation and promote the use of alternative fuels across the board in the transportation sector. As a result, significant improvements in engine technologies — including the use of new fuels (such as natural gas or hydrogen) and vehicles built from lighter materials — are on the horizon. In the case of light-duty vehicles, new technologies such as autonomous vehicles, plug-in and hybrid vehicles, and electric vehicles are coming to the marketplace. These technologies are of great importance to South Carolina because they not only will reduce South Carolina’s fossil fuel imprint but also will produce significant environmental and health benefits to residents, as well as generate economic development in the state.

Automation will have a potentially transformative impact across all transportation modes by increasing productivity, improving safety, and enhancing the capacity of existing infrastructure. It will also have a profound impact on the transportation workforce by changing the skills required to manage, operate, and maintain transportation vehicles and systems.

Acceptance of these new technologies and the availability of a workforce that has the skills to create, manage, and maintain these new technologies will be crucial for economic prosperity in the state in the long term. Success of implementation will depend heavily on public acceptance and investment. Public awareness of the advantages and the impact of these technologies on human health and future economic prosperity will spur government to invest resources.

**Approach:** Task the Energy Office to coordinate the creation of a committee that brings together representatives from the SCDOT, SC Department of Education, the transportation industry, municipal leaders, and academia (including the Technical School System) in a taskforce to develop a plan for public education and workforce development. The task force will focus on clean technologies, alternative transportation, and multi-modal solutions. The plan should detail short-, medium-, and long-term strategies and recommendations for implementation.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

**Corresponding Page in Energy Plan Appendices:** pg. 67

## Innovation and Technology Transfer Center

**Challenge:** Make the state a hub of clean energy transportation innovation, thus leading to development and rapid implementation of clean technologies.

**Background:** South Carolina has some very unique assets. It is home to one of the most advanced automotive companies in the world (BMW) and one of the most unique research centers (CU-ICAR) focused on the transportation industry. The energy resources in the state include the world's largest wind turbine drivetrain testing facility and a grid-simulation capability that is second to none. The Smart State Program has drawn talent into the state unlike any other and has resulted in significant industry investment in the program. The automotive sector in the state is thriving, and the automotive and aircraft industries (with Boeing leading the way) have put South Carolina on the global map. Almost every day one hears of supporting industries coming to the state. A prime example is the cluster of industries focused around advanced materials, which are now considered to be essential in meeting the CAFE standards on fuel efficiency slated for 2025. South Carolina also has the International Transportation Innovation Center. The International Transportation Innovation Center is designed as a physical test bed for connected vehicle and sustainable mobility technologies. The state is therefore heavily invested in the clean transportation/energy area and can easily position itself as a clean energy/ transportation hub if it can bring all these assets together and focus them on creating future prosperity in the state.

The German Fraunhofer Institute model is an excellent example of an entity that rapidly translates innovation into workable technologies. Fraunhofer Institutes are well known for being strong engines of economic activity in the regions in which they are present. These institutes are prime examples of public/private partnerships and are dedicated to serving the cluster industries of the region. The creation of institutes such as Fraunhofer, with a focused vision to bring new ideas rapidly to the marketplace and drawing from talent in other entities in the state, could make the state a real powerhouse in the clean-energy technology domain.

**Approach:** Create a South Carolina Clean Transportation and Technology Transfer Center, funded through a public/private partnership that includes SC DOT, the research universities, and industry that focuses on the development, rapid implementation of new technologies, and technology transfer in a cost effective manner. The Center should serve as a resource for local companies trying either to bring innovation into their products or to adopt new technologies by connecting the companies to existing assets in the state. It would serve as a repository of information related to clean transportation, be responsible for its dissemination, and support efforts of local communities to adopt clean energy best practices. The Center should operate independently as a state entity but work synergistically with existing assets such as CU-ICAR, the SC Energy Innovation Center, The McNair Center, the ITIC, and other organizations such as Upstate Forever and the Coastal Conservation League. Create a task force to develop a vision and goals for this Center. An example of one such center is the NC Clean Energy Technology Center.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

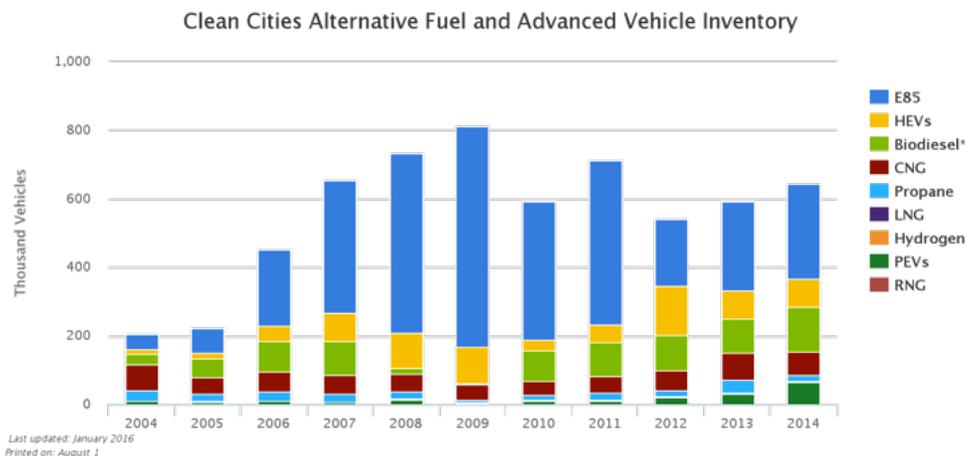
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## Lead By Example – State Transportation

**Challenge:** Currently, the proportion of state-owned or leased fleet vehicles that are fueled by a DOE-established alternative fuel is not large. As a result, the state’s fleet lacks diversity and fuel supply is vulnerable, thereby limiting fuel efficiency and diversity in transportation.

**Background:** An increase in transportation fuel efficiency and diversity is considered a priority by the federal government as a means of reducing dependence on foreign oil, thereby reducing security risks. The mission of the DOE Clean Cities program – in which Palmetto State Clean Fuels Coalition is based – is to encourage voluntary public/private partnerships coordinated by the DOE that expand the use of alternatives to gasoline and diesel fuel. Legal alternatives under EPCAct92 include CNG, ethanol, methanol, electricity, and liquefied petroleum gas (propane). According to the EIA, “the number of alternative fuel vehicles (AFVs) in use has been increasing steadily during the past 15 years, largely due to federal policies that encourage and incentivize the manufacture, sale, and use of vehicles that use non-petroleum fuels. AFVs in widest use today are those that run on E85, propane, compressed natural gas, and electricity.” The importance of the deployment of these alternative fuels and technologies cannot be understated. Not only can they reduce South Carolina’s fossil fuel use in the transportation sector, but also they can assuage potential human health impairments and environmental impacts, as well as generate economic development in the state. Shown in the following chart, the diversity of these fuels has increased over time. Nonetheless, to determine ways the state can lead by example to promote stability and drive economic development, more research into these trends and the barriers that limit adoption of alternative fuels should be conducted.

**Approach:** Lead by Example



1. Palmetto State Clean Fuels Coalition or another umbrella organization devoted to transportation issues should conduct a survey of state agencies, local governments, and municipalities to determine their interest and willingness to lease, purchase, use, or convert to alternative fuel vehicles or equipment.
2. Palmetto State Clean Fuels Coalition or another umbrella organization devoted to transportation issues should convene a task force that engages state agencies and local municipalities to determine what, if any, barriers currently exist that limit their ability to lease, purchase, use, or convert to alternative fuel vehicles or equipment.
3. If warranted by the results, Palmetto State Clean Fuels Coalition, or another umbrella

organization devoted to transportation issues — in conjunction with its stakeholders and using existing state and federal statutes as a baseline — should develop a recommendation to establish a statewide goal as it applies to state entities. An example could be to identify a certain percentage of state vehicles that should be powered by a DOE-established alternative fuel — with a phased-in approach to adoption. Another possibility would be to create a policy document to promote the use of alternative fuels by state entities. (These goals or policies may later be expanded to other entities.) The effort should also include an education component so that agencies understand the benefits and challenges of alternative-fuel vehicle use.

4. The task force should also consider a reward structure for exemplary performance in this domain.

**Timeframe:** Begin immediately, in order to be ready for any funding opportunities that arise and to prepare for the next contract renewal.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

**Corresponding Page in Energy Plan Appendices:** pg. 70

## Encouraging Connectivity

**Challenge:** To reduce energy use in transportation, encourage connectivity between major cities and towns by working on land use and public facility siting with SCDOT, thereby reducing the number of single occupancy vehicles and, as a result, the overall energy consumption of the state's citizens.

**Background:** Some transit systems within the state are small — owned by an individual county, city, or metropolitan planning organization; therefore, jurisdictional boundaries make it more difficult to communicate and plan regularly for regional travel. Absent the provision in the SCDOT intercity bus plan, it can be difficult to travel from cities and towns not within the same county region (for example, Charleston to Columbia) on a statewide transit service.<sup>9</sup> This situation increases the reliance on single-occupancy vehicles for regional travel. Within local areas, new projects are not always accessible by transit because of disjointed planning processes, an emphasis on traffic-impact analysis of vehicles only, and lack of available funds. Planning for new transit systems alone will not improve this situation entirely: Transit planning must be coordinated with land-use investments at the local and state level — whether an individual local school, or a state-supported economic development opportunity that will draw from a larger region.

**Approach:** Link land use and transportation investments by improving public facility siting to ensure government buildings, schools, and transit hubs are located in priority investment areas. This approach requires local planning with strong coordination between SCDOT, transit authorities, Departments of Commerce and Education, local economic alliances, and others.

- Engage in and fund scenario planning for major projects, including but not limited to, the projects that receive public funding by the state.
- Facilitate partnerships with local and regional entities, as well as with other state agencies to better coordinate land use, economic development, and transit investment on new developments; facilitate transit development and coordination between existing economic hubs.
- Documents to use as a starting point include SCDOT and Department of Commerce's work on interstate investment and strategic investment areas.<sup>10</sup>

### Examples:

- Scenario planning: Delaware: LUTSAM “The Delaware DOT developed the Land Use and Transportation Scenario Analysis and Microsimulation (LUTSAM) tool. DelDOT will use the tool to help local stakeholders and land use authorities visualize the positive and negative transportation outcomes of potential development plans. Depending on compactness, mixture of uses, connectivity, and other criteria, the tool can estimate VMT and emissions, and can produce an animated simulation of traffic conditions.” [www.dvrpc.org/reports/08059.pdf](http://www.dvrpc.org/reports/08059.pdf)
- Partnering with state agencies: [www.smartgrowthamerica.org/documents/the-innovative-dot-third-edition.pdf](http://www.smartgrowthamerica.org/documents/the-innovative-dot-third-edition.pdf)
- Public facility siting: State of Maryland Code of Maryland Regulations (COMAR) 23.03.02.13 “Unless a waiver is granted in accordance with Regulation 28 of this chapter, a proposed site for a new school or a replacement school that adds capacity shall be in a priority funding area.” Maryland Division of State Documents website (COMAR Online). Retrieved 11/25/13 from [www.dsd.state.md.us/comar/comarhtml/23/23.03.02.13.htm](http://www.dsd.state.md.us/comar/comarhtml/23/23.03.02.13.htm)

**Timeframe:** Begin immediately by convening stakeholders and developing recommendations.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

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## Complete Streets Policies

**Challenge:** Infrastructure built across the state today is primarily owned by SCDOT and not the local county or municipality. This reality presents challenges for the DOT budget and local authority on road design. The SCDOT should strengthen its existing 2003 resolution for Complete Streets policies and/or support local municipalities' adoption of Complete Streets policies to encourage transit, bicycle, and pedestrian opportunities and increased network capacity, thereby reducing energy used for transportation. Improving the capacity and design of the existing streets by investing in other modes of travel will relieve some of the maintenance burden and reduce congestion and energy used (per vehicle and in general).

**Background:** Complete Streets policies have been adopted in over 800 communities — large and small. The FHWA, in recognizing the challenges to adopt policies such as this one, relaxed its own requirements and oversight (via the Fixing America's Surface Transportation Act). Complete Streets are streets designed to accommodate multiple modes of travel and be safe, convenient, and comfortable for all users — whether in a car, in a truck, on a bike, on foot, or travelling by public transit. At the local level, trips that could be walked or taken on a bike are driven due to lack of safe, convenient, or comfortable infrastructure. The same can be said for longer trips and lack of transit access. Increasing public transit use, walking, and bicycling offer benefits across the spectrum including public health improvements, cleaner air via lower air emissions, reduced congestion, and more livable neighborhoods. Pursuant to state energy goals, Complete Streets policies can also lead to reduced fossil-fuel use and more efficient use of road space.

**Approach:** Recommend adoption of local-level Complete Streets policies and transit-oriented development standards in the State Energy Plan. Policies can be adopted via a pilot project or home rule of a municipality and should be coordinated with SCDOT to ensure design approval and safety. Policies for Complete Streets review and support within SCDOT should be reviewed and made more efficient; expertise should be available to local entities for this type of transportation planning. In addition, consideration should also be given to financial and/or administrative incentives.

### Examples:

Pilot Project: Recently, the Town of Clemson wanted to improve walkability and traffic calming on Old Greenville Highway (SC 93). SCDOT agreed to renumber the route (by combining SC 93 with US 76, a major road), and they turned over ownership of the road to the Town of Clemson so it could control traffic engineering.

- National Complete Streets Inventory: [www.smartgrowthamerica.org/best-complete-streets-policies-of-2015](http://www.smartgrowthamerica.org/best-complete-streets-policies-of-2015)
- Little Rock, Arkansas: [www.smartgrowthamerica.org/documents/cs/policy/cs-ar-littlerock-ordinance.pdf](http://www.smartgrowthamerica.org/documents/cs/policy/cs-ar-littlerock-ordinance.pdf)
- Reading, PA Executive Order 2-2015-3. [www.smartgrowthamerica.org/documents/cs/policy/cs-pa-reading-order.pdf](http://www.smartgrowthamerica.org/documents/cs/policy/cs-pa-reading-order.pdf)

**Timeframe:** Review existing policies immediately; convene stakeholders to write additional policies.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

**Corresponding Page in Energy Plan Appendices:** pg. 74

## Availability of Alternative Fueling Infrastructure at Transportation Nodes

**Challenge:** Locations exist throughout the state where several types of transportation, such as rail and freight distribution via trucks, come together. The state may not be able to maximize efficiencies in energy used to transport cargo due to limited availability of multi-modal fueling and other equipment at transportation hubs or nodes throughout the state.

**Background:** Many long- and mid-distance haulers are turning to CNG as a more efficient fuel for transporting cargo. At the same time, multi-modal carriers are exploring other forms of transportation fuel, such as electric vehicles. These fuels could be used more efficiently if logical hubs were identified so that resources applied to alternative fueling infrastructure can be concentrated where they are likely to be needed the most. Thus, CNG fueling stations can be strategically located near interstate hubs where cargo is most likely to be transferred from rail to long- distance trucks. Additional information is available at [www.scdot.org/multimodal/](http://www.scdot.org/multimodal/) and [www.scdot.org/multimodal/pdf/SC\\_MTP\\_Freight\\_Plan.pdf](http://www.scdot.org/multimodal/pdf/SC_MTP_Freight_Plan.pdf).

**Approach:** The Palmetto State Clean Fuels Coalition or another umbrella organization devoted to transportation issues should develop a background document — by working with private and public haulers, state and federal officials, planners, and universities — to identify the most important hubs for infrastructure development, determine availability of fueling infrastructure, and recommend next steps as appropriate.

**Timeframe:** Begin immediately, in order to be ready for any funding opportunities that arise

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

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# Pending Subcommittee Recommendations

## Appliance and Equipment Energy Efficiency Standards

**Challenge:** Inefficient appliances waste money and cause unnecessary pollution, but customers do not always make economical or environmentally friendly purchasing decisions due to insufficient information or motivation.

**Background:** Nine states and the District of Columbia have implemented appliance/equipment energy efficiency standards on items such as battery chargers, pool pumps, hot food holding cabinets and water dispensers. This is a low-cost way to save customers money and reduce the demand for electricity. Per the Appliance Standards Awareness Project (ASAP): [www.appliance-standards.org/states#states-table](http://www.appliance-standards.org/states#states-table). National standards trump state standards, so the only things it makes sense to have state standards for are odd things. There also are many standards that are in the process of being developed by the DOE ([www.appliance-standards.org/products](http://www.appliance-standards.org/products)). ASAP conducted a study in 2012 on a few appliances and determined payback and savings by state. The table for South Carolina is here: [www.appliance-standards.org/sites/default/files/states/Model\\_Bill\\_Analysis-SC.pdf](http://www.appliance-standards.org/sites/default/files/states/Model_Bill_Analysis-SC.pdf). The products from the study are battery chargers, commercial dishwashers, double-ended quartz halogen lamps, faucets, hot food holding cabinets, portable electric spas, room air cleaners, toilets, urinals and water dispensers. The payback ranged from 0.5 to 3.5 years.

**Approach:** Include language in the State Energy Plan calling for the development of appliance energy efficiency targets. Convene a working group of interested stakeholders, including retailers, to explore best practices and develop a list of applicable appliances and proposed minimum standards for consideration by the Legislature.

**Timeframe:** Convene the working group upon completion of the State Energy Plan.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Demand-Side Management/Demand Response/Energy Efficiency (DSM-DR-EE)

**Corresponding Page in Energy Plan Appendices:** pg. 25

## Environmental Indicators

**Challenge:** Inability to easily view status of key environmental indicators related to energy production and use

**Background:** Many environmental indicators are closely related to energy production or use. An example is the relationship between ground-level ozone and transportation. It would be useful to have a simplified measure of progress, year over year, on various key indicators — particularly since the state is generally showing improvement on many, if not most, of them. (To continue the ozone example, the Upstate was recently moved from non-attainment to attainment status as ground-level ozone dropped below the EPA's threshold.)

At various times in the past, DHEC has published key indicators in a “state of the environment” type of report. DHEC currently maintains a searchable database for some indicators, notably National Air Quality Standards. While these are very helpful, they do not include all of the indicators presented in the environmental report. Reviving the indicators report — either in downloadable form or as an interactive online tool — would be helpful in tracking the state's progress going forward.

**Approach:** The subcommittee recommends that DHEC return to its practice of producing an environmental indicators report in a format that is simple for the public to understand and easy to replicate each year. The subcommittee also recommends that DHEC periodically publicize the availability of existing trends data. Ideally, DHEC will consult with a wide variety of stakeholders to determine the most useful trends related to energy production and use.

**Timeframe:** Begin in 2017, based on limitations of time and resources

**Subcommittee Outcome:** Consensus

**Subcommittee:** Environmental Justice, Economic Development, and Environment Planning

**Corresponding Page in Energy Plan Appendices:** pg. 28

## Utility Regulations

**Challenge:** The electric utility industry is in a state of transformation. Keeping the grid running reliably is a balancing act, where the amount put into the grid must equal the amount taken out. Utilities are seeing slower growth in demand for electricity due to the effects of energy efficiency and a sluggish economy; at the same time, demand for renewable energy and natural gas resources is increasing. Utilities are striving to incorporate those new sources of generation into the grid.

**Background:** Utilities have been modernizing their generating plants and building new, cleaner sources of generation including non-greenhouse gas emitting nuclear. In addition, utilities are also increasingly modernizing the electric grids with advanced metering infrastructure and investing in enhancements to maintain and improve reliability for customers and the broader manufacturing economies within South Carolina.

New technologies like energy storage are becoming more of a reality every day. Customer expectations are also shifting as customers are expecting their utilities to interact with real-time information, through smart phones and non-traditional communication channels, and to provide increasing options for payment and service. And, in South Carolina, customers have a variety of options for their energy supply including community solar farms and customer-sited solar systems, whether owned or leased. This industry transformation is ongoing in the midst of ever-increasing environmental and system security regulations that put pressure on utilities to recover their investments in a timely manner. Given the changes happening in the industry, it merits asking whether the regulatory construct we have in place today in South Carolina is sufficient to keep pace with the evolution of the industry and the technological advancements driving that evolution.

**Approach:** Accordingly, we recommend that a new subcommittee convene in 2017 to evaluate the regulatory construct including resource planning, revenue recovery, and rate design policies. The topics the subcommittee may evaluate include, but are not limited to, the following:

- whether opportunities exist to enhance current policy or regulations to further help expedite necessary and/or cost-beneficial infrastructure modernization and expansion;
- whether the changing state of the industry merits consideration of a more flexible revenue recovery model for utilities; and
- whether there are rate-making or rate-related policy changes that should be considered to 1) provide more flexibility to better allow for adaptation to changes in the industry 2) send informative price signals to customers 3) support economic development and industrial retention 4) take into account customer adoption of energy efficiency, demand response, conservation, and distributed energy resources and 5) properly account for benefits and costs in an obligation to serve territory.

**Timeframe:** Convene subcommittee in 2017

**Subcommittee Outcome:** Consensus

**Subcommittee:** Electric and Natural Gas Planning

**Corresponding Page in Energy Plan Appendices:** pg. 40

## Economic Impact Modeling

**Challenge:** Lack of consideration of expected economic development consequences of resource plans.

**Background:** Economists routinely use modeling tools to evaluate how government policies, new infrastructure, and other economic changes are expected to affect employment, gross domestic product, state and local government revenues, and other economic indicators. These tools and the information they provide to aid decision-making have not been adopted for resource planning purposes in South Carolina. Additional background can be found in the EPA's Assessing the Multiple Benefits of Clean Energy, Chapter 5: [www.epa.gov/sites/production/files/2015-08/documents/epa\\_assessing\\_benefits\\_ch5\\_0.pdf](http://www.epa.gov/sites/production/files/2015-08/documents/epa_assessing_benefits_ch5_0.pdf)

**Approach:** As part of coordinating “the preparation of an integrated resource plan for the State” (SC Code 58-37-40(D)), the ORS Energy Office or the PSC should perform economic impact modeling to further inform resource decisions and policy.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Electric and Natural Gas Planning

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## Develop a Plan for Acceptable Use of Beneficial Waste-to-Energy in South Carolina

**Challenge:** Problematic waste streams that cannot be recycled exist throughout the state which could be utilized for waste-to-energy, rather than landfilling. This changeover requires defining preferred pathways for these waste streams, which are acceptable from the environmental standpoint, and then providing encouragement or incentive to develop.

**Background:** Significant waste streams (often biomass-based) exist, which could be funneled to a beneficial use by using a waste-to-energy process. Such waste streams could be a commonly used waste product such as waste wood; or a highly specialized waste product which cannot be recycled but could be useful in waste-to-energy processes.

The DOC has a committee named Recycling Market Development Advisory Council (RMDAC) that is tasked with finding markets for recycled materials and could help with determining the waste stream availability. DHEC also has responsibility for waste accounting and supervision in the state, as well as for air and water quality when the waste is processed. The ORS Energy Office monitors energy use and production in the state. Among these entities, the knowledge and responsibility could be harnessed to develop best practices for utilizing these wastes and then for incentivizing the preferred pathways.

**Approach:** Establish a task force, under the guidance of RMDAC and including other related stakeholders, to identify the economically significant waste streams that are unutilized in the state. Prioritize developing beneficial uses for the waste streams, based on economic and environmental benefit. Make recommendations for incentives that could result in creation of new waste-to-energy projects to meet this need. Create marketing assistance (exchanges, or buyer-seller lists and maps) for waste streams when this would be helpful.

**Timeframe:** Begin upon approval, and continue with yearly reassessments of relevant changes.

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

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## Increasing the Utilization of Forestry Byproducts, Tree Trimmings, and Waste Wood

**Challenge:** South Carolina's forestry industry is already a major economic contributor to the state and there are forestry byproducts and residuals that could add incremental revenues to landowners and forest products processors if nearby markets were available. In addition, tree trimmings and other forms of wood waste can be diverted from landfills for beneficial use as fuel wood.

**Background:** More nuclear generation will be incorporated into South Carolina's electric generation mix (with no load-following capability), along with more solar generation at utility-scale and behind the meter in homes and businesses. As restrictions on coal or the desire to reduce coal use increase, the need for load-following and peaking units becomes more important. Natural gas, hydro, biomass, and energy storage are dispatchable generating resources that can adjust with load variation. The current price of natural gas generation drives utilities to run these units as base load so that there is less ability to use them for peaking or load-follow capacity. There is very limited ability to expand hydro generation. As a result of these constraints, the increased use of electric generation that uses waste wood could be beneficial to the utilities. Waste wood as a fuel may provide emission benefits and economic benefits to the state, especially in the rural economy. Forestry jobs would increase, and fuel dollars would be paid to in-state landowners instead of exported to coal- or natural gas-producing states. Less transport would be required since the wood is available locally in South Carolina.

**Approach:** The South Carolina Forestry Commission monitors the forestry products markets and could provide fuel wood studies to determine where sufficient forestry residuals, forestry byproducts, urban wood waste, and suitable tree/yard trimmings exist for wood-fueled generating station sites. A task force of state government, state environmental groups, and industry could prepare recommendations to legislators to develop additional in-state electric generation from this resource while ensuring no conversion of natural forests.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 51

## Advanced Inverter and Storage Technologies

**Challenge:** How to utilize the benefits of advanced inverter and storage technologies?

**Background:** New technologies for inverters and storage solutions can provide grid support to address power quality and strengthen the grid in a variety of ways. The newly adopted South Carolina Grid Integration Plan is not entirely clear on how these inverter or storage benefits can be used or how solutions can be interconnected.

**Approach:** Convene a technical working group with utility engineers and industry experts to discuss best practices from high photovoltaic penetration markets and markets that have started implementing smart inverter or storage solutions. The working group will also identify financial, contractual, or other policy issues that may present barriers to realizing potential benefits from third- party PPAs or PURPA QF providers. This action will help realize the potential benefits associated with smart inverters or storage provided by these providers.

**Timeframe:** 2017

**Subcommittee Outcome:** Consensus

**Subcommittee:** Renewables

**Corresponding Page in Energy Plan Appendices:** pg. 56

## Convene the Green Purchasing Taskforce

**Challenge:** Inability to purchase energy-efficient items if they are not on state contract

**Background:** A green purchasing taskforce was put together in 2009 to develop the green purchasing policy ([www.mmo.sc.gov/PS/agency/PS-agency-green-purchasing.phtm](http://www.mmo.sc.gov/PS/agency/PS-agency-green-purchasing.phtm)). This policy covers areas such as EE, recycled-content items, and source reduction. While this policy exists, many state government agencies and colleges/universities would like to purchase energy-efficient items such as lighting, washers, dryers, solar panels, and vehicles. When these items are not on state contract, it is difficult to justify purchasing them. It would make the process easier, and more people would purchase energy efficient items, if they were on state contract and/or if there were a price preference similar to what is in place for recycled-content items. The green purchasing policy will need to be revived and enforced.

**Approach:** Convene the green purchasing taskforce to add to the policy and work on adding vendors of energy-efficient items to the state contract. In addition, the group can add a price preference for energy-efficient items to the policy.

**Timeframe:** Begin immediately. It will take time to update the policy and add vendors to the state contract.

**Subcommittee Outcome:** Consensus

**Subcommittee:** State Government Energy Use

**Corresponding Page in Energy Plan Appendices:** pg. 62

## Recommendation for Minimum Energy Requirements for Leased Facilities

**Challenge:** Many state entities operate partially or entirely in leased space, and leases may or may not take into account the operating costs related to energy. By drawing attention to energy costs at the point a lease is developed, the state may be able to negotiate energy-saving improvements and/or a cost per square foot that adjusts for higher energy costs.

**Background:** Real Property Services provides centralized real estate-related services for all agencies of the State of South Carolina. Real Property Services — on behalf of the Department of Administration and the Division of General Services — maintains and processes all leases either for or from a state agency. Exceptions are for property matters for those agencies and processes specifically exempt from the oversight delegated by the South Carolina Code of Laws and the South Carolina Code of Regulations.

The oversight delegated to the Department of Administration and the Division of General Services regarding leasing matters is required by the following:

- SC Code of Laws §1-11-55, §1-11-56, §1-11-67
- SC Code of Regulations §19-447.1000

SECTION 1-11-56. Program to manage leasing; procedures.

(B) The Division of General Services of the Department of Administration, in an effort to ensure that funds authorized and appropriated for rent are used in the most efficient manner, is directed to develop a program to manage the leasing of all public and private space of a governmental body. The department must submit regulations for the implementation of this section to the General Assembly as provided in the Administrative Procedures Act, Chapter 23, Title 1. The department's regulations, upon General Assembly approval, shall include procedures for:

(1) assessing and evaluating agency needs, including the authority to require agency justification for any request to lease public or private space; and establishing standards for the quality and quantity of space to be leased by a requesting agency

**Approach:** It is recommended that Real Property Services consider adopting a requirement that the costs of energy per square foot of leased space do not exceed the average for state agency buildings by more than 5% (excluding exempt and temporary lease buildings).

**Timeframe:** As soon as possible

**Subcommittee Outcome:** Consensus

**Subcommittee:** State Government Energy Use

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## Intelligent Infrastructure

**Challenge:** Create an intelligent infrastructure plan that prepares the state for the coming advances in transportation technology.

**Background:** The transportation industry is undergoing a technological revolution with automation and connectivity synergistically leading the way. Per the US DOT 2016 white paper “Beyond Traffic Framework,” automation will have a potentially transformative impact across all transportation modes by increasing productivity, improving safety, and enhancing the capacity of existing infrastructure including the ability to combat the impact of climate change. Automation has the potential to revolutionize how ports, trains, vessels, and trucks operate and has the potential to significantly and favorably affect the environment.

Part of the excitement of the upcoming autonomous vehicle revolution is the realization that automated vehicles have the potential to transform society. Some of the benefits these vehicles bring include the following:

- Significantly reducing crashes, thereby improving safety, travel time reliability, and congestion associated with crashes.
- Enabling real-time route planning, thus improving travel time and reliability.
- Increasing the ability of existing infrastructure to accommodate more vehicles due to synchronized traffic flows.
- Improving transportation access to the young, older adults, and people with disabilities, thereby improving quality of life and job opportunities.
- Reducing costs associated with delivering freight.
- Freeing up time for more productive or recreational activities.

Reaping these benefits is possible only if vehicles and the infrastructure are part of a system that works synergistically.

**Approach:** Engage SCDOT and other interested parties, including the State’s automotive and transportation industry, and universities to develop an intelligent infrastructure plan as an addendum to their 2040 Statewide Multi-modal Transportation Plan. This plan should have a long term vision for the State, identify new and important technologies that are essential in the short, mid, and long term, and a path, including funding for their implementation.

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

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## Funding for Public Transit

**Challenge:** Public transit is recognized as a means of reducing the energy used for transportation. Funding options for transit providers are limited in quantity and lack diverse options, while urban congestion in South Carolina is increasing, thus resulting in increased fossil-fuel use.

**Background:** Comparing the funding levels (federal, state, and local) of South Carolina transit providers to their peers in the Southeast reveals how far South Carolina's transit systems are falling behind during a period of significant growth in population, freight movement, and congestion. Poor land-use planning has contributed to the problem of sprawl and congestion in the larger metropolitan areas, but South Carolina's transit funding structure and level has not provided any relief. That South Carolina has the third lowest gas and diesel tax rates in the nation (\$.1675 per gallon) means that state dollars available for both funding and for federal match are extremely limited. In addition, state rules governing local-option sales taxes can be overly prescriptive and further inhibit an individual community's ability to 1) fund transit improvements locally and 2) meet state and federal matching requirements for additional funds.

**Approach:** Convene a study group to identify the various federal, state, and local transit funding options to 1) identify existing legislative restrictions on local funding options (such as local option sales taxes) and 2) to identify relevant Southeastern best practices and alternatives for transportation funding. Release the findings publicly and make them available to entities wishing to pursue policy change.

Conceptual questions for a study group to address:

- What flexibility do we currently have with local-option sales taxes with respect to funding transit projects?
- What can we NOT do?
- What are the restrictions?
- What federal funds are we leaving on the table by not having more state match?
- What are local and state funding options, other than sales taxes? (for example, development impact fees, ad valorem taxes, vehicle taxes or fees, bonds, and local hospitality taxes)
- Are regional sales taxes, local hospitality taxes, or other funding mechanisms possible in SC?

**Timeframe:** Begin immediately

**Subcommittee Outcome:** Consensus

**Subcommittee:** Transportation Planning

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## Inactive Subcommittee Recommendations

## Fuel Diversity

**Challenge:** Ensuring energy diversity

**Background:** South Carolina's energy production includes a diverse mix of fuel sources for its electric generation plants. Energy diversity is defined as having a varied set of energy options to include, but not limited to, coal, natural gas, nuclear, hydro, pumped storage, solar, biomass, and wind. This diversity provides benefits to the citizens of South Carolina by allowing the economical dispatch of generating facilities based on the lowest fuel prices at the time of consumer demand needs, the reliable and continuous base load power that customers count on each day and night, as well as the lessening of environmental impacts through the reduction of emissions. Maintaining a balanced and diverse energy mix in South Carolina will allow a reliable, versatile, resilient, clean, and cost-effective energy system to continue to be available to all residents and businesses as the state economy continues to grow.

**Approach:** To that end, nuclear power — used as base load electric generation — is critically important to meet 24x7 customer demand with zero greenhouse-gas emissions. In fact, almost 33% of the energy consumed in South Carolina comes directly from nuclear power, and it is estimated to be 45% in 2025. Nuclear plants have been providing power safely and reliably for over four decades and will continue to do so, well into the future. Nuclear generation is able to avoid volatile market price fluctuations in coal and natural gas that often occur during periods of high customer demand. Recently, the decision to build new nuclear power as a zero greenhouse-gas emitting source was affirmed by the new nuclear base load plants qualifying as credit against South Carolina's goal for CO<sub>2</sub> reductions. Therefore, South Carolina's continued reliance on nuclear generation is an important factor to provide energy supplies, today and tomorrow, at the lowest practical environmental and economic cost.

South Carolina lawmakers in 2007 established the Base Load Review Act (BLRA), a law which adds structure and consistency to the process regulated utilities follow in licensing and building new base load generation plants.

Two provisions of the BLRA that are pertinent to South Carolina's new nuclear projects are as follows:

- Base Load Review Order — a determination as to whether the anticipated costs and construction schedule for a nuclear plant are prudent before construction begins.
- Revised Rates Order — has the effect of lowering the total cost of a new nuclear plant to customers. By allowing the utility to adjust rates each year during the construction phase to reflect only financing costs (the cost of capital), the amount of interest associated with construction is significantly reduced. Then, as each plant begins commercial operation, a final adjustment to rates under the BLRA allows for recovery of construction costs for that plant. The BLRA assists the utility in attracting investment capital at reasonable rates, which also helps control costs to customers. Independent analysis has affirmed that paying financing costs while the two new nuclear units are being built, as opposed to waiting until they are complete, significantly lowers the project cost. This approach, in turn, reduces the amount customers will pay through rates. It is estimated that the BLRA will save customers approximately \$4 billion in electric rates over the life of the new units.

**Subcommittee Outcome:** Non-Consensus

**Subcommittee:** Electric and Natural Gas Planning

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