Brief Policy Option Descriptions of State Actions Energy Supply and Demand (ESD) Technical Work Group (TWG)

(Note that this listing is incomplete and will be fleshed out during the Technical Work Group (TWG) process; TWG members are encouraged to provide input to the TWG facilitators on existing policies and programs, where relevant. Recently enacted policies and programs in Florida are listed where relevant in the policy options catalog notes. Additional details will be added to this document under each of the option descriptions, as they are provided.)

ESD-1 EMISSIONS POLICIES AND OVERARCHING ITEMS

1.1 GPS or Mitigation Requirements for Electricity

A generation performance standard (GPS) is a mandate that requires load-serving entities (LSEs) to acquire electricity, or power plant developers to build and operate new generation, with a per-unit emission rate below a specified mandatory standard. In some cases, greenhouse gas (GHG) offsets or credits can be used to mitigate emissions and achieve compliance. A market-based variation of a GPS would allow generators with emission rates lower than the GPS to sell their extra "credits" to generators with emission rates higher than the standard.

Recent Actions in FL:

Department of Environmental Protection (DEP) is currently engaged in rulemaking to implement the Governor's Executive Order that calls for an economy wide reduction of GHG in Florida.

1.2 Integrated Resource Planning

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 renewable portfolio standard (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.

Recent Actions in FL:

IRP is currently conducted within the context of the Florida Public Service Commission (PSC) Power Plant Siting Act (PPSA) process, but does not include GHG emissions. In addition, the PSC also reviews future plans of Investor Owned Utilities (IOUs) via a Ten Year Site Plan.

1.3 Voluntary GHG Commitments

Numerous U.S. companies and organizations, including many utilities, have taken on voluntary GHG reduction commitments. Some of these are organized through the U.S. Environmental Protection Agency's (US EPA's) Climate Leaders program. These commitments can be based on total GHG emissions in a given year or can be defined on an intensity basis (metric tons of carbon dioxide equivalent per megawatt-hour [tCO_2e/MWh] generated or delivered). Some entities with voluntary commitments also transact through the Chicago Climate Exchange (CCX), a self-regulating pilot program for reducing and trading GHG emissions in North America.

1.4 Technology Research and Development

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, or to set the stage for adoption of the technology for use in the state. For example, an agency can be established with a mission to help develop and deploy energy storage technologies. R&D funding can also be made available to any renewable 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 which are not yet in widespread use. Finally, funding could be targeted to increase collaboration among existing institutions in the state for R&D.

Recent Actions in FL:

The Florida Energy Office (FEO) administers a renewable energy grant program that includes R&D. Also, the FEO assists the Florida Department of Revenue (DOR) with corporate tax incentives that includes R&D.

ESD-2 RENEWABLE ENERGY AND ENERGY EFFICIENCY

2.1 Renewable or EPS

RPS is a requirement that utilities must supply a certain, generally fixed percentage of electricity from an eligible renewable energy source(s). An environmental portfolio standard (EPS) expands that notion to include energy efficiency or other GHG emissions-reducing technologies as an eligible resource. About 20 states currently have an RPS in place, while a handful has implemented an EPS. In some cases, utilities can also meet their portfolio requirements by purchasing Renewable Energy Certificates (RECs) from eligible renewable energy projects.

Recent Actions in FL:

As a result of Executive Order 07-127, the PSC held a series of workshops on RPS in 2007. They took comments on how to define what is renewable, at what level the standard should be set, and what the state wishes to achieve by setting an RPS. A report will be provided to the PSC this year on the findings and recommendations will follow on rulemaking.

2.2 Grid-based Renewable Energy Incentives or Barrier Removal

This policy option reflects financial incentives to encourage investment in renewable energy resources. Examples 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 kilowatt-hour (kWh) of electricity generated from a qualifying renewable facility;
- Tax credits for each kWh generated from a qualifying renewable facility; and
- Regulatory policies that provide incentives or assurance of cost recovery for utilities investing in central station renewable energy systems.

In addition, this policy option would make it a priority for the Legislature, the PSC, and other relevant state agencies to identify and rectify barriers that are impeding the development of renewable resources in the state.

Recent Actions in FL:

The FEO administers

- Renewable energy grant program that includes incentives for renewable energy,
- Solar rebate program available to all residents in Florida, and
- Tax incentives for investing in renewable energy.

Florida Department of Agriculture and Consumer Services (DOACS) has a Farm-to-Fuel grant program.

The PSC approved standard offer contracts to streamline the process of signing Power Purchase Agreements (PPA), and the PSC recently issued a proposed rule regarding net metering.

2.3 Distributed Renewable Energy Incentives or Barrier Removal

This option is analogous to option 2.2 but focuses on providing incentives for and removing barriers to distributed renewable resources throughout the state.

Recent Actions in FL:

The PSC recently issued a proposed rule regarding net metering. The PSC is addressing comments filed by IOUs on March 4, and the rule is expected to be in place no later than May.

2.4 Green Power Purchases and Marketing

Greenpower refers to electricity produced by environmentally benign sources such as wind, solar, biomass, and hydroelectric generating resources. These programs allow consumers to purchase “green tags” along with their electricity ensuring that a quantity of electricity equal to

their purchase contributed to the development and support of renewable resources. Generally voluntary, these programs can be implemented on a statewide or regional basis.

Recent Actions in FL:

All IOUs in Florida have a voluntary green pricing program for their customers.

2.5 CHP Standards, Incentives or Barrier Removal

Combined heat and power (CHP) can reduce GHG emissions by increasing the overall efficiency of fuel use. However, there are numerous barriers to CHP, including inadequate information, institutional barriers, high transaction costs because of small projects, high financing costs because of lender unfamiliarity and perceived risk, "split incentives" between building owners and tenants, and utility-related policies, such as interconnection requirement, high standby rates, and exit fees. The lack of standard offer or long-term contracts, payment at avoided cost levels, and lack of recognition for emissions reduction value provided also creates obstacles. Policies to remove these barriers can include: improved interconnection policies, improved rates and fees policies, streamlined permitting, recognition of the emission reduction value provided by CHP and clean distributed generation (DG), financing packages and bonding programs, power procurement policies, and education and outreach.

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 British thermal unit (Btu) of heat generated from a qualifying CHP system; and
- Tax credits for each kWh or Btu generated from a qualifying CHP system.

Recent Actions in FL:

Florida has a Renewable Energy Production Tax Credit that provides a corporate income tax credit equal to one cent ($0.01) for each additional kilowatt hour of electricity produced from renewable energy sources at a new or expanded Florida facility. This incentive program is capped at $10 million. The PSC also approved standard offer contracts to facilitate and streamline the PPA between renewable generators and IOUs.

2.6 Pricing Strategies to Promote Renewable Energy or CHP (e.g., Net Metering)

Pricing and metering strategies can provide price signals and revenue streams to support investment and optimal operations of CHP and renewable energy systems. Net metering is a policy that allows owners of grid-connected DG (generating units on the customer side of the meter, often limited to some maximum kilowatt [kW] level) that produce 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 or for different seasons that reflect the time-varying value of electricity.

Recent Actions in FL:

The PSC issued a rule in December 2007 requiring net metering and interconnection standards. The rule will be finalized in either April or May of 2008.

2.7 Renewable Energy Development Issues (e.g., Zoning, Siting)

Policies can be developed to help overcome barriers for renewable energy development. Institutional and market barriers 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 because of small projects, 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.

Financial obstacles can be addressed through property tax exemptions, exclusions, and credits; personal income tax 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.

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.

2.8 Technology-Focused Initiatives (e.g., Biomass Co-Firing, Energy Storage, Fuel Cells)

States can undertake initiatives focused on developing, promoting, or implementing one or more specific technologies that have the potential to reduce GHG emissions. Technologies could include, among others, hydrogen production and fuel cells for electricity storage, compressed air energy storage systems (to enable greater penetration of intermittent renewable technologies such as wind), or biomass co-firing. Biomass co-firing can be a low-cost, near-term means of converting biomass to electricity and displacing a fraction of coal use by adding up to 15% biomass in high-efficiency coal boilers.

Recent Actions in FL:

Florida has two tax incentive programs, a renewable energy grant program, a renewable energy production tax credit, and a Farm-to-Fuel grant program.

2.9 Public Benefit Charge

A public benefits charge (sometimes called a systems benefits charge) is a fee on utility customers based on their usage of energy that is to be spent on public goods such as energy efficiency. In many deregulated states the utility commissions have lost the ability to require efficiency programs of the electric utilities, so the public benefits charge has been introduced as a non-bypassable charge on electric bills. The funds collected are then provided to a third party to provide energy efficiency programming.

Recent Actions in FL:

None. However, the Florida Energy Commission is exploring this issue in 2008.

2.10 RECs Valuation–Treatment of In-State Vs. Out-of-State RECs

A requirement to ensure that the ability to purchase RECs does not result in demand for renewable energy development outside of the state at the expense of renewable energy development within the state.

2.11 Solar/Thermal Incentives for Offsetting Water Heating Using Fossil Fuel

An option for encouraging a clean, distributed source of energy to reduce the use of more carbon-intensive fuels.

2.12 TRC-Based Conservation Test for Generator Efficiency and Conservation Programs

Provides a better balance in the assessment of new options to account for environmental impacts in addition to cost.

2.13 Energy Efficiency Resource Standards

Requirements to achieve minimum standards for energy efficiency use as an alternative to new generation.

ESD-3 FOSSIL FUEL AND NUCLEAR ELECTRICITY

3.1 Advanced Fossil Fuel Technology Incentives, Support, or Requirements

Advanced fossil technologies include more efficient and thus lower emitting generation technologies. Advanced fossil technologies combined with carbon capture and sequestration or reuse (CCSR) may have the potential to significantly lower carbon dioxide (CO_2) emissions associated with fossil fuel based electricity generation.

Policies to encourage the development of these technologies may include mandates or incentives to use advanced coal technologies for new coal plants, such as a mandate that requires new fossil fuel-fired power plants to achieve a specific low net CO_2 emission rate. Alternatively, a mandate might require that all or a portion of new coal plants be of a certain type, such as integrated gasification combined cycle (IGCC). Incentives may take the form of direct subsidies or assistance in securing financing, or off-take agreements. A combination of mandates and incentives is also possible.

Policies to encourage carbon capture and sequestration (CCS) could include a state agency or department within an existing agency tasked with promoting CCSR, evaluation studies to identify geologically sound reservoirs, R&D funding to improve CCS technologies, or financial incentives or mandates to capture and store carbon or to capture and reuse it.

Recent Actions in FL:

There is advanced cost recovery for IGCC technology whereby the PSC determines prudency on an annual basis. There is a Public/Private CCS working group underway. This partnership involves consortium of utilities, DEP and the Southern States Energy Board (SSEB).

3.2 New Nuclear Power

Nuclear power has historically presented a low-GHG source of electricity. However, no new commercial reactor has come on line in the United States 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 (ESD) 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.

Recent Actions in FL:

Advanced cost recovery for nuclear facilities whereby the PSC determines prudency on an annual basis. All existing commercial facilities are undergoing uprates in addition, Progress Energy proposed a new nuclear unit in green field; Florida Power & Light Company (FPL) proposed two units in a "brown field," and Gulf is looking at one unit in a green field but has not selected the location.

3.3 Relicensing/Up-Rating Existing Nuclear Power

Nuclear plant relicensing allows a nuclear power plant to extend the life of the facility for 20 years past its original 40-year license term. This is considered a low-cost and low-emissions source of energy because there is limited additional capital cost or additional embodied emissions associated with extending the life of fully depreciated and operating nuclear plants. The Nuclear Regulatory Commission (NRC), the nation's regulatory authority for nuclear power, considers the relicensing program one of its major cornerstones of current regulatory activity. A nuclear power plant uprating is a process whereby a licensee receives approval from the NRC to operate a plant at a higher power level than the level authorized in the original license.

Recent Actions in FL:

This is occurring in Florida.

3.4 Efficiency Improvements and Repowering Existing Plants

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.

Recent Actions in FL:

This is occurring in Florida.

3.5 Technology-Focused Initiatives

States can undertake initiatives focused on developing, promoting, or implementing one or more specific fossil fuel or nuclear technologies that show promise for reducing GHG emissions. Technologies could include, among others, carbon capture and storage (to sequester CO_2 emissions from power plants, oil and gas operations, or refineries); biomass blending in coal power plants; implementation of equipment in oil and gas operations that increases efficiency and reduces losses (e.g., remote sensors of leaks).

Recent Actions in FL:

Florida has advanced cost recovery for nuclear and IGCC power plants. These two technologies undergo annual prudency reviews for cost recovery, opposed to, cost recovery upon completion of the project.

3.6 Technology to Optimize and Reduce Water Management, Use and Reuse for Generation

The treatment of water and its distribution across distances are energy-intensive activities. Water is relatively heavy, and the use of electric pumps and motors to move and treat it represent targets for potentially achieving GHG reductions, for example, through the “right-sizing” of pumps, changing to variable speed drives, or pressure management.

3.7 Advanced Cost-Recovery for Replacement Generation and Transmission Built to Address Climate Change Legislation/Regulation or an RPS

The approach involves providing mechanisms that effectively reduce the payback period for major investments that aid in mitigating GHG emissions.

3.8 A ‘Grace Period’ of Up to 5 Years Where Coal or Gas Units Slated to be Replaced by Nuclear Generation are Exempted from any CO_2 Tax or Penalty

This will exempt units destined to be shut down within 5 years from investments in GHG reduction technologies that will be uneconomic given the limited remaining life of the unit.

ESD-4 FUEL PRODUCTION, PROCESSING AND DELIVERY

4.1 Oil and Gas Production: GHG Emission Reduction Incentives, Support, or Requirements

Emissions of both methane (CH_4) and CO_2 can be reduced in the oil and gas production. Natural gas consists primarily of CH_4, a potent GHG; any reduction in leaks during production, processing, and transportation/distribution avoids GHG emissions. Stopping these leaks may also be economically beneficial because it can prevent the waste of valuable product. The EPA Natural Gas STAR program offers numerous methods of preventing leaks, including preventive maintenance (improving the overall efficiency of the gas production and distribution system), reducing flashing losses (releases when pressure drops at storage tanks, wells, compressor stations, or gas plants), and changing and replacing parts and devices to reduce leaks and improve efficiency.

Recent Actions in FL:

There is very little production or processing of oil or gas in Florida – all production is isolated to the Jay Field in Escambia County in the western panhandle and the Big Cypress area west of the Everglades.

4.2 Natural Gas Transmission and Distribution

As with leaks of CH_4 in oil and gas operations, any reduction of leaks during production, processing, and transportation/distribution avoids GHG emissions to the atmosphere and prevents the waste of valuable product.

Recent Actions in FL:

Florida Gas Transmission Company (FGT) is proposing a $2.1 billion pipeline from Alabama to South Florida.

4.3 Oil Refining: GHG Emission Reduction Incentives, Support, or Requirements

Options for reducing CH_4 and CO_2 emissions during the production of liquid fuels at oil refineries include various efficiency measures including enhanced CHP along with carbon capture and storage. Regulations, incentives, or support programs can be applied to achieve these reductions.

Recent Actions in FL:

There are no oil refineries in Florida. This may become an issue with the siting of new biofuel refineries.

4.4 Coal Production: GHG Emission Reduction Incentives, Support, or Requirements

There are a number of ways in which CH_4 and CO_2 emissions can be reduced and CH_4 can be recovered in the production of coal. These options include various efficiency measures, use of CHP for operations, carbon capture and storage, and capture and use (or at least flaring) of CH_4 that would otherwise be vented to the atmosphere. Regulations, incentives, or support programs can be applied to achieve these goals.

Recent Actions in FL:

There are no coal production centers in Florida.

4.5 CTL Production: GHG Emission Reduction Incentives, Support, or Requirements

Coal-to-liquids (CTL) plants are energy-intensive, and produce about 10 times more CO_2 emissions than conventional oil refineries in order to produce liquid fuels. However, with carbon capture and storage (and co-production of electricity and liquid fuels) such emissions can be substantially reduced.[1] Regulations, incentives, or support programs can be applied to achieve these goals.

Recent Actions in FL:

There are CTL production facilities in Florida.

4.6 Low-GHG Hydrogen Production Incentives and Support

Hydrogen is not an energy source, but rather an energy carrier. It must be produced from other energy resources, such as fossil fuels (coal, oil, gas), renewable electricity (wind, solar), renewable fuels (biofuels, landfill gas [LFG]), or nuclear power. However, it may facilitate the avoidance of GHG emissions by storing energy produced when and where available to be used when needed. The net GHG implications of producing hydrogen depend on the energy resource from which it is produced. In order to produce hydrogen from fossil fuels with low GHG emissions, it would be necessary to do it in conjunction with CCS. Policies in support of this option would provide incentives to projects that help develop or deploy low-GHG hydrogen production technologies as well as advance the technology of efficiently storing electric energy as hydrogen and converting it back to electricity.

Recent Actions in FL:

Florida has a Hydrogen Project Manager in its Energy Office and he is managing several projects. Florida has grants and tax incentives for fixed installation hydrogen projects.

4.7 Liquid Natural Gas Development

As a less carbon-intensive fuel than coal, broadening the availability of liquid natural gas (LNG) for electricity generation, heating and vehicle fueling has the potential to yield GHG reductions.

ESD-5 CARBON CAPTURE AND STORAGE OR REUSE

5.1 CCSR Incentives, Requirements or Enabling Policies (Administration, Regulation, Liability, Incentives)

Carbon capture and sequestration or reuse (CCSR) is a process that includes separation of CO_2 from industrial and energy-related sources, transport to a storage location, and permanent or long-term storage in isolation from the atmosphere. Ideally, the CO_2 from large point sources

[1] International Energy Agency, 2006. *Energy Technology Perspectives*. Well-to-wheel GHG emissions from coal liquids are approximately twice those of conventional oil products. Cogeneration and carbon capture and storage can reduce those emissions to levels similar to, or slightly below, those of conventional oil products.

such as power plants can be compressed and transported for storage in geological formations, in the ocean, in mineral carbonates, or for use in industrial processes. Captured carbon can also be used for enhanced recovery of oil and gas. The net reduction of emissions to the atmosphere through CCSR depends on the fraction of CO_2 captured, the relative increase in CO_2 production resulting from loss in overall efficiency of power plants which capture carbon, energy used for transport and storage, any leakage from transport, and the fraction of CO_2 retained in storage over the long term.

Policies to encourage development of CCSR technology could include a state agency or department within an existing agency tasked with promoting CCSR, financial incentives to capture and store carbon or to capture and reuse it, or mandates – coupled with technical feasibility and cost and investment recovery mechanisms, if appropriate – to capture and store or reuse CO_2 from power plants.

5.2 R&D for CCSR

Technological as well as financial barriers exist to implementation of CCSR. While separation, capture and transport of CO_2 are themselves mature technologies, only three industrial-scale storage projects are currently in operation: the Sleipner project in an offshore saline formation in Norway, the Weyburn enhanced oil recovery (EOR) project in Canada, and the In Salah project in a gas field in Algeria. Further R&D funding to improve CCSR technologies and evaluation studies to identify geologically sound reservoirs will be needed for this technology to play a significant role in reducing GHG emissions.

Recent Actions in FL:

Florida has a public/private consortium looking into CCS. DEP and various utilities are involved in digitizing Florida geological structures.

ESD-6 OTHER ESD OPTIONS

6.1 Transmission System Upgrading

Measures to improve transmission systems to reduce bottlenecks and enhance throughput may be required to satisfy long-term electricity demands and improve the 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. 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.

Recent Actions in FL:

Need to involve the Florida Reliability Coordinating Council (FRCC) for reliability purpose, the PSC for cost recovery, and DEP for siting.

6.2 Reduction of Transmission and Distribution Line Losses

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, or support programs can be applied to achieve greater efficiency of transmission and distribution system components.

6.3 General DG Support (e.g., Interconnection Rules, Net Metering)

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 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: purchase power from the grid to supply supplemental power as needed, for example, during periods of planned system maintenance; sell excess power to the utility; and maintain grid frequency and voltage stability, as well as utility worker safety. This topic is of particular interest as the Energy Policy Act of 2005 (EPACT) 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).

Recent Actions in FL:

The PSC issued a rule in December 2007 requiring net metering and interconnection standards. The rule will be finalized in either April or May 2008.

6.4 Environmental (GHG Emissions) Disclosure

Emission disclosure consists of establishing requirements that GHG emitters publish their estimated GHG emissions on a regular (e.g., annual) basis. In addition to emissions, disclosure can also include an accounting of business risks due to climate change, such as assets in danger of weather-related damage, threats to market share, and risks of future regulation. Environmental disclosure allows investors and consumers to obtain information regarding a firm's GHG emissions and climate risks so as to better make purchasing and investment decisions, and provide an incentive for firms to reduce risk in these areas by, among other actions, reducing their CO_2 footprints. In the case of ESD, environmental disclosure would take the form of providing consumers and stockholders with information on carbon emissions per kWh in a form that would help them make decisions about electricity purchases and consumption as well as evaluate investment risks. It is effective particularly in areas where consumers have an opportunity select their electricity provider.

Recent Actions in FL:

Electric utilities have been encouraged to join *The Climate Registry*. The Action Team recommended in Phase I that all utilities be required to join *The Climate Registry*.

6.5 Landfill Gas Recovery (See Also Waste)

Capture of CH_4 gas from landfills to reduce direct emissions and to produce electricity. This option could be structured as either a mandate or an incentive program.

Recent Actions in FL:

Florida has approximately 10 waste to energy facilities operating and waste to energy is one of the largest sources of renewable energy in Florida currently.

6.6 Waste to Energy (See Also Waste)

Certain components of municipal waste can be used as a non-fossil combustion resource for generating electricity.

Recent Actions in FL:

Florida has approximately 10 waste to energy facilities operating and waste to energy is one of the largest sources of renewable energy in Florida currently.

6.7 N_2O Reduction Co-Benefit

Nitrous oxide (N_2O), a minor component of total nitrogen oxides (NO_x) emissions from fossil fuel combustion, is one the most powerful GHGs. Each ton of N_2O represents more than 250 tons of carbon dioxide equivalent (CO_2e). Emissions policies further reducing NO_x emissions from power plants would have the additional benefit of reducing release of N_2O into the atmosphere.

Recent Actions in FL:

6.8 Smart Grid

Smart Grid systems promote efficiency through improvements in system stability and better control technology and systems integration.

ESD-7 Energy Efficiency Programs, Funds, and Goals

7.1 Utility DSM Programs for Electricity

This option focuses on increasing investment in electricity demand-side management (DSM) programs through programs run by utilities or others, energy efficiency funds, or energy efficiency goals. These options are typically termed DSM activities, and may be designed to work in tandem with other strategies recommended by the Action Team that can also encourage efficiency gains.

The policy design includes two key and linked dimensions: achievable/desirable energy savings and policy/administrative mechanisms to achieve these savings. In order to implement expanded DSM programs, a number of mechanisms should be considered. Candidate 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 for CO_2 emissions. 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. 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, and industries;
- Incentives for specific technologies, potential 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; and
- Energy efficiency reinvestment funds.

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

Recent Actions in FL:

The PSC has had an active DSM program for over 20 years.

7.2 Utility DSM Programs for Natural Gas, Propane, and Fuel Oil

This option has most of the same attributes and options for design elements and implementation as Option 1.1, but focuses on increasing investment in DSM 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, or energy efficiency goals.

7.3 Regional Market Transformation Alliance

Market transformation alliances use voluntary efforts, typically implemented by non-utility organizations, to encourage greater uptake by consumers (residential, commercial, and industrial, as well as the professionals that service energy-using equipment) of cost-effective energy efficiency practices. A market transformation program is designed to create a situation where the bulk of the private market automatically adopts or incorporates technologies or techniques that result in improved energy efficiency. The goal of a market transformation and technology development program is to put energy efficiency technologies and practices into a position where they will be demanded by the public, chosen by builders and manufacturers, and provided by retailers and contractors. Methods of transformation can be different for each technology or technique, but often revolve around public and private review of quality and effectiveness, including partnerships between government agencies, retailers, manufacturers, and non-governmental agencies. Market transformation programs can be statewide or regional.

Market transformation also seeks to ensure sufficient supplies of technologies and practitioners to meet the subsequent increased demand for energy efficiency.

Potential elements of a market transformation program include:

- Target specific measures, such as ground-source heat pumps, solar watt-hours/photovoltaics (Wh/PV), or other technologies important for Florida;
- Support for commercialization of promising technologies; and
- Bulk purchasing programs (public–private) or arrangements with retailers.

Consumer education is a significant supporting measure for market transformation programs.

Recent Actions in FL:

Governor Crist is the co-chair of the Southern Energy Efficiency Alliance that encompasses all 11 southern states.

7.4 Energy Efficiency Financing (Alternative Business Models)

A public benefits charge (sometimes referred to as a systems benefits charge) is a fee attributed to utility customers based on their usage of energy in a given time period. With deregulation in many states, the utility commissions often lost the ability to require efficiency programs of the electric utilities. The result in many states was the development of the public benefits charge, which is a charge on electric bills that cannot be bypassed. The funds collected are then provided to a third party to provide energy efficiency programming.

Recent Actions in FL:

Some utilities offer low interest loans to consumers for energy efficiency. An energy audit is a prerequisite for such loan.

7.5 Non-Utility DSM Programs for Electricity

This option has most of the same attributes and options for design elements and implementation as option 1.1, but focuses on municipal utilities and cooperatives.

7.6 Provide Public Access to Residential Energy Consumption Data and Establish Community Baselines

Accurate data are needed for making judgments related to the energy efficiency of housing. Providing transparent access to residential energy consumption data and establishing understandable consumption baselines are needed to allow consumers to make informed decisions and encourage market transformation. Community baselines also provide a reference against which DSM (7.1) programs and certifications (8.2) can be evaluated within a service territory. Ultimately, transparent access to energy consumption data and community baselines can become the basis for calculating annual offsets (million metric tons of carbon dioxide [$MMtCO_2$] emissions avoided) associated with DSM (7.1) and certifications (8.2).

Recent Actions in FL:

Florida's public energy utilities (e.g., Gainesville Regional Utilities [GRU], Jackson Energy Authority [JEA], Orlando Utilities Commission [OUC]) operate in the "sunshine" making residential utility bills accessible.

ESD-8 Buildings

8.1 Improved Building Codes for Energy Efficiency

Building energy codes specify minimum energy efficiency requirements for new buildings or for existing buildings undergoing a major renovation. Given the long lifetime of most buildings, amending state or local building codes to include minimum energy efficiency requirements and periodically updating energy efficiency codes could provide long-term GHG savings. Implementation of building energy codes, particularly when much of the building occurs outside of urban centers, can require additional resources. Potential elements of a policy to include building codes are to require high-efficiency appliances in new construction and retrofits, and 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.

8.2 Promotion and Incentives for Improved Design and Construction (e.g., Leadership in Energy and Environmental Design Green Building Rating System™ (LEED)[2], Green Buildings) in the Private Sector

This policy provides incentives and targets to induce the owners and developers of new and existing buildings to improve the efficiency with which energy and other resources are used in those buildings, along with provisions for raising targets periodically and providing resources to building industry professionals to help achieve the desired building performance. This policy can include elements to encourage the improvement and review of energy use goals over time, and to encourage flexibility in contracting arrangements to encourage integrated energy- and resource-efficient design and construction.

Additional potential elements of this option include

- Targeting new, renovated, or existing buildings (retrofits);
- Setting a cap on consumption of energy per unit area of floor space for new buildings;
- Encouraging building commissioning and recommissioning, including energy tracking and benchmarking;
- Providing incentives, in the form of tax credits, DSM program support, financing incentives (such as “green mortgages”), or other inducements for retrofit of existing residential and commercial buildings; and
- Encouraging the use of alternative and local building materials and practices.

Potential supporting measures for this option include training and certification of building professionals, consumer and primary/secondary education, performance contracting/shared

[2] Leadership in Energy and Environmental Design; see U.S. Green Building Council, http://www.usgbc.org.

savings arrangements, and setting up of a clearinghouse for information on and access to software tools to calculate the impacts of energy efficiency and solar technologies for buildings.

Compliance with improved design and construction certifications (such as the LEED, ENERGY STAR®, Florida Green Building Coalition [FGBC] and other standards) does not guarantee actual performance at the meter. Incentives should 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. Furthermore, the value of certifications should be judged against meaningful benchmarks based on community consumption standards developed for similar classes of homes (see Option 7.6).

Recent Actions in FL:

Report of Green Building Public Awareness Campaign, Florida Solar Energy Center (FSEC).

8.3 Improved Design and Construction, "Government Lead-by-Example"

Recognizing that governments should "lead by example" the option presented here provides energy use targets to improve the efficiency of energy use in new and existing state and local government buildings. The proposed policy provides energy efficiency targets that are much higher than code standards for new state-funded and other government buildings. This option sets energy-efficiency goals for the existing government building stock, as well as for new construction and major renovations of government buildings. Potential elements of this policy include:

- Requiring that energy efficiency be a criterion in procurement of energy-using equipment and systems, and in the improvement in operation of buildings and other facilities
- Audits of energy performance and operations of state and other government buildings (in tandem with an audit program). Audit results could be used to target and prioritize investments in improving government building energy efficiency. (See also 10.2)
- Improvement and review of efficiency goals over time, and development of flexibility in contracting arrangements to encourage integrated energy-efficient design and construction.
- Recommendations that the infrastructure for implementation (e.g., meters, bookkeeping systems, staff) be established as soon as possible.
- State bulk-purchase of appliances and equipment with higher-than-standard energy efficiency for public facilities.
- Establishing "retained savings" policies whereby government agencies are able to retain funds saved by reducing energy bills for further energy efficiency/renewable energy investments or other uses.

Potential supporting measures for this option include raining and certification of building sector professionals and performance contracting/shared savings, but could also include surveys of government energy and water use, energy benchmarking, measurement, and tracking programs for municipal and state buildings.

Recent Actions in FL:

Governor's Executive Order 07-126 requires state government leadership by example that includes a requirement for the quantification of emissions by state government (about 900,000 tons of CO_2e in FY 2006–2007) and specific reductions of 10% by 2010, 25% by 2017, and 40% by2025. Further, the order requires the Florida Department of Management Services (DMS) develop a Climate Friendly Preferred Products List for use by agencies in procuring products.

The Action Team's phase one report recommended that state government clarify and streamline energy performance contracting in order to increase the use of the tools to help state agencies meet specific emission reduction targets.

8.4 Support for Energy Efficient Communities Planning, "Smart Growth"

"Smart Growth" aims to create communities that are, among other attributes, livable, designed for reduced use of energy both within homes and businesses and in the transport sector, and have a reduced environmental impact relative to typical developments. Variants on the smart growth concept exist, but many call for clustering living units with easy access (often walking distance) to shops, schools, and entertainment and recreational facilities, incorporating elements of energy-efficient design and renewable energy in buildings, sharing energy facilities between buildings (for example, district heating systems), and preserving open spaces. See, for example, http://www.epa.gov/smartgrowth/about_sg.htm for additional information about Smart Growth.

8.5 Increased Use of Blended Cement (Substituting Fly Ash or Other Pozzolans for Clinker)

The Action Team could recommend that Florida promote the use of blended cement in buildings and other applications. (Substituting fly ash or other pozzolans for clinker—the chief ingredient of cement—reduces CO_2 emissions associated with clinker production from limestone.)

8.6 Reduction of Emissions from Diesel Engines Used In New Construction Developments

Diesel engines are a source of CO_2 as well as black carbon and particulates.

8.7 Training and Education for Builders and Contractors (e.g., Heating, Ventilation, and Air Conditioning [HVAC] Sizing, Duct Sealing)

This option refers to an education and outreach program for building professionals to encourage incorporation of energy-efficiency and GHG emissions-reduction considerations. Examples include

- Starting programs to train builders and contractors on proper heating and air conditioning sizing and installation,
- Mandating that State Boards of Licensing for building professionals cover knowledge of the improved building codes and building energy performance requirements reflected in various policy options in licensing exams, and
- Implementing code training and technical assistance for builders and architects.

8.8 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 (DOE) in this area.

8.9 Promotion and Incentives for Voluntary Adoption of Performance Standards in Master Planned Community Developments

Over the last decade more than 1,000,000 new homes were built in Florida. The majority of were in master planned community developments, which are uniquely well equipped to integrate energy efficiency both into community designs and housing standards. Master planned community developments also strongly influence on-going community operations and standards through their organizational design of Home Owner Associations (or Community Development Districts). Developers can readily establish minimum performance standards (e.g., all homes shall be ENERGY STAR qualified) that can literally affect thousands of homes and strongly influence local standards of product performance and tradecraft. This policy offers the potential for developers to specify requirements that go well beyond code (and local standards) in terms of energy efficiency, which could qualify the community for carbon credits.

8.10 Energy Rating Systems for New and Existing Homes

Standardized approaches to evaluating and communicating the energy efficiency of the various relevant systems in a home would improve the ability of home buyers to incorporate energy efficiency issues into their buying decision. As a result, homebuilders and sellers will be more likely to ensure that energy efficiency improvements are achieved.

8.11 Incentives for Investments at Rental Properties

Landlords often do not have a direct incentive to make energy efficiency improvements at their rental units, particularly if the tenants pay utility bills directly. Similarly, renters do not have the long-term commitment to the rented unit that would incentivize them to invest in energy efficiency improvements that ultimately stand to benefit the landlord.

ESD-9 Appliance Standards

9.1 Expansion of State-Level Appliance Efficiency Standards

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 where higher-than-federal standard efficiency requirements are

appropriate.[3] Regional coordination for state appliance standards can be used to avoid concerns that retailers or manufacturers may resist supplying equipment to one state that has advanced standards, or focus sales of lower efficiency models on a state with less stringent efficiency standards.

Potential elements of an appliance efficiency standards policy include:

- Establishment and enforcement of higher-than-federal state-level appliance and equipment standards (or standards for devices not covered by federal standards),
- Joining with other states in adopting higher standards, and
- Requiring high-efficiency appliances in new construction and retrofits.

Consumer education is a potential supporting measure for this option.

Recent Actions in FL:

Executive Order 07-127 required the Florida Department of Community Affairs (DCA) to increase by 15% the efficiency of appliances regulated under 9B-44, Florida Administrative Code (authorized under Ch 553.957, F.S.) which includes refrigerators, refrigerators-freezers, and freezers excluding those that are designed to operate without doors and those which does not include a compressor and condenser unit as an integral part of the cabinet assembly, lighting equipment, showerheads, and other products defined by the DCA as covered under the controlling statute.

Action Team phase I report recommended that additional statutory authority be granted to the DCA for appliance efficiency standards including authorization to regulate "commercial appliances" as well as additional residential appliances not subject to federal preemption.

9.2 Support for Federal-Level Appliance Efficiency Standards

This policy option involves advocating for the development and implementation of higher federal-level appliance efficiency standards.

Recent Actions in FL:

Report of Green Building Public Awareness Campaign, FSEC.

9.3 US DOE "Regional" Air Conditioning Equipment Efficiencies Pursuant to New Authority Established by the Energy Independence and Security Act of 2007

ACEEE estimates that the appliance and lighting standards provisions in the Energy Independence and Security Act of 2007 will save at least 2.0 quadrillion Btu's in 2030, which is 1.6% of total projected nationwide energy use that year. The bill will save approximately 177

[3] In recent years, Arizona, Oregon, and Washington, among other states, adopted state standards for several appliances; this led to the inclusion of standards for these appliances in the 2005 federal Energy bill.

billion kWh per year in 2030 and reduce peak electric demand by 33,000 megawatt (MW). Annual CO_2 emissions will be cut by around 135 million metric tons.[4]

9.4 Uniform Labeling Standards for Appliances

As a customer-awareness strategy, a uniform labeling standard for appliances would make it easier for appliance consumers to identify each unit's energy efficiency performance and incorporate this information into the purchasing decision. Absent a uniform standard, the comparison of appliances across different manufacturers could be difficult or impossible.

ESD-10 Education and Outreach

10.1 Consumer Education Programs

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.

Recent Actions in FL:

Legislature approved $250,000 for education and outreach during 2007 session.

10.2 Energy Efficiency School Curriculum

The long-term effectiveness of emissions reduction activities depends on providing information and education not only to present consumers, but also to future consumers. This policy option involves the education of primary and secondary school students regarding the energy and GHG emissions implications of consumer and societal 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 young citizens. As with adult consumers, public education and outreach efforts should integrate with and build upon existing outreach efforts involving climate change and related issues in the state.

Recent actions in FL

See 10.1. In addition, the FEO works with the FSEC under a "SunSmart School Program."

[4] Savings estimates are conservative since they do not include additional rulemakings required by the regular reviews provision.

10.3 Post-Secondary Specialist Education and Certification for Building Energy Efficiency Experts and Related Trades

In order to effectively implement buildings-related and other GHG-reduction policies, specific and targeted education, outreach, and licensing requirements will be required for professionals in a variety of building-related trades in order to ensure that those professionals have the expertise to support aggressive state building energy efficiency policies. This policy focuses on continuing education programs or requirements for building professionals.

Complementary policies include:

- Training of building code and other officials in energy code enforcement.
- Establishment or extension of professional licensing requirements related to energy efficiency or GHG emissions assessment.
- Training and education for builders and contractors (for example, HVAC sizing, duct sealing, and incorporation of renewable energy systems into buildings).
- Energy management training and training of building operators.
- Targeted community college/university programs.

Recent Actions in FL:

10.4 Post-secondary College and University Programs

This policy would encourage and support the creation or expansion of post-secondary programs designed to increase the capacity of the states' engineers, architects, technicians, and others in building energy and related trades to implement GHG emissions mitigation activities. These programs could be established/expanded at the community college, college/university, and post-graduate levels, and could cover topics ranging from performance and interpretation of energy audits and installation of energy-efficiency measures and renewable energy systems to design of low- or "net zero" emissions buildings and low-GHG community design.

10.5 Provide Support for Coordinated Statewide Delivery of Energy Education and Outreach Services

Florida has no agency with the responsibly to support the coordinated statewide delivery of energy education and outreach services. The result is a patchwork of sporadically developed educational materials that may or may not be current and may or may not be appropriate in Florida's hot, humid climate.

10.6 Education of Realtors

Realtors are well positioned to communicate residential energy efficiency issues to homeowners and homebuyers. If home energy efficiency information were available on the multiple listing service (MLS) used for the vast majority of homes available for sale, potential homebuyers would become more aware of the level of energy efficiency for listed homes. The availability of

this information might provide an incentive for home sellers, contracts, and real estate brokers to improve residential energy efficiency.

ESD-11 Pricing and Purchasing

11.1 Green Power Purchasing for Consumers

Green power purchasing comprises a variety of consumer-driven strategies to increase the production and delivery of low-GHG power sources, above and beyond levels achieved through RPS and other mandatory programs.

Possible elements of green power programs include:

- A definition of what power sources qualify as green power source by a relevant authority.
- Regulatory encouragement for utilities to develop green power tariff structures.
- Implementation of regulatory requirements that power sources and emissions data be reported in consumer utility bills.
- State goals or mandates for green power purchases, or for the renewable fraction of standard purchased electricity, that would apply to all non-federal government buildings, including local government buildings, public schools, and public universities. This could also be a part of state "lead-by-example" programs.
- Promotion by the State or other entities of voluntary purchasing of green power through provision of information and promotional materials.

Recent Actions in FL:

All Florida IOUs have a voluntary green pricing for consumers.

11.2 Net-metering for DG

This policy option involves the consideration and adoption by state regulatory authorities of rate designs, coupled with the necessary metering technology, that promote reduction in GHG emissions by encouraging consumers to install DG systems—especially those based on renewable fuels—and combined heat (and or cooling) and power systems that offer the opportunity to improve the overall efficiency of fuel use.

Potential elements of this option include

- Reviewing existing net-metering policies, including policies that affect electricity consumers who install on-site CHP or DG fueled with renewable or fossil fuels. Consider the impact of NO_x and power factor requirements on net-metering and availability of information for small customers.
- Reviewing rate issues, including decoupling of utility revenues from sales, and consider a specific focus on the impacts of rate design on GHG emissions. This could include an exploration of the impacts of time-of-use rates on GHG emissions.

- Reviewing and considering utility and other technical rules related to the interconnection of consumer-sited power sources to the electricity grid to assure that they offer equitable treatment of potential DG hosts while providing adequate safeguards for the public and for power sector workers.

Recent Actions in FL:

The PSC issued a rule in December 2007 addressing net metering and interconnection standards. That rule will become final in either April or May 2008.

11.3 Rate Structures and Technologies to Promote Reduced GHG Emissions

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.

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.

Recent Actions in FL:

New Policy Options descriptions made by combining two others. FPL and Progress energy have inclining rate structures.

11.4 Bulk Purchasing Programs for Energy Efficiency or Other Equipment

Bulk purchasing of appliances and equipment with higher-than-standard energy efficiency by public agencies, and for the organization of similar bulk-purchase programs in the private sector, is a policy option that can augment or be a part of DSM, market transformation, or state lead-by-example programs. In this option, a government or non-governmental organization purchases large quantities of energy-efficiency products (such as high-efficiency refrigerators or office equipment, or solar water heaters) or services (such as home weatherization services) at a bulk price. The organization then either uses the purchased items and services internally, or sells them at an attractive price to other buyers. Bulk purchase programs can help to rapidly develop markets for energy-efficiency or low-GHG goods and services.

Potential elements of this option include

- Municipal or state government programs, possibly including training in the use of existing bulk-purchasing tools;[5]
- Programs for schools; and

[5] For example, the EnergyStar bulk purchasing tool—developed by the US DOE, in collaboration with the U.S. Department of Housing and Urban Development (US HUD) and the US EPA—is designed to make it easy to comparison shop for energy-efficient products. The tool provides a simple way to obtain bids on EnergyStar-qualified products such as appliances, compact fluorescent light bulbs, and light fixtures.

- Private-sector programs (possibly in coordination with market transformation programs).

11.5 Third Party PPAs for Renewable Energy Transmission and Distribution

Streamlining the process and documentation for third-party PPAs would reduce a barrier to the availability of renewable energy in the market.

ESD-12 Customer-Sited Distributed Energy and CHP

12.1 Incentives to Promote Implementation of Renewable Energy Systems

Distributed electricity generation sited at residences and commercial and industrial facilities, and powered by renewable energy sources (typically solar, but also wind, small hydroelectric power sources, or biomass or biomass-derived fuels), 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. 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. Potential elements of this option include

- Solar roofs (roofing materials with built-in solar photovoltaic cells, or solar photovoltaics (PV) panels erected on roofs);
- Solar water heating and solar space heating systems;
- Wind power systems, particularly for rural areas;
- Biomass-fired generation, space, or water heating systems;
- Programs targeted at specific customer sectors (residential, commercial, industrial), or specific markets within sectors; and
- Tax credits, or utility or other incentives to lower the first cost of distributed energy systems to users.

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

Recent Actions in FL:

Within the FEO are grants programs to encourage the use of solar water heating and PV systems. Also, it has Solar Rebate Program for PV, solar thermal and solar pool and the Renewable Energy Grant Program.

12.2 Incentives and Resources to Promote CHP (Cogeneration)

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. Potential elements of this option include:

- Promotion of the use of gas-fired CHP systems
- Promotion of the use of biomass-fired CHP systems
- Creation/expansion of markets for, and incentives designed to promote implementation of, CHP units in capacities suitable for residential, commercial, and industrial users.
- Provision of tax benefits, attractive financing arrangements, and other incentives to promote CHP technologies.

Potential 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.

Recent Actions in FL:

Florida's Renewable Energy Grant Program.

12.3 Retention of Credits (Revenue) by DG and CHP Sources

GHG reductions achieved by DG and CHP activities are complicated by the fact that the location of the reduction is typically off-site from the DG or CHP operation. This is due to the fact that the energy generation at the DG/CHP facility is typically affecting a corresponding reduction in generation at the area utility. It is the reduced generation at the utility that results in the GHG reduction. In the presence of a market opportunity to sell the reductions, a legal and contractual mechanism needs to exist to ensure that the DG/CHP entity is the recognized owner of the credits associated with the reduced emissions from the utility.

ESD-13 GHG Emissions-Specific Goals and Policies

13.1 Support for Switching to Less Carbon-Intensive Fuels (Coal and Oil to Natural Gas or Biomass)

A number of the energy services, provided by fuels use in the residential, commercial, and industrial sectors (RCI), can be met through the use of different fuels. Prime examples here are water and space heating, as well as industrial process heat, which can be provided by burning coal, oil, gas, biomass, and perhaps hydrogen, or by using electricity or solar heat. Alternatives also exist for air conditioning, where absorption air conditioning units using heat from combustion of fuels or from solar heat can substitute for electric units. Moving to less carbon-intensive fuel/technology combinations in some end uses can be achieved through a combination of promotion and incentive programs, market creation/expansion (for biomass fuels or for equipment not common in the market, for example).

Recent Actions in FL:

Gulf Power has a rebate program for geothermal pumps (residential).

13.2 Policies or Programs Specifically Targeting Non-Energy GHG Emissions

This approach would provide information and incentives to reduce the GHG emissions associated with various industrial processes that generate these emissions, separate from those resulting from fossil fuel combustion.

13.3 Local Government Program for Voluntary Emissions Targets by Businesses

Local governments could work with industrial and other large users of energy in their jurisdiction to encourage those organizations to set emissions reduction targets above targets that are in effect throughout the rest of the state. This option could be implemented through a combination of financial and other incentives, public–private partnerships and agreements, provision of information and technical assistance, and other methods.

Recent Actions in FL:

23 Cities in Florida have signed on to the Mayor's Climate Change initiative.

13.4 Negotiated Emissions or Energy Savings Agreements

Government agencies could work with industrial and other large users of energy (or of process gases that are GHGs) to encourage those organizations to set emissions reduction targets. This option may be implemented through a combination of financial and other incentives, public–private partnerships and agreements, provision of information and technical assistance, and other methods.

Organizations that use large amounts of energy (electricity, gas, or other fuels) or are responsible for large volumes of direct GHG emissions would be encouraged to set and pursue their own emissions reduction targets. The organizations participating in such a program would typically be large industrial plants, although in some cases large commercial or governmental organizations and facilities might also participate. Reductions in GHG emissions can be achieved in the industrial sector through energy efficiency, process changes, or switching to the use of less carbon-intensive fuels to provide key energy services. Providing tools and information for residents, businesses, and communities to inventory GHG emissions, and to use inventory results to set reduction targets, can also be an element of this option.

Recent Actions in FL:

Florida law allows for Energy Saving Contracts.

ESD-14 Technology Specific Policies

14.1 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.

14.2 Focus On Specific End-Uses/Technologies

Policies focusing on specific energy end-uses and technologies can target window air conditioning units, lighting, water heating, plus loads, networked personal computer management, power supplies, motors, pumps, boilers, and others. Consumer products programs may include education, incentives, retailer training, and marketing and promotion.

14.3 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.

ESD-15 Non-Energy Emissions (e.g., HFCs, PFCs, SF_6, CO_2)

15.1 Voluntary Industry-Government Partnerships

Voluntary agreements with industries can be used to reduce the emissions of process gases (e.g., hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], sulfur hexafluoride [SF_6], CO_2) that have high global warming potentials (GWP, a measure of the potential impact of different gases on climate in terms of CO_2e). Florida can implement voluntary programs and public–private partnerships, or it can provide support to programs at the local or county level.

Recent Actions in FL:

Progress Energy has a financial incentive for "cool roofs."

15.2 Promotion and Funding for Process Changes/Optimization

Promotion and funding for process changes/optimization can be used to reduce the emissions of process gases with high global warming potential.

15.3 Promotion and Funding for Leak Reduction/Capture, Recovery and Recycling of Process Gases

The Action Team can recommend that the state engage in promotion and funding for leak reduction/capture, recovery and recycling of process gases with high global warming potential.

15.4 Appliance Recycling/Pick-Up Programs

Facilitating appliance recycling and disposal can reduce emissions associated with improper disposal of discarded appliances. This policy may be considered in tandem with RCI-1.1 (DSM/Energy Efficiency Programs, Funds, or Goals for Electricity) and other policies that effect appliance turnover.

ESD-16 Other

16.1 Focus on Specific Market Segments

Energy efficiency programs, funds, or goals can focus on specific market segments, such as existing homes (weatherization), new construction, apartments, low income residential, and small and medium businesses. Targeting specific market segments can also be an effective component of a regional market transformation alliance.

16.2 Municipal Energy Management

Under this type of policy, Florida could initiate and provide funding for Municipal Energy Management systems, as well as audits of energy performance and operations of local government buildings. Audit results could be used to target and prioritize investments in improving government building energy efficiency.

16.3 Focus On Industrial Ecology/By-Product Synergy

implementation of industrial ecology, using innovation and systems-based analysis to reduce GHG emissions, and by-product synergy, in which waste streams from one industry or process are used as a resource to another.

16.4 Industrial Audits

This policy option includes providing industrial-sector energy technical assistance (energy audits) to identify and recommend options for reducing fossil energy and electricity use, and for reducing non-energy emissions of GHGs. A combination of incentives, expertise, and information to implement recommended options could be included in the policy to encourage the operators of industrial-sector facilities to follow up on audit recommendations.