Energy Supply & Demand (ESD) Technical Work Group

Summary List of Pending Priority Policy Options for Analysis

Policy No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Status of Option
		2015	2025	Total 2009-2025			
Tier 1							
ESD-3	Renewable Energy Incentives and Barrier Removal						Pending
ESD-5	Renewable Portfolio Standard (RPS)						Pending
ESD-6	Nuclear Power						Pending
ESD-8	Combined Heat and Power (CHP) Systems						Pending
ESD-11	Waste-To-Energy (WTE)						Pending
ESD-12	Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity						Pending
ESD-13a	Energy Efficiency for Existing Residential (new name)						Pending
ESD-14							Pending
ESD-15	Training and Education for Building Operators and Community Association Managers	*Not to be quantified*					Pending
ESD-17	Consumer Education Programs	*Not to be quantified*					Pending
ESD-23	Decoupling	*Not to be quantified*					Pending
Tier 2							
ESD-1	Technology Research and Development (R&D) with Commercial Opportunities						Pending

Policy No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Status of Option
		2015	2025	Total 2009-2025			
ESD-4	Electricity Transmission and Distribution Improvements						Pending
ESD-7	Integrated Resource Planning (IRP)						Pending
ESD-9	Power Plant Efficiency Improvements						Pending
13b & 13c	Incentives for Improved Building Design, Construction and Operation in the Private Sector – New and Master Planned Communities						Pending
ESD-16	More Stringent Appliance/Equipment Efficiency Standards						Pending
ESD-18	Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems						Pending
ESD-21	Rate Structures and Technologies to Promote Reduced Greenhouse (GHG) Emissions						Pending
ESD-22	Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Natural Gas						Pending
							Pending

GHG = greenhouse gas; $MMtCO_2e$ = million metric tons of carbon dioxide equivalent; $/tCO_2e$ = dollars per metric ton of carbon dioxide equivalent.

Note: The numbering used to denote the above pending priority policy options is for reference purposes only; it does not reflect prioritization among these important draft policy options.

ESD-1. Technology Research & Development (R&D) With Commercial Opportunities

Policy Description

The State of Florida is committed to a leadership role in commercializing new energy technologies to reduce the state's carbon footprint and to reap benefits for the state's economy. Toward these ends, public and private funding will be mobilized and targeted to support research and development of emerging energy technologies. This policy should be seen as enabling and supporting other ESD policies and should target both supply and demand side opportunities.

Research and development (R&D) funding can be targeted toward a particular technology or group of technologies as part of a state initiative to build an industry around that technology in the state, and/or to set the stage for use of the technology in the state. For example, an agency could be established to develop and deploy energy storage technologies.

R&D funding can be made available to any renewable energy or other advanced technology through an open bidding procedure (i.e., driven by bids received rather than by a focused strategy to develop a particular technology). Funding can also be given for demonstration projects to help commercialize technologies that have already been developed, but are not yet in widespread use. This funding will eventually lead to commercialization of reasonable cost generation technologies with low or zero greenhouse gas (GHG) emissions. Finally, funding can be targeted to increase collaboration among existing institutions in the state for R&D.

Policy Design

Goals: Achieve 15% emission reductions from investments in clean/renewable technologies. Establish scenarios for near and long term technologies and determine which technologies are eligible under each of these categories. Intended to be additive.

Timing: 5% reduction achieved by 2015, 10% by 2020, 15% by 2025.

Parties Involved: Universities, private sector, state agencies, and local governments.

Other: Technologies utilizing tidal, wave, wind and solar energy, and biofuels are eligible, among others to be identified.

As for longer-term technologies, those that require significant cost developments include carbon capture and storage (e.g., in deep saline aquifers or coal seams) for fossil fuel facilities, large-scale base-load renewable energy infrastructure, and technologies that can transform intermittent renewables into base-load generation (e.g., batteries, hydrogen, compressed air storage).

Implementation Mechanisms

Given the magnitude of the task, an Apollo-like research program to create and field-test such technologies that are or have high potential to become commercially viable is needed. Presently, such funding is not a significant portion of a rate-regulated utilities budget or the budgets of

federal and state government agencies. Nonetheless, even a small fee per kilowatt-hour of electricity could generate significant funding. However, funding is only half the equation, and strategies to use such funds to implement a focused program to commercialize generation technologies with low or zero GHG emissions must also be developed.

- Establish an agency or program to support strategic development and deployment of new renewable energy technologies.
- Establish funding mechanisms for example a small fee per kilowatt-hour of electricity.
- Identify mechanisms to encourage private capital investment.
- Establish parameters for eligible projects (e.g., 25 or 50% of project financing).
- Link with local government efforts (note existing relationships with bio-tech firms as example).
- Evaluate and update funding and financing mechanisms at regular intervals.

Related Policies/Programs in Place

Since 2006, Florida has provided financial incentives through sales tax deductions, tax credits, and a very robust grant program that has funded renewable technologies such as wind, solar, and bioenergy. Further building on this initiative, HB 7135 pushed R&D to a new level with the creation of Florida Energy Systems Consortium. This consortium is comprised of numerous Florida universities that research a variety of renewable technologies, including but not limited to cellulosic ethanol, solar energy, and ocean current. This consortium received $50 million to advanced renewable technologies. In addition, Florida universities and state government enjoy many public-private partnerships with private industries. The programs below total $84 million.

- Solar rebate program ($5 million)
- Sales tax deductions for hydrogen and biofuels ($3 million),
- Corporate investment tax credits for hydrogen and biofuels ($11 million),
- Renewable energy and efficiency grant program ($7 million); Farm-to-Fuel ($8 million)
- Florida Energy Systems Consortium ($50 million)

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

ESD-1 creates co-benefits in the areas of (1) economic development and (2) fuel diversity.

In the past year, over 4,000 megawatts of coal have been removed from Florida's fuel forecast and will likely be replaced largely by natural gas. Florida is already top heavy in terms of its use of natural gas to supply electricity. Florida's long-term strategy may require a large increase of nuclear generation. However, due to the lead time of permitting and construction, Florida can diversify its fuel portfolio more quickly through implementation of renewable generation.

The issue of job creation in clean energy industries is of great interest to states. Although numerical estimates vary, clean energy may create significantly more jobs than fossil energy per dollar invested. In a 2001 study, **the Renewable Energy Policy Project calculated that wind and solar energy produce 40% more jobs per dollar than coal.** A 2004 study by the Renewable and Appropriate Energy Laboratory found that investment in renewable energy created three to five times as many jobs as the same investment in fossil-fuel energy systems. http://www.subnet.nga.org/downloads/energy/0807ENERGYRD.PDF

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-3. Renewable Energy Incentives and Barrier Removal

Policy Description

Renewable energy incentives and barrier removal can increase distributed and central grid-based renewable energy resources throughout the state.

Institutional and market barriers to the development of renewable energy include price distortions, failure of the market to value the public benefits of renewables and the social cost of fossil fuel technologies, inadequate information, institutional barriers to grid interconnection, high transaction costs due to small project size, high financing costs because of lender unfamiliarity and perceived risk. These can be overcome through a suite of financial and regulatory redresses as well as through information and public education campaigns.

The Legislature, the Public Service Commission, and other relevant state agencies are encouraged to prioritize the identification and elimination of barriers which are impeding the development of renewable resources in the state.

Policy Design

Goals: Increase distributed and central grid-based renewable energy demand in Florida by 1% to 2% per year (two separate scenarios), relative to a baseline to be established. Establish a goal that goes beyond 20% RPS goal set by Executive Order 7-127.

Timing: 2010 through 2025.

Parties Involved: Florida Energy and Climate Commission(FECC); Public Service Commission, all power producers operating qualifying renewable facilities in Florida, manufacturers, local, state, and regional banks and other financial institutions.

Other: Renewable energy sources should receive subsidies at least equal to nuclear to level the playing field, noting the current $9 per month per household fee for nuclear.

Implementation Mechanisms

Financial obstacles can be addressed through property tax exemptions, exclusions, and credits; or deductions to cover the expense of purchasing and installing renewable energy equipment; loan programs to aid in financing the purchase of renewable energy equipment; and grant programs designed for research and development or to help a project achieve commercialization.

Examples of financial incentives to encourage investment in renewable energy resources include:

- Direct subsidies for purchasing/selling renewable technologies;
- Tax credits or exemptions for purchasing renewable technologies;
- Feed-in tariffs, which provide direct payments to renewable generators for each kWh of electricity generated from a qualifying renewable facility;

- Tax credits for each kWh generated from a qualifying renewable facility;
- Regulatory policies that provide incentives and/or assurance of cost recovery for utilities that invest in central station renewable energy systems; and
- Incentives for solar/thermal water heating to off-set the use of fossil fuels.

Regulatory policies can include solar or wind easements of access rights; development guidelines at the local level to enhance renewable energy generation (e.g., requiring proper street orientation); requirements that utilities provide information and utility leasing programs for renewable energy production to customers in remote regions.

Pricing and metering strategies can provide price signals and revenue streams to support investment in and optimal operations of renewable energy systems. Net metering is a policy that allows owners of grid-connected distributed generation (generating units on the customer side of the meter, often limited to some maximum kW level) that generate excess electricity to sell it back to the grid, effectively "turning the meter backward." Net metering provides several incentives for renewable DG by reducing transaction costs (e.g., no need to negotiate contracts for the sale of electricity back to the utility) and increasing revenue by setting compensation at retail electricity rates rather than at utility-avoided costs. In addition to net metering, pricing strategies of relevance to distributed renewable energy systems can include "time-of-use" rates. These are fixed rates for different times of the day and/or for different seasons which reflect the time-varying value of electricity.

Well-designed interconnection rules will ensure that distributed power products meet minimum requirements for performance, safety, and maintenance, at the same time significantly advancing the commercialization of these technologies. Such rules, generally developed and administered by a state's public utility commission, establish clear and uniform processes and technical requirements for connecting distributed generation (DG) systems to the electric utility grid. Interconnection standards will reduce barriers to connection of DG systems to the grid. Connecting to the grid enables the facility to (a) purchase power from the grid to supply supplemental power as needed, for example, during periods of planned system maintenance, (b) sell excess power to the utility, (c) maintain grid frequency and voltage stability, as well as utility worker safety.

Implementation mechanisms should involve manufacturers, producers, local, state, and regional banks and other financial institutions.

Related Policies/Programs in Place

Florida has taken a multi-faceted approach to reducing barriers to renewable generation and bringing those technologies to market. For example, the FPSC has approved standard offer contracts to reduce regulatory lag and reduce negotiations between qualifying renewable facilities and utilities. Also, the Florida PSC recently approved tariffs to implement one of the nation's most aggressive net metering laws by expediting interconnection and allowing up to 2 MWs for inclusion of offset at the retail rate for twelve consecutive months. Moreover, Florida has a whole host of state-sponsored financial incentive programs to bring these technologies to market. These programs include the highly successful solar rebate program ($5 million), sales tax deductions for hydrogen and biofuels ($3 million), corporate investment tax credits for

hydrogen and biofuels ($11 million), Renewable energy and efficiency grant program ($7 million); Farm-to-Fuel ($8 million) and Florida Energy Systems Consortium ($50 million).

It is important to note that the passage of HB 7135 requires the Florida PSC to view distributed generation under 2 MWs as energy efficiency. In addition, Floridians cannot be financially penalized by a housing appraiser for adding a renewable energy device to his or her home.

The Energy Policy Act of 2005 directs states to consider upgrading their standards for interconnecting small generators within one year of enactment (http://www.epa.gov/chp/pdf/interconnection_factsheet.pdf).

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-4. Electricity Transmission and Distribution Improvements

Policy Description

Measures to improve transmission systems to reduce bottlenecks and enhance throughput may be required to satisfy long-term electricity demands and improve the energy efficiency of operations system-wide. Opportunities may exist to substantially increase transmission line carrying capacity through the implementation of new construction and retrofit activities on the transmission grid, including incorporating advanced composite conductor technologies, capacitance technologies, and grid management software.

To increase efficiency, new generation must be closer to load. Siting new transmission lines can be a difficult process given their cost and their local impact on the environment, and on the use, enjoyment, and value of property. Policy measures in support of this option could provide incentives to utilities to upgrade transmission systems and reduce barriers to siting of new transmission lines. It should also consider the incorporation of demand response systems and smart grid technologies.

Policy Design

Goals: Reduce system-wide losses from transmission, generation, and distribution by an average of 5% of total energy delivered across Florida by 2018.

Timing: Phase in beginning in 2011, with the goal achieved by 2018.

Parties Involved: Florida Energy and Climate Commission, Florida Department of Environmental Protection, Florida Public Service Commission, possibly FRCC.

Other: Coverage of renewable energy sources (TBD).

Implementation Mechanisms

There are several energy efficiency measures that can be implemented to reduce the transmission and distribution line losses of electricity. Utilities use a variety of components throughout the transmission and distribution system to manage losses. Increasing the efficiency of these components can further reduce losses and associated GHG emissions. For example, the state of Vermont offers a rebate to encourage the installation of energy efficient transformers. Regulations, incentives, and/or support programs can be applied to achieve greater efficiency of transmission and distribution system components.

- Create incentive program to encourage capital investments.

Related Policies/Programs in Place

The Public Service Commission (PSC) places emphasis on reducing the growth rates of weather-sensitive peak demand, reducing and controlling the growth rates of electricity consumption, and reducing the consumption of scarce resources such as petroleum fuels. The PSC has adopted rules requiring those electric utilities which are subject to Florida Energy Efficiency and

Conservation Act (FEECA) to implement cost-effective demand-side management (DSM) programs. Section 366.82(4), Florida Statutes, directs the Commission to provide an annual report to the Legislature and the Governor with the DSM goals it has adopted under FEECA and the progress toward meeting these goals.

HB 7135 (2008) made major revisions to the FEECA. Utilities subject to the PSC's rate-making jurisdiction may receive incentives for additional efficiencies to generating facilities, transmission, and demand side management programs. For example, an investor-owned utility may receive up to 50 basis points return on its investment if that utility offsets 20% or more of its new load growth through efficiencies. These efficiencies apply to both the supply side of the equation and the demand side of the equation. Further, the new legislation streamlines the siting of transmission associated with nuclear generation by allowing access to Department of Transportation right-of-ways, and state lands. In addition, utilities can received advanced cost recovery for transmission lines directly associated with a nuclear facility or relocation of transmission as a result of a new nuclear facility.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-5. Renewable Portfolio Standard (RPS)

Policy Description

A renewable portfolio standard (RPS) is a requirement that utilities must supply a certain, generally fixed percentage of electricity from an eligible renewable energy source(s). The fundamental policy object is to reduce GHG emissions, provide fuel diversity, and stimulate Florida's economy.

In some states, and in Florida, utilities can also meet their RPS (or EPS) by purchasing certificates from eligible energy projects, typically referred to as Renewable Energy Certificates (RECs). The percentage should be based on capacity.

Policy Design

Goals: 20% by 2020 or 2025, pending analysis.

Timing: Ramp up beginning in 2012 until the final level is reached in 2020 or 2025.

Parties Involved: Florida Energy and Climate Commission, Public Service Commission, Department of Environmental Protection, investor-owned utilities, public power, electric cooperatives, and state government.

Other: Eligible classes of renewable energy would include solar, wind, waste heat recovery, waste biomass, and ocean energy (current, tidal, and wave) (TBD). Special emphasis should be given to ramping up biomass.

Implementation Mechanisms

TBD

Related Policies/Programs in Place

The Florida Public Service Commission is currently engaged in rule-making that would allow for a utility to meet the RPS either directly through the production of renewable energy and/or through the trading of renewable energy credits (RECs). The percentage must be based on retail sales, and HB 7135 also allows for added weight to those RECs for solar and wind. This rule must be presented to the 2009 legislature for its consideration and ultimate ratification. The Florida PSC and the Florida Energy and Climate Commission are working with the Department of Energy to catalog all available renewable resources in the state.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods:

Key Assumptions: TBD

Key Uncertainties

TBD Dynamic nature of rapidly shifting marketplace and costs are significant uncertainty factors.

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-6. Nuclear Power

Policy Description

Nuclear power has historically presented a low-GHG source of electricity. However, no new commercial reactor has come on line in the US since 1996 due to extremely high capital costs, the absence of any plan or technology for permanent disposal of nuclear waste, and risks to public safety exemplified by high-profile accidents at Three Mile Island and Chernobyl. The current Administration has been supportive of nuclear expansion, emphasizing its importance in maintaining a diverse energy supply and its reputation for producing electricity with negligible pollutant emissions during operation. Congress has also offered significant financial subsidies for new nuclear plants in an effort to jump-start the industry, including limitations on liability for nuclear accidents.

Today, nuclear power plants provide about 20% of electric power nationally. The role of both existing and new units needs to be considered for a comprehensive climate change policy process.

Policy Design

Goal: Four new 1,100 MW nuclear plants operating at 92% capacity factor (including 2 approved for FPL and 2 other approved). Two plants/four units assumed to be 1,100 MW are part of baseline (Scenario 1). Add two additional 1,100 MW plants to baseline (Scenario 2).

Timing: New plants operational in 2020.

Parties Involved: United State Nuclear Regulatory Commission, Florida Public Service Commission, Progress Energy, Florida Power & Light. Possibly Gulf Power, Jacksonville Electric Authority.

Other: TBD.

Implementation Mechanisms

TBD

Related Policies/Programs in Place

With the construction of a traditional electric generator the utility must assume all the costs of permitting, planning and construction until the plant is operational, and only once it is producing electricity may the utility begin collecting cost recovery revenues. The design, permitting, planning, and construction of a nuclear facility takes from eight to ten years to complete. The long planning and permitting process for nuclear facility means that a utility would have to assume all costs to develop the project for a decade before it could begin recovering those expenses. In recognition of that burden and to stimulate the development of new nuclear facilities in Florida, during the 2007 session, the Legislature passed and Governor Crist signed legislation allowing utilities to begin recovering the expenses associated with nuclear facilities in advance. During the 2008 legislative session, HB 7135 added the recovery of expenses

associated with new, expanded or relocated electrical transmission lines needed for the operation of a nuclear power plant. In addition, a provision was added to allow an electric utility to obtain a separate permit to begin construction of facilities (such as access roads, rail lines, or electric transmission facilities) on a site in support of a future nuclear generator before the nuclear certification is issued.

The current administration has been supportive of nuclear expansion. Congress has also offered significant financial subsidies for new nuclear plants in an effort to jump-start the industry, including limitations on liability for nuclear accidents. The U.S. Department of Energy (DOE) recently announced submittal of a license application (LA) to the U.S. Nuclear Regulatory Commission (NRC) seeking authorization to construct America's first repository for spent nuclear fuel and high-level radioactive waste at Yucca Mountain, Nevada. Currently, the waste is stored at 121 temporary locations in 39 states across the nation.

In Florida, a total of 5600 megawatts of nuclear generation is planned through 2020.

Table X. Title

Utility	FPL	FPL	FPL	PEF	PEF	JEA
Location	Miami-Dade	St. Lucie	Miami-Dade	Levy County	Citrus County	Duval
Name	Turkey Pt. 6 & 7	St. Lucie 1 & 2	Turkey Pt. 3 & 4	Levy Units 1 & 2	Crystal River Unit 3	
Capacity (MW)	1,100–1,520 each	103 each	104 each	1,100 each	37 & 129	200
In Service	6/2018 & 6/2020	Fall 2011 & Spring 2012	Spring 2012 & Fall 2012	6/2016 & 6/2017	12/2009 (37) & 12/2011 (129)	2016

FPL = Florida Power & Light Company; PEF =Progress Energy Florida; JEA = Jacksonville Electric Authority.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

The construction of nuclear plants is directly tied to the price of oil and there is significant uncertainty in future oil prices. Also no new commercial reactor has come on line in the United States since 1996 due to high capital costs, the certainty of Yucca Mountain, and risks to public safety exemplified by high-profile accidents at Three Mile Island and Chernobyl.

Additional Benefits and Costs

There are significant potential risks associated nuclear power including unresolved waste disposal issues, negative impacts on human health, cost overruns and siting and permitting issues that need consideration.

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-7. Integrated Resource Planning (IRP)

Policy Description

Integrated Resource Planning (IRP) is planning process that strives to meet needs for electricity services in a manner that meets multiple objectives such as least cost, meeting emissions standards, fuel diversity, and RPS requirements. An IRP process should include evaluation of all options, from both the supply and demand sides, in a fair and consistent manner, building in flexibility to account for future uncertainties. While originally targeted primarily towards cost minimization, IRP processes have increasingly considered the environmental risks and the potential costs associated with future regulation of GHGs.

Policy Design

Goals: Non-quantifiable. To develop a comprehensive state resource adequacy plan for Florida that meets the energy reliability, environmental, and economic needs of the state.

Timing: Final plan completed by June 30, 2010.

Parties Involved: Florida Energy and Climate Commission, Florida Department of Environmental Protection, regulated electric utilities, environmental and consumer advocates, renewable energy industry, energy efficiency industry, financial community.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

Florida has a reliable and robust IRP in place. All investor-owned utilities, as well as, Orlando Utilities Commission and Jacksonville Electric Authority file Ten-Year Site Plans (TYSP) with the PSC. The TYSP is an annual filing that provides a list of future generation for the next ten years, and the PSC acknowledges the TYSP. In addition, the PSC determines the need for generation (75 MW of steam or solar) in a need determination that is triggered by a utility TYSP filing. The PSC takes into account availability of efficiency and renewable generation prior to approving the necessity of a power plant. Lastly, the power plant must go through the Power Plant Siting Act which is a rigorous multi-agency review which requires obtaining all environmental criteria and ultimate approval by the Governor and his siting board.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-8. Combined Heat and Power (CHP) Systems

Policy Description

Combined heat and power is the use of a heat engine or a power station to simultaneously generate both electricity and useful heat.

Conventional power plants emit the heat created as a by-product of electricity generation into the environment through cooling towers, flue gas, or by other means. CHP or a bottoming cycle captures the by-product heat for domestic or industrial heating purposes, either very close to the plant, or for distribution through pipes to heat local housing.

CHP systems reduce fossil fuel use and GHG emissions, both through the improved efficiency of the CHP systems, relative to separate heat and power technologies, and by avoiding transmission and distribution losses associated with moving power from central power stations that are located far away from where the electricity is used.

Combined heat and power, and waste-heat capture can reduce GHG emissions by increasing the overall efficiency of fuel use. However, there are numerous barriers to these processes, including inadequate information, institutional barriers, and high transaction costs. This is because of small projects, high financing costs due to lender unfamiliarity and perceived risk, "split incentives" between building owners and tenants, and utility-related policies like interconnection requirements, high standby rates, exit fees, etc. Large-scale heat projects are also contemplated by this policy; the full set of options should be considered including paper mills and waste recovery projects for example.

Policy Design

Goals: Ramp up CHP to 5,000,000 MWh of total generation by 2022 (insert rationale for goal). Set up for sensitivity analysis.

Timing: Beginning in 2012, ramp up new CHP linearly, until 5,000,000 MWh is reached in 2022.

Parties Involved: State government and regulators, PSC, including the Florida Energy and Climate Commission, electric utilities, and renewable energy and CHP industry.

Other: Note that CHP is a mature technology.

Implementation Mechanisms

Potential elements of this option include

- Promotion of the use of gas-fired CHP systems,
- Promotion of the use of biomass-fired CHP systems, and

- Creation/expansion of markets for and incentives designed to promote implementation of CHP units in capacities suitable for residential, commercial, and industrial users.

Specific financial incentives for CHP could include

- Direct subsidies for purchasing/selling CHP systems given to the buyer/seller;
- Tax credits or exemptions for purchasing/selling CHP systems given to the buyer/seller;
- Tax credits or exemptions for operating CHP systems;
- Feed-in tariff, which is a direct payment to CHP owners for each kWh of electricity or Btu of heat generated from a qualifying CHP system;
- Tax credits for each kWh or Btu generated from a qualifying CHP system; and
- Targeted financing arrangements

Other supporting measures for this option include training/certification of installers/contractors, net metering and other pricing arrangements, establishment of clear, and consistent interconnection standards, and creation/support of markets for biomass fuels.

Pricing and metering strategies can provide price signals and revenue streams to support investment in and optimal operations of CHP systems. Net metering is a policy that allows owners of grid-connected distributed generation (generating units on the customer side of the meter, often limited to some maximum kW level) that generate excess electricity to sell it back to the grid, effectively "turning the meter backward." Net metering provides several incentives for renewable DG by reducing transaction costs (e.g., no need to negotiate contracts for the sale of electricity back to the utility) and increasing revenue by setting compensation at retail electricity rates rather than at utility-avoided costs. In addition to net metering, pricing strategies of relevance to CHP and distributed renewable energy systems can include "time-of-use" rates. These are fixed rates for different times of the day and/or for different seasons which reflect the time-varying value of electricity.

Policies to remove barriers can include: improved interconnection policies; improved rates and fees policies; streamlined permitting; recognition of the emission reduction value provided by CHP and clean DG financing packages and bonding programs; power procurement policies; ability to provide power to third party power; and education and outreach.

Related Policies/Programs in Place

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-9. Power Plant Efficiency Improvements

Policy Description

Efficiency improvements refer to increasing generation efficiency at power stations through incremental improvements at existing plants (e.g., more efficient boilers and turbines, improved control systems, or combined cycle technology). Repowering existing power plants refers to switching to lower or zero emitting fuels at existing plants, or for new capacity additions. This includes use of biomass or natural gas in place of coal or oil. Policies to encourage efficiency improvements and repowering of existing plants could include incentives or regulations as described in other options, with adjustments for financing opportunities and emission rates of existing plants.

Policy Design

Goals: To improve the heat rates of all existing power plants of the state-wide fleet improved by an average of 10% through efficiency improvements/fuel switching, and/or repowering. The cost of HB 7135 is to be included in baseline.

Timing: Improvements begin in 2012, ramping up to a 10% improvement by 2020.

Parties Involved: All power plants in the state.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

HB 7135 made major revisions to the Florida Energy & Efficiency Conservation Act (FEECA). Utilities subject to the PSC's rate-making jurisdiction may receive incentives for additional efficiencies. For example, an investor-owned utility may receive up to 50 basis points extra return on its investment, so long as that utility offsets 20% or more of its new load growth through efficiencies to its generating facilities.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-11. Waste-to-Energy (WTE)

Policy Description

This policy option focuses on capture of methane gas from landfills, and converting waste-to-energy to reduce direct emissions and to produce electricity. An added policy benefit of converting waste-to-energy is obviating the need for landfills and produce base-load like electric generation. Certain components of municipal waste can be used as a non-fossil combustion resource for generating electricity. This option could be structured as either a mandate or an incentive program.

Policy Design

Goals: 90% of qualifying landfills in Florida that do not already capture landfill gas and convert it to energy (or sell the gas to a utility for conversion to energy) are doing so by 2025.

Timing: First landfill converted by 2012; by 2025, 90% of all qualifying landfills in the state will be capturing their methane emissions and using or selling the gas for energy.

Parties Involved: Municipal and county governments, private solid waste management companies, local economic development agencies, Florida Energy and Climate Commission, state regulatory agencies, state utilities commission, non-government organizations, and public interest groups.

Other: Coverage should extend beyond utilities. Other categories TBD.

Implementation Mechanisms

TBD

Related Policies/Programs in Place

Florida defines these technologies as renewable, and has a production tax credit of $.01 KWh currently in place. The program is capped at a total of $5 million. In 2007, Florida did not reach the cap.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-12. Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Electricity

Policy Description

Demand-side management (DSM) entails actions that influence the quantity or patterns of use of energy consumed by end users. This option focuses on increasing investment in electricity DSM through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals. These options may be designed to work in tandem with other strategies that encourage efficiency gains.

Policy Design

The policy design includes two key and linked dimensions: achievable/desirable energy savings and policy/administrative mechanisms to achieve these savings.

Goals: In each sector—residential, commercial and industrial—reduce electricity consumption relative to consumption in the prior year by 1.0% per year through 2012, then by 1.5% per year through 2015, and then 2.0% per year thereafter through 2030.

Timing: 2010 is the first year of compliance.

Parties Involved: All electric utilities (public and private), regulators, municipal utilities and cooperatives and customers (all sectors).

Other: TBD

Implementation Mechanisms

Policy and administrative mechanisms that might be applied include regulator-verified savings targets, public benefit charges, portfolio standards, "energy trusts," integrated resource planning, performance-based incentives, decoupling of rates and revenues, and appropriate rate treatment for efficiency. Potential mechanisms include revising existing statutes to enable utility investments in energy efficiency at the levels indicated above, to consider as potentially eligible programs that are cost-effective taking into account the valuation of CO_2 emissions.

Elements that might be considered in designing this option might include

- Implementation/administration by utility (including municipal utilities and cooperatives), state agency, or third-party actors.
- Subsidized energy audits for homeowners, businesses, industries.
- Incentives for specific technologies, potentially including (but not limited to) lighting, water heating, plug loads, networked personal computer management, power supplies, motors, pumps, boilers, customer-side transformers, water use reduction, ground-source heat pumps, and others.
- Energy efficiency reinvestment funds.

This policy may be broad in focus, or it can focus on specific market segments. Complimentary policies include appliance recycling/pick-up programs. Measures supporting this option might include consumer education, performance contracting, and energy end-use surveys.

Related Policies/Programs in Place

FEECA places emphasis on reducing the growth rates of weather-sensitive peak demand, reducing and controlling the growth rates of electricity consumption, and reducing the consumption of scarce resources such as petroleum fuels. The PSC has adopted rules requiring those electric utilities which are subject to FEECA to implement cost-effective DSM programs.

Section 366.82(4), Florida Statutes, directs the Commission to provide an annual report to the Legislature and the Governor with the DSM goals it has adopted under FEECA and the progress toward meeting these goals. Section 553.975, Florida Statutes, requires the Commission to prepare a biennial report on the savings derived from the efficiency standards for lighting equipment, showerheads, and refrigerators enumerated in Section 553.963, Florida Statutes, the Energy Conservation Standards Act.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-13. Energy Efficiency in Existing Residential Buildings (new title)

Policy Description

In 2005 Florida's population was just under 18,000,000 with approximately 7,130,000 households. With over 50% of electricity used in homes, focusing attention on energy efficiency improvements to the existing residential home sector has the potential to provide the greatest reduction in electricity usage and associated greenhouse gas emissions. Incentives should focus on existing residential.

Policy Design

Goals: In each sector—residential measures implemented with low-interest loans reduce energy consumption by X% each year relative to consumption in the prior year (with a baseline to be established).

Timing: Ten-year program from January 1, 2011 through 2020, with results tracked annually from 2011 through 2030.

Parties Involved: Cities and counties, utilities, building contractors, remodelers, building designers, architects, engineers, retailers of energy-efficient products, manufacturers of alternative building products, social service organizations, including clubs and religious organizations, Florida Energy and Climate Commission, Florida Department of Environmental Protection, and Department of Community Affairs.

Other: Eligible technologies to be determined.

Implementation Mechanisms

- Improving energy efficiency in low income units can provide some of the most cost effective energy savings in the residential sector. Facilitating access to existing grants and providing new low or zero interest energy efficiency loans can be effective mechanisms through which to realize those savings. These low interest loans can often be facilitated through traditional lending mechanisms,[1] as well as through specially designated funds. In a broader loan program, target loans toward areas that are compatible with desired low-carbon land use patterns.
- Encourage and reward alternative business models aimed at increasing efficiency in the marketplace. For example, the creation of ESCo services in the residential retrofit arena should be promoted as a finance mechanism for home energy efficiency retrofits.
- Implement a net metering program modeled after the successful German solar experience.
- Explore incentives to induce owners and remodeling contractors to improve energy efficiency in existing residential buildings. An initial action that can be taken as a way to

[1] For instance, see the Nebraska Dollar Energy Saving Loans, through which the Nebraska State Energy Office purchases half of each energy efficiency loan at a 0% interest rate so that the total interest paid by the borrower is half the market rate.

"measure" gains in residential buildings would be to establish and maintain an energy consumption baseline by community or region for existing homes. Meaningful community building performance benchmarks could be established using that baseline. In addition, residential owners and remodelers could use that community baseline to compare their usage against.

On an individual home basis, utilities could be encouraged to establish and provide energy consumption histories for existing residences against which meaningful individual household benchmarks could be established. It may be possible to use the energy histories to link incentives to measured performance improvements such as CO_2 emissions avoided.

- Make available individual household energy consumption history review services and associated energy audits to establish household CO_2 emissions avoidance benchmarks.
- Design and offer incentives modeled on performance contracting with incentives linked to energy use reductions and associated CO_2 emission avoided. Incentives may be in the form of tax credits, DSM program support, "green mortgages" and others.
- Provide DSM incentives for compliance with improved design and construction certifications (such as EPA's Energy Star appliance and product programs and other standards). Since these certifications do not guarantee actual performance at the meter, incentives may be linked to demonstrated performance over time (e.g., as a rebate after a year of demonstrated performance) rather than when a certificate is awarded.

Windstorm resistant features, indoor air quality standards, construction waste management and HVAC and lighting standards, including but not limited to energy efficiency and occupant health and safety, would be developed to complement energy efficiency codes.

Related Policies/Programs in Place

The U.S. Department of Energy estimated that Florida's average annual increase in electric consumption from 1980 to 2005 was 3.6% while the average annual increase in population was 2.3%. One way to address this growth in electric consumption and the associated greenhouse gas emissions over time is to provide incentives to building contractors and developers to improve resource and energy efficiency in new residential buildings. To achieve that goal, the Florida Legislature passed and Governor Crist signed two bills during the 2008 Florida legislative session (HB 7135 and SB 697) providing clear direction to the building industry on the improvements it expects from new homes built in Florida.

New Florida legislation requires

- The Florida Building Commission to use the most current version of the International Energy Conservation Code (IECC) as a foundation code; however, it shall be modified by the commission to maintain the efficiencies of the Florida Energy Efficiency Code for Building Construction.
- The establishment of scheduled increases in the energy performance of buildings subject to the Florida Energy Efficiency Code for Building Construction, such that by the 2010 edition of the Florida Energy Efficiency Code for Building Construction necessary provisions shall be included to increase the energy performance of new buildings by at least 20% as

compared to the energy efficiency provisions of the 2007 Code. Then those provisions will increase the energy performance of new buildings by at least 30% in 2013, 40% by 2016, and 50% by 2019.

The Florida Building Commission to, prior to implementing the goals established in the Florida Energy Efficiency Code for Building Construction, adopt by rule and implement a cost-effectiveness test for proposed increases in energy efficiency. The cost-effectiveness test shall measure cost-effectiveness and shall ensure that energy efficiency increases result in a positive net financial impact.

By the 2010 edition of the Florida Energy Efficiency Code for Building Construction necessary provisions shall be included to increase the energy performance of new buildings by at least 20% as compared to the energy efficiency provisions of the 2007 Code. Then those provisions will increase the energy performance of new buildings by at least 30% in 2013, 40% by 2016, and 50% by 2019.

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

Affordability issues to be addressed by TWG.

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

Policy Design

Goals: Energy efficiency in new homes will meet increasingly higher standards compared to 2007 standards until they are 50% higher by 2019.

ESD-14. Improved Building Codes for Energy Efficiency

Policy Description

Buildings are significant consumers of energy and other resources. Building energy codes can be an effective way to eliminate the least efficient energy approaches in new or renovated buildings. This policy sets a goal for reducing building energy consumption, to be achieved by increasing standards for the minimum performance of new and substantially renovated commercial and residential buildings through the adoption and enforcement of building codes. Building codes would be made more stringent via incorporation of aspects of advanced/next generation building designs and construction standards, such as sustainable design and green building standards.

Policy Design

Goal: Both HB 697 and HB 7135 require that the energy efficiency requirements of the Florida Energy Efficiency Code be incrementally scaled up to 50% higher than the 2007 Code by 2019. The goal of ESD-14 is to extend the timeframe of HB 697 and 7135 beyond 2019 such that energy consumption per square foot of floor space is reduced by 100% from what it was in 2007.

Timing: Operational in 2010.

Parties Involved: Florida Building Commission, Florida Department of Community Affairs, Florida Energy and Climate Commission.

Other: TBD

Implementation Mechanisms

Potential elements of a building code policy include the following:

- Require high-efficiency appliances in retrofits.
- Training of building code and other officials in energy code enforcement.
- Potential measures supporting this option can include consumer education, improved enforcement of building codes, training for builders and contractors, and development of a clearinghouse for information on and to provide access to software tools to calculate the impact of energy efficiency and solar technologies on building energy performance.
- Energy rating systems for existing homes
- White roofs, rooftop gardens, and landscaping (including shade tree programs)
- High summer roof temperatures increase the need for more electricity for air conditioning, as well as producing black carbon from updrafts. Incentives for white roofs, rooftop gardens, and landscaping can lower electricity demand.
- Promote installation of ductwork and air handlers in conditioned spaces.
- Approximately half of the energy demand in Florida's homes is for heating and cooling. Air handlers are generally in garages or occasionally in attic spaces. Ductwork is uniformly in

attic spaces and exposed to very high (or low) temperatures. The energy costs associated with conduction and leakage losses can be reduced considerably by moving air handlers and ductwork into spaces within a home's conditioned envelope.

- Identify all barriers to improved efficiency in existing homes buildings and implement government programs and policies to overcome these barriers.

Related Policies/Programs in Place

Recently, the Florida Legislature passed legislation that sets new energy efficiency standards for the building code. 2008 Florida Energy Bill HB 7135 directs the Florida Building Commission to select the most recent International Energy Conservation Code as a foundation code. HB697 targets a 20% increase in building code energy efficiency standards from 2007 levels by 2010. Furthermore, both HB 697 and HB 7135 require that the energy efficiency requirements of the Florida Energy Efficiency Code be incrementally scaled up to 50% higher than the 2007 Code by 2019.

There is a mandatory review of codes every three years to ensure that the State and local building codes relating to energy efficiency requirements are always as strict as the more stringent of the IECC or ASHRAE standards.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-15. Training and Education for Building Operators and Community Association Managers

Policy Description

Energy Management Training/Training of Building Operators. Energy Management Training provides administrative and technical training for energy managers, school officials, building operators, and others responsible for energy-efficient facility operation. This policy could include

- Training commercial building energy managers, for example, by making use of the building operator training and certification program developed in the Pacific Northwest.
- Training industrial energy and facility managers in techniques for improving the efficiency of their steam, process heat, pumping, compressed air, motors, and other systems, perhaps dovetailing with the U.S. Department of Energy in this area.
- Creation of a credentialing program for certification of "green" energy managers that requires not only training but also examinations for certification qualification.

Policy Design

Goals: Not quantifiable.

Timing: Programs in place by the end of 2010.

Parties Involved: Energy managers, school officials, building operations, community colleges, universities, Department of Education.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-16. More Stringent Appliance/Equipment Efficiency Standards

Policy Description

Appliance efficiency standards reduce the market cost of energy efficiency improvements by incorporating technological advances into base appliance models, thereby creating economies of scale. Appliance efficiency standards can be implemented at the state level for appliances not covered by federal standards, or standards can be jointly developed by multiple states. Electrical appliances span all sectors and include, for example, refrigerators, freezers, dishwashers, stoves, ovens, clothes washers and dryers, room air conditioners, and pool heaters.

Policy Design

Goals: In the residential sector, reduce the energy used by appliances by an additional 1.0% every year (relative to consumption in the prior year) from 2010 through 2030. In the commercial and industrial sectors, reduce the energy used by appliances by an additional 0.5% every year (relative to consumption in the prior year) from 2010 through 2030.

Timing: Standards effective January 1, 2010.

Parties Involved: State government agencies, including the Florida Energy and Climate Commission, Department of Environmental Quality, the Department of Labor and Industry, and the Department of Commerce; appliance manufacturers and appliance/equipment industry representatives; and the Florida Department of Environmental Protection and the Florida Department of Revenue.

Other:

Implementation Mechanisms

To ensure that appliances purchased in Florida maximize the cost-effective potential for energy efficiency and minimize GHG emissions, the following policy prescriptions should be considered:

- Improve appliance standards for appliances not regulated by federal standards.
- Lobby for more stringent appliance standards at the federal level. Require the preferential procurement of ENERGY STAR products if available (equipment, appliance, or technology) if state funds are involved (state purchasing contracts, state grants or loans, etc.)
- Provide Florida state sales tax exemptions, whether temporary or permanent, for ENERGY STAR-certified products.
- Establish and enforce higher-than-federal state-level appliance and equipment standards (or standards for devices not covered by federal standards).
- Join with other states in adopting higher standards.
- Require high-efficiency appliances in new construction and retrofits.

- Require uniform labeling standards for appliances.
- Set state minimum efficiency standards for appliances not covered by federal standards, as recommended by Appliance Standards Awareness Program (ASAP),[2] by 2010.
- Double the market penetration of ENERGY STAR appliances in purchases made in the residential, commercial, and industrial sectors, where applicable, up to 100%, by 2015.

Consumer education is a potential supporting measure for this option.

Related Policies/Programs in Place

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

[2] See http://www.standardsasap.org/documents/a062_sc.pdf. The analysis recommends standards for the following products: bottle-type water dispensers, commercial boilers, commercial hot-food-holding containers, compact audio products, DVD players and recorders, liquid immersion distribution transformers, medium-voltage dry-type distribution transformers, metal halide lamp fixtures, pool heaters, portable electric spas, residential furnaces and boilers, residential pool pumps, single-voltage external AC-to-DC power supplies, state-regulated incandescent reflector lamps, and walk-in refrigerators and freezers.

Barriers to Consensus

TBD

ESD-17. Consumer Education Programs

Policy Description

The ultimate effectiveness of emissions reduction activities in many cases depends on providing information and education to consumers regarding the energy and GHG emissions implications of consumer choices. Public education and outreach is vital to fostering a broad awareness of climate change issues and effects (including co-benefits, such as clean air and public health) among the state's citizens. Such awareness is necessary to engage citizens in actions to reduce GHG emissions in their personal and professional lives. Public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in the state. Ultimately, public education and outreach will be the foundation for the long-term success of all of the mitigation actions proposed by the Florida Action Team, as well as those that may evolve in the future.

- Institute mandatory time-of-sale energy use labeling programs for all consumer products, devices, and systems (including all buildings) that can be evaluated by either testing or computer simulation and educate consumers on the use and implications of these labels.
- Create a public inquiry "information center" where interested public can obtain factual (vetted by experts in the field) answers to common energy-efficiency and GHG questions.
- Provide public education materials and energy information collateral that can be used at local levels by minimally trained "speakers".
- Create an awards program that recognizes businesses and individuals who exhibit exemplary behavior or performance with respect to local energy and climate public education program or in local GHG or energy use reduction programs.
- Provide state-sponsored Public Service Announcement programs.

Policy Design

Goals: Not quantifiable

Timing: Begin outreach programs in 2010.

Parties Involved: Florida Energy and Climate Commission, consumers, retailers, manufacturers, K-12 public schools, community colleges, universities, Department of Education.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

The Department of Environmental Protection and a consultant are formulating a state-wide energy efficiency campaign incorporating radio, television and internet.

Type(s) of GHG Reductions

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-18. Incentives to Promote Implementation of Customer-Sited Renewable Energy Systems

Policy Description

Distributed electricity generation sited at residences, commercial and industrial facilities, and powered by renewable energy sources (typically solar, but also wind, small hydroelectric power sources, or fuels derived from waste biomass), displaces fossil-fueled generation and avoids electricity transmission and distribution losses, thus reducing GHG emissions. This policy can also encourage consumers to switch from using fossil fuels to using renewable fuels in applications such as water, process, and space heating, as well as to supply new energy services using fuels that produce low or no GHG emissions.

Policy Design

Goals: 200,000 MWh of customer-sited renewable energy systems added by 2021.

Timing: 200,000 MWh[3] added every year from 2012 through 2021, for a cumulative amount by the end of 2021 of 200,000 MWh.

Parties Involved: All power producers operating qualifying renewable facilities at residences and commercial and industrial facilities in Florida; the Florida Energy and Climate Commission.

Other: TBD

Implementation Mechanisms

Increasing the use of renewable energy applications in homes, businesses, and institutions in Florida can be achieved through a combination of regulatory changes and financial incentives to overcome barriers posed by high up-front costs and other aspects of distributed renewable energy systems, in order to promote stronger market for Florida. Potential elements of this option include

- Programs targeted at specific customer sectors (residential, commercial, industrial), or specific markets within sectors.
- Tax credits and/or utility or other incentives to lower the first cost of distributed energy systems to users.
- Rewarding innovative financing mechanisms and business models dedicated to fostering the growth of renewable energy implementation.
- Provision of subsidies to renewable energy generators at 0.5 cents/kWh for each kWh of electricity generated from a qualifying renewable facility.

[3] 20,000 MWh is 5.4 MW using a capacity factor of 42%, which is based on the simple average of: 30% for wind, 20% for solar PV, 37% for solar thermal, and 80% for biomass gasification and municipal solid waste. Geothermal is not included due to the lack of geothermal potential in Florida.

- Training/certification of installers/contractors.
- German-style net metering and other pricing arrangements. Allow third-party renewable power production systems that are located on user facilities to be eligible for net metering.
- Creation of interconnection standards.
- Creation/support of markets for biomass fuels.

Examples of customer-sited renewable energy systems include:

- Solar roofs (roofing materials with built-in solar PV cells, or solar PV panels erected on roofs).
- Solar water heating and solar space heating systems.
- Wind power systems, particularly for rural areas.
- Generation, space, or water heating systems fueled by waste biomass.

Related Policies/Programs in Place

Florida Energy and Climate Commission oversees Florida's grant program that has resulted in a 1 MW solar system which is the largest in the Southeast. In addition, the FECC administers a solar rebate program ($5 million). This program provides $500 per residential solar hot water heater, and $4 per watt for P.V. (up to a cap of $20,000 for residential and $100,000 for commercial residents). Rebates are released on a first come, first served basis. As discussed above, the PSC recently approved tariffs to expedite interconnection for its net metering program. Various utilities provide rebates for solar applications, as well as, geothermal pumps, cool roofs, etc. For more information see: http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=FL&RE=1&EE=1

Type(s) of GHG Reductions

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-21. Rate Structures and Technologies to Promote Reduced Greenhouse Gas (GHG) Emissions

Policy Description

(Option 1) Time-of-use rates typically price electricity higher at times of higher power demand, and thus better reflect the actual cost of generation. Time-of-use rates may or may not have a significant impact on total GHG emissions, but do affect on-peak power demand and thus both the need for peaking capacity and fuel for peaking plants. Consider real-time pricing pilot programs coupled with "smart-grid" concepts and strategies, including plug-in hybrid vehicle management.

(Option 2) Tiered (increasing block) rates for electricity and natural gas use provide affordable base usage rates for consumers, but which increase with increasing consumption, hence providing a built-in rate incentive for energy conservation and energy efficiency.

Policy Design

Goals: TBD and baseline year to be established.

Timing: New rate structure will begin on January 1, 2010.

Implementing Parties: All Florida utilities and utility customers, and the Florida Public Service Commission.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

According to the Florida Public Service Commission all the investor-owned utilities (FPL, Progress, TECO, Gulf, and Florida Public Utilities) offer time-of-use rates. However, it is primarily offered in the commercial sector with minimal offerings in the residential sector. Only FPL and Progress have a tiered rate structure for the residential sector.

Type(s) of GHG Reductions

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-22. Demand-Side Management (DSM)/Energy Efficiency Programs, Funds, or Goals for Natural Gas

Policy Description

This option has most of the same attributes and options for design elements and implementation as ESD-12, but focuses on increasing investment in demand-side management programs related to the use of natural gas, propane (or liquefied petroleum gas—LPG), and fuel oil, through programs run by utilities or others, energy efficiency funds, and/or energy efficiency goals.

Policy Design

Goals: In each sector—residential, commercial, and industrial—reduce the consumption of natural gas, relative to consumption in the prior year, by 1.0% per year through 2012, then by 1.5% per year through 2015, and then 2.0% per year thereafter through 2030.

Timing: 2010 is the first year of compliance.

Parties Involved: All natural gas utilities (public and private), regulators, and customers (all sectors).

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

TBD

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

ESD-23. Decoupling

Policy Description

Traditional regulatory frameworks tie a utility's recovery of fixed costs of providing service (for example, infrastructure costs) to the quantity of energy sold. There is thus a perverse incentive for utilities to increase sales in order to increase revenues and minimize investments in energy efficiency (which will simply lead to lower than anticipated sales). This option includes the implementation of cost recovery rules that "decouple" the level of utility sales from net revenues earned by investor-owned utilities.

Implement rate structures and utility cost recovery rules that "decouple" the level of gas and electric utility sales from the net revenues earned by utilities. Decoupling should be geared exclusively to removing barriers to utility investment in programs to increase their customers' energy efficiency and reduce customer loads. Decoupling mechanisms should be carefully designed so as to avoid, as much as possible, adverse economic impacts on ratepayers so that factors other than energy efficiency investments—such as economic downturns—do not adversely affect rates, and to assure that the decoupling mechanism is fair to both consumers and shareholders.

Policy Design

Goals: Not quantifiable; the resulting declines in energy use will be tied more directly to utility demand side management programs (ESD-12 and ESD-22) that will be more successful due to decoupling.

Timing: New regulatory framework in place by January 1, 2010.

Parties Involved: Florida utilities and the Florida Public Service Commission.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

During the 2008 Legislative session, the Legislature passed and Governor Crist signed HB 7135 which ordered the Florida Public Service Commission to analyze utility revenue decoupling and provide a report and recommendation to the Governor, the President of the Senate, and the Speaker of the House of Representatives by January 1, 2009. The PSC will begin holding workshops on this in early August.

Type(s) of GHG Reductions

TBD

Estimated GHG Reductions and Costs or Cost Savings

TBD

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD