



## Brief Description of Catalog of State Actions Energy Supply (ESD) Technical Working Group

(Note that this listing is incomplete and will be fleshed out during the subcommittee process; subcommittee members are encouraged to provide input to the subcommittee 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 Generation performance standards and/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, 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 is currently engaged in rule-making to implement the Governor's Executive Order that calls for an economy wide reduction of GHG in Florida.*

#### 1.2 Integrated resource planning (IRP)

Integrated Resource Planning, or 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, RPS requirements, etc. 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: Recent actions in FL: IRP is currently conducted within the context of the PSC 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 US companies and organizations, including many utilities, have taken on voluntary GHG reduction commitments. Some of these are organized through the 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 (tCO<sub>2</sub>e per 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.

*Recent actions in FL:*

### 1.4 Technology Research & 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 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 Department of Revenue with corporate tax incentives that includes R&D.*

## ESD-2 RENEWABLE ENERGY AND ENERGY EFFICIENCY

### 2.1 Renewable and/or Environmental Portfolio Standard (RPS/EPS)

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). 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 EO 07-127, the Florida Public Service Commission 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 and/or barrier removal

This policy option reflects financial incentives to encourage investment in renewable energy resources. Examples include: (1) direct subsidies for purchasing/selling renewable technologies; (2) tax credits or exemptions for purchasing renewable technologies; (3) feed-in tariffs, which provide direct payments to renewable generators for each kWh of electricity generated from a qualifying renewable facility; (4) tax credits for each kWh generated from a qualifying renewable facility; (5) regulatory policies that provide incentives and/or assurance of cost recovery for utilities that invest in central station renewable energy systems. In addition, this policy option would make it a priority for the Legislature, the Public Service Commission, and other relevant state agencies to identify and rectify barriers which are impeding the development of renewable resources in the state.

*Recent actions in FL: The Florida Energy Office (FEO) administers:*

- (1) renewable energy grant program that includes incentives for renewable energy;*
- (2) Solar rebate program available to all residents in Florida; and*
- (3) tax incentives for investing in renewable energy.*

*Department of Agriculture has a Farm-to-Fuel grant program.*

*Last, the Florida 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 and/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 Florida Public Service Commission recently issued a proposed rule regarding net metering. The PSC is addressing comments filed by IOUS on March 4<sup>th</sup>, 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 Combined Heat and Power (CHP) standards, incentives and/or barrier removal

Combined heat and power can reduce GHG emissions by increasing the overall efficiency of fuel use. However, there are numerous barriers to combined heat and power (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 like interconnection requirement, high standby rates, exit fees, etc. 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 DG, financing packages and bonding programs, power procurement policies, education and outreach, etc.

Financial incentives for combined heat & power (CHP) could include: (1) direct subsidies for purchasing/selling CHP systems given to the buyer/seller; (2) tax credits or exemptions for purchasing/selling CHP systems given to the buyer/seller; (3) tax credits or exemptions for operating CHP systems; (4) 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; and (5) 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. Also, the PSC approved standard offer contracts to facilitate and streamline the PPA between renewable generators and IOUs.*

## **2.6 Pricing strategies to promote renewable energy and/or CHP (e.g. net metering)**

Pricing and metering strategies can provide price signals and revenue streams to support investment in and optimal operations of CHP and 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 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.

*Recent actions in FL: The Florida 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 (zoning, siting, etc.)**

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.

*Recent actions in FL*

## **2.8 Technology-focused initiatives (biomass co-firing, energy storage, fuel cells, etc.)**

States can undertake initiatives focused on developing, promoting, and/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 which 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**

## **2.11 Solar/thermal incentives for off-setting water heating using fossil fuel**

## 2.12 TRC-based conservation test for generator efficiency and conservation programs

## 2.13 Energy efficiency resource standards

# ESD-3 FOSSIL FUEL AND NUCLEAR ELECTRICITY

## 3.1 Advanced fossil fuel technology (e.g. IGCC, CCSR) 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 CO<sub>2</sub> 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<sub>2</sub> 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, and/or off-take agreements. A combination of mandates and incentives is also possible.

Policies to encourage 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, and/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 prudence 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.*

## 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 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.

*Recent actions in FL: Advanced cost recovery for nuclear facilities whereby the PSC determines prudence on an annual basis. All existing commercial facilities are undergoing uprates in addition, Progress Energy proposed a new nuclear unit in green field; 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 twenty 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, and/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 carbon dioxide emissions from power plants, oil and gas operations, and/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 prudence 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**

### **3.7 Advanced cost-recovery for replacement generation and transmission built to address climate change legislation/ regulation or an RPS**

### **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<sub>2</sub> tax or penalty up to the COD of the nuclear replacement 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<sub>4</sub>) and CO<sub>2</sub> can be reduced in the oil and gas production. Natural gas consists primarily of methane, a potent greenhouse gas; 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 methane 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: 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<sub>4</sub> and CO<sub>2</sub> emissions during the production of liquid fuels at oil refineries include various efficiency measures including enhanced combined heat and power

along with carbon capture and storage. Regulations, incentives, and/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<sub>4</sub> and CO<sub>2</sub> emissions can be reduced and CH<sub>4</sub> can be recovered in the production of coal. These options include various efficiency measures, use of combined heat and power for operations, carbon capture and storage, and capture and use (or at least flaring) of methane that would otherwise be vented to the atmosphere. Regulations, incentives, and/or support programs can be applied to achieve these goals.

*Recent actions in FL: There are no coal production centers in Florida.*

#### **4.5 Coal-to-liquids Production: GHG emission reduction incentives, support, or requirements**

Coal-to-liquids (CTL) plants are energy-intensive, and produce about 10 times more CO<sub>2</sub> 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.<sup>1</sup> Regulations, incentives, and/or support programs can be applied to achieve these goals.

*Recent actions in FL: There are no coal to liquids 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, 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 greenhouse gas implications of producing hydrogen depend on the energy resource from which it is produced. In order to produce hydrogen from fossil fuels with low greenhouse gas 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.*

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<sup>1</sup> 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.

## 4.7 LNG Development

### ESD-5 CARBON CAPTURE AND STORAGE OR REUSE

#### 5.1 CCSR incentives, requirements and/or enabling policies (administration, regulation, liability, incentives)

Carbon dioxide capture and storage or reuse (CCSR) is a process which includes separation of CO<sub>2</sub> 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<sub>2</sub> from large point sources 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<sub>2</sub> captured, the relative increase in CO<sub>2</sub> 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<sub>2</sub> 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, and/or mandates – coupled with technical feasibility and cost and investment recovery mechanisms, if appropriate – to capture and store or reuse carbon dioxide from power plants.

*Recent actions in FL:*

#### 5.2 R&D for CCSR

Technological as well as financial barriers exist to implementation of CCSR. While separation, capture and transport of CO<sub>2</sub> 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 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 ENERGY SUPPLY 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, and/or support programs can be applied to achieve greater efficiency of transmission and distribution system components.

*Recent actions in FL:*

## 6.3 General distributed generation support (interconnection rules, net metering, etc.)

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: 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. This topic is of particular interest as the Energy Policy Act of 2005 (EPA 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](http://www.epa.gov/chp/pdf/interconnection_factsheet.pdf) )

*Recent actions in FL: The Florida 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.*

## 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<sub>2</sub> footprints. In the case of energy supply, environmental disclosure would take the form of providing consumers and stockholders with information on carbon emissions per kWh in a form that it 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 methane 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<sub>2</sub>O reduction co-benefit

Nitrous Oxide (N<sub>2</sub>O), a minor component of total NO<sub>x</sub> emissions from fossil fuel combustion, is one the most powerful GHG's. Each ton of N<sub>2</sub>O represents > 250 tons CO<sub>2</sub>e. Emissions policies further reducing NO<sub>x</sub> emissions from power plants would have the additional benefit of reducing release of N<sub>2</sub>O 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.

*Recent actions in FL:*

## ESD-7 Energy Efficiency Programs, Funds, and Goals

### 7.1 Utility Demand-Side Management (DSM) Programs for Electricity

This option focuses on increasing investment in electricity demand-side management programs through programs run by utilities or others, energy efficiency funds, and/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<sub>2</sub> 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, 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.
- 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.

*Recent actions in FL: The Florida PSC has had an active DSM program for over 20 years.*

### 7.2 Utility Demand-Side Management (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 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.

*Recent actions in FL:*

### **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 WH/PV, or other technologies important for Florida.
- Support for commercialization of promising technologies.
- 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 which encompasses all 11 southern states.*

### **7.4 Energy Efficiency Funds (e.g., public benefits funds) administered by state agency, utility, or 3rd party (e.g., Energy Trust)**

A public benefits charge (sometimes call 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 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: Question, are the loans for utilities or consumers? Some utilities offer low interest loans for energy efficiency. An energy audit is a prerequisite for such loan.*

## **7.5 Non-Utility Demand-Side Management (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.

*Recent actions in FL:*

## **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 (MMtCO<sub>2</sub> emissions avoided) associated with DSM (7.1) and certifications (8.2).

*Recent actions in FL: Florida's public energy utilities (GRU, JEA, 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 and/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 include:

- Require high-efficiency appliances in new construction and 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.

*Recent actions in FL:*

## **8.2 Promotion and Incentives for Improved Design and Construction (e.g. LEED<sup>2</sup>, 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:

- Target new, renovated, and/or existing buildings (retrofits).
- Set a cap on consumption of energy per unit area of floor space for new buildings.
- Encourage building commissioning and recommissioning, including energy tracking and benchmarking.
- Provide 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.
- Encourage 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 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 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.*

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

### 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 (meters, bookkeeping systems, staff, etc.) 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 which includes a requirement for the quantification of emissions by state government (about 900,000 tons of CO<sub>2</sub>E in FY 06-07) and specific reductions of 10% by 2010, 25% by 2017, and 40% by 2025. Further, the order requires the Department of Management Services 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](http://www.epa.gov/smartgrowth/about_sg.htm) for additional information about Smart Growth.

*Recent actions in FL:*

### **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<sub>2</sub> emissions associated with clinker production from limestone.)

*Recent actions in FL:*

### **8.6 Reduction of emissions from diesel engines used in new construction developments**

Diesel engines are a source of CO<sub>2</sub> as well as black carbon and particulates.

*Recent actions in FL:*

### **8.7 Training and education for builders and contractors (e.g., HVAC sizing, duct sealing)**

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

Examples include:

- Start programs to train builders and contractors on proper heating and air conditioning sizing and installation.
- Mandate 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.
- Implement code training and technical assistance for builders and architects.

*Recent actions in FL:*

### **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. DOE in this area.

*Recent actions in FL:*

### **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 (and/or Community Development Districts). Developers can readily establish minimum performance standards (e.g., all homes shall be Energy Star qualified) that can literally effect 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**

### **8.11 Incentives for investments at rental properties**

## **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.<sup>3</sup> Regional coordination for state appliance standards can be used to avoid concerns that retailers or manufacturers may (1) resist supplying equipment to one state that has advanced standards or (2) focus sales of lower efficiency models on a state with less stringent efficiency standards.

Potential elements of an appliance efficiency standards policy include:

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<sup>3</sup> 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.

- 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.
- 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 Department of Community Affairs 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, Florida Solar Energy Center.*

## **9.3 Federal DOE “regional” air conditioning equipment efficiencies pursuant to new authority established by 2007 US Energy Security Act.**

## **9.4 Uniform labeling standards for appliances**

# **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 to future consumers as well. 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."*

## **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 and/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 and/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: Needs Policy Options description. I believe Gulf Power works with a vocational school or is working to bring a vocational school to market.*

## **10.4 Post-secondary College and University Programs**

This policy would encourage and support the creation and/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.

*Recent actions in FL:*

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

Florida has no agency with the responsibility 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.

*Recent actions in FL:*

### **10.6 Education of Realtors**

## **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 Renewable Portfolio Standards 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 and/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 Distributed Generation

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 distributed generation 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:

- Review existing net-metering policies, including policies that affect electricity consumers who install on-site combined heat and power or distributed generation fueled with renewable or fossil fuels. Consider the impact of NO<sub>x</sub> and power factor requirements on net-metering and availability of information for small customers.
- Review rate issues, including decoupling of utility revenues from sales, and consider a specific focus on the impacts of rate design on greenhouse gas emissions. This could include an exploration of the impacts of time-of-use rates on GHG emissions.
- Review and consider 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 distributed generation 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 of 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) and/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<sup>4</sup>.
- Programs for schools.
- Private-sector programs (possibly in coordination with market transformation programs).

*Recent actions in FL:*

## 11.5 Third party PPAs for renewable energy transmission and distribution

### ESD-12 Customer-Sited Distributed Energy and Combined Heat and Power

#### 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 greenhouse gas 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 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.

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<sup>4</sup> For example, the EnergyStar bulk purchasing tool—developed by the U.S. Department of Energy, in collaboration with the Department of Housing and Urban Development and the U.S. Environmental Protection Agency—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.

- 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.

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 Florida's Energy Office 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 Combined Heat and Power (a.k.a. cogen)**

Combined heat and power (CHP) systems reduce fossil fuel use and greenhouse gas 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: FL's Renewable Energy Grant Program.*

## **12.3 Retention of credits (revenue) by DG and CHP sources**

## 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 RCI sectors 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 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.*

### 13.3 Negotiated Emissions or Energy Savings Agreements

Government agencies could work with industrial and other large users of energy (and/or of process gases that are greenhouse gases) 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) and/or are responsible for large volumes of direct greenhouse gas 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 greenhouse gas emissions can be achieved in the industrial sector through energy efficiency, process changes, and/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.

*Recent actions in FL:*

### **14.2 Focus on specific end-uses/technologies**

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

*Recent actions in FL:*

### **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.

*Recent actions in FL:*

## **ESD-15 Non-Energy Emissions (HFCs, PFCs, SF<sub>6</sub>, CO<sub>2</sub> Process Emissions)**

### **15.1 Voluntary Industry-Government Partnerships**

Voluntary agreements with industries can be used to reduce the emissions of process gases that have high global warming potentials (GWP, a measure of the potential impact of different gases on climate in terms of "CO<sub>2</sub>-equivalent"). 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 & 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.

*Recent actions in FL:*

### **15.3 Promotion & 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.

*Recent actions in FL:*

### **15.4 Appliance Recycling/Pick-Up Programs**

Emissions associated with improper disposal of discarded appliances can be reduced by facilitating appliance recycling and disposal. This policy may be considered in tandem with RCI-1.1 (Demand-Side Management/Energy Efficiency Programs, Funds, or Goals for Electricity) and other policies that effect appliance turnover.

*Recent actions in FL:*

## **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.

*Recent actions in FL:*

### **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.

*Recent actions in FL:*

### **16.3 Focus on Industrial ecology / by-product synergy**

The state can engage in outreach activities and voluntary partnerships with industry to promote 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.

*Recent actions in FL:*

### **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.

*Recent actions in FL:*