PSC Staff Summary of the

Information Gained from Public Service Commission

Workshops on a Renewable Portfolio Standard

March 2008

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Section 1. Introduction

As a part of its efforts to encourage additional renewable generation in the state, the Florida Public Service Commission (PSC) has been investigating a renewable portfolio standard (RPS). This document summarizes the information gained to date.

On July 26, 2007, the PSC held an initial public workshop to explore whether an RPS would be appropriate for Florida. There were 29 speakers at the workshop, including representatives of the Governor's office and the Department of Agriculture and Consumer Services, utilities, renewable generators, environmental advocates, and large electric consumers. Katrina Pielli of the United States Environmental Protection Agency (EPA) also presented an overview of RPS programs in other states. The speakers made presentations on five RPS-related topic areas: (1) establishing the foundation for an RPS, (2) setting RPS goals, (3) operation of an RPS, (4) identification of likely impacts on Florida's economy and consumers, and (5) RPS regulation and enforcement. At this workshop, it became clear that a number of complex issues needed to be explored in more depth. As a result, the PSC directed its staff to hold a series of technical workshops to develop additional information.

Workshops on RPS policy and design were held in August, September, and December 2007. During these workshops, comments were received from a wide range of stakeholders, including renewable generators, electric utilities, environmental advocates, electric consumers, and other state agencies.[1] The PSC also received assistance from the EPA, which provided subject matter experts from around the nation. Following each technical workshop, stakeholders were requested to file written comments on the subject matter of each workshop.

August 23, 2007 Workshop. The topics addressed at the workshop were (1) RPS policy objectives, (2) RPS goals, (3) applicability of an RPS, (4) eligible resources, (5) structure of an RPS and compliance mechanisms, and (6) mechanisms to encourage specific resources. The workshop followed an open discussion format, with no formal presentations. Workshop participants included electric utilities, renewable generators, and large utility customers. In addition, the EPA sponsored the participation of Ryan Katofsky of Navigant Consulting. Mr. Katofsky provided expertise on RPS policies in other states. The PSC staff also discussed its efforts to collect data on existing renewables and conservation programs in Florida and requested updated information from the participating stakeholders. The PSC staff requested post-workshop written comments and received written comments from several of the workshop's participants.

September 27, 2007 Workshop. The focus was on compliance and enforcement issues associated with an RPS. Once again, the EPA provided technical assistance through Ryan Katofsky, of Navigant Consulting. Mr. Katofsky made a presentation on the compliance and enforcement procedures in other states' RPS policies.

[1] Attendees included representatives of: (1) the Governor's office, (2) federal, state, and county government agencies, (3) the solar, biomass, waste-to-energy, waste heat, ocean energy, landfill gas, and cogeneration industries, (4) energy efficiency measure providers, (5) investor-owned, municipal, and cooperative electric utilities, (6) customers including large industrial customers, and (7) Florida-specific and national environmental organizations.

December 6, 2007 Workshop. The workshop focused on three main topics: (1) methods to encourage specific renewables, (2) methods to encourage compliance, and (3) compliance verification and tracking mechanisms. The workshop also included a discussion of three strawman RPS proposals that were received in written comments from Florida Power & Light Company (FPL), the Florida Municipal Electric Association (FMEA), and the Vote Solar Initiative.

A summary of each of the PSC's four RPS workshops is provided in Appendix 1. More detailed information on each renewables workshop is posted on the PSC's home page, including copies of transcripts, presentations, and post-workshop comments:
http://www.floridapsc.com/utilities/electricgas/RenewableEnergy/index.aspx

1. Major Factors Affecting RPS Design

Clear Identification of Policy Objectives

First and foremost, the objectives of an RPS must be clearly identified, weighted, and prioritized. This was emphasized by all parties throughout the workshop process. To produce the best RPS design for the state, articulating the primary objectives early in the process is important. Differentiation must also be made from secondary objectives that, while also important, are subordinate to primary objectives.

Among the objectives discussed during the workshops, one focus would be to promote fuel diversity, reduce dependence on natural gas and other fossil fuels, and minimize the volatility of fuel costs. Another objective would be to maintain and promote economic development within the state. Emphasis was also placed on improving environmental conditions such as the reduction of greenhouse gas (GHG) emissions. Finally, costs paid by electric consumers should be minimized. All of these are laudable objectives. However, taken together with no weighting or ranking, they may lead to conflicting RPS strategies. If, for example, the primary objective of an RPS is to reduce the emission of GHGs, this objective may best be accomplished by placing emphasis on non-carbon emitting renewables, such as solar and wind. Because of the current high cost of these technologies, this may require up-front subsidies to encourage their development. This, in turn, would have an impact on costs paid by electric consumers.

In contrast, if the primary focus of an RPS is to promote economic development in Florida while protecting the viability of existing renewables in the state, more emphasis may be placed on technologies like municipal solid waste and biomass. These more conventional renewable technologies will have less impact on costs paid by electric consumers but will have greater impact on GHG emissions because they rely on the combustion of fuels. These examples show that the design of an RPS is dependent on the priorities established when defining the overall policy objectives.

Coordination with Other State and Federal Actions

The design of an RPS for Florida is also dependent on what takes place at the state and federal levels, particularly with regard to the regulation of GHG emissions. For example, the Florida Department of Environmental Protection (DEP) is currently compiling a registry of GHG emission sources in Florida. Also, several recommendations by the Florida Energy Commission and the Governor's Action Team encourage the DEP to develop regulatory strategies for the control of GHG emissions. At the federal level, Congress continues to debate the enactment of a national RPS as well as legislation requiring the control of GHG emissions.

If Florida or the Congress enacts new carbon regulations, whether in the form of cap and trade or an energy tax, the cost of complying with the new regulations will be included in the utility's cost to produce electricity. This, in turn, will increase the cost-effectiveness of purchasing electric power from renewable generators. For example, many economists argue that this internalization of the social costs associated with GHG emissions is the preferred approach to address GHGs because it stimulates the market forces necessary to reduce GHGs in the most efficient way. Policies, such as carbon pricing and government funding of renewable rebates and incentives, that increase the relative cost-effectiveness of renewables will result in the additional development of renewables separately from an RPS. Care must be taken to avoid adopting duplicate or conflicting programs. Otherwise, Florida's citizens will pay more than is necessary.

Incentive Mechanisms for Higher Cost Clean Technologies

During the workshops, there was significant discussion by the attendees over the need for incentive mechanisms to encourage the development of higher cost clean technologies. A number of incentive mechanisms were discussed including technology set asides, energy multipliers, utility profit incentives, and public benefit funds.

While each of these approaches may have its own strengths and merit, some general observations can be made. First, whatever incentive mechanisms are ultimately adopted, it is important that they provide certainty for renewable generators. A reliable revenue stream over the life of the project is of paramount importance in order to obtain financing for renewable projects.

Second, compliance and administrative costs should be kept as low as possible. RPS achievements should be measurable, monitorable, and verifiable, but care should be taken to avoid overly bureaucratic processes that place undue administrative cost burdens on the utilities or renewable generators.

RPS Target Setting and Timing

Two other important factors must be considered in order to set RPS targets: (1) whether targets should be mandatory or aspirational and (2) timing. In the PSC's workshops, Katrina Pielli, Clean Energy Program Manager of the EPA, reported that states with aspirational goals have had limited success in encouraging renewable development. Renewable generators also stressed the need for mandatory goals to increase certainty and enhance their opportunities to

obtain financing. However, adopting mandatory targets will make it important to ensure that the targets are reasonable and can be achieved.

Timing of the RPS targets is also important. RPS targets should be long-term in nature and phased in over time. A phased-in approach provides time for the renewable industry to develop projects, time for the renewable industry and electric utilities to provide needed supporting infrastructure, and better assurance that RPS targets can be met.

Eligibility Requirements

The definition of renewables that can be counted toward meeting an RPS target should be clearly established. In defining eligible resources, the capability of potential resources to contribute toward RPS objectives must be considered. Also, the impact on overall program cost must be considered. In general, the broader the definition of eligible resources, the lower the potential cost of meeting a specific RPS target.

An RPS establishes a market for renewable generation by requiring utilities to serve their customer load with a specified proportion of renewable electric generation or other eligible resources. Contributions to meeting these goals can come from utility-owned renewable generating facilities, non-utility renewable generating facilities delivering capacity and energy to the electric grid, or customer-owned renewable resources which offset customer electric usage. Thus, renewables installed on the customer's side of the electric meter act in a similar manner as energy conservation measures to reduce a customer's energy purchases from a utility. If the purpose of an RPS includes the reduction of GHG emissions, then there are other nonrenewable technologies that might help meet this objective, such as energy efficiency measures and nuclear generation.

Compliance and Enforcement Mechanisms

After determining the objectives, goals, resources, and obligated utilities, the appropriate mechanisms to ensure compliance with the RPS must be put in place. In reviewing compliance and enforcement options, providing certainty for renewable generators is important while keeping compliance and administrative costs low for obligated utilities and their ratepayers. Policymakers should also consider including some form of ratepayer cost cap or other safety valve device, particularly in the initial years of an RPS when cost uncertainty is greatest.

During the PSC workshops, significant discussion took place on the use of a public benefits fund (PBF) as both an incentive and compliance mechanism. Typically, the funding of a PBF is supported through a separate surcharge to consumers on their electric bill. Public benefits funds have been used in 21 states[2] to promote the development of renewable energy and energy efficiency. Generally, the financial resources of a renewable energy PBF have been used to fund grants and rebates, provide venture capital and support to emerging renewable energy

[2] As of November 2007, 21 states and the District of Columbia have a PBF. Of these 21 states, the PBFs in 18 states plus the District of Columbia provide funds for renewables; 18 states plus the District of Columbia provide funds for energy efficiency and conservation.

technologies and equipment, increase technical assistance and training for installers, and develop and provide consumer outreach and education.

In the context of an RPS, a PBF can serve as an alternative compliance mechanism. In other words, if for whatever reason a utility finds that it cannot meet its numerical RPS targets, payments are made instead to a PBF. Funds drawn from the PBF may be used to fund policy-preferred renewables. In order to minimize costs paid by electric consumers, the level of ratepayer supported payments into a PBF may be capped.

Impact on Electric Customer Rates

If Florida does pursue the development of an RPS, the end result must take into consideration the rate impact to electric customers. In today's society, an adequate, reliable, and affordable supply of electricity is essential. For this reason, the cost impacts of any RPS design must be balanced with the benefits expected to be received.

PSC Jurisdiction

Under Section 366.92, F.S., the PSC has been authorized to set goals for increasing the use of renewable resources in Florida. The PSC also has the authority to establish rewards and penalties for investor-owned utilities which exceed or fall short of the adopted goals. The PSC has limited jurisdiction over municipal electric utilities and rural electric cooperatives so separate statutes may be required to address their participation in a Florida RPS.

2. The PSC's Efforts to Monitor Other State and Federal Actions

Throughout the PSC's workshops it became evident that the design of an RPS is dependent on other state and federal policies, particularly with regard to GHGs and renewable energy. An RPS policy must not be designed in a vacuum, but must take related state and federal policies into account. The Florida Energy Commission recognized this concept in its December 31, 2007 report to the Florida Legislature. As stated in the report:

> It is recommended that the Florida Legislature develop Florida's renewable energy policy in the context of the larger state energy, environmental and economic plans. In particular, the renewable energy policy should be consistent with the state's greenhouse gas reduction goals, air quality standards, and the guiding principles of reliability, affordability, efficiency and diversity.

Toward that end, the PSC has held the workshops discussed above to encourage the development of renewable energy and explore how best to ensure that such development fits into larger energy policy, including the creation of an RPS. In addition, the PSC staff monitors state and federal policy developments with respect to renewables and GHG reduction, including carbon pricing and government rebates. The DEP is currently compiling a registry of GHG emission sources in Florida. If Florida or the federal government enacts a carbon cap and trade or tax policy, electric utilities will internalize the costs associated with the carbon dioxide (CO_2) produced by fossil-fueled generation. This will increase the cost-effectiveness of renewable

generation relative to fossil-fueled generation, which will in turn drive market forces to react to the higher prices available for alternatives to fossil-fueled generation. In a similar manner, government-sponsored renewable rebates and tax incentives reduce the relative cost of renewable energy. Such policies will encourage additional renewable development even in the absence of an RPS. As the PSC continues its exploration of whether an RPS policy is appropriate, the PSC staff will monitor developing state and federal policies and consider how these policies would interact with an RPS for Florida.

3. Organization of the Discussion Paper

During the workshops, the PSC examined the components of an RPS policy. For each component, policy alternatives were discussed to determine the range of options in establishing an RPS policy. The following RPS topics are discussed in depth in this paper:

- Setting clear policy objectives
- Defining the eligible resources
- Establishing numerical goals or targets
- Determining the applicable utilities
- Establishing compliance mechanisms
- Defining mechanisms to encourage policy-preferred resources
- Developing enforcement policies
- Establishing evaluation and review procedures
- Assigning administrative duties

The paper concludes with more detailed information in three appendices. Appendix 1 provides a summary of the PSC's four RPS workshops. Appendix 2 discusses the RPS policies in other states. Finally, Appendix 3 presents information on the public benefits fund policies in other states.

Section 2. The PSC's Exploration of an RPS in Florida

If Florida establishes an RPS, three major policy considerations must be resolved before the details of an RPS can be developed: (1) *policy objectives* must be clearly identified, (2) *eligible resources* must be defined, and (3) *numerical goals* must be formulated. Once these three points are established with clarity, utility obligations and the other detailed mechanisms involved in an RPS can be determined.

1. RPS Policy Objectives

First, the objectives of the RPS must be determined. Policy objectives are essentially the benefits sought through the creation of an RPS. These benefits can be loosely categorized into three areas: *resource benefits*, *environmental benefits*, and *economic benefits*. Each category can have several subcategories, with different levels of priority given to each, and particular resources can be used to achieve benefits in more than one category. Fixed dividing lines between benefit categories are not always evident, and it is not necessarily essential to establish these dividing lines. The purpose of breaking benefits into categories is simply to recognize and avoid competing objectives. Toward that end, combinations of benefits should be identified and prioritized to best reflect the overall effect that an RPS is intended to produce.

Resource Benefits. The category of resource benefits includes fuel diversity, energy independence, supply chain security, price stability, and minimized costs. Objectives within this category seek to achieve benefits that are usually accomplished by obtaining varied, low cost, reliable sources of electricity, whether renewable or not. The emphasis is more on having a variety of options that mitigate the risk of being overly reliant upon a single fuel source. Within an RPS structure, these benefits can be achieved by obtaining electric generation through a wide range of renewable sources that can be expected to reliably supply electricity.

Environmental Benefits. Environmental objectives include pollution control, natural resource conservation, and reduction in greenhouse gas (GHG) emissions. The aim is to move a state's generating capacity away from fossil fuel plants toward cleaner burning or emission free technologies.

Economic Benefits. Economic benefits include the development of new markets with the potential to create jobs and bring new industries to the state. In addition, economic benefits include development of new technologies and/or improvement of existing technologies, which could serve to create new industries, reduce costs, and increase deployment of renewable resources in the state.

Objectives should be carefully constructed in order to guide the development of subsequent decisions. Although all of the potential objectives listed above are beneficial in and of themselves, they may not always be achieved by the same means. In fact, two or more objectives could result in incompatible implementation methodologies. Clearly prioritizing RPS objectives is essential before considering operational details.

One benefit or objective that was not identified above is encouraging renewable energy. The objective of encouraging renewables could be placed in any, or all, of the three benefit categories. The implementation of that objective, however, could be different for all three categories, most notably in the way eligible resources are identified. In determining the eligible renewables, an objective of achieving environmental benefits would imply that only "green" renewables should be eligible (such as solar and wind), while the objectives of fuel diversity and energy independence would favor the inclusion of all forms of renewable energy. While some may argue that a *Renewable* Portfolio Standard should by definition only include renewable resources, certain nonrenewable resources may be included if these resources can contribute towards the stated policy objectives. For example, energy efficiency measures and nuclear generation would each contribute to the objective of reducing GHGs. Careful thought must go into establishing policy objectives in order to approach the designation of eligible resources with the proper diligence.

Under Section 366.92, F.S., the PSC has been authorized to set goals for increasing the use of renewable resources in Florida. The PSC also has the authority to establish rewards and penalties for investor-owned utilities which exceed or fall short of the adopted goals.

2. Eligible Resources

Eligible resources should be chosen based upon how well they promote the policy objectives of an RPS. In fact, the selection of policy objectives will greatly influence which resources can and should be considered eligible for RPS compliance. However, the effect of each technology or fuel type on specific policy objectives, especially in the case of conflicting objectives, may not always be clear cut. As a result, prior to finalizing eligible resources, there may be a need to rank technology or fuel options based on their potential contributions to the policy objectives.

For example, if the primary objective is environmental benefits, then renewable technologies that are considered "clean" (e.g., solar and wind) may receive the greatest weight. Certain technologies may be considered renewable even though they may not necessarily be considered green (e.g., municipal solid waste burners), resulting in such technologies not being viewed as favorable for achieving an environmental objective. If resource benefits such as fuel diversity and supply chain security are the primary objectives, however, then a broad definition of eligible resources could be adopted in order to include as many technologies as possible. A broad definition of eligible resources could also minimize cost to ratepayers by giving utilities a larger field from which to choose the least cost options. If economic benefits are the primary objective, then greater emphasis could be placed on technologies with the greatest potential for development in the state due to their lower cost and higher availability (e.g., biomass). Nonrenewable resources should also be considered as eligible resources if they have a greater impact on reaching a specified objective. For example, nuclear generation could help achieve some environmental objectives due to its low emissions, even though it is not considered a renewable technology. In addition, although an RPS is usually focused upon the utility's generation or purchase of electricity, another consideration is whether to include resources that actually avoid generation, such as energy efficiency and conservation. Particularly if there are limited renewable resources to draw upon, an RPS may include efficiency and conservation as an

eligible resource for compliance by utilities. Decreasing the need for additional generation through greater efficiency in current utility generation and transmission, or through an increase in customer energy efficiency and conservation, could meet several environmental and resource objectives. Self-service generation may also be included as an eligible resource, allowing utilities to purchase energy or credits from customer-owned systems such as combined heat and power or photovoltaic systems.

A combination of objectives that includes all of the benefits mentioned above may be adopted, while setting certain priority values to one or two objectives in order to emphasize preferred technologies. For example, a primary objective of reducing GHGs could be established, combined with secondary objectives of increasing fuel diversity and energy security. In this situation, a very broad definition of eligible resources could be adopted in order to encourage fuel diversity, with specified percentages or carve-outs that must be met by low emission resources, such as solar power, wind, and energy efficiency measures, to create additional incentives for those resources that best achieve the priority objective.

A similar consideration would be whether to include existing renewable generation within RPS eligibility or only new renewable generation projects. If a state has limited renewable resources to draw upon, renewable generators already in service could be included as eligible resources. In order to encourage new investment, however, added weight in meeting goals could be awarded to new projects.

The objectives of an RPS will also have an impact on whether the location of a renewable energy generator or of renewable fuel production becomes a factor in determining eligibility. For example, resource benefit objectives related to diversity or security may simply require that energy be reliably delivered and sold to end users within the state. On the other hand, environmental or economic policy objectives may require a renewable generator to actually be located within the state in order to maximize the pollution control and economic development within the state. A realistic assessment of these possibilities, however, may require location flexibility in the early implementation stages if the local market is not sufficient to meet these objectives right away. In other words, even though 100 percent of RPS compliance with in-state resources may be desired, it may be necessary to allow for a phase-in period while local resources are developed. Interim goals could be established that allow for purchases from out-of-state resources, with the allowed contribution of out-of-state purchases towards compliance declining over time.

3. Numerical Goals

Once the objectives have been clearly established and eligible resources consistent with the objectives have been identified, the numerical goals for an RPS must then be formulated. Establishing goals requires the designation of the starting and ending point, and setting numerical achievements for all points in between. A baseline starting point must be determined by accurately identifying renewable resources already deployed in the state. Then an end point should be established by designating a certain level of renewable resources that are ultimately to be deployed in the state. Finally, interim numerical targets should be established to facilitate the development of a market necessary to achieve the ultimate numerical goal.

A number of considerations should be addressed when setting numerical goals. First, will the numerical goals be aspirational or mandatory? A determination must be made regarding whether a firm numerical goal should be established for utility compliance. Later decisions regarding compliance, enforcement, and penalties will be driven by this determination. In developing the numerical goals, one policy option is to establish a mandatory numerical end goal, with a combination of aspirational and mandatory interim goals leading up to the ultimate numerical goal. For example, a numerical goal of 20 percent renewable generation by the year 2025 could be established as a mandatory numerical goal. To facilitate the development of the market, an initial aspirational goal of 5 percent by 2010 could then be set, recognizing that it may take a few years for the renewable industry to install infrastructure and place projects in service. As the 2025 deadline approaches, however, more fixed numerical goals could be established to ensure that utilities are taking the appropriate actions, such as 10 percent by 2015 and 15 percent by 2020.

If mandatory goals are required, it is essential to have a firm grasp on the potential for economically viable renewable technologies in Florida. A Florida renewable inventory would be helpful in establishing reasonable, achievable goals for an RPS. An inventory of Florida renewables could be performed in parallel to the PSC's exploration of an RPS for Florida, so as not to delay the development of an RPS. One option would be for the PSC to work with the DEP to revise an existing Florida renewables inventory. In 2003, the PSC undertook a joint assessment of Florida renewables with the DEP. The PSC, in cooperation with the DEP's Energy Office, could update the 2003 renewable assessment, including the status of existing renewable generation, along with the costs and environmental impacts of each viable technology for Florida. This approach was recommended by the Florida Energy Commission in its December 31, 2007 report to the Florida Legislature. The Florida Energy Commission recommended that the Florida Legislature direct the DEP and the PSC "to produce a current and comprehensive assessment of renewable energy opportunities and demand-side resources and technologies."

A second consideration is how to set and measure numerical goals. Several scenarios to consider include (1) installed capacity versus energy, (2) fixed amount of energy produced versus percentage of energy sales, and/or (3) percentage of total energy sales versus percentage of new energy sales (sales growth). Pros and cons exist for each approach.

Initially, it must be determined whether to base the numerical goals on capacity of installed generation or on actual energy generated and sold. For example, a state could require that 20 percent of a utility's total capacity use renewable resources or require that 20 percent of the energy actually generated be from renewable resources. Although basing the numerical goal on capacity of installed renewable generation could provide utilities with the flexibility to dispatch the most economic resources at any given time, this method would not guarantee that renewable energy is actually generated and sold to consumers. Basing the numerical goals on energy generated and sold to consumers would achieve more of the benefits sought by an RPS by actually replacing energy generated by nonrenewable generators.

If numerical goals are to be based upon energy, it must then be determined whether to set a fixed goal or to establish a goal based upon the percentage of sales. For example, a fixed

energy goal could be set at 10,000 gigawatt-hours (gWhs) of renewable energy by 2025, or a percentage of sales goal could be set at 20 percent of net energy for load from renewable energy by 2025. Goals could also be based on achieving a fixed amount of generating capacity by a specified date. Basing the numerical goal on a fixed amount, whether capacity or energy, could provide utilities with a measure of certainty for forecasting capital investment. Basing the numerical goal on a percentage of sales, however, guarantees that the development of renewable energy would grow as the population and energy usage increase in the state, which in turn ensures that an RPS continues to track the state's energy needs.

Finally, it should be considered whether the numerical goal is to be based upon a percentage of total energy or a percentage of new energy. For example, utilities could be required to provide 20 percent of total net energy for load with renewable energy. In the alternative, a year could be selected to serve as a base, such as the net energy for load in 2008, and utilities could be required to serve 20 percent of all growth in energy usage over that amount with renewable energy. In other words, the RPS goals could be applied to energy sales growth instead of total energy sales. Although basing the goals on growth may provide utilities with the confidence that they will not need to replace generating facilities that are already in use, this method would greatly diminish the level of energy produced by renewables, which would limit the benefits obtained through an RPS.

Numerical goals should require innovation and aggressive implementation efforts by utilities, but the goals must also be based upon a realistic assessment of available resources. Goals must be achievable. In addition, the ability to make mid-course corrections should be available as the market develops and provides a more realistic evaluation of the goals. Any such mid-course corrections, however, should be made prospectively in order to provide investors with greater certainty that their investments will have long-term stability.

4. Other Factors to be Developed

a. Applicable Utilities

If an RPS is established on a state level, jurisdictional limits must be taken into consideration. Retail providers of electricity fall under the state's jurisdiction, but independent power producers that do not sell to retail customers fall under federal jurisdiction. In addition, it must be considered whether to include all retail providers, or some subset of retail providers based upon size or some other factor. The PSC has rate-setting authority over IOUs pursuant to Chapter 366, F.S., but limited authority in this regard over municipal and cooperative electric utilities. In the PSC's workshops, there was disagreement over whether Section 366.92, F.S., which provides the PSC with the authority to establish goals for renewables, applies to all electric utilities, including municipals and cooperatives. If an RPS benefits all ratepayers in the state, then all ratepayers should share in the cost of an RPS. As such, all electric utilities, including municipal or cooperative utilities, should be required to comply with an RPS. However, jurisdictional limits over certain subsets of retail providers could be taken into consideration, and the RPS requirements could be applied to only the IOUs and the two largest

municipal utilities that fall under the Florida Energy Efficiency and Conservation Act. These seven utilities account for approximately 85.7 percent of the total energy sales in the state.[3]

Finally, it must be determined how to allocate RPS requirements among the applicable utilities. This consideration will be affected by the characteristics of the goal and the number of applicable utilities. If the state goal is based upon a percentage of net energy for load, and all retail providers are obligated to comply with the RPS, then the same percentage can be applied to all applicable utilities. For example, an RPS goal of 20 percent net energy for load could equate to a 20 percent requirement for each utility. If, however, the goal is based upon a fixed amount of renewable energy, the obligation of each utility could be determined based upon their share of the total energy market. For example, if the goal is 10,000 gigawatt-hours of renewable energy, a utility that serves 35 percent of the market would be responsible for 35 percent of the goal, or 3,500 gigawatt-hours.

b. Compliance Mechanisms

Establishing clear, consistent compliance mechanisms is essential in creating a viable market for renewables. Each mechanism's ability to stimulate investment in renewables must be weighed against the cost of the mechanism itself in order to choose an appropriate compliance mechanism. The compliance mechanism must ensure proper tracking of performance by the obligated utilities. The mechanism must also have the capability of verifying that only those resources that are eligible under the state's RPS rules are used to meet the established goals. A compliance mechanism should also have the flexibility to address all forms of ownership of renewables, including facilities owned by utilities and large cogenerators, as well as smaller systems owned by residential and commercial customers.

Three mechanisms have been used to track compliance in the existing state RPS structures: (1) renewable energy credits (RECs), (2) contract path, and (3) centralized procurement by a state agency. It appears that the REC and contract path mechanisms have promise for a Florida RPS. These two compliance mechanisms can be used singularly or in combination. The use of both the contract path and REC mechanisms may have merit, particularly in the transitional phase of establishing an RPS. Use of the contract path mechanism in the initial years of an RPS can provide time for a REC market to develop. The contract path mechanism also takes obligations under existing bundled power purchase contracts into account. As discussed further below, the centralized procurement approach was not advocated by any of the stakeholders in the PSC's workshops and does not appear to be appropriate for a Florida RPS. The pros and cons of each of the three compliance mechanisms are discussed below.

[3] In determining the applicable utilities for a Florida RPS, wholesale all-requirements contracts for non-generating utilities must also be addressed. In the PSC's workshops, Fred Bryant, representing FMPA, stated that an RPS raises a contract issue for the ten Florida municipal utilities and 15 members of FMPA that are under all-requirements contracts, in which all of the utility's capacity and energy requirements are provided by another utility. These contracts do not contain provisions to generate a portion of the power with renewables. Ryan Katofsky, of Navigant Consulting, noted that there are provisions in existing RPS programs that allow a non-generating utility under a wholesale all-requirements contract that would constrain the utility's ability to meet an RPS goal to be exempted until the all-requirements contract expires.

Renewable Energy Credits

The use of RECs is by far the most common method to track compliance in existing RPS structures. A REC market allows a value to be placed on the renewable resource's attributes. A REC is a tradable financial instrument that represents the environmental attributes of renewable energy, typically associated with one megawatt-hour of renewable energy. Prior to the introduction of the REC concept, renewable generators sold capacity and energy, just like any other generator. Under a REC market, attributes can be disassociated with the renewable energy and sold as a separate product. Once a REC is sold separately from the energy, the energy has no attributes; the energy is now a homogenous product. The renewable energy and attributes can also be sold together, which is referred to as selling a bundled product.

RECs encourage renewable generation by providing an additional revenue source for these generators. The value of a REC can be thought of as the above-market price of renewable energy relative to nonrenewable energy. The price of a REC represents the premium paid for the attributes associated with renewable energy. The price is determined by the supply and demand for RECs, so one could expect that the price in any particular state's RPS is directly related to the availability of qualified renewable generation and the rules of the RPS itself. For example, the broader the definition of eligible renewable generators, the lower the expected price of the RECs. RPS structures may include such concepts as REC price ceilings or caps to protect ratepayers, as well as REC multipliers to encourage specific types of renewable generation. These concepts are discussed in further detail below.

In an RPS with a REC-based compliance mechanism, obligated utilities must obtain sufficient RECs to meet their obligation in each compliance period. Utilities can obtain RECs through generating energy in their own facilities or purchasing RECs from renewable generators. Once a REC is used for compliance with an RPS, the REC is retired and cannot be sold again or used for future compliance, mitigating the potential for double counting of the renewable energy associated with the REC. RECs can also be purchased by individuals or businesses that have an interest in encouraging the development of renewable generation, in turn reducing the supply and increasing REC prices for obligated utilities.

A REC-based compliance system requires the certification of renewable generators and a REC tracking system. Individual renewable generators must first be registered, or certified, as eligible in order for their RECs to qualify for compliance under a state's RPS. REC tracking systems are simply the accounting systems for following a REC from the time the associated renewable energy is produced until the REC is used for compliance and retired. A properly designed REC tracking system acts as an accounting and verification mechanism and ensures that RECs are not double counted. REC tracking can be performed by a state agency, a third party, or by the obligated utilities themselves. Multiple states with RPS policies share several of the existing REC tracking systems. Florida should explore whether there is an existing REC tracking system that could be used if the state adopts a REC-based RPS.

The RPS rules must specify the time period in which a REC remains viable, also known as the REC's shelf life. The maximum shelf life under existing state RPS structures is three years. Expanding the shelf life of a REC will tend to lower the price of RECs, but may also

decrease certainty for renewable generators, potentially reducing their incentive to invest in the state. In the PSC's workshops, several renewable generators expressed the need for long-term contracts for RECs in order to increase certainty.

A REC-based compliance mechanism has several advantages. Tracking compliance using RECs is relatively easy. A REC system also allows for compliance mechanisms such as REC banking, which can be used to compensate utilities for early compliance. REC systems also facilitate the inclusion of eligible self generation, including small systems, because RECs can be issued to account for the energy produced by these facilities.[4] A REC system allows for inclusion of facilities that are in regions beyond the reach of a contract path approach. Inclusion of these facilities can potentially reduce compliance costs by expanding the number and technology types of eligible facilities. In addition, a REC system provides the policy option of using multipliers to encourage the use of policy-preferred renewables, such as solar and wind. Multipliers will be discussed in further detail below. RECs can also be used to facilitate the inclusion of energy efficiency and conservation if these resources are eligible under an RPS. Tradable credits for energy efficiency and conservation are referred to as white tags and function in a similar manner to RECs. Finally, a REC system will potentially mitigate cost concerns for those areas of the state with less potential for renewable development because utilities in those areas will have the flexibility to purchase RECs from renewables-rich areas. This flexibility is especially important if there are transmission constraints that prevent the free movement of renewable energy into all regions of the RPS.

The primary concern with using RECs for compliance is the need to set up a fully functioning, transparent REC market. This includes establishing the appropriate rules, as well as implementing the renewable generation registration and REC tracking structures. The appropriate venue for REC tracking (a state agency or third party) must be selected, and a determination must be made on how the associated costs will be paid. Methods to pay these costs include registration fees for renewable generators and a per REC add-on charge. Examples of states with functioning REC markets include Texas and Massachusetts. An additional concern relates to property rights for the attributes associated with renewable generation under existing contracts. Many existing Public Utility Regulatory Policy Act (PURPA) contracts were signed prior to the concept of RECs and therefore do not address the ownership of the environmental attributes. The property rights issue may also be a concern for self-generators. There was general agreement among the renewable industry representatives that participated in the PSC's workshops that RECs should be owned by the self-generator. The IOUs generally agreed that RECs should be owned by the self-generator; however, the IOUs expressed a concern that REC ownership should at least be shared if the utility contributed to the cost for the customer's system through rebates or net metering. Barry Moline, of the Florida Municipal Electric Association (FMEA), stated that the utility should own the RECs if the utility provides any incentive to the customer. Likewise, there could be an argument that taxpayers have a right to the RECs if the customer received state rebates or tax incentives toward the purchase of the renewable system.

[4] RECs can facilitate the development of small renewable generators, such as photovoltaic systems that have high up-front costs. Utilities can forward purchase the expected RECs from these systems to reduce start-up costs for customers. At the PSC's workshops, a representative of the Florida Solar Energy Center (FSEC) suggested this as a means of financing customer-owned photovoltaic systems.

Finally, using RECs as a compliance mechanism implies that the RPS goal must be set on energy, rather than capacity.

Contract Path

The contract path approach is much less commonly used to track compliance than REC systems in existing RPS structures. Under a contract path compliance system, obligated utilities are required to purchase or generate sufficient renewable energy to meet the goals in each compliance period. Renewable energy is purchased and sold as a bundled product, which includes the attributes. This approach is used in the California RPS, in which utilities either build their own renewable generation or enter into purchased power agreements for renewable energy. The RPS administrator must have the authority to audit contracts and ensure that contracted resources are eligible under the RPS.

The primary advantage of the contract path approach is that it is more consistent with current practices in vertically integrated markets, such as Florida. Therefore, the contract path approach does not require new systems (and the associated costs) to verify and track RECs. The eligibility of utility-owned generation and the terms of renewable purchased power agreements could simply be monitored by the designated regulatory agency, such as the PSC. A contract path approach would also be consistent with the competitive request for proposals for new capacity, as required for IOUs under the PSC's Bidding Rule, Section 25-22.082, Florida Administrative Code. Finally, the use of long-term contracts could increase certainty for renewable generators, leading to enhanced financing prospects.

Several concerns appear with the contract path approach to compliance tracking, however. Using this approach to account for customer-owned renewable generation is more difficult. Counting self-service generation would require an energy purchase and sales agreement between utilities and customers. This approach could also lead to increased costs for those utilities with low renewable opportunities relative to other utilities, particularly when coupled with transmission constraints.

The contract path and REC compliance mechanisms are not incompatible, and a combination of the two mechanisms may be beneficial. For example, Colorado allows for the use of both contract paths and RECs for compliance with its RPS. There was discussion at the PSC's workshops regarding the potential for using the contract path approach for compliance as a transitional measure until a REC market is fully functional.

Centralized Procurement by the State

New York has the only RPS that currently uses the centralized procurement compliance mechanism. Under this approach, a state agency acts as the single obligated party for the RPS program. The designated state agency purchases the RECs necessary for compliance each year. For example, in New York, a state agency issues requests for proposals (RFP) for the attributes to renewable energy sufficient to meet the RPS goals. Unlike a REC market, the attributes are sold directly to the state without a system in which the attributes are traded and tracked. The energy associated with these attributes is sold separately into the New York independent system

operator (ISO). After the state issues the RFP, the state agency allocates the total cost of the environmental attributes among New York's utilities. The agency then determines the surcharge necessary for each utility to charge its customers in order to recover the necessary funds. These funds are then transferred to the state in order to purchase the environmental attributes from the renewable generators.

The centralized procurement mechanism uses attributes but does not require the state to establish a REC market and tracking system, reducing the associated costs. This compliance mechanism uses competitive procurement, which can also reduce costs, as renewable generators compete against each other to receive revenue for their environmental attributes. The primary benefits of this mechanism are its relative ease to implement and the potential to reduce costs through competitive procurement. One potential concern is that no automatic mechanism ensures compliance if the state does not receive sufficient response to its RFPs.

The centralized procurement mechanism does not appear to have promise for a Florida RPS. The New York ISO plays a key role in New York's RPS, but Florida does not have an ISO. Furthermore, none of the representatives of renewable generators or utilities in the PSC's workshops have advocated the use of a centralized procurement mechanism in Florida. The IOUs, in particular, expressed concern about setting up another layer of state bureaucracy in the administration of a Florida RPS.

c. Compliance Flexibility Measures

Building flexibility into the compliance policies of an RPS can reduce costs for obligated utilities by increasing the liquidity of the REC market, thus smoothing out the price of RECs. In particular, these policies can reduce the potential for REC price spikes near the end of each compliance period. Compliance flexibility policies will also reduce the need for utilities to over comply in an effort to ensure goals will be met and to avoid penalties. Flexibility options under a REC compliance mechanism include a compliance true-up period and REC banking and borrowing. Two additional flexibility measures that are applicable to any compliance mechanism are the consideration of force majeure conditions and alternative compliance payments.

True-up Period

A true-up period allows utilities additional time to meet required goals. Under a REC compliance regime, utilities that do not have sufficient RECs for full compliance would be afforded an additional time period in which to obtain needed RECs. Utilities that have over-complied would have the opportunity to sell RECs during this period. In the absence of a REC borrowing policy, obligated utilities would only be allowed to purchase RECs produced prior to the end of the compliance period. In the PSC's workshops, FMEA suggested that three months was sufficient time for a true-up period. Providing a lengthy true-up period would reduce certainty for renewables and potentially delay investment in renewable facilities.

REC Banking and Borrowing

REC banking extends the life of a REC beyond the compliance period in which it is produced, providing obligated utilities with the opportunity to use these RECs to comply in a future period. REC banking also promotes investment in renewable generation before the generation is needed to meet RPS goals, because banking adds value to the attributes associated with energy produced prior to a specific compliance period. Allowing REC banking may induce the installation of larger size renewable facilities that take advantage of economies of scale. REC banking has been limited to a maximum of three years in existing state RPS structures.

REC borrowing allows obligated utilities to use RECs associated with future renewable energy production for compliance in the current period. REC borrowing may be limited to RECs produced solely during the true-up period, or may extend beyond the true-up period.

REC banking and borrowing policies increase the liquidity of the REC market and reduce the risk associated with the seasonality of renewable production. Certain renewables exhibit seasonal production within the year, such as solar, wind, and hydroelectric generation. Renewable production from some technologies may also vary from year to year, for example, due to a poor growing season for biomass fuels.

Force Majeure Considerations

Provisions may be included within an RPS to account for force majeure conditions. Under force majeure conditions, utilities may receive reduced penalties or an extended compliance time period. Force majeure considerations are especially important in regions with the potential for hurricane-related damage, such as Florida. In the PSC's workshops, JEA advocated that there should be force majeure considerations or other policies to mitigate the impact of contracts with planned renewable facilities that are not placed in service as expected.

Alternative Compliance Payments

Some existing state RPS structures allow utilities to make financial payments in lieu of complying through purchasing renewable energy or RECs. These payments are referred to as alternative compliance payments. Alternative compliance payments provide an opportunity for utilities to comply when sufficient renewable generation or RECs are not available or if the costs of these resources are prohibitive. These payments are typically thought of as an alternative means of compliance, rather than a penalty. Alternative compliance payments are discussed in greater detail in sections e and f.

d. Mechanisms to Encourage Specific Renewables

Three primary approaches have been used in existing state RPS structures to encourage specific types of renewables: (1) carve outs, (2) tiered goals, and (3) multipliers. As discussed in Section I, an RPS may be established to meet competing policy objectives, such as promoting fuel diversity and reducing GHGs. Carve outs, tiered goals, and multipliers can be used to accommodate multiple policy objectives by promoting the specific resources that are best suited

to accomplish each objective. In the absence of such policies, obligated utilities will be more likely to choose least-cost options for compliance. The potential for increased costs must be weighed against the benefits of promoting policy-preferred resources.

Carve Outs and Tiered Goals

Carve outs, also referred to as set asides, require obligated utilities to obtain a specified quantity of energy or capacity from a select subset of resources. Tiered goals are similar to carve outs and require obligated utilities to meet a percentage of total goals, rather than a specified quantity, with a specified subset of renewable resources. Some existing state RPS structures use a separate tier for energy efficiency to prevent potentially lower cost energy efficiency measures from competing against renewable resources.

A carve out or tiered approach provides certainty that a particular policy objective will be reached by requiring a certain quantity or percentage of a preferred resource. The primary concern, however, is that no certainty exists about the cost of reaching this level of policy-preferred resources. There may also be reduced incentive for the renewable industry to keep costs low under this prescriptive method. This concern can be mitigated by combining a carve out or tiered goal approach with ratepayer protections such as alternative compliance payments or revenue caps.

Representatives of the solar industry have suggested the need for a tier for solar resources in Florida, with 10 percent of an RPS goal met by solar photovoltaic systems, and 10 percent met by solar thermal water heating systems. With a numerical goal of 20 percent of retail energy sales, the solar industry's suggestion implies that 2 percent of total load would be supplied with solar photovoltaics, and an additional 2 percent with solar thermal systems.

Multipliers

Multipliers promote investment in policy-preferred resources while providing greater compliance flexibility to obligated parties. Under this approach, obligated utilities are given greater credit toward reaching goals with policy-preferred resources. A multiplier is applied to the energy produced by policy-preferred resources to determine the impact on goal achievements. For example, if it is determined that solar and wind energy should receive a multiplier of two, a megawatt-hour of solar or wind energy will count as two megawatt-hours toward compliance. Similar to carve outs, multipliers can be used to encourage investment in higher cost renewable resources. Multipliers can be applied under a REC-based or contract path compliance mechanism and could be expected to result in a higher price for policy-preferred contracts or RECs.

The benefit of a multiplier approach is the increased compliance flexibility it provides relative to a carve out or tiered approach. It is also reasonable to expect that a multiplier approach will put more pressure on the renewable industry to reduce costs.

Several concerns are associated with using a multiplier approach. No guarantee exists that the multiplier will be sufficient to prompt the desired level of investment, and setting the

multiplier at the appropriate level is difficult. The multiplier must be set at a level high enough to prompt renewable investment, while keeping the multiplier low enough to prevent unnecessary ratepayer costs. Multipliers would also need to be reviewed over time as industry costs change. Current government rebates and tax incentives, along with net metering, should be considered in determining the appropriate multiplier. An additional concern relates to the impact of multipliers on goal achievements. Applying multipliers implies that obligated utilities can be in compliance while purchasing or producing lower levels of renewable energy or RECs. This concern can be mitigated by phasing out multipliers over time.

Gulf Power and FMEA have recommended a multiplier for technologies that are more costly. If multipliers are not effective in other state RPS structures, Gulf Power suggested that perhaps this is because these states set the specific multipliers too low. Existing multipliers are typically set below three, while Gulf Power provided an example using a multiplier of five for solar photovoltaics as a starting point for discussion. Gulf Power suggested that the multiplier should decrease over time, as the costs for the technology decline. FMEA advocated a review of the multiplier at least every few years to account for cost changes.

e. Mechanisms to Limit Ratepayer Cost Exposure

Most existing state RPS structures contain some form of cost containment measure to limit ratepayer cost exposure. These safety valve measures include (1) alternative compliance payments, (2) rate or revenue caps, and (3) REC price caps.

Alternative Compliance Payments

Alternative compliance payments (ACPs) provide an opportunity for utilities to comply when sufficient renewable generation or RECs are not available or if the costs of these resources are prohibitive. If ACPs are included in an RPS, the maximum cost of the RPS can be estimated in a compliance period by multiplying the ACP by the goal. ACPs can function in a similar manner to an expense cap. Combining ACPs with an additional ratepayer protection mechanism may be beneficial if ACPs are set at a high absolute value or as a multiple of the REC price. It may be necessary to combine an ACP with some form of rate or revenue caps to ensure ratepayers are fully protected from unacceptable costs.

Rate or Revenue Caps

Ratepayer cost exposure can be limited by setting a cap on utility RPS expenditures. Caps can be set based on a percentage of revenue or rates. Revenue caps appear to be easier to implement than rate caps. Setting fixed caps based on rates may be difficult due to the variability of utility costs recovered through clauses. FMEA suggested a one percent revenue cap as a starting point in the PSC's discussion on RPS structures. The solar industry promoted a one percent revenue cap solely for their proposed four percent solar set-aside. The solar industry stated that costs for other renewables would be in addition to the one percent of revenues reserved for solar.

Setting the level of a rate cap is only the first step in implementing this policy option. The types of costs that would be counted toward the expenditure cap must then be determined. FMEA suggested that only those costs above a utility's avoided cost, or the cost the utility would have otherwise incurred, would be counted toward the revenue cap.

REC Price Caps

REC price caps can also be used to limit ratepayer costs. Under this policy, utilities would not be required to purchase RECs priced over a specified ceiling. REC price caps can be combined with an alternative compliance payment policy. In this case, if sufficient RECs are not available priced below the ceiling, utilities can pay alternative compliance payments to fully comply.

f. Enforcement Policies

Mandatory versus Voluntary Goals

The goals established in an RPS can be either mandatory or voluntary. Both approaches have been implemented in existing state RPS structures. Mandatory compliance requires some form of alternative compliance payments or penalties for noncompliance. Mandatory goals provide more incentive for obligated utilities to perform but may increase costs above an acceptable level if implemented without appropriate safeguards. In contrast, voluntary goals will reduce price pressure in the market for renewables but will also result in market uncertainty for renewables, which may lead to reduced investment in renewables. Katrina Pielli of the EPA said that those states with RPS structures with voluntary goals have seen a lack of investment in renewables. Some states have mandatory goals for some types of utilities and voluntary goals for others. For example, Colorado allows municipal and cooperative utilities to opt out of mandatory RPS requirements.

Alternative Compliance Payments and Penalties

Credible noncompliance mechanisms must be included in an RPS structure in order to achieve the desired results, particularly with a mandatory goal. Such RPS enforcement mechanisms may include the use of both alternative compliance payments and penalties.

Alternative compliance payments provide an opportunity for utilities to comply when sufficient renewable generation or RECs are not available or if the costs of these resources are prohibitive. ACPs may also be combined with cost caps to limit ratepayer cost exposure. ACPs increase compliance flexibility for obligated parties, while providing information to renewable generators about the availability of eligible resources within the RPS region. For example, the payment of ACPs in the initial years of an RPS sends a signal to renewable generators to invest in an RPS region. In order to encourage additional renewable generation, ACP payments must be set at a level significantly higher than estimated compliance through existing renewables or RECs. When setting ACP levels, the need to encourage renewable development must be balanced against the protection of ratepayers from unnecessary costs. ACPs can be set based on

a dollar value per megawatt-hour and may be indexed for inflation. ACPs can also be set based on a multiple of the average REC price or a combination of the two methods.

Some RPS structures also include penalties which are assessed when utilities fail to comply with the RPS. Penalties serve a different purpose than ACPs. In contrast to ACPs, penalties are typically assessed for willful non-performance. Financial penalties may be applied to those utilities that are not making sufficient effort to meet goals. Penalty options include levying fines on non-performing utilities or disallowing cost recovery for ACPs for IOUs. Penalties may also be applied to renewable generators for providing false information to the RPS administrator on fuel sources or energy production. In this case, a renewable generator's registration as a qualified resource may be revoked as a penalty. RPS structures may include force majeure considerations prior to levying ACPs or penalties.

Use of Alternative Compliance Payments and Penalty Funds

A determination must be made regarding how any funds resulting from alternative compliance payments and penalties are to be used. These funds can be used to develop renewable generation projects, fund energy efficiency programs, or finance research and development programs. Alternatively, the funds can be used to offset ratepayer costs associated with the RPS. A determination must also be made on who best could administer these funds. Possible alternatives include the PSC, another state agency such as the Energy Office at the DEP, a private entity, or the utilities. At the PSC's workshops, a representative of the IOUs suggested that the utilities could administer the funds.

One alternative for funds generated from an RPS is to combine these funds with a public benefit fund (PBF). PBFs are a separate funding source that can be used to provide resources to policy-preferred renewables and/or energy efficiency measures and are most commonly supported through a charge on electric consumers' bills. However, PBFs can be combined with RPS policies to further encourage renewable development. The funds generated through RPS penalties or ACPs can be used to augment consumer contributions within a PBF to fund the desired projects. Examples of the uses of PBFs include (1) direct funding of renewable energy generation, (2) rebates on customer-sited renewable generation and energy efficiency measures, (3) funding of research and development projects and energy education programs, and (4) low income energy programs.

Currently, 21 states and the District of Columbia have PBFs to fund renewable energy and/or energy efficiency projects. A detailed description of these existing state PBFs is included in Appendix 3.

Cost Recovery for Investor-Owned Utilities

IOUs typically receive cost recovery for ACPs under existing RPS structures. In most states, ACPs are viewed as another means of compliance, with costs recovered in the same manner as expenditures on renewable energy. Montana and Pennsylvania, however, do not allow recovery of ACPs. Several states also have qualifiers built in to the RPS rules regarding cost recovery for ACPs. For example, in Delaware, ACPs are recoverable only if utilities can

prove that they are the least cost method for compliance relative to purchasing renewables or that sufficient renewables are not available. A methodology would have to be built into the RPS rules for utilities to provide this proof. For example, utilities could provide the results of RFPs for renewable generation or RECs. If cost recovery is not allowed for ACPs, these payments act as a penalty. Penalties are typically applied only to those utilities that do not make a good faith effort to comply. To be effective, full cost recovery of penalties should not be allowed for IOUs.

g. Evaluation and Review Procedures and Administrative Duties

Schedule to Review Compliance

An RPS structure must include a set time period in which to review compliance by the obligated utilities. A determination must be made regarding how often, and in what manner, utilities are reviewed for compliance. For example, under the PSC's conservation goal setting process, the PSC sets goals for utilities every five years. The PSC has a review process in which the staff continuously reviews each obligated utility's compliance toward meeting its conservation goals. The PSC also requires utilities to provide reports on conservation achievements and expenditures on an annual basis. A similar review process could be employed for RPS compliance.

Many existing state RPS structures have annual goals and review compliance on an annual basis. In the PSC's workshops, the IOUs and FMEA advocated the use of a rolling average of annual achievements to review compliance.

Reporting Requirements

There are two reasons to include reporting requirements for obligated utilities in an RPS structure. First, periodic reports will facilitate the review of the success of the RPS. Second, information on utility compliance can provide the necessary transparency to encourage investment in the developing market for renewables. Reporting requirements for utilities should be explicitly stated in RPS rules. The schedule to review utility compliance should be taken into account when establishing a reporting schedule. Annual reports should be required at a minimum, with perhaps a need for more frequent reporting in the initial years of an RPS. A REC-based compliance mechanism may reduce the need to obtain information from utilities, depending on the level of detail provided in REC tracking reports.

In a related matter, Florida's IOUs have suggested a need for transparency for ratepayers regarding the cost impacts of an RPS. Ratepayers could be provided with this information by requiring utilities to include a line item on customers' bills for RPS-related costs.

Administrative Requirements

A fully functional RPS requires the implementation of many administrative functions. These functions may be performed by the PSC, other state agencies, utilities, and third parties. In its traditional role, a regulatory commission would be expected to perform certain functions in an RPS. These functions could include (1) implementing policy regulations through rulemaking

and ongoing dockets, (2) monitoring utility compliance, (3) determining cost recovery for IOUs, and (4) determining any ACPs and assessing penalties. The appropriate entity to perform additional administrative tasks is less certain, including (1) certifying eligible renewable generators, (2) managing a REC tracking system, and (3) administering the expenditure of any funds from ACPs and penalties. Considering whether there would be efficiencies associated with having existing state agencies or third parties perform these tasks is important. For example, a potential exists for any funds resulting from the RPS to be used to fund solar rebates and renewable grants through the present program at the DEP's Florida Energy Office.

Periodic Review of the RPS Structure and Goals

An RPS could include a process to review the RPS structure and goals over time. This review process would be beneficial in reducing the risk for ratepayers and in ensuring that the market for renewables is developing as expected. Two possible methods for RPS review are an automatic review process on a set time schedule and an ongoing review process. Section 366.92, Florida Statutes, states that once the PSC sets goals for renewables, the PSC should review the goals at least every five years. This timeline is similar to the PSC's conservation goal setting process, in which the PSC reviews conservation goals for utilities subject to FEECA every five years. FMEA suggested that the RPS goals should be reviewed every three years. An alternative option would be to continuously review the RPS structure and goals without including an automatic process for review in RPS rules.

5. Conclusions

The PSC's initial efforts to explore an RPS for Florida have raised a number of issues which need to be further investigated before a decision can be made on whether an RPS is needed to encourage further development of renewable energy in the state. The PSC will continue to develop background information on this important topic and will monitor activities of the Energy Commission and the Governor's Action Team as they address related issues.

Appendix 1. Summary of the PSC's RPS Workshops

Summary of the July 26, 2007 Commission Workshop on RPS

The PSC held its first RPS workshop on July 26, 2007. There were 29 speakers at the workshop, including representatives of the Governor's office and the Department of Agriculture, utilities, renewable generators, and environmental advocates. Katrina Pielli, of the EPA, also presented an overview of RPS programs in other states. The presentations were divided into six topic areas: (1) general remarks, (2) the foundation for an RPS, (3) setting an RPS, (4) operation of an RPS, (5) identification of likely impacts on Florida's economy and consumers, and (6) regulation and enforcement of an RPS. Time was also provided for interested members of the public to speak. The following is a summary of each speaker's remarks.

General Remarks

Jay Levenstein, Department of Agriculture

Supporting the Farm to Fuel project and renewables is important in Florida because renewables (1) provide another source of support for farmers, (2) can reduce Florida's fossil fuel consumption, and (3) can reduce emissions associated with climate change. Commissioner Bronson supports net metering for renewables and "reasonable, attainable goals" over mandates for an RPS. Florida is ranked as the number one state with the potential for growing biomass as a fuel.

Steve Adams, Florida Department of Environmental Protection (DEP)

Florida's electric utilities produce 50 percent of the state's greenhouse gases. Renewables and energy efficiency must be part of Florida's climate change policy. The DEP supports an RPS policy as a "vital tool in mobilizing the capital required to develop renewable energy technologies." Twenty-six states and the District of Columbia currently have an RPS. A properly designed RPS should be (1) outcome oriented, (2) predictable, (3) cost-effective to administer, (4) provide flexibility for utilities in meeting requirements, (5) fair, and (6) enforceable.

Chris Kise, on behalf of Governor Crist

Mr. Kise stressed Governor Crist's concern for the environment and expressed appreciation to the PSC for moving so quickly to explore an RPS.

Foundation for an RPS

Robert Reedy, Director, Solar Energy Division of the Florida Solar Energy Center

Eligible resources for an RPS can be defined by technology type or by attribute. Mr. Reedy advocates that eligible resources should be selected by attribute because it is more flexible and would be able to include technologies that are not yet anticipated. He recommended a set

aside for solar of no less than 20 percent of the goal (four percent for a 20 percent goal). Florida could supply four percent of net energy for load from solar thermal water heating and solar photovoltaic systems by 2020, with a potential to achieve ten percent net energy for load with solar resources. Seven states currently include solar thermal water heating as eligible for an RPS. It is possible to meter the avoided energy due to the use of solar thermal water heating. The PSC should also consider including other technologies such as process heat and absorption chilling.

Rich Zambo, City of Tampa, Solid Waste Authority of Palm Beach County, Florida Industrial Cogeneration Association

Large renewable energy producers that use municipal solid waste and waste heat for fuel to produce energy are concerned about the price they get paid for this renewable energy. They are also large consumers of utility power and are concerned about their energy bills. The definition of an eligible renewable should be broad enough to include all resources in Florida and all resources that are identified in the statutes. The PSC should be more concerned with getting policies right than the initial amount of renewables. Twenty percent should be the minimum goal, and should be based on a percentage of retail energy sales on a twelve-month rolling average basis. An RPS should be phased in with a ten percent goal by 2010 and add one percent per year thereafter. RECs should be limited to in-state, or out-of-state if energy can be delivered to Florida. Avoided cost should be based on the generating unit that most closely matches a renewable unit's operating characteristics, and include a consideration for fuel diversity and price stability characteristics.

Dick Lowry, Sharp Solar Energy Solutions Group

Several policy measures in an RPS are necessary to develop the solar market in Florida, including a solar carve out rather than multiplier. The carve out should require two percent photovoltaics and two percent solar thermal. Costs for the solar photovoltaics and solar thermal combined can be capped at one percent of revenues. Using RECs for compliance can increase investment in renewables by leveraging private investment. An alternative compliance payment is important to give RECs value over time. Long-term REC contracts are important to encourage investment and ease in financing renewables. A Florida RPS should require long-term REC contracts with a term of at least 15 years. Up-front payments for RECs for small systems are also important. The installation of solar capacity follows the policy, not the solar insulation value of the region. For example, Germany has less solar insulation than the United States, but has the world's largest solar market.

Camille Coley, Florida Atlantic University, Florida Center of Excellence in Ocean Technology

Florida has a huge potential for energy production from the ocean. The Florida Center of Excellence in Ocean Technology is working to develop ocean thermal and current technology. It will be at least two years before ocean energy is commercially viable at a demonstration scale.

Tom Hartman, Florida Power & Light Company

The purpose of an RPS should be reducing greenhouse gases, so policies and targets should be set with this in mind. A clean energy portfolio standard should value those generation sources and energy efficiency programs that have the greatest impact on greenhouse gas reduction, including nuclear, wind, solar, renewables, and energy efficiency. Achievements in these resources should be compared to net energy for load.

Setting an RPS

Barry Moline, Florida Municipal Electric Association (FMEA)

Mr. Moline presented a strawman "green portfolio standard" (GPS) on behalf of FMEA. The proposal is referred to as a GPS because it includes renewables, energy efficiency and conservation, transmission and distribution efficiency improvements, and power plant efficiency improvements. The goal of the GPS is to reduce greenhouse gases. There is a concern about whether a 20 percent goal based solely on renewables is achievable and at what cost. The proposal contains a revenue cap of one percent, or $200 million per year total for all Florida utilities. Resources that reduce GHGs, such as solar and wind, should have a higher weighting or multiplier. A multiplier is preferred over set asides because set asides take away flexibility. GPS costs should be part of a pass through to customers. RECs should be used for compliance, and REC banking should be allowed. Resources with a vintage of January 1, 1997, should be considered eligible so that early adopters are not penalized. Small utilities should be excluded, with sales less than 500,000 MWh. Utilities should report annually to the PSC. The RPS program should be reevaluated every three years. A penalty should be applied for not achieving goals, but compliance should be evaluated with a five year rolling average. There should also be an alternative program where utilities could comply by investing in green research and development. For noncompliance, a utility should pay ten percent more than its budget into a state fund for grants to consumers. There needs to be a resource study on the availability and cost of renewable technologies in Florida.

Frank Ferraro, Wheelabrator Technologies

Wheelabrator is a subsidiary of Waste Management, Inc., and operates over 800 MW of waste-to-energy capacity. The company owns two plants with a total of 134 MW in Florida. Waste-to-energy provides net reductions in greenhouse gases. There are 11 waste-to-energy facilities in Florida with a total capacity of 500 MW. Wheelabrator endorses the definition of renewable energy in Section 366.91, Florida Statutes. An RPS goal should be set as percentage of total annual retail sales. A percentage sales goal encourages utilities to implement demand-side management programs. Both new and existing units should be eligible resources. Different policies toward new and existing facilities should be considered. New facilities should be reclassified as existing, so they are not competing with new, after a certain period of time. New facilities should include (1) greenfield sites, (2) expansions of existing facilities, and (3) efficiency improvements of existing facilities. Alternative compliance payments should be included in an RPS. Similar to fossil-fueled generation, the cost of waste to energy facilities has risen in recent years due to increased steel costs.

Vincent Dolan, Progress Energy

It is important to determine the top objectives before designing an RPS, because some of the objectives are competing. Progress Energy supports the inclusion of energy efficiency in an RPS. If greenhouse gas reduction is a goal, then nuclear generation should be included. An RPS should include some type of cost safety valve to protect ratepayers.

Scott Keeley, Siemens Energy

Renewable developers are looking for a return on their investment. Siemens just signed a 6 MW contract to build a landfill gas facility in Florida. Methane has 20 times the greenhouse impact of CO_2. Landfill gas facilities reduce methane emissions. Landfill gas also has a high capacity factor of 92 percent. There is a potential for 80-150 MWs of new landfill gas projects in Florida. Landfill gas projects are low cost compared to other renewables. Biomass is also a viable option for Florida, with 25-150 MW of economic biomass waste potential. There is also a greater than 500 MW potential for municipal solid waste development. Siemens has not studied wind potential in Florida. Solar is potentially cost-effective. Contract provisions, including the price of energy and RECs, and the term are important for developers, as is the cost of interconnection. An RPS goal should be set as an absolute value of MW, rather than a percentage. The goal must be achievable and above Florida's current total renewable capacity. There will not be a significant effect on ratepayers with a target of 1,000 MW. The specific technologies are important because costs and emissions profiles vary, for example, plasma arc has lower emissions than traditional municipal solid waste facilities.

Paul Barber, Energy Strategies, representing Florida Crystals

The 26 existing RPS structures vary greatly. Whether the goal is set based on energy or capacity will benefit different types of renewables. Eligible technologies should be based on what is viable in the state. The viable options in Florida include biomass, some solar applications, and ocean energy. The center for biomass production is going to be in the southeastern United States due to the extended growing season. If the RPS goal is based on greenhouse gas reduction or clean energy development, then there should be a carve-out for renewables.

Gus Cepero, Florida Crystals

Florida Crystals owns the largest biomass plant in the United States, with a capacity factor greater than 90 percent. Florida Crystals has the ability to expand its existing plant and develop others in Florida. A 20 percent RPS goal could be achieved with 500,000 acres of biomass in Florida. Biomass is an indigenous resource, which has economic implications including economic development, employment benefits, and reduced fossil fuel use. A study performed four years ago concluded that biomass has 10 times the impact on Florida's economy than a natural gas plant. The PSC should consider not only the cost to the consumer, but the broader impact on Florida's economy when designing an RPS. Eligible resources should be limited to in-state to take advantage of economic benefits.

Operation of an RPS

Jane Maxwell, Waste Energy Solutions

Waste Energy Solutions builds anaerobic digesters that can use a wide assortment of wastes. These facilities are CO_2 neutral and burn methane which has 20 times the climate change impact of CO_2. An RPS should include the use of RECs. RECs provide compliance flexibility and encourage investment in renewables. Anaerobic digesters should be included in Tier 1 of an RPS (policy-preferred tier) because of the methane reduction benefit, and a multiplier should be applied on RECs. Eligible resources should be limited to in-state only.

Joseph Treshler, Covanta Energy

Waste-to-energy reduces greenhouse gases by avoiding methane from landfills. There is a potential for an additional 1,130 MW of municipal solid waste capacity if all of Florida's additional waste is used. Policy incentives must be right to encourage development. Renewable developers need long term contracts. Twelve states have included municipal solid waste in an RPS. An RPS should include clear, aggressive annual targets, and an alternative compliance payment high enough to encourage innovative thinking.

Katrina Pielli, U. S. Environmental Protection Agency

The existing 26 state RPS structures (27 with the District of Columbia) vary greatly, with different eligible resources, and goals of from 1-25 percent. It is important to articulate goals and objectives clearly early in the process. Most RPS policies are established approximately ten years out. Many RPS policies have long-term contract requirements to provide certainty for renewable investors. States with voluntary goals are having less success than those with mandatory goals. Eleven states include energy efficiency as an eligible resource. Including energy efficiency in an RPS can reduce the cost. Having clear evaluation, measurement and verification of renewable performance and energy efficiency measures in place is important. Tiers or multipliers can be used to encourage specific resources. REC costs increase with a multiplier. RPS policies are typically applied to investor-owned utilities. Credible noncompliance mechanisms such as alternative compliance mechanisms and penalties are important. RPS certainty plays a key role in encouraging renewable investment.

Robert McGee, Gulf Power Company

To encourage compliance, an RPS must have realistic goals and timetables, with flexibility in the eligible fuel sources. Multipliers should be applied to RECs from preferred sources. An RPS should include periodic goal setting, similar to the conservation goal proceedings. IOUs should be allowed full cost recovery on RPS expenses. In-state RECs should count toward compliance, as well as out-of-state RECs if the goal cannot be met with Florida resources. It would be necessary to establish a REC tracking and monitoring system authorized or administered by the PSC.

Identification of Likely Impacts on Florida's Economy and Consumers

Gwen Rose, Vote Solar Initiative

The Vote Solar Initiative is a non-profit focused on promoting solar policies. Defining the policy objectives of an RPS at the outset is critical because the objectives will largely dictate the targets, timelines, implementation of RPS, as well as the role of solar. Vote Solar advocates a carve-out for solar of two percent photovoltaics and two percent solar thermal. A carve out policy can be combined with protections against high cost impacts, such as the one percent revenue cap on solar expenditures suggested by Vote Solar. Four states currently have carve outs for solar. The RPS goal and carve out for solar should be set as a percentage of sales and phased in slowly. There must be a stable, secure funding source for the RPS to encourage solar development. Incentives can be reduced over time as the solar industry develops. To encourage solar development, there should be long-term contracts for RECs produced by solar systems owned by large commercial customers. RECs from smaller, residential systems can be forward-purchased to aid in financing these systems. Customer-sited solar systems can increase installation of renewable generation at lower ratepayer costs because these systems can leverage private investment. Solar also has the benefit of reducing emissions, creating high tech jobs, and aiding economic development.

Kim Owens, JEA

The greatest uncertainty of an RPS is whether goals can be met with a minimal rate impact. JEA agrees with FMEA's suggested affordability rate cap. Three states have rate caps (two based on a percentage of retail rates, one on a percentage of revenues). The first step is to define the appropriate rate cap and then the definition of costs must be defined. With a 1 percent rate cap, JEA could purchase a 100 MW project over the next 20 to 30 years (100 MW supports 5 percent of JEA's retail sales). It would take approximately a 3-4 percent expenditure for a 20 percent RPS for JEA. JEA currently has a strong program in renewable resources. The reliability impact of renewable generators must be considered, especially for large projects relative to small utility systems.

Michael Dobson, Florida Renewable Energy Producers Association

An RPS should include mandated goal to encourage renewable investment. Potential developers need a fuel feedstock and resources study. Incentives are needed to help developers with economics. The best options for Florida are solar and biomass. Developers need incentives that are long-term and consistent from year to year. More focus should be placed on developed technologies. Renewables provide benefits by reducing emissions, increasing economic development and creating jobs, and by increasing national and economic security. An RPS can change Florida's image regardless of the percentage.

Scott Jorgensen, Solarsa

Solar technologies can be used to reduce air conditioning load. Thermal driven air conditioning and heating, dehumidification, and hot water produced by solar and biofuels should

be eligible for RECs. Solar thermal air conditioning is more cost effective than solar photovoltaics. Waste cooking oil can be used as a backup fuel in these systems, and larger systems are cost-effective today.

Tamela Perdue, Associated Industries of Florida

Ms. Perdue presented the large customers' point of view. Energy is very important to large businesses in terms of cost, environmental impact, and future needs. In the development of new policies, such as an RPS, policymakers should not overlook the good aspects of Florida's current energy market–reliability and affordability. There should be continued efforts to develop a diverse energy resource portfolio for Florida, including coal gasification technology. Florida should consider implementing a biorenewable venture fund so the state can share in any profits from new technological development. Florida is a small business driven state. The capital investment costs of solar are significant for small businesses. Policymakers should keep the high initial costs of solar for small businesses in mind when formulating incentives.

Keith McAllister, North Carolina Solar Center and CHP Center Southeast

Energy efficiency should be included in an RPS to keep costs low. Beneficial resources such as combined heat and power should also be considered.

Bill Ashburn, Tampa Electric Company (TECO)

TECO is concerned about the rate impact associated with an RPS, especially if set asides are required for higher cost renewables. The availability of renewables must also be considered. Including energy efficiency to keep costs low should be considered. Customer acceptance of distributed generation and larger facilities will also be important. RPS goals should be reviewed over time.

Regulation and Enforcement of an RPS

Leon Jacobs, Southern Alliance for Clean Energy and the Sierra Club

The PSC should begin its efforts to design an RPS now, but with an eye toward the future. It is essential to design an RPS in such a way as to encourage a fully functional market for renewables, which will result in decreased costs over time. It is important to create a long-term planning horizon for potential investors, including the use of long-term contracts. Existing resources should be included. Adding energy efficiency should be considered, but balanced against the need to encourage new renewables. Compliance flexibility measures should be included, but not to the extent that investment in renewables is hindered.

Jeff Cooper, Lake County

Lake County supplies the garbage, or fuel, for a municipal solid waste facility owned by Covanta. Lake County would like to receive part of the RECs for providing the renewable fuel for this facility. Allowing fuel suppliers to be eligible to receive a portion of the revenues from

RECs will facilitate negotiations between localities, plant operators and utilities. Lake County's contract expires in 2014, so the county is currently reviewing whether to expand by adding another boiler. Although the MSW plant is not owned by Lake County, the county issues bonds to finance these facilities.

Remarks by Members of the Public

Jennifer Green, Environmental Defense

Renewables are an important option to reduce greenhouse gases. There will not be sufficient renewable development without a carbon market or RPS. Key design features for an RPS include (1) establishing a quantitative goal, (2) including flexible compliance options, (3) assigning clear responsibility for compliance and enforcement, and (4) establishing clear and strong penalties for noncompliance.

Bob Krasowski, Florida Alliance for a Clean Environment

Municipal solid waste and nuclear generation should not be included in an RPS. Efficiency efforts are important, but energy efficiency should not compete with renewables. Strict building codes are also important for achieving energy efficiency. An RPS should include clean renewables in one category and efficiencies in another. A lifecycle analysis of all options should be performed, including nuclear generation.

Summary of August 23, 2007 PSC Staff RPS Workshop

On August 23, 2007, the PSC staff conducted a follow-up workshop to obtain more detailed information on establishing an RPS. The workshop followed an open discussion format, with no formal presentations. A wide range of stakeholders participated in the workshop, including electric utilities, renewable generators, and large utility customers. In addition, the U.S. Environmental Protection Agency sponsored the participation of Ryan Katofsky, of Navigant Consulting. Mr. Katofsky provided expertise on the RPS policies in other states. Karen Webb, of the PSC staff, discussed staff's spreadsheet on existing renewables and conservation programs in Florida, and requested updated information from the participating stakeholders. The PSC staff requested post-workshop written comments and received written comments from several of the workshop's participants.

The following is a brief summary of the stakeholder discussion at the workshop. The summary follows the order of the topics on the workshop agenda, which consisted of (1) RPS policy objectives, (2) RPS goals, (3) applicability of an RPS, (4) eligible resources, (5) structure of an RPS and compliance mechanisms, and (6) mechanisms to encourage specific resources.

RPS Policy Objectives

Susan Clark, representing the large investor-owned utilities (IOUs) FPL, Gulf Power, Progress Energy and TECO, noted that the policy objective in the Governor's executive order appears to be GHG reduction, and there are numerous objectives in Section 366.92, Florida Statutes. Policy objectives are important in formulating an RPS. If the focus is on GHG reduction, then there may be a better way to achieve the objective than with renewables alone.

Barry Moline, Florida Municipal Electric Association, stated that the goal of an RPS should be increasing clean generation. GHG reduction should be the highest priority; next to that is minimizing cost to ratepayers.

Schef Wright, representing Biomass Investment Group and other renewable generators, stated that the underlying objectives of an RPS are reducing GHG and increasing fuel diversity, which is closely related to increasing energy security. Reducing GHG and increasing fuel diversity are superior objectives to minimizing costs.

Jon Moyle, representing Wheelabrator Technologies, stated that the focal point of an RPS should be based on existing legislation. There is already a statutory definition of renewable energy, and the law is clear. Section 366.92, Florida Statutes, includes as one of the goals promoting the economic viability of Florida's existing renewable energy facilities.

Yann Brandt, Advanced Green Technologies, believes that the main intent of RPS policies across the U.S. is to hedge our cost of fuel in the future by using more renewable fuels.

Leon Jacobs, representing Southern Alliance for Clean Energy, stressed that an RPS moves policy from subsidizing renewables to a market-based approach. It is essential to be clear in setting objectives and goals because those will be the signal to the marketplace. Otherwise,

policymakers will fail in the fundamental purpose of doing an RPS–to make selection of renewables a market driven process.

RPS Goals

Ryan Katofsky, Navigant Consulting, noted that in general, RPS rules in other states base goals on retail sales. Most RPS programs have caps in place to make sure above-market cost does not become overly burdensome to ratepayers.

Susan Clark, representing the IOUs, stated that RPS goals must be reasonable and achievable. All utilities should be required to meet uniform goals based on megawatt-hour sales of electricity. If there are statewide goals and some utilities are exempted, the obligated utilities would be required to achieve a higher percentage goal.

Ann Grealy, of FPL, stated that the RPS goals should be based on a percentage of retail sales.

Barry Moline, Florida Municipal Electric Association, stated that an updated resource study is needed to determine resource availability, potential, and emission profiles to help in setting phased-in goals. The goals of an RPS should be reevaluated on a regular basis, perhaps every three years. A cost cap of one percent of revenues to pay for costs above avoided costs should be included to protect ratepayers.

Charlie Beck, Office of Public Counsel, noted that the U.S. Environmental Protection Agency estimates the cost of existing RPS policies in other states as ranging from a reduction in rates in some states to increases in others. Also, Progress Energy just signed a biomass contract that was lower in net present value than its avoided natural gas plant. We need to look at how far we can go with similar cost-effective renewables without raising customer bills. It is premature to be looking at increasing customer bills as in the Florida Municipal Electric Association's proposal. We need to first look at what renewables are available, and what are the most cost-effective renewable technologies, and evaluate where we are. There should be a study on existing and potential renewables before implementing an RPS. The statutes on renewable energy that require full avoided cost are still in effect. The PSC has some flexibility even under an avoided cost requirement; however, for example, the PSC could look at expected carbon costs.

Jon Moyle, representing Wheelabrator Technologies, advocated a statewide rather than a utility specific goal, based on a percentage of retail sales. The goal should be phased in for new facilities. There needs to be an accurate count of existing facilities. The initial goal should be set based on this initial count so Florida does not lose ground with respect to renewable generation.

Chris O'Brien, Sharp Electronics Solar Systems Group and Solar Energy Industry Association, advocated a two percent goal for solar photovoltaic and an additional two percent for solar thermal water heating, with a gradual phase-in. This solar goal can be combined with a cost cap of one percent of revenues for the combined solar share. These suggested goals for solar are based on a phase-in that the solar industry believes is an achievable growth rate for Florida.

Bob Reedy, Florida Solar Energy Center, stated that FSEC endorses a two percent goal for solar photovoltaic and additional two percent goal for solar thermal systems. FSEC believes this goal is attainable by 2020. FSEC is also comfortable with the suggested one percent cost cap to achieve the solar goal, because the cost of solar systems is expected to decrease significantly.

Rich Zambo, representing Florida Industrial Cogenerators Group and City of Tampa, believes we cannot determine how much renewable energy may result until we establish the rules, so it is premature to say a 20 percent goal is too high. The goal should be phased in and revisited over time, perhaps every two to three years. Section 366.92, Florida Statutes, provides for a review of the goals every five years. The initial goal should be set according to how much renewable generation is desired in the portfolio of resources.

Dell Jones, Regenesis Power, stated that when establishing goals and other policies for an RPS, the renewable industry needs certainty that the business will be there in the long-run in order to invest in the necessary infrastructure.

Applicability of an RPS - Obligated Utilities

Ryan Katofsky, Navigant Consulting, noted that in general, RPS rules in other states apply only to the regulated utilities, or load serving entities, and do not include municipal and cooperative utilities. Small utilities may also be exempted, as in Colorado. There are provisions in existing RPS programs that allow a non-generating utility under a wholesale all-requirements contract that would constrain the utility's ability to meet an RPS goal to be exempted until the all-requirements contract expires.

Susan Clark, representing the IOUs, stated that all utilities should be required to meet uniform goals based on megawatt-hour sales of electricity. If there are statewide goals and some utilities are exempted, the obligated utilities would be required to achieve a higher percentage goal.

Barry Moline, Florida Municipal Electric Association, stated that the obligated utilities should be based on a sales threshold to exclude the small utilities. Only those utilities that meet the PURPA standard of above 500,000 megawatt-hours of sales should be included in an RPS. From the municipals, JEA and Orlando Utilities Commission meet the standard.

Fred Bryant, representing FMPA, stressed that the PSC should consider creating a separate docket and a separate rule for the IOUs and for the municipals. An RPS raises a contract issue for the ten municipal utilities and 15 members of FMPA that are under an all-requirements contract, in which all the utility's requirements are provided by another utility. The issue is who is obligated to meet the goals?

Jon Moyle, representing Wheelabrator Technologies, stated that Section 366.92, Florida Statutes, which provides the PSC with the authority to establish goals, applies to all utilities because it does not expressly exclude any utilities.

Eligible Resources

Ryan Katofsky, Navigant Consulting, stressed that policymakers should be very clear about which resources are eligible and use clear terms for these resources. For example, the term "resources" refers to fuel sources (biomass), while "technologies" refers to a specific generation technology (advanced low emission biomass). Most RPS policies, with one or two exceptions, define a geographic boundary in which the renewable generation can qualify. In general, RPS policies address out-of-state RECs by requiring that there is an available contract path for the associated energy.

Susan Clark, representing the IOUs, stated that if the objectives are to reduce GHG, a clean portfolio standard should be considered that includes efficiency measures and other carbon reduction measures. A very aggressive goal implies that existing resources should be included. If a clean portfolio standard is implemented, that standard should include renewables, energy efficiency, demand-side and direct load measures, nuclear energy, fossil fuel technologies with carbon capture and sequestration, fuel efficiency improvements, and grid improvements. RECs and global greenhouse gas offsets should also count towards a clean portfolio standard. In-state RECs should be used to the extent available, but utilities should also be permitted to purchase out-of-state RECs.

Ann Grealy, FPL, stated that the RPS should encourage both energy efficiency and renewables, such as solar and wind.

Bill Ashburn, TECO, stated that utilities should be able to pursue all cost-effective opportunities at the same time, including renewables and energy efficiency.

Barry Moline, Florida Municipal Electric Association, stated that energy efficiency should be included in order to meet large goals. Five states have included energy efficiency toward an RPS. Including energy efficiency will help to control costs. Policymakers should set the goals and then let the utilities choose the most cost-effective options through a combination of owning resources and requests for proposals. FMEA listed the applicable renewables in its proposal, but believes there must be an emissions study of each. An RPS should allow flexibility of ownership in the eligible resources, including ownership by the utility, renewable developers or customers. Whether to include out-of-state RECs will depend on the objectives of an RPS. If the objective is to reduce GHGs, then out-of-state resources should be included.

Schef Wright, representing Biomass Investment Group and other renewable generators, noted that an RPS policy should not be established in isolation, but must consider the role of energy efficiency and nuclear generation in reducing GHG. For example, enhanced energy efficiency can be achieved through improvements in the Florida building code. There is a potential to triple waste-to-energy generation in Florida. If nuclear or coal with carbon capture and storage is a good option, then utilities should be offering renewable generators standardized contracts priced on these technologies. Mr. Wright is not concerned about energy efficiency crowding out renewables in an RPS. Utilities should have a broad choice of eligible resources, in order to minimize costs while meeting the required goals.

Jon Moyle, representing Wheelabrator Technologies, stated that the focal point of an RPS should be based on existing legislation, and there is already a statutory definition of renewable energy in Florida. Existing renewable resources should be included. A twenty percent goal gives enough room to encourage both combustion and non-combustion renewables with different GHG profiles.

Rich Zambo, representing Florida Industrial Cogenerators Group and City of Tampa, stated that nuclear generation should not be included in an RPS. If nuclear is the best option to meet customer needs, then utilities should be building nuclear generation under current statutes and rules. Likewise, conservation should not be included. Utilities are obligated to do all cost-effective conservation under FEECA. The controlling statute for the PSC to set goals is Section 366.92, Florida Statutes, which refers to the definition of renewables in Section 377.803, Florida Statutes.

Yann Brandt, Advanced Green Technologies, stated that energy efficiency should not be included in an RPS. Energy efficiency results in reduced retail sales, which in turn reduces the renewable requirements in an RPS based on sales.

Bob Reedy, Florida Solar Energy Center, endorsed a full resource study of renewables in Florida. He believes five to ten percent of net energy for load can be served through solar, and twenty percent through efficiency. Efficiency is complicated because it rewards the customer with reduced bills, so there are issues about who benefits and who pays. So most states handle efficiency increases through the building code, which should be enhanced. Because efficiency is so rewarding in reducing GHGs, it should be addressed separately from an RPS. An attribute approach should be used to select eligible renewables for an RPS. This approach uses an attribute list that results in a list of approved technologies as a first pass, and than allows for approval of new technologies that meet the attribute requirements over time. The attribute approach would not require rewriting the rule to include new technologies, and could be combined with perhaps an annual review of potential technologies. Defining eligibility based on resources (solar, wind, biomass) would also be a good approach, because this approach would include solar thermal as an eligible resource.

Dell Jones, Regenesis Power, stated that the overall goal should be Florida's energy sufficiency, not just its electric sufficiency, so perhaps policymakers should broaden the scope to include other fuel sources, such as gas and oil. The RPS discussion should apply to other nonrenewable fuel sources besides electricity. Utilities should get credit for supplying energy to consumers on a distributed generation basis that were not offsetting electricity (for example, industrial customers that were using natural gas). An RPS could provide RECs for the case of replacing the use of gas with renewable fueled energy.

John McWhirter, representing the Florida Industrial Power Users Group, stated that an RPS should include conservation and innovation. Also, policymakers need to reevaluate how conservation goals are set. From the customers' point of view, we should not emphasize renewables to the point that conservation falls by the wayside. There should not be a cap on energy efficiency and conservation in an RPS.

Structure of an RPS and Compliance Mechanisms

Ryan Katofsky, Navigant Consulting, noted that most RPS programs use credits for compliance, whether exclusively or in addition to bundled renewable energy purchases. RECs can facilitate the inclusion of customer-sited renewable generation, such as photovoltaic systems. REC systems require an administrator to register eligible resources, certify renewable energy production, and track RECs. California uses a contract path compliance mechanism. Some states combine RECs and contract path compliance mechanisms. In general, RPS policies address out-of-state RECs by requiring that there is a contract path for the associated energy. If a contract path mechanism is used, there must still be a system to ensure that there is no double counting if these same generators sell RECs elsewhere. Registration in a REC system could pose some administrative difficulty for small customer-sited systems that may only generate one to two RECs a year. RPS policies may also include alternative compliance payments, which are meant to do two things: (1) cushion cost impacts to ratepayers and (2) create an incentive high enough for renewable generators to come into the market.

Susan Clark, representing the IOUs, stated that the IOUs advocate incentives rather than penalties, including (1) rewards for meeting goals early, (2) higher returns for investments in clean energy, (3) incentives for research and development projects on preferred resources, (4) incentives for investments in companies developing clean energy technologies, and (5) incentives for developing enhanced energy efficiency programs. There must be a tracking and trading system for RECs included in an RPS to prevent double counting. Banking of RECs should be allowed. An alternative compliance payment, rather than penalties, should be included for increased compliance flexibility. Cost recovery should be allowed for alternative compliance payments. Alternative compliance payments can be combined with rate caps to protect ratepayers.

Jon Moyle, representing Wheelabrator Technologies, advocated a REC system, and believes the PSC is the logical choice to administer a REC system. The PSC should also explore the cost of third party REC system administration.

Chris O'Brien, Sharp Electronics Solar Systems Group and Solar Energy Industry Association, stressed that the success of an RPS in Florida will be determined to a large extent by the private investors who are induced to participate and invest in not only renewable projects, but also in the business infrastructure to deliver renewable projects to Florida. This investment will be significantly limited if there is uncertainty about the outlook of the program. Allowing RECs increases compliance flexibility and provides a stream of revenues that renewable developers and investors can count on. There will be a high degree of uncertainty for renewable developers if the RPS does not include an alternative compliance payment and a binding requirement on the number of RECs the utilities must purchase in order to comply each year. An explicit carve-out approach for encouraging solar, rather than a multiplier, has been most effective in other states. The flexibility of a carve-out can be increased by allowing solar RECs to be traded. A set-aside for solar can be implemented with solar RECs, and a solar alternative compliance payment. The benefit of having a separate solar alternative compliance payment and solar REC system, such as in New Jersey, is that it will automatically adjust for reductions in cost over time. In contrast, a

multiplier approach requires the RPS administrator to correctly adjust the multiplier in response to changes in market price.

Dell Jones, Regenesis Power, stated utilities will pay more attention to goals if they are not allowed to recover penalties or ACPs. If there is REC trading within an RPS, there must be rules established for the RECs, including metering protocols, standards, accuracy, and maximum possible error rates. There is a measurement issue associated with counting the energy produced by small distributed generation systems toward an RPS. REC aggregators have difficulties obtaining RECs from small systems because the metering costs can be ten percent of the capital costs for installing a system on a home. This cost issue raises the question whether engineering estimates can be used to estimate the energy produced by these small systems, rather than metering. For example, there could be a deemed performance standard for a small photovoltaic system, which is depreciated over time to account for degradation of the system, until someone validates that the system is still working. A measurement issue also exists with thermal water heating systems. Measuring thermal energy with a high degree of accuracy is more difficult, but the maximum acceptable accuracy rate for measurement is a policy issue, rather than a technical issue.

Mechanisms to Encourage Specific Resources

Ryan Katofsky, Navigant Consulting, noted that several states use a multiplier to encourage specific resources, in which a kilowatt-hour produced by a preferred resource counts more for compliance than other resources. An alternative to using a multiplier on energy is to use a higher alternative compliance payment for solar RECs, such as in New Jersey. As the cost of solar decreases, the value of a solar REC should come down. An RPS may include a carve-out for customer-sited renewables, such as New York. Financial incentives for small customer-sited systems appear to be the main public policy driver of development of these systems, however, rather than the inclusion in an RPS.

Bob McGee, Gulf Power Company, advocated the use of a multiplier to encourage specific renewables. Mr. McGee stressed the importance of building compliance flexibility measures into an RPS. One element of flexibility is the ability for the utility to determine the least-cost method of compliance. A multiplier method would allow for flexibility of compliance, while emphasizing policy-preferred resources, such as solar and wind. Multipliers can reduce the cost of compliance for utilities. Many states have multipliers ranging from two to three for solar. Solar advocates have stated that carve-outs are more effective in encouraging solar development than multipliers. However, the problem may just be that the multipliers were not set high enough. The multiplier should be high enough for solar to compete with lower-cost renewable resources. A multiplier for solar could be set at five initially, and then phased out as the cost of solar technology decreases over time. Policymakers should take the various resources available in each utility's service area into account when considering policies such as set-asides to encourage specific renewables.

Barry Moline, Florida Municipal Electric Association, stated that utilities can choose the best resource options, but policy-preferred resources, which may be higher cost, could receive a multiplier (subsidy). The multiplier should be adjusted every few years as costs change, because

there should not be a subsidy if it is not needed. FMEA supports multipliers rather than tiers. An updated resource study is needed to determine resource availability and potential, and emission profiles to help in setting phased-in goals, multipliers, or carve-outs.

Jon Moyle, representing Wheelabrator Technologies, stated that there should not be categories of renewables with special treatment, such as tiers and set-asides, beyond new and existing renewables. The RPS should instead let the market work to determine the best resource choices.

Yann Brandt, Advanced Green Technologies, noted that several states have either solar carve-outs or set-asides, and may also have a multiplier. These states include Arizona, Colorado, Maryland, North Carolina and Delaware. Some have a distributed energy set-aside, rather than a technology set-aside. Colorado combines the approaches, with a set-aside for photovoltaics, and a requirement that a set percentage must be distributed generation. States are moving from using multipliers to set-asides. For example, Maryland recently revised its RPS and changed from a multiplier to a set-aside approach.

Rob Kornahrens, Advanced Roofing, one of the largest installers of insulation for FPL's rebate program, advocated incentives for solar to increase customer demand, as well as a carve-out for photovoltaic and solar thermal systems. Mr. Kornahrens also expressed a concern that solar systems and buildings should be constructed to withstand high wind conditions so that the benefits of these systems are available long-term.

Summary of the September 27, 2007 PSC Staff RPS Workshop

The PSC staff workshop held on September 27, 2007, on a Renewable Portfolio Standard (RPS) was introduced by staff supervisor Mark Futrell, and immediately proceeded into a slide presentation by Ryan Katofsky, the Associate Director of Navigant Consulting. Mr. Katofsky was invited by staff to speak regarding RPS compliance mechanisms and enforcement options. Judy Harlow of PSC staff presented the structure around which the workshop would be conducted, involving discussion of compliance and enforcement of an RPS. The following outline details the topic progression during the workshop:

I. Compliance
   a. Compliance Mechanism Options
      i. Renewable Energy Certificate Based Systems
      ii. Contract Path Systems
      iii. Central Procurement Systems
   b. Alternative Compliance Payments
   c. In-State vs. Out-of-State Consideration
   d. Utility Ownership of Renewable Facilities
   e. Verification
   f. Inclusion of Self Service Generation

II. Enforcement
   a. Penalties

Compliance

Mr. Katofsky stressed that the importance of implementing a compliance mechanism lies in its creation of a market to stimulate investment in renewables, to control overall costs to ratepayers, to ensure proper tracking and compliance with targets, and to verify that eligible resources are being used to meet the standard. Mr. Katofsky stated that three methods exist for verification of compliance with an RPS: (1) the use of Renewable Energy Certificate (REC) based systems, which he indicated was the most common choice among states with existing RPS requirements; (2) contract path, the method employed by California where the utilities that are subject to the requirements purchase both the power and the attributes of the renewable energy bundled together; and (3) the central procurement approach, found most notably in New York, where a state agency acts as a single obligated party for the RPS program.

REC-Based Systems

As discussed during the workshop, a REC-based system involves the obligated party purchasing RECs equivalent to its obligation under the RPS. Because the REC represents the "unbundled" renewable attributes of the energy, and does not require the obligated party to receive the energy physically, a REC-based system creates no capacity complications with the existing transmission infrastructure. Additionally, REC-based systems facilitate the inclusion of customer-owned renewable generation, since these customers would also generate RECs, thereby contributing to the viability of the market and strengthening the statewide achievement of RPS

targets. Mr. Katofsky cited the Texas REC-based system as a "very successful" RPS compliance system, and indicated the Massachusetts system is steadily gaining strength.

Use of a REC-based compliance mechanism would not preclude the use of multipliers, tiers, or the contract path system approach. The primary drawback to a REC-based system identified during the workshop involved the creation of the REC market and its coordination with any other attribute markets in the state. Currently, Florida does not maintain any attribute-related markets. Should Florida develop other attribute related markets such as those for SO_2, CO_2, etc., it is likely that a REC could not be split between the markets.

Mr. Katofsky indicated that five regional registries exist nationwide to administer REC exchanges for multiple member states. Existing REC markets largely consist of bilateral agreements between generators and buyers, and the registries serve to record those contractual transactions and to ensure that a solitary REC is not resold in other jurisdictions. Christy Herig with the Florida Solar Industries Association (FlaSEIA) stated her understanding that each REC is assigned a unique identifier that prevents reactivation after the REC is retired. Conflicts may develop when acquiring RECs from out of state, as different states may have differing standards of eligibility. However, independent bodies may be employed to certify the RECs under various categories, while continuing to track the RECs under the shared systems.

Barry Moline of the Florida Municipal Electric Association (FMEA) initiated discussion of "white tags" or "negawatts," where a negotiable instrument is generated with each unit of energy conserved through efficiency measures. Mr. Katofsky indicated that these white tags might be purchased or retired in some regions alongside RECs, or green tags, to achieve compliance. In states where tiers are structured to include energy efficiency and/or conservation in a select tier, price differentials may occur between the white tags and green tags, or the states might impose limits on how much of the RPS could be met through conservation and energy efficiency.

Mr. Katofsky stated that compliance verification was "fairly easy" under the REC-based system, and because this system provides the flexibility of banking and early compliance opportunities, its user-friendliness makes it an attractive option for Florida. Banking in other state RPS policies is typically limited to three years, although no rationale was provided for this limit. Bill Ashburn with Tampa Electric Company indicated that the existing Open Access Same Time Information System (OASIS) could potentially be used for tracking in a contract path or a REC-based system. OASIS was stated to have a mechanism for tagging transactions that are sufficiently large (1 MW or greater) for distribution over the transmission system. Smaller transactions would need to be covered by another tracking mechanism. Bob Graniere of the PSC staff discussed the option of using a regional transmission organization (RTO) or independent system operator (ISO) for tracking the RECs. Funding for these REC tracking systems could be maintained through collective activities, such as surcharges on transactions.

Discussion followed as to the ownership assignment of RECs resulting from customer-owned renewable generation, with Mr. Moline indicating that if the utility has provided monetary incentive for the customer to install the renewable generation facility, then the utility is entitled to the REC. Jennifer Szaro with Orlando Utilities Commission (OUC) indicated that

OUC submitted an incentive proposal to the PSC for customer-owned renewable generation, in which OUC would provide a five-cent-over-retail production incentive for photovoltaics and a three-cent production incentive for solar hot water, in exchange for the ownership rights to all associated RECs. These terms would be outlined in a contract with the customer. Mr. Graniere commented that a customer would be entitled to the REC for his load serving renewable generation, but that any RECs associated with energy sold back to the utility would then belong to the utility.

Contract Path Systems

As discussed in the workshop, a contract path system involves the obligated party entering into a Power Purchase Agreement (PPA) or building the necessary capacity to ensure compliance with the RPS targets. The energy and its attributes are bundled together as a single commodity. As described by Mr. Katofsky, vertically integrated states such as Florida typically find that the contract path approach works well with the established administrative hierarchies and state commissions. The use of a contract path system does not preclude the use of a REC-based system, as seen in Colorado, a traditionally regulated state that uses both REC-based and contract path mechanisms for increased flexibility.

Long-term power contracts usually associated with a contract path system provide a degree of certainty for planners and generators, which better assures financing for those parties seeking to expand capacity or negotiate PPAs. The primary drawback to the contract path system identified during the workshop involves transmission constraints. Because the energy is bundled together with its attributes, the obligated party must receive transmission of the energy if it is to count the attributes toward its RPS compliance; therefore, an increased burden is placed on the transmission infrastructure. The contract path system additionally creates the responsibility to ensure that any PPA contracts assumed for this purpose are auditable and can be verified for compliance with the RPS.

Central Procurement Systems

As discussed in the workshop, a central procurement system involves the state agency administering the program and acting as the sole obligated party under the RPS. The state agency purchases the attributes of the renewable energy, while the power is delivered in the usual manner. The central procurement system allows the obligated party, the state agency, to deal solely with the attributes of the energy, thereby avoiding the issue of transmission capacity constraints, yet does not require the creation of a REC market. Competitive solicitations through renewable energy RFPs drive this tracking and compliance mechanism. The state agency determines the surcharges for each utility to cover the costs of the generator contracts, and then handles the payment delivery from the utility to the generator. Two primary drawbacks are associated with the central procurement system of RPS compliance: (1) Shortfalls in compliance cannot be quickly settled, since additional RFPs would need to be issued and additional bids would be collected from eligible generators and (2) Escalating responsibility would be assumed by the administering state agency.

Alternative Compliance Payments

Despite the compliance mechanism chosen, an RPS program may include provisions for an Alternative Compliance Payment (ACP) to achieve the stipulated requirements when there are insufficient quantities of eligible generation and/or eligible RECs to be procured. The ACP would act as a substitute for purchasing RECs or eligible power (attributes). Employment of ACPs can result in periods when the renewable energy (or attribute) targets are not met, yet the obligated parties are considered in compliance with the RPS.

Mr. Katofsky cautioned that ACPs should be high enough to encourage generation expansion as the more cost-effective means of complying with the RPS, as opposed to continuous reliance on the ACP. However, cost caps are typically used in conjunction with ACPs to control the overall ratepayer costs. Setting the price for the ACP then becomes more crucial, since a precise floor and ceiling must be established. Mr. Katofsky cited the example of ACPs in Texas, where the price is set at either $50 per MWh or twice the average price of credits in that year. Additionally, some states, such as Massachusetts, have tied their ACPs to inflation indices to limit the necessary manipulation by the administering agency. ACPs for set-asides or carve-outs were stated to be typically higher than the ceiling price for the bulk of the market.

Mr. Katofsky stated that it is common for ACPs to be subject to cost recovery, or passed-through to ratepayers, but this recovery is not automatic, as seen in Delaware and Pennsylvania. Therefore, a state must consider whether to allow recovery when structuring its RPS program. Assignment of funds from ACPs is typically to investment in renewable energy projects within the state, as seen in Pennsylvania, where ACP funds are required to be placed in a sustainable energy fund and may only be used for developing additional alternative energy sources, with a limited percentage earmarked for administrative purposes. Bob Trapp of the PSC staff questioned whether the PSC has the authority to manage the ACP-related funds, and suggested that a more regulatory-friendly approach might be to implement cost caps and a penalty system in the event of noncompliance. John Burnett of Progress Energy questioned the PSC's jurisdiction to implement a REC system at all, much less a system of penalties, and suggested that direction from the Legislature would be required as to how an RPS should be implemented. Richard Zambo, representing renewable qualifying facilities (QFs) in Florida, commented that section 366.92, Florida Statutes, provides the PSC the authority to establish goals, and that enforcement of such goals is presumed.

In-State vs. Out-of-State Consideration

John McWhirter, representing the Florida Industrial Power Users Group (FIPUG), initiated discussion regarding whether a Florida utility could build a renewable plant outside of Florida, while charging its Florida customers for the RECs attributable to that out-of-state renewable plant. Mr. Katofsky commented that typically, RPS programs are designed to provide local or state benefits, and so generally, scenarios such as that are not allowable.

Utility Ownership of Renewable Facilities

Susan Clark of the Radey, Thomas, Yon, and Clark firm representing investor-owned utilities throughout the state, indicated that utility construction and ownership of renewable

facilities would provide an incentive to the utilities, since cost recovery for meeting the RPS in this fashion would not have to wait for a rate case.

Verification

Mr. Burnett commented that the PSC's jurisdiction within existing statutes suggests that a tiered approach would best allow the Florida market to operate, and added his suggestion that re-evaluation should occur after pre-defined incremental year periods. At the end of the workshop, Mr. Trapp indicated his hopes for more discussion on multipliers at the next RPS workshop.

Inclusion of Self-Service Generation

In its continuing effort to assess Florida's existing renewable capacity, staff distributed copies of its latest update to the state's renewable inventory, with discussion following that the numbers for self-service generation are likely underestimated. Numbers provided in the FRCC Ten Year Site Plan did not agree with numbers received by staff in a renewables survey, and discussion followed as to what is contained in the different figures. A request was made by Mr. Trapp to the workshop attendees to provide corrected information. After some discussion as to whether the inclusion of self-generation implies the employment of an unbundled compliance mechanism, and therefore a REC-based system, Mr. Katofsky stated that the REC-based system might simplify the self-generation inclusion, while Mr. Ashburn commented that the two were not inextricably mixed.

Enforcement

Penalties

Mr. Katofsky indicated that penalties are typically included in RPS programs for taking punitive action against obligated parties who have falsely reported information relating to eligibility or generation or if the obligated party is shown to have not made good-faith efforts towards compliance. Penalties may be monetary or may take other forms, such as tightened eligibility criteria, which would be determined by the administering entity. States may assign penalties on a discretionary basis, or may structure an automatic penalty system, which Mr. Katofsky stated should likely include an appellate process and consideration of force majeure occurrences. Mr. Katofsky indicated that not much precedent exists nationwide to provide penalty system structure discussion.

Summary of the December 6, 2007 PSC Staff RPS Workshop

The purpose of the workshop was for staff to gather information on issues relevant to the development and implementation of a Renewable Portfolio Standard (RPS) for Florida. The workshop followed an open discussion format and focused mainly on methods to encourage specific renewables and strawman RPS structures proposed by stakeholders.

Methods to Encourage Specific Renewables: multipliers vs. set-asides or tiered goals

Presentation by Robert McGee, Gulf Power Company
Topic: Multiplier Example

Bob McGee of Gulf Power Company presented an analysis of a multiplier approach to RPS compliance. Mr. McGee compared multipliers to set-aside and tier approaches. He stated that the goal of a set-aside is to get the obligated party to do what he otherwise might not do. He explained that a complier would not be economically compelled to build or purchase expensive renewable energy unless there was a set-aside in place. Similarly, tiers are a prescriptive method to get the complier to purchase or build a certain amount of expensive energy. He explained that the top tier would include the most favorable type of renewable energy (e.g., solar, wind), and would generally have a minimum purchase requirement. The bottom tier would have the least favorable form of renewable energy (e.g., municipal solid waste, exothermic phosphate production), and could potentially have a maximum purchase allowance. The rest of the RPS would be met by the middle tier technologies (e.g., biomass, hydroelectric, geothermal, ocean, etc.).

Mr. McGee stated that these methodologies are not really market forces at work, but are instead regulatory structures that say "thou shalt." Although still operating within a "thou shalt" structure, multipliers are designed to allow a little bit of market force to happen. He explained that multipliers have the same goal as set-asides and tiers – to get the complier to purchase or build expensive renewable energy that he might not otherwise be economically compelled to build – but multipliers allow some market force to work on the industry by reducing the effective cost of the more expensive renewables and allowing the utility the choice of which resources to deploy.

Multipliers work by giving additional credit for each kilowatt-hour produced. For example, with a multiplier of five applied to solar photovoltaic systems (PV), for each kilowatt-hour (kWh) produced a utility would get credit for five kWhs toward RPS compliance. Mr. McGee explained a spreadsheet analysis of the results of implementing a multiplier approach, in two different scenarios. The first scenario described a situation where everyone used only PV with multipliers to comply with an RPS of 20 percent. This situation would result in about 14.8 percent of total retail sales actually being generated by renewable energy. The second scenario included a 10 percent cap on the amount of PV included within the multiplier. Under this approach, the actual percentage of retail sales generated by renewable energy would end up being 19.5 percent.

Mr. McGee drew several conclusions from his analysis. First, multipliers and set-asides both place emphasis on a particular type of renewable generation. Second, multipliers make no guarantee that kilowatt hours of a particular type will be generated. He stated that using multipliers is a market-based approach which provides a carrot instead of a stick. Applying a multiplier brings down the effective cost of the policy-preferred energy (for example, by comparing the cost of producing one kWh from PV to five kWhs from another technology), and maintains the utility's flexibility of determining which resource is more cost-effective. On the other hand, he explained that this flexibility is the downside of the multiplier approach as well, because the deployment of a certain amount of any given technology is not guaranteed. The multiplier must be set high enough to be effective.

As an additional conclusion, the multiplier method offers the highest incentive in the early years. The multiplier starts at whatever level at which it is initially set (e.g., five) and then decreases over time. With set-asides, the requirement generally starts out small, just like the RPS starts small, and then grows over time. With a multiplier, the complier has the most incentive to install PV early in the process. Finally, multipliers offer an incentive to choose PV without removing market pressure to keep PV costs low. Providing the obligated party with the choice of resources is particularly important in the case where PV costs do not decrease as projected.

In the set-aside approach, if PV costs don't decrease over time, the costs are simply passed on the ratepayers because compliers are forced to use PV anyway. With a multiplier approach, if PV costs do not decrease as projected the complier will choose not to use PV because it is no longer cost-effective as the multiplier decreases. The PV industry has a very strong incentive to reduce their costs under a multiplier approach.

Chris Cooke of SunEdison and the Solar Alliance commented that the difficulty with the multiplier in setting the market conditions is getting the multiplier exactly right in order to provide sufficient margin, a situation that will require constant monitoring. Mr. Cooke argued that all the other states where there is a significant amount of distributed solar electric resources have a set-aside or some form of Solar Renewable Energy Credit (SREC) goal. The advantage of using SRECs is to the extent that there are marketplace changes that adjust the price, the SREC immediately reflects that price adjustment in an open, fair, and competitive marketplace.

Mr. Cooke stated that another problem with the multiplier relates to the longevity of the program. He explained that the industry wants to know what kind of market they will have three to five years out. A carve-out approach provides the certainty for the industry to be willing to invest in the needed infrastructure for coming to a new state because they can actually formulate a business plan. With a multiplier, however, a huge market risk exists because of uncertainty.

Presentation by Patrick Jeffery, Wheelabrator Technologies, Inc.
Topic: Tier Example

Patrick Jeffery of Wheelabrator Technology provided a presentation on a two tiered methodology that would place wind and solar into the first tier, with all other renewable technologies in the second. He explained that there would be two separate and distinct purchase

requirements for each tier. The purchase requirement for each tier would drive the price for the RECs associated with that tier, and as such, would probably result in different prices for the RECs in each tier. Mr. Jeffery stated that the tiered approach would address the desire by some to have different incentives applied to resources that are not the lowest cost. In terms of cost control, Mr. Jeffery explained that the since a market for SRECs or for tier 2 RECs is being created, market forces would exert cost control as the RECs settle into a market-based price.

Mr. Jeffery stated that it is important to establish separate purchase requirements in order to avoid competition between technologies because competition is not consistent with the desire to create fuel diversity. By creating separate tiers, the competition is eliminated that might result if utilities are able to use multipliers and purchase a single technology like solar. By eliminating competition between technologies for economic incentives, the state becomes a more attractive place for the renewable community in general. In addition, by having two tiers, the regulator can tailor the requirements to the desired policy goals.

Mike Twomey, speaking on behalf of ratepayers, explained that consumers of electricity in the state are interested in seeing utilities provide the least cost service possible. And if GHGs are to be reduced by paying above avoided cost, policymakers should look for opportunities to get the most out of consumer dollars by concentrating on the least cost options first. The least cost option (for example, biomass) for meeting policy goals should be selected first. The entire goal (or budget) should be met with this least cost resource if sufficient capacity can be developed. If not, policymakers should then look toward the next least cost resource. He argued that tiers are not needed, but instead competition. There should be head-to-head competition among suppliers, and the ones that are the most effective in producing power at the least cost should get the contracts.

Mr. Cooke, of SunEdison and the Solar Alliance, suggested that within the tier or carve-out robust competition would exist. He explained that the RPS would establish the purchase requirement, and then companies would bid to provide that supply. The utilities would pick the lowest cost supplier. Whereas, in the multiplier approach in which solar energy competes with all other technologies, the ability to compete is dependent upon how accurate the multiplier is set. The multiplier approach could result in a significant incentive for solar producers or little incentive depending upon how accurate the multiplier is set. In contrast, with a tier approach, solar producers would know what their market is and compete for market share. Mr. Cooke also described two important elements to control costs: a per unit cost cap and a minimum bid requirement. He also explained that the devil in the design of the program is in the details. In particular, the key is to get the right tier scale so that the efficiencies needed to drive costs down are produced, without making the tier so large that the industry cannot fulfill the desired supply.

Todd Foley, with BP Solar, discussed additional drivers to reduce cost over time, starting with implementing a declining incentive schedule. Incentives would be higher in the early years to get the market started and then decline over time to promote the lowering of costs. He also suggested an absolute rate cap. He pointed to the policy established in Maryland where in any one year if the cost of compliance exceeded one percent of electric rates, there was immediate cessation of the need to comply.

Discussion of Stakeholder Proposed RPS Structures

During this section of the workshop, stakeholders were provided an opportunity to summarize their RPS proposals.

Presentation by Tom Hartman, FPL

Tom Hartman presented a summary of FPL's proposed RPS strawman and pointed out that additional work and further discovery was needed in order to develop the optimal design. Several areas where additional information is needed include the effectiveness of various renewable options on reducing GHG, a determination of the available renewables in Florida, and the price at which those renewables are available. Mr. Hartman also stated that the primary focus of an RPS should be on the benefits to Florida with a focus on GHG reduction. In addition, fuel diversity, energy security, and reasonable prices to the consumer are important objectives. An RPS is not an end in and of itself, but a means to achieve those objectives. Highlights of the FPL strawman RPS proposal include:

- All clean energy sources should be included, such as new nuclear and incremental energy efficiency. Everything that reduces GHG emissions and increases fuel diversity and energy security should be available to meet an RPS.

- REC purchases should be a preferred means of compliance. He suggested a preference for in-state RECs, but out-of-state RECs should be included. He proposed that 120 percent of the out-of-state REC price should be paid for in-state RECs. The cost of a REC should be capped at the estimated cost of avoiding carbon emissions. Based upon a potential cap and trade cost for avoiding carbon emissions, he suggested this cap should be $20 per megawatt hour. FPL also believes that utilities should be allowed to bank and borrow RECs in order to provide more certainty and stability to REC pricing.

- An extra 2 percent return on equity (200 basis points) should be granted for utility investment in renewable resources in order to give an incentive for utilities to build a renewable facility rather than a fossil fuel facility.

- Quick approval for cost recovery and for purchased power agreements is essential, as are prudence determinations and administrative finality. Cost recovery for renewable projects can be accomplished through existing mechanisms, such as the recovery clauses.

- FPL believes that default by a renewable producer should not lead to noncompliance by a utility. If a renewable project does not develop for reasons outside of the utility's control, the utility should not be assessed a penalty for noncompliance if the project's delay causes the utility to fall short of a deadline.

- FPL believes a multiplier approach is appropriate for encouraging specific technologies. FPL proposes a multiplier of 3.5. This figure is not based upon the cost of the technology, but rather accounts for the intermittent nature of these resources and attempts to levelize their capital investment with a base load unit by comparing the capacity

factors. FPL prefers a multiplier over a set-aside due to the potentially high cost of RECs in a set-aside market. For example, although voluntary RECs for solar are available throughout the nation at a market price of about $17 per megawatt hour, in the New Jersey market, which has a solar set-aside, the price is $270 per megawatt hour.

- FPL believes that customers should receive a separate statement (e.g., bill insert) describing the cost of RPS compliance.
- FPL proposes an RPS target of 5 percent by 2017, 10 percent by 2025, and 20 percent by 2030. FPL does not believe that targets should be set on a year-to-year basis due to the time needed to construct and interconnect new resources.

- FPL believes that the RPS compliance should be capped at one percent of net retail revenue, including alternative compliance payments. FPL proposes that the cap would grow to about two percent over five years.

- FPL believes that a Florida RPS should be harmonized with any federal RPS that is established.

- FPL believes there needs to be an alternative compliance mechanism. Mr. Hartman explained that this mechanism would not be a penalty, but rather a means of achieving RPS compliance if RECs are not available at market prices. The alternative compliance payments would be used by FPL to develop additional renewable resources. FPL also believes that force majeure should be included in order to account for situations that are out of a utility's control.

Presentation by Barry Moline, FMEA

Barry Moline, of the Florida Municipal Electric Association (FMEA), provided a summary of FMEA's proposed Green Energy Portfolio Standard (GPS). Mr. Moline stated that FMEA looked at climate change as being the overriding goal of their strawman GPS. Features of the GPS include:

- Energy efficiency and conservation are included as eligible resources. There is no difference between a kWh generated from renewable energy and a kWh saved from efficiency and conservation. Technologies that are carbon free, such as solar or wind, could receive some kind of higher weighting factor such as a multiplier.

- RECs would be included in the GPS, including out-of-state RECs if they are the least-cost option (provided they are not double counted).

- The GPS would include an Affordability Rate Cap of one percent of retail revenues, including fuel. The rate cap is important to protect consumers, and one percent was chosen for the GPS proposal after a comparison to other programs around the nation. A one percent rate cap would result in an annual budget of approximately $200 million to start, with approximately $5.4 billion being spent over the next 20 years.

- The Affordability Rate Cap would only apply to those expenditures which are above avoided cost. For example, if the cost of PV is $130/MWh and avoided cost is $60/MWh, the charge to the GPS budget would be the difference above avoided cost, or $70/MWh. Similarly, for energy efficiency, only the cost of the rebate associated with a high efficiency appliance, not the total cost of the appliance, would count toward the budget.

- The GPS would allow for banking of green energy credits.

- The GPS should be evaluated every three years to make sure the goals and budget are set appropriately. Mr. Moline also recommended annual reporting.

- Although he did not address compliance issues due to the difference in regulatory jurisdiction for municipals, Mr. Moline did suggest that the entire budget would be spent even if a utility does not use it to build renewables. The utility could either meet the goal or spend the budget. The utility could write a check to a state fund that would be used for grants and rebates associated with renewable energy, partner with other utilities to fund projects, or fund university research.

- The GPS would include projects that were initiated on or before January 1, 1997, but only current MWh would count toward compliance.

- A research study should be conducted to accurately assess what is available in the state and how much it costs before appropriate goals can be set.

Various parties commented on the proposal. Of note, Mr. Krasowski argued against the use of out-of-state RECs because those would not benefit the state. Mr. Reedy, of the Florida Solar Energy Center, argued that if energy efficiency is included as an eligible resource then the goals should be doubled. Mr. Moline responded that this is one of the reasons why a resource study is necessary. He stated that if the study shows that Florida can get to 20 percent with renewable energy, and energy efficiency could also reach 20 percent, then the goal could be set at 40 percent.

Presentation by Gwen Rose, Vote Solar Initiative

Gwen Rose presented the Vote Solar Initiative proposal for an RPS with specific set-asides for solar thermal and PV. To obtain the benefits of solar power, the state should develop a program aimed at creating a self-sufficient solar industry. If such a program provides sustained support, the unsubsidized costs of PV will decline, approaching retail grid prices in the next decade, at which point solar will be a main stream energy solution. A traditional RPS design in which all eligible resources are competing may be an effective way to support the least-cost projects, but least-cost projects may not be the only objective.

Ms. Rose stated that solar deserves differential treatment for several reasons. First, from a distributed generation perspective, having the generation close to load provides reliability, security, and lower customer bills while reducing transmission line losses and deferring repairs

and upgrades to infrastructure. Second, solar is the best zero emissions energy generation resource. Finally, solar provides more jobs per installed megawatt than almost any other energy resource.

To successfully open a solar market, there needs to be long-term commitment and large scale commercial and small residential development must be included. The Vote Solar Initiative's strawman proposal includes:

- Set-asides of two percent for solar thermal and two percent for solar PV. These carve-outs would start slowly when the cost of solar is high and slowly increase over 12 years as the market builds and costs decline.
- Explicit annual targets, with compliance through SRECs.

- Safety valves for cost control would include a solar specific alternative compliance payment set approximately 25 percent above the expected market value of SRECs. The solar specific alternative compliance payment would set a basic ceiling to the cost of the SRECs. A second cost control proposal is a one percent affordability cap for the RPS.

- Creating markets for small commercial and residential systems is an important component of a solar program under the RPS. The customers would continue to need some kind of an upfront incentive, however, which could be funded in a number of ways, including a rider on rates or a systems benefit fee. An additional incentive for consumers to install solar is to ensure the purchase of SRECs upfront for the lifetime of the solar system.

- The objective would be to slowly increase solar capacity over 12 years with costs declining over time. The program would achieve, by the end of 12 years, 4 gigawatts of solar PV and 105 million square feet of solar thermal, which are both equivalent to about 6 gigawatts. A self-sufficient solar industry that can deliver systems competitive with retail electricity rates would be established. Other benefits include at least 60,000 new jobs to the state, meeting climate change goals, and diversifying the energy mix.

Following Ms. Rose's presentation, Mr. Paul Barber made several recommendations for an RPS structure on behalf of Florida Crystals. For the last decade, Florida Crystals has been operating one of the largest biomass generating plants in North America. Mr. Barber stated that Florida should not segment its renewable production by including set-asides or multipliers, but that the RPS should be developed further with overriding policy goals without a predisposition about what technologies or methods should be used to meet those goals. Over the next few years, the market should be allowed to develop broadly before a specific segmentation should take place. He stated that once a technology has been set-aside with a designated market segment through and RPS rule, it would be almost impossible to reduce that market allocation and reallocate it to another technology, even if the other technology proves to have a greater benefit for Florida. Mr. Barber suggested that goals could be established now, with segmentation to take place later when more is known about what technologies would prove to be most beneficial.

Second, Mr. Barber argued that the goal of an RPS is to facilitate the development of renewable energy in Florida, not in other states. To allow purchase of out-of-state RECs to meet a Florida RPS would frustrate development of an in-state renewable energy market and export the economic and technological development that would otherwise occur in Florida.

Finally, Mr. Barber suggested that existing renewable resources that have already been developed in Florida should be included in the RPS. Exclusion from the RPS would relegate these facilities to an inferior class, which would have a long-term detrimental effect on the economy of Florida.

David Smith, of U.S. Solar Energies, suggested that an RPS include some provisions that would encourage builders to include solar thermal in new construction. Gordon Hanson, a consumer, also spoke on the benefits of solar thermal and the need to encourage this technology.

III. Discussion of Questions

The workshop concluded with a brief discussion of the following questions posed to the stakeholders by PSC staff.

1. How should compliance verification for resources that avoid generation be addressed?
Dell Jones stated that energy meters can measure thermal energy from solar thermal water heaters and to calculate a unit of energy that would then be attributed to a REC. An alternative is to use engineering estimates to project a deemed energy savings over the life of the solar thermal system. Mr. Jones recommended applying a depreciation schedule to the engineering calculation to recognize the potential degeneration in thermal energy production from a thermal system over time.

2. Should we extend our policies down to the smallest kilowatt hour of savings to encourage everyone to participate?
Dell Jones noted that the ability to include the production from small renewable systems is largely dependent upon the transaction costs associated with bringing the RECs from these systems to market. A REC is generally associated one megawatt hour of energy. So a single residential system will produce approximately one to two RECs in one year. The value of these RECs must be compared to the cost of bringing the RECs to market. Mr. Jones recommended that there should be policies within an RPS that facilitate including RECs from these small systems toward RPS compliance. Chris Cooke stated that many states are using engineering estimates for systems smaller than 10 KW. For example, Colorado provides an up front payment of $2 per watt, but in return the homeowner gives up ownership to the RECs produced by a system for 20 years.

3. How are RECs created from a multi-fuel facility?
A representative of JEA stated that RECs from a multi-fuel facility could be counted by creating a fuel analysis based on the tonnage and BTU content of the eligible fuel that is used in a co-fired unit, along with the heat rate of the generating technology.

4. Should we consider line losses? How are they taken into account in a REC market?
Chris Cooke stated that line losses are addressed by a tiered system that includes distributed generation as a separate tier. If the energy is produced in a different region and brought in by transmission, line losses are taken into account by counting the energy that is actually delivered, rather than the energy that was generated.

Appendix 2. Review of State and Federal RPS Activity

State Overview

In assessing all potential strategies for development of an RPS, staff reviewed the existing policies in other states. As of this writing, 25 states and the District of Columbia have implemented mandatory renewable portfolio standards, and an additional four states have implemented voluntary renewable portfolio goals.[5] All but 1 of these 30 total renewable policies became effective within the last 7 calendar years,[6] with 20 of these implemented within the last 2 calendar years. Two of the 30 have been enacted but are yet to be implemented.[7]

All but 3 of the 29 total states with renewable portfolio policies have structured graduated benchmarks of achievement. In these policies, overall achievement goals are established, with incremental increases scheduled at intermediate points to better ensure compliance with the overarching objective. Eleven states specifically include energy efficiency or conservation as a means to meeting renewable goals. Seven states plus the District of Columbia use some form of a multiplier to encourage growth of certain preferred technologies and to ensure compliance with renewable goals. Twenty-five states plus the District of Columbia have included provisions for current or future use of tradable energy certificates as a means of compliance. Eleven states give some degree of preferential treatment to in-state or regional renewables, while 15 states plus the District of Columbia have constructed carve-outs or set-asides for preferred types of renewable technologies. Eleven states plus the District of Columbia specifically address an Alternative Compliance Penalty (ACP), and ten states address noncompliance penalties, with two of these states containing provisions for both ACP and noncompliance penalties. Six states have included a cost cap for affordability.

For the sake of comparison, staff has selected five states for which to provide more in-depth analysis of program structures: California, Colorado, New Jersey, North Carolina, and Texas.

California

California's renewable mandate applies to the state's IOUs, electric service providers, small and multi-jurisdictional utilities and community choice aggregators, all collectively referred to as "retail sellers." Retail sellers must increase their sales eligible renewable energy resources by at least 1 percent annually, working toward the mandate of 20 percent by the year 2010. An aspirational goal is set for 33 percent by the end of 2020.

Eligible resources include solar thermal electric, photovoltaics, landfill gas, wind, biomass, geothermal electric, municipal solid waste, anaerobic digestion, small hydroelectric,

[5] As of December 1, 2007, Missouri, North Dakota, Vermont, and Virginia had voluntary renewable portfolio goals.
[6] Iowa's Alternative Energy Law, a renewables set-aside of 105 MW, was enacted in 1983.
[7] Missouri's renewable energy and energy efficiency objective and North Carolina's renewable energy and energy efficiency portfolio standard are each scheduled to become effective January 1, 2008.

tidal energy, wave energy, ocean thermal, biodiesel, and fuel cells using renewable fuels. No carve-outs or set-asides are established for California.

As of the California utility RPS compliance filings made on August 1, 2007, California's 3 large IOUs collectively provided 13.2 percent of their 2006 electricity sales with renewable power. Applying the minimum 1 percent annual increase to this provision would result in these utilities failing to comply with the 2010 benchmark.

Among the itemized roles of the California Energy Commission is the authority to allocate and award supplemental energy payments to eligible renewable energy resources to cover above-market costs of renewable energy. These supplemental energy payments serve as production incentives for fulfilling RPS obligations; therefore, the amount of the payment is dependant upon the project size and the cost.

Although current state law does not allow for the usage of RECs as a method to meet renewable goals, California's legislation specifically notes that it does not exclude future allowance of tradable RECs.

Colorado

Colorado's renewable mandate applies to all the state's IOUs and to those municipal utilities and rural electric cooperatives serving more than 40,000 customers. The IOUs have higher ultimate goals than the municipals and cooperatives. IOUs are required to use specified percentages of renewable energy and/or recycled energy according to a graduated schedule beginning in 2007, ultimately increasing to 20 percent of retail electricity sales in Colorado for the year 2020 and for each following year. The obligated electric cooperatives and municipal utilities are required to comply with a graduated schedule beginning in 2008, ultimately increasing to a 10 percent goal in the year 2020 and beyond.

Eligible resources include photovoltaics, landfill gas, wind, biomass, hydroelectric, geothermal electric, fuel cells, recycled energy, and anaerobic digestion. A carve-out of 4 percent solar-electric technologies is applicable to the state's IOUs, with half of the carve-out to be generated by customer-sited facilities.

Eligible energy generated in Colorado is favored, with an in-state kWh of eligible electricity generated counting as 1.25 kWh for RPS-compliance purposes. Electricity generated as community based projects, or projects that are not greater than 30 MW that are located in Colorado and are owned by community residents, non-profits, cooperatives, local government entities or tribal councils, receives a 150 percent credit towards compliance.

Because Colorado's RPS became effective within the last calendar year, in 2007, reports of compliance are not yet available. Tradable RECs may be used to satisfy the standard.

New Jersey

New Jersey's renewable mandate applies to each supplier/provider selling electricity to retail customers. The state's renewables portfolio standard applies a graduated schedule of requirements beginning in the year 2004, increasing to a 22.5 percent requirement by the year 2021. The online Database of State Incentives for Renewables & Efficiency <http://www.dsireusa.org> cites the New Jersey RPS as "one of the most aggressive in the United States."

Eligible resources include solar thermal electric, photovoltaics, landfill gas, wind, biomass, hydroelectric, geothermal electric, resource-recovery facilities approved by the New Jersey Department of Environmental Protection (NJDEP), anaerobic digestion, tidal energy, wave energy, and fuel cells using renewable fuels. The 22.5 percent requirement by the year 2021 is comprised of a 2.12 percent carve-out for solar energy, a 17.88 percent carve-out for any energies included in Class I, and a 2.5 percent carve-out for any energies included in Class II. These minimum requirements do not act as ceilings, as the state has allowed solar energy to qualify for any of the carve-outs, and for Class I energies to qualify for the Class II requirements. However, Class II energy would not qualify for the solar or the Class I requirements. Class I energy is defined as electricity deriving from solar energy, wind energy, wave or tidal action, geothermal energy, landfill gas, anaerobic digestion, fuel cells using renewable fuels, and certain other forms of sustainable biomass, as approved in writing from the NJDEP. Class II energy is defined as electricity deriving from hydropower facilities no greater than 30 MW, and resource-recovery facilities approved by the NJDEP and located in New Jersey. Any energy classified as Class I or Class II must be generated within or delivered into the regional transmission organization's territory. If delivered, the energy qualifies for inclusion if generated at a facility that began construction on or after January 1, 2003.

Electric suppliers or providers meet the RPS requirements by submitting Solar RECs, Class I RECs, or Class II RECs. Compliance is achieved solely through this REC submission. Alternative Compliance Payments (ACPs) and/or Solar Alternative Compliance Payments (SACP) are remitted in years when compliance is not achieved. The prices of these payments are determined by the New Jersey Board of Public Utilities (BPU), and are set no lower than the estimated competitive market cost of either (1) the cost of meeting the requirement by purchasing a REC/solar REC or (2) the cost of meeting the requirement by generating the required renewable energy. The BPU reviews the prices of these payments at least once per year. Any revenue generated by the ACPs is used to fund renewable energy projects through the New Jersey Clean Energy Program (NJCEP), while revenue generated by the SACP is used to fund solar projects under the NJCEP.

Deregulation in New Jersey allows its BPU to keep all market share information confidential. Because RPS compliance reports detail market share information for New Jersey utilities, these reports are not available to the public, per Scott Hunter, the Renewable Energy Program Administrator in the BPU's Office of Clean Energy. However, Mr. Hunter indicates that prior to this most recently completed Energy Year (Energy Year 07 ending May 31, 2007), the requirements for solar, Class I, and Class II resources have been met through REC retirement. While revised data reports are still being accepted by the BPU for Energy Year 07, early indications are that goals will be met for solar and Class II resources with REC retirement,

but that ACPs will likely be required for the expected $7 million shortfall on Class I resources. To date, New Jersey has not resorted to penalties for noncompliance.

North Carolina

North Carolina's renewable mandate applies to the state's IOUs, municipal utilities, and electric cooperatives. North Carolina's renewable energy and energy efficiency portfolio standard applies a graduated schedule of requirements beginning in the year 2010, increasing to a 12.5 percent requirement for IOUs by the year 2020 and a 10 percent requirement by 2018 for municipal utilities and electric cooperatives. Until the year 2018, utilities may employ energy efficiency measures to meet a maximum of 25 percent of the standards. After 2018, this maximum increases to 40 percent of the requirements.

Utilities are permitted to recover incremental costs from customers, as well as up to $1 million for alternative energy research. Annual per customer cost recovery is capped according to a graduated schedule beginning in 2008, as seen below:

Customer Type	2008	2012	2015
Residential	$10	$12	$34
Commercial	$50	$150	$150
Industrial	$500	$1,000	$1,000

Eligible resources include solar water heat, solar space heat, solar thermal electric, solar thermal process heat, photovoltaics, landfill gas, biomass, geothermal electric, hydrogen, anaerobic digestion, small hydroelectric, tidal energy, and wave energy. Carve-outs are included for solar electricity and thermal energy (up to 0.2 percent in the year 2021), swine waste (0.2 percent by the year 2018), and poultry waste (900,000 MWh by 2014). All utilities are held to the carve out requirements, regardless of the graduated schedule to which the utility belongs.

Because North Carolina's requirement has not yet become effective, reports of compliance are not yet available.

Renewable energy certificates may be used to achieve compliance, including the use of RECs from out-of-state facilities. Out-of-state REC use is limited to a maximum of 25 percent of the standard.

Texas

The renewable generation requirement in Texas applies only to the state's IOUs. Municipal utilities, rural electric cooperatives, and retail suppliers are provided the option to participate. A graduated schedule of compliance is applied beginning with 2,280 MW by January 1, 2007, increasing to 5,880 MW by January 1, 2015. Qualifying systems include those installed after September 1999, including the following sources: solar, wind, geothermal, hydroelectric, wave/tidal energy, biomass, biomass-based waste products, and landfill gas.

Expansion projects required by the utilities for meeting these requirements are recovered through electric rates.

Eligible resources include solar water heating, solar thermal electric, photovoltaics, landfill gas, wind, biomass, hydroelectric, geothermal electric, geothermal heat pumps, tidal energy, wave energy, and ocean thermal. Nearly all of the current renewable energy generation in Texas derives from wind, thereby prompting the Public Utility Commission of Texas (PUCT) to establish a set-aside requirement of 500 MW for renewable sources other than wind.

As of December 31, 2006, Texas maintained 3,416 MW of renewable energy capacity, of which 3,134.8 MW derived from wind. Therefore, Texas has already exceeded its total renewable requirements for the year 2009. The set-aside requirement of 500 MW from non-wind resources does not appear to have been achieved.

RECs are permitted for compliance achievement. The PUCT maintains the authority to cap the price of RECs and to suspend the renewable requirements, if necessary, to protect grid reliability and operation. The Texas Legislature has empowered the PUCT to establish alternative compliance payments, but this compliance mechanism had not been established as of this writing. A penalty system is in place requiring either $50 per MWh or 200 percent of the average cost of credits traded during the year, whichever is less, for non-compliant entities.

Please see the accompanying table on the following page for a state-by-state overview.

Federal Overview

As of this writing, no legislation is proposed to establish a federal renewable portfolio standard. Most recently, HR 6 included a provision for a 15 percent renewable standard by the year 2020; however, this provision and others were removed prior to the bill's passage by the Senate on December 14, 2007.

State RPS Policy Overview

	Arizona	California	Colorado	Connecticut	Delaware	D.C.	Hawaii	Illinois	Iowa	Maine	Maryland	Massachusetts	Minnesota	Missouri	Montana	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Oregon	Pennsylvania	Rhode Island	Texas	Vermont	Virginia	Washington	Wisconsin
Graduated?	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X
Includes efficiency or conservation?				X			X	X						X		X			X		X		X	X			X		X	
Addresses RECs?	X	-	X	X	X	X		X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Carve-outs?			X	X	X	X		X			X		X			X	X	X	X	X	X			X						
Set-asides?									X		X							X			X						X			
In-state or regional preference?	X		X		X			X			X				X		X	X			X						X		X	
Multipliers?	X		X		X	X					X					X												X	X	
Alternative Compliance Payments?					X	X				X	X	X	X				X	X					X	X	X		X			
Penalties?	X			X			X			X			X		X								X			X			X	
Cost cap?								X			X				X				X		X		X							

Source: Information gathered from the http//www.dsireusa.org website and state regulatory agencies.

Appendix 3. Review of State Public Benefit Funds

As of November 2007, the District of Columbia and 21 states have adopted a public benefit fund (PBF) for renewable energy and/or energy efficiency. The table below lists the District of Columbia and the states with these PBFs. The District of Columbia and 18 states have a renewable energy PBF.[8] Participation in these funds is mandatory in all but one state. Only Maine has a non-mandatory PBF for renewable energy, which is voluntarily financed to support renewable energy and combined heat and power. Coincidentally, The District of Columbia and 18 states have an energy efficiency PBF.[9] Participation in these funds is mandatory. Additionally, there are at least two PBFs for energy-related research and several for financial assistance for low-income electricity customers.[10]

Public Benefits Funds for Energy Efficiency and Renewable Energy

State	Energy Efficiency	Renewable Energy
Arizona	X	X
California		X
Connecticut	X	X
Delaware		X
District of Columbia	X	X
Illinois	X	X
Maine	X	
Massachusetts	X	X
Michigan	X	
Minnesota		X
Montana	X	X
North Carolina		
New Hampshire	X	X
New Jersey	X	X
New York	X	X
Ohio	X	X
Oregon	X	X
Pennsylvania	X	X
Rhode Island	X	X
Texas	X	
Vermont	X	
Wisconsin	X	X

[8] The states with a renewable energy PBF are Arizona, California, Connecticut, Delaware, Illinois, Maine, Massachusetts, Minnesota, Montana, North Carolina, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, and Wisconsin.

[9] The states with an energy efficiency PBF are Arizona, California, Connecticut, Illinois, Maine, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, Vermont, and Wisconsin.

[10] North Carolina is in the process of putting together a PBF for alternative energy research. Since 1996 California has had a Public Benefits Fund for Research, Development and Demonstration of renewable energy and emerging energy efficiency technologies.

Arizona (Inactive) Public Benefits Fund

The situation in the State of Arizona demonstrates how strongly an energy-related PBF could be tied to electric-industry-restructuring legislation at the state level. Although Arizona's electricity restructuring legislation allowed for energy-related PBFs, there are not any energy-related PBFs in Arizona because the state did not actually restructure its retail electricity market. If the retail electricity market in Arizona had been restructured to support unregulated retail-electricity providers, then each customer that chose an unregulated retail electricity provider would have to contribute a lump-sum amount of money to an energy-related PBF.

Arizona PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
				ACC Decision No. 69127 (AAC Ri14-2-1801 et seq, enacted 11/14/2006, effective 06/15/2007	Arizona Commerce Commission	Landfill gas, fuel cells with renewable fuel, geothermal heat pumps and electric, wind, biomass, hydroelectric, CHP/co-generation, anaerobic digestion, day lighting (non-residential only), photo-voltaic, technologies approved by ACC, and solar water heat, space heat, thermal electric, thermal process heat, space cooling, HVAC, and pool heating (commercial only)

California Public Benefits Funds

AB1890 (1996) directed Southern California Edison, Pacific Gas and Electric Company, and San Diego Gas and Electric Company to collect a public goods surcharge on ratepayer electricity usage to create three PBFs. AB995 (2000) and SB1194 (2000) extended these PBFs. In September 2005, the California Public Utilities Commission (CPUC) increased the funding of the energy efficiency PBF to a total of $2 billion over the period 2006 to 2008. The system benefit charges (SBCs) that are used to collect these funds vary by utility and customer type.

California PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Renewable Energy	Varies by utility and customer type. On average throughout state, approximately 2.7 mills/kwh.	Approximately $135 million per year.	2001 initially, extended to 2011.	AB 1890 (1996) AB 995 (2000) SB 1194 (2000)	California Energy Commission	Production incentives, above-cost premiums, rebates. Eligible: solar thermal, biomass, small wind, fuel cells using renewable fuels, consumer education
Energy Efficiency	Varies by utility and customer type. On average throughout state, approximately 4.2 mills/kwh.	$2 Billion for 2006 to 2008. Approximately $228 million per year thereafter.	2001 initially, extended to 2011.	AB 1890 (1996) AB 995 (2000) SB 1194 (2000)	California Public Utilities Commission	Program implementation, small grants, energy system integration, energy-related environmental research
Research Development and Demonstration	Varies by utility and customer type. On average throughout state, approximately 1.1 mills/kwh.	Approximately $62.5 million per year.	2001 initially, extended to 2011.	AB 1890 (1996) AB 995 (2000) SB 1194 (2000)	California Energy Commission	Grants Eligible: small wind and fuel cells using renewable fuels

Colorado Public Benefits Fund

In November 2006, the voters in the City of Boulder, Colorado authorized the City Council to levy and collect an excise tax from the residential, commercial, and industrial electricity customers to contribute to the Climate Action Plan Fund.[11] The fund's objective is to reduce greenhouse-gas emissions. The programs and projects for achieving this objective will reduce greenhouse-gas emission from motor vehicles and increase energy efficiency and renewable energy use. The Climate Action Plan Fund began operations on April 1, 2007, and is scheduled to terminate on March 31, 2013.

Colorado PBF Overview

Public Benefit Fund	System Benefit Charge *	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
City of Boulder CO Climate Action Plan Fund	$0.0022/kwh (2.2 mills/kwh) Residential April 2007 $0.0004/kwh (0.4 mill/kwh) Commercial April 2007 $0.0002/kwh (0.2 mill/kwh) Industrial April 2007	No estimate	March 31, 2013	Ballot Issue 202, enacted 11/07/2006 Boulder Revised Code 3-12, effective 04/01/2007		Energy efficiency Renewable energy Emission reduction from motor vehicles

* After one year of administering the Climate Action Plan Fund, the City Council of Boulder, Colorado has the authority to increase the residential SBC to $0.0049/kwh (4.9 mills/kwh), the commercial SBC to $0.009/kwh (0.9 mill/kwh), and the industrial SBC to $0.0003/kwh (0.3 mill/kwh).

[11] Voluntary purchases of wind power are not subject to the excise tax.

Connecticut Public Benefits Fund

Public Act 98-28 (1998), which is electricity industry restructuring legislation, established separate Clean Energy funds to support energy efficiency and renewable energy. The funds began work in earnest in 2000. The associated SBC was put on the electricity bills issued by the investor-owned utilities.[12] This legislation also provided for other SBCs to fund other PBFs, which help to support public education, weatherization and conservation measures for low-income residents, storage and disposal costs for spent nuclear fuel, and post-retirement costs for decommissioned nuclear reactors.

The prior administrator of the Connecticut Clean Energy Funds is Connecticut Innovations, which is a quasi-government investment organization. Connecticut Innovations receives guidance from the Clean Energy Advisory Committee. Connecticut Innovations created and administered the Solar PV Program, the Fuel Cell Performance Monitoring Program, the Connecticut Clean Energy Communities Program, the Connecticut Clean Energy Community Innovations Grant Program, the Clean Energy Climate Solutions Program, the Solar Curriculum Project, the Operational Demonstration Program, and the Smart Energy marketing campaign, the On-site Renewable Distributed Generation Program, and Project 100.

Currently, these funds are administered by the Renewable Energy Investment Board. Its investment activities cannot involve the combustion of coal, petroleum, petroleum products, municipal solid waste, and nuclear fission. The emerging technologies that it chooses to invest in must have a significant potential for commercialization. But in general, the Renewable Energy Investment Board may invest in solar electric, solar thermal, wind, ocean thermal energy, wave or tidal energy, fuel cells, landfill gas, hydrogen production and hydrogen conversion technologies, low-emission advanced biomass conversion technologies. The investment tools are subsidies, convertible debt, equity investments, and grants and rebates.

[12] Unlike other states with energy-related PBFs, each of Connecticut's municipal electric utilities is required by Conn. Gen. Stat. Section 7-233y to establish a fund to promote renewable energy, energy efficiency, conservation, and load-management programs. Furthermore, the municipal electric utilities are required to adopt a comprehensive plan for the expenditure of the proceeds in the fund.

Connecticut PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects *
Connecticut Clean Energy Funds	$0.0005/kwh (0.5 mills/kwh) statewide (2000 -2001) $0.00075/kwh (0.75 mills/kwh) statewide (2002 - 2004) No less than $0.001/kwh (1 mill/kwh) statewide (200 4 -) $0.001/kwh (1 mill/kwh) current	$75.4 million for fiscal year 2007 $117 million (Total collections since 2000 through April 30, 2006)	No date set.	Conn. Gen. Stat. § 16-245n, enacted 04//1998, effective 01/01/2000	Connecticut Innovations (2000 – 2007) Members appointed b Governor, Legislature, and Connecticut Innovations Renewable Energy Investment Board (2007 -) Members are statutorily appointed **	Biomass, hydroelectric, tidal and wave energy, ocean thermal, fuel cells using renewable fuels, photovoltaic, and hydrogen. Energy efficiency projects must be demand-side management
Clean Energy Funds Supported by Municipal Electric Companies **	$0.001/kwh (1 mill/kwh (2006) $0.0013/kwh (1.3 mills/kwh) 2007 $0.0016/kwh (1.6 mill/kwh) 2008 $0.0019/kwh (1.9 mills/kwh) 2009 $0.0019/kwh (1.9 mills/kwh) 2010 $0.0025/kwh (2.5 mills/kwh) 2011	Data not available	No date set.	Conn. Gen. Stat. § 7-233y	Local governing boards	Programs and projects that promote load management, renewable energy, conservation, and energy efficiency.

* Presently, Connecticut Light and United Illuminating pay the current SBC into the Connecticut Clean Energy Funds.

** The municipal electric companies are required by statute to adopt their own comprehensive plans for the expenditure of the proceeds of their funds.

Delaware Public Benefit Fund

In 1999, the State of Delaware passed electric industry restructuring legislation that required Delaware's one investor-owned utility to participate in a Green Energy Fund. This fund supports renewable energy, energy efficiency, and assistance for low-income electricity users. Municipal utilities and electricity cooperatives were not asked to contribute to or establish an energy-related PBF until 2005. Under the Renewable Portfolio Standard legislation that was passed in 2005, Delaware's one electricity cooperative and its nine municipal electric utilities are required to choose between an energy-related PBF and conforming to the RPS schedule. Delaware's one electricity cooperative chose to establish its own energy-related PBF instead of

contributing to the statewide Green Energy Fund. Each of Delaware's nine municipal electric utilities also chose to establish their own energy-related PBF under the auspices of the Delaware Municipal Electric Corporation.[13]

Delaware PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Green Energy Fund (applies only to the one investor-owned utility)	$0.000176/kwh (0.176 mill/kwh) from 1999 to 2007 for energy efficiency and renewable energy $0.000356/kwh (0.356 mill/kwh) as of July 2007 for energy efficiency and renewable energy. $0.000095/kwh (0.095 mill/kwh) as of July 2007 for low-income programs	$3 million for renewable energy and energy efficiency programs $0.8 million for low-income programs	No expiration date has been set	26 Del. C § 1014, enacted 1999, amended 2003, effective 10/01/1999 29 Del. C § 8051 et seq Green Energy Fund Regulations Senate Bill 35 of 2007, enacted 07/24/2007	Delaware's one investor-owned utility (renewable energy and energy efficiency) Department of Health and Social Services, Division of State Service Centers (low income)	Solar thermal electric, wind, photovoltaic, geothermal heat pumps Green Energy Program Incentive Technology and Demonstration Grants Research and Development Grants
Electric Cooperative's Fund	$0.000178/kwh (0.178 mill/kwh)	Approximately $197,000	No expiration date has been set.	Senate Bill 74 of 2005 § 363, enacted 07/21/2005	Electric Cooperative	Rebates for distributed renewable energy systems
Municipal Electric Fund	$0.000178/kwh (0.178 mill/kwh)	Dover: $143,000 Newark: 77,679 Milford: 33,856 Seaford; $21,396 Lewes: $13,848 Middletown: $20,523 New Castle: $14,774 Smyrna: $15,842 Clayton: $2,136	No expiration date has been set.	Senate Bill 74 of 2005 § 363, enacted 07/21/2005	Delaware Municipal Electric Corporation	Rebates for wind, solar heating, solar thermal electric, and geothermal heat pumps

[13] The Delaware Municipal Electric Corporation is a joint-action agency and wholesale electric company that represents the nine municipal electric utilities in legislative and regulatory matters.

District of Columbia Public Benefits Fund

Electric-industry restructuring legislation, which was passed in 1999, required the District of Columbia Public Service Commission to establish a PBF to provide energy assistance to low-income residents and to support energy efficiency and renewable energy programs. The Reliable Energy Trust Fund took effect 2001. This fund is financed with a non-bypassable surcharge on all customers that are not Residential Aid Discount customers. The approved annual collection for this fund was $8 million from 2001 through 2004.[14] The authorized annual collection for this fund is $9 million to $23 million for 2005 through 2007. Most of the assets in this fund are allocated to low-income energy assistance programs.[15] The majority of the remaining balance of the fund's proceeds is used to support energy efficiency programs.

District of Columbia PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Reliable Energy Trust Fund	$0.0008/kwh (0.8 mill/kwh) Maximum 2001 – 2004 $0.002/kwh (2 mills/kwh) Maximum 2005 – forward $0.0001/kwh (0.1 mill/kwh) Minimum 2005 - forward	$2 million annually (2001 – 2004) $9.5 million annually (2005) $10.5 million annually (2006 – 2007) No decision for 2008	No expiration date is set	D.C Code § 34-1514, enacted 05/09/2000, effective 0101/2001	District of Columbia Energy Office (Energy efficiency and renewable energy)	Energy efficiency Low-income assistance Outreach and public education for conservation Distributed generation and net metering Renewable energy demonstration * Rebates **

* Financial support for renewable energy was suspended in 2007. During 2005 and 2006, the Public Service Commission of the District of Columbia allocated $250,000 annually to the Renewable Electricity Generation Demonstration Program

** Rebates are given for the installation of Energy Star appliances and lighting.

[14] The District of Columbia Public Service Commission approved the collection of $2 million annually for Reliable Energy Trust Fund from 2001 through 2004.

[15] The Reliable Energy Trust Fund has supported appliance replacements and weatherization for low-income electricity users, extension of the Residential Aid Discount program, expansion and education for LIHEAP, home-energy ratings, and loans promotion.

Illinois Public Benefits Funds

Illinois has separate PBFs for energy efficiency and renewable energy. The renewable energy PBF is supported by the Renewable Energy Resource and Coal Technology Development Assistance Charge, which is a surcharge on customer service for electric and gas services. One-half of this SBC supports the renewable energy PBF, and one-half of this SBC supports Illinois Coal Technology Development Assistance Fund. The SBCs for this fund are statewide, but they do vary by customer classes. The energy efficiency PBF is capped at the level of $3 million per year. Electricity and gas customers do not contribute directly to this PBF. Instead, the direct contributors are the electric utilities and alternative retail electric service suppliers.

Illinois PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Renewable Energy Resource Trust Fund	**Residential** $0.05/mo/electiric and gas service **Small nonresidential** $0.50/mo/electric and gas service **Large nonresidential** $37.50/mo/electric and gas service	Approximately $6 million per year, on average, from 1998 through 2015	2007 initially, extended to 2015	20 ILCS 687/6-1 et seq. Enacted 12/16/1997 Effective 12/16/1997 § 220 ILCS 5/16-111.1 Enacted 06/30/1999 Effective 06/30/1999 Public Act 095-0481 § 5-910 et seq Enacted 08/28/2007 Effective 08/28/07)	Illinois Department of Commerce and Economic Opportunity	Grants, loans, production incentives, all other incentives Eligible: solar thermal, wind, solar, organic waste bio-mass, dedicated crops for energy production, small hydropower
Energy Efficiency Trust Fund	Pro rate share contributed by electric utilities and alternative retail electricity suppliers on the basis of the number of kwhs sold during the previous year	$3 million per year	2007 initially, extended to 2015.	20 ILCS 687/6-1 et seq. Enacted 12/16/1997 Effective 12/16/1997 § 220 ILCS 5/16-111.1 Enacted 06/30/1999 Effective 06/30/1999 Public Act 095-0481 § 5-910 et seq Enacted 08/28/2007 Effective 08/28/07)	Illinois Department of Commerce and Economic Opportunity	Energy efficiency upgrades for low-income customers, retrofits, building construction, window and appliance upgrades, lighting upgrades, and insulation

Iowa Public Benefit Fund

The State of Iowa does not have an energy-related PBF, per se. However, legislation was passed in 2001 that allows the customers of Iowa's utilities to make contributions to their utilities in support of renewable energy. Meanwhile, all of Iowa's utilities, regardless of whether or not they are rate regulated by the Iowa Utilities Board, must offer green-power options to their customers.

Iowa PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
No specific PBF	Voluntary contributions for the utility's customers	No estimate available	No expiration date is set	Iowa Code § 476.47, enacted 07/01/2001, effective 01/01/2004	All utilities	Development of renewable energy sources

Maine Public Benefits Fund

Maine's Renewable Energy Funds is a voluntary PBF, which means that a SBC is not the funding mechanism. Instead, electricity users may contribute to this PBF by checking off a contribution per month on the electricity bill. The size of the monthly contribution is $1, $5, $10, or an amount chosen by the electricity user. The contribution is added to the customer's monthly electricity bill. Because there is not a pre-set SBC, the size of this PBF is indeterminate from year to year. This voluntary PBF is a result of Maine's electricity-industry restructuring legislation that passed in May 1997. The Renewable Energy Fund can provide financial support to residential customers, nonprofit organizations, schools, rural electric cooperatives, institutions, and the general public. The Renewable Resource Fund supports:

1. Grants for research and development to the University of Maine, Maine Maritime Academy, and Maine Technical College System.

2. Grants for demonstration projects by Maine-based non-profits, customer-owned T&D utilities, community-based non-profits, community action programs, municipalities, quasi-municipal corporations and districts, and school administrative units.

Efficiency Maine is a mandatory PBF that is authorized by the electric-industry-restructuring legislation that was passed in 1997. The Maine Public Utilities Commission assesses the utilities a SBC to cover program costs and administrative costs. The SBC is reflected in the utilities' rates. This SBC has a maximum and a minimum. Beginning in 2003, the Maine Public Utilities Commission decided to gradually raise the SBC to the maximum of 1.45 mills/kwh. The minimum for a utility was set at 0.6 mill/kwh, and the Maine Public Utilities Commission intends to increase the minimum by 0.2 mill/kwh per year, thereafter, until the maximum is reached. By statute, at least 20 percent of the annual funding must support energy programs for low-income customers, and at least 20 percent of the annual funding must

support energy programs for small businesses. Initially, the administration of Efficiency Maine was shared among the State Planning Office, the utilities, and the Maine Public Utilities Commission. In 2002, the complete authority was transferred to the Maine Public Utilities Commission.

Maine PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Renewable Energy Fund	Voluntary contributions from electricity customers and others. RPS Alternative Compliance Payment (2007)	$350,000 + (as of July 1, 2007)	No expiration date has been set because participation in the Renewable Energy Fund is voluntary	35-A.M.R.S. § 3210, enacted 1997 CMR 65-407-312, enacted 12/15/1998, amended 2000, effective 12/20/1998	State Planning Office (originally) Maine Public Utilities Commission (07/01/ 2007) Joint Standing Committee of the Legislature receives annual report from Maine Public Utilities Commission (07/01/2007)	Solar thermal electric, wind, biomass, photovoltaic, hydroelectric, geothermal electric, fuel cells, tidal energy, municipal solid waste
Efficiency Maine	Varies by year and utility $0.00145. kwh (1.45 mills/kwh) is the maximum SBC $0.0006/kwh (0.6 mills/kwh) Minimum	Collected $9.6 million (2006) $72 million (total collections expected through 2009)	No expiration date has been set.	35-A.M.R.S § 3211-A, enacted 04/05/2002 CMR 65-407-380, enacted 10/01/1999, amended 12/02/2002' effective 10/06/1999	State Planning Office (originally) Maine Public Utilities Commission (07/01/ 2007) Joint Standing Committee of the Legislature receives annual report from Maine Public Utilities Commission (07/01/2007	Eligibility: specific technologies are not identified Supports improvements in lighting efficiency, reductions in peak demand, high-performance buildings, energy training and certification, public education, and appliance replacements for low-income electricity users

* The report contains descriptions of the Maine Public Utilities Commission's actions, the accounting of total deposits and expenditures, and the descriptions of the research and development projects and the demonstration projects.

Massachusetts Public Benefits Funds

Massachusetts has separate PBFs for energy efficiency and renewable energy. Massachusetts also has a PBF for low-income assistance programs. The renewable energy and energy efficiency PBFs are supported by different statewide SBCs that apply to the ratepayers of all investor-owned utilities. Each SBC changed on a yearly basis between 1998 and 2002. However, each pair of SBCs will remain at its 2002 levels until 2012. A quasi-public research and development entity is the administrator of both funds. The structure of the oversight responsibilities that are assumed by the State of Massachusetts is noteworthy.

Massachusetts PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Renewable Energy Trust Fund	Varied by year 0.75 mill/kwh (1998) 1 mill/kwh (1999) 1.25 mills/kwh (2000) 0.75 mill/kwh (2001) 0.50 mill/kwh (2002 through 2012)	Approximately $25 million per year	2012	M.G.L. ch. 40J, § 4E Enacted 11/25/1997 Effective 03/01/1998 M.G.L. ch. 25, § 20 Enacted 11/25/1997 Effective 03/01/1998	Massachusetts Technology Collaborative Massachusetts Division of Energy Resources (Overseer) Advisory Board (Overseer)	Eligible: solar, solar thermal, wind, ocean, wave, tidal, fuel cells, land-fill gas, biomass, storage and conversion technologies., consumer education, green building, commercialization, provide access to capital markets, reduce or remove market barriers
Energy Efficiency Fund	Varied by year 3.30 mill/kwh (1998) 3.10 mill/kwh (1999) 2.85 mills/kwh (2000) 2.70 mill/kwh (2001) 2.50 mill/kwh (2002 through 2012)	Approximately $114 million per year, on average, from 1998 through 2012	2012	M.G.L. ch. 25, § 19 Enacted 11/25/1997 Effective 03/01/1998	Investor-owned Utilities Massachusetts Division of Energy Resources (Overseer) Massachusetts Department of Telecommunications and Energy (Cost effectiveness)	Eligible: demand –side management, energy projects for low-income residents, education projects for low-income residents

Michigan Public Benefits Fund

Michigan's Low-Income and Energy Efficiency Fund was authorized as a result of electric-industry restructuring legislation that was enacted in June of 2000. There have been several sources of proceeds for this fund. Securitization savings exceeding the amount needed to achieve a 5 percent rate reduction for residential and business customers was the source of funding from 2000 through 2003. The fund's proceeds were distributed for the first time in 2002. A uniform SBC was the source of funding for 2005. The SBC was established and approved by the Michigan Public Service Commission. Rate settlements in 2005 and 2006 supplied additional annual contributions to the Low-Income and Energy Efficiency Fund. The terms of the settlements require that the utility's ratepayers are the source of funding. The majority of proceeds in this fund are used for low-income assistance.[16] In 2001, the Michigan Public Utilities Commission decided that 75 percent of the annual funding would be used to provide energy assistance for low-income electricity users and to issue grants for energy efficiency projects that are targeted for low-income residents. The remaining 25 percent would be used to support energy efficiency projects that benefit all customer classes and renewable energy projects.

Michigan PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding *	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Low-income and Energy Efficiency Fund	Excess securitization savings (2000 – 2003) Uniform SBC that yields $39.8 million annually (2005 – forward) $26.5 million annually (Rate-case settlement in 2005) $17.4 million annually (Rate-case settlement in 2006)	Approximately, $83.8 million, annually	No expiration date is set.	MCL § 460.10d, enacted 06/05/2000, effective 06/05/2000	Michigan Public Service Commission	Low-income assistance Energy efficiency for all customer classes Conservation for low-income electricity users. Eligible renewable energy projects include wind turbines, anaerobic digesters, other biomass projects, and photovoltaic systems

* After 17 rounds of funding, Consumers Energy's and Detroit Edison's ratepayers have contributed approximately $295.4 million as of June 2007. As of the same date, $69 million has been used to support energy efficiency projects.

[16] An example is that the fund supports conservation and energy measures that reduce energy use by and energy bills of low-income electricity users.

Minnesota Public Benefits Fund

Minnesota's Renewable Development Fund was created in 1999 as a result of the passage of the Radioactive Waste Management Facility Authorization Law in 1994. Participation in this fund is limited to Xcel, which was required to donate a fixed amount of money for each dry cask that contains spent fuel that is stored at the Prairie Island nuclear power plant. Subsequent legislation, which was enacted in May 2003, extended the period that nuclear waste would be stored at that plant. This legislation also increased the amount of money that Xcel had to pay to the fund for the development of renewable energy resources. Beginning in 2010, Xcel wants to begin storing spent nuclear fuel in dry casks at the Monticello Nuclear Power Plant under similar terms and conditions.

The expenditure of the proceeds in the Renewable Development Fund, generally, is split between new development projects that result in the production of renewable energy and research and development.[17] Through January 2018, up to $10.9 million annually must be allocated in the support of renewable energy production incentives. Out of the $10.9 million, $9.4 million must be dedicated to providing production incentives for up to 200 megawatts of electricity that is generated by wind-energy systems. The balance of the $10.9 million may be used for production incentives that are awarded to biogas recovery facilities on farms or to other renewable energy producing facilities.

In 2001, the fund assigned $16 million to 19 research projects. In 2005, 29 research and development projects received $37 million from the fund. In 2007, Xcel announced grants that total $23 million.

[17] The expenditure of the fund's resources requires pre-approval by the Minnesota Public Service Commission after a petition from an investor-owned utility.

Minnesota PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Renewable Development Fund	$500,000 per dry cask $16 million as long as Prairie Island is in operation. $7.5 million for each year that Prairie Island is not in operation $350,000 per dry cask at Monticello as long as the plant is operating	$9 million annually (1999-2002) $16 million annually or $7.5 million annually No estimate for Monticello while plant is operating $5.25 million annually when Monticello is not in operation		Minn. Stat. § 116C.779, enacted 1994, amended 2003, effective 2001 S.F. 2096, Article 2, Section 9, enacted 05/07/2007, effective 05/07/2007	Renewable Development Board *	Restricted to the development of renewable energy resources Preference for projects that are located in Minnesota Eligible resources: wind, biomass, solar, hydroelectric, and fuel cells

* Two representatives from Xcel, two representatives from the environmental community, one representative from Prairie Island Indian Community, one representative for Xcel's commercial/industrial customers, and one representative for residential customers populate the Renewable Development Fund.

Montana Public Benefits Fund

Montana's Universal System Benefits Program was established in 1999 as a result of the passage of electric-industry restructuring legislation in 1997. This PBF is structured so that all the utilities that operate in Montana are required to make annual PBF contributions that amount to 2.4 percent of their 1995 revenues.[18] Furthermore, these utilities are required to place utility-specific or cooperative-specific SBCs on their electricity customers.[19] The Montana Public Service Commission sets the SBCs for the investor-owned utilities. The governing boards set the SBCs for their electricity cooperatives. The utilities may spend all or a portion of their contributions to this PBF on their own energy efficiency, conservation, renewable energy, and low-income assistance programs. Alternatively, they may choose to contract for or fund the eligible programs that are being administered by others within Montana.

Montana PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Universal System Benefits Program	Non-bypassable surcharge on electricity usage Varies by year and utility or cooperative	$14.9 million annually	December, 31, 2009	MCA 69-8-402, enacted 1997, effective 01/01/1999 MONT. ADMIN. R. 42.29.101 et seq	Investor-owned utilities Electricity cooperatives	Cost-effective conservation Low-income assistance Renewable energy Research and development * Market transformation **

* Eligible research and development programs must be directed toward energy conservation and renewable energy.
** Market-transformation programs must be designed to encourage competitive markets and to be compatible with other public-purpose programs.

[18] All utilities include electricity cooperatives in the context of the Universal System Benefits Program.
[19] Electricity users with a load of 1 megawatt or more are allowed to fund their own eligible programs or projects and to make a compensating reduction in their SBC payments.

New Hampshire Public Benefits Fund

New Hampshire's energy-related PBF covers energy efficiency and low income assistance programs. This fund came into existence in 2002 as a result of New Hampshire's electric industry restructuring legislation that was passed in 1996. This law authorizes a SBC to support the installation of energy efficiency products by low-income residential, residential, and commercial customers. A non-bypassable charge on the electricity customers' bills is the type of SBC that replenishes the PBF. All energy efficiency programs are administered by the regulated utilities with oversight provided by the New Hampshire Public Utilities Commission (NHPUC). The NHPUC's oversight authority extends to the approval of the utilities' core energy efficiency programs.

New Hampshire PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Energy Efficiency * and Low-income Customers**	$0.0018/kwh (1.8 mills/kwh)	Approximately, $ 19 million	No date set for termination of the fund	N.H. RS 374-F:3 et seq, (1996)	Investor-owned regulated utilities	Specific energy efficiency technologies are not identified

* Eligible residential energy efficiency projects include Energy Star lighting and appliances, Energy Star new home construction, insulation, thermostats, and other energy efficiency measures. Eligible commercial energy efficiency projects include new construction, major renovations, lighting upgrades, occupancy sensors, energy controls such as programmable thermostats, air conditioning improvements, efficient motors, variable-frequency drives, energy-management drives, LED traffic lights, and custom projects. Schools, utilities, commercial, and industrial customers are eligible for commercial energy efficiency programs.

** Low-income customers are required to be qualified before they can receive assistance to upgrade lighting, buy efficient refrigerators, and install insulation and programmable thermostats.

New Jersey Public Benefits Fund

The State of New Jersey has one energy-related PBF that covers renewable energy, energy efficiency, and financial assistance for low-income electricity users.[20] New Jersey has divided renewable energy into classes of types of renewable energy. Only Class I renewable energy is eligible for funding from New Jersey's energy-related PBF.[21] This PBF is called the New Jersey Clean Energy Program. This program is statewide and funded by a non-bypassable, statewide SBC that is charged against all of the customers of New Jersey's seven investor-owned utilities. The SBC is a per kilowatt-hour surcharge that varies annually according to the annual PBF-funding target that is set by the New Jersey Board of Public Utilities (NJBPU). An annual SBC is back calculated from the amount of money that the NJBPU authorized for the fund for that year. All unused funds during a year are carried forward to the next year. The New Jersey Clean Energy Program is administered by the NJBPU.[22]

New Jersey PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
New Jersey Clean Energy Program	Statewide SBC vary by year. 25% allocated to renewable energy 75% allocated to energy efficiency Renewable-allocation expected to reach 44% by the end of 2008 Renewable energy allocation is divided 50-50 between customer-sited and grid-supply renewable energy	Collected $358 million (2001 – 2003) Collected $124 million (2004) Estimated to collect $745 million (2005 – 2008) Estimated total funding $1.23 billion (2001 – 2008) Nothing decided beyond 2008	No date set for termination of the fund. This fund is embedded in North Carolina Renewable Portfolio Standard's cost recovery mechanisms.	N.J. Stat. § 48:3-60, enacted 02/09/1999	New Jersey Board of Public Utilities	Only Class 1 renewable energy: tidal and wave energy, solar thermal, fuel cells using renewable fuel, biomass, landfill gas, photovoltaic, wind, geothermal, anaerobic digestion, and hydroelectric Energy efficiency: technologies not identified

[20] Energy Star products, energy efficiency measures for low-income customers such as weatherization, energy audits, CHP, efficient HVAC systems, energy-efficient new construction, and building retrofits have been supported by the Clean Energy Program. Also, all customer classes are provided with technical assistance, education, and information that are related to energy efficiency

[21] Burning biomass is treated as Class I renewable energy with the caveat that the biomass must be cultivated and harvested in a sustainable manner.

[22] Initially, the investor-owned utilities managed the energy efficiency and renewable energy projects. However, on April 1, 2007, project management in these two areas was transferred to two third-party project managers.

New Mexico Public Benefits Fund

The Efficient Use of Energy Act, which was enacted 2005, allows investor-owned electric and natural-gas utilities to implement cost-effective energy-reduction programs. These Programs may be funded through a tariff rider. The per kWh charges to electricity users cannot exceed the commission's approved tariff rider. The maximum amount of money that an electricity user may pay to the utility to promote either energy efficiency or load management is $75,000 per year.[23] In addition to supporting energy reduction programs, the proceeds from the tariff rider may be used by the utilities for two other purposes: (1) to monitor and verify expenditures on energy efficiency and load management and (2) to periodically report on the overall effectiveness of their programs. Thus far, one investor-owned utility has received approval of their programs' tariff riders and the associated energy efficiency projects.

New Mexico's distribution cooperatives may collect renewable energy and conservation fees that are not larger than 1 percent of the customer's bill. The cooperative must divide the proceeds from the fees and place the divided revenues into a separate renewable energy and a separate conservation account. The use of these funds is limited to expenditures on programs or projects that promote the use of renewable energy, load management, or energy efficiency. The cooperatives must submit written descriptions of their renewable energy and conservation programs to the New Mexico Public Service Commission. But, the approval of these programs lies with the governing body of each electricity cooperative. One cooperative has a renewable energy and conservation fee.

New Mexico PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
No specific Public Benefit Fund	Tariff rider for energy efficiency and load management * Tariff rider revenues cannot exceed $75,000 per year for a specific customer	No estimate	No expiration date for the tariff rider has been set	Efficient Use of Energy Act (2005), HB 619 (2005)	Investor-owned utilities	Load management and energy efficiency programs

[23] The investor-owned utilities may implement their energy efficiency and load-management projects only after they have received the approval of the New Mexico Public Service Commission.

New York Public Benefits Fund

New York does not have an energy-related PBF per se. Instead, the state has a System Benefits Charge that was established in 1996 by the New York Public Service Commission. Its SBC supports energy efficiency, education and outreach, research and development, and low-income energy assistance. The six investor-owned utilities, which operate in New York, assess the SBC against its electricity users. The SBC supports numerous energy-related programs and projects in the energy efficiency, research and development, and low-income assistance for weatherization, and third-party activities that further the disclosure of environmental information. Although the SBC may be used to support renewable energy infrastructure, the funds cannot be used to provide financial support for renewable energy systems.

New York PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
No specific fund or funds	No specific SBC Each utility collects 1.42% of its prior year revenues (2006 - 2011)	$234 million (1998 - 2001) total funding $750 million (2002 – 2006) total funding $857 million (2006 – 2011) *	No expiration date has been set	New York PSC Opinion No. 96-12 (Cases 94-E-0952 et al.), enacted 05/20/1996, effective 05/20/1996 New York PSC Order (Case 94-E-0952), enacted 01/26/2001, effective 01/26/2001 New York PSC Order (Case 05-M-0090), enacted 12/21/2005, effective 12/21/2005	SBC collection remitted to New York State Energy Research and Development Authority	NY Energy Smart Program Improvement to T&D infrastructure System wide reliability Low-income assistance Facilitate competition in electricity markets Peak-load reduction Environmental impact reduction

* Of the $875 million, $427 million is to be used to for peak load reduction, energy efficiency, and outreach and education. $182 million is to be used for research and development that include renewable energy. $190 million is to be used for low-income energy assistance. The balance is to be used for administration, evaluation, and fees.

Ohio Public Benefits Fund

Electric-industry restructuring legislation, which was passed in 1999, authorized energy-related PBFs. By statute, the participation in these funds is mandatory for investor-owned utilities and voluntary for electricity cooperatives and municipal electric utilities.[24] The State of Ohio established the Advanced Energy Fund, which, in turn, supports the Advanced Energy Program. The proceeds in the fund are used to provide grants in support of distributed energy, renewable energy, and energy efficiency.[25] The proceeds are acquired through a uniform SBC that is determined by the Ohio Department of Development. This department's Office of Energy Efficiency administers the fund. The Public Benefits Advisory Board, which was created as a result of the 1999 legislation, assists the Ohio Department of Development with respect to the administration of the fund. The Ohio Department of Development collaborates with the Public Utilities Commission of Ohio to design and develop energy programs that are eligible for support from the Advanced Energy Fund.

Ohio PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Advanced Energy Fund	Annual uniform SBC is determined by dividing the aggregate revenue target for a given year by the number of the customers of the electric distribution utilities during the previous year	$15 million (Collected through 2005) $5 million annually (Maximum for 2006 through 2010)	January 1, 2011 Or When fund reaches $100 million, whichever comes first	OCR 4928.61 et seq, effective 10/05/1999	Ohio Department of Development Universal Service Board Public Utilities Commission of Ohio	Advanced Energy Program Low-interest Energy Loan Program * Ohio Small Business Energy Saver Program ** New Solar Homes Program **

*Low-interest Energy Loan Program reduces the interest rate on an energy loan by one-half. For example, the interest rate on an 8 percent loan is reduced to 4 percent.
**As of September 2007, the Ohio Small Business Energy Saver Program and the New Solar Home Program are fully subscribed.

[24] None of the electricity cooperative or the municipal electric utilities is participating in energy related PBFs.
[25] The Advanced Energy Program provides incentives to eligible residents of Ohio, low-income housing developers, small businesses, local governments, schools, agriculture, and nonprofit organizations.

Oregon Public Benefits Fund

Oregon's electric industry restructuring legislation, which was passed in 1999, required two investor-owned utilities to collect a 3 percent public purpose charge. This SBC had to be used to support renewable energy and energy efficiency projects for a period of no less than ten years. As the means of implementing this law, the Oregon Public Utility Commission authorized an independent nonprofit organization to begin administering the PBF in 2002. New legislation was enacted in 2007 that restricted the use of the SBC in order to coordinate the administration of this PBF with a RPS.[26]

Oregon PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Energy Trust of Oregon	3% charge on electricity rate (Pacific Power and Portland General Electric) * 1.25% charge on natural gas rate (NW Natural Gas) 1.5% charge on natural gas rate (Cascade Natural Gas)	No estimates for annual funding $12 million for renewable energy through 2025 (expected) $52 million for energy efficiency through 2025 (expected)	December 31, 2025 (currently) December 31, 2008 (originally)	ORS 757.612 et seq, enacted 1999 SB 838, enacted 2007 (RPS legislation)	Energy Trust of Oregon – non profit organization (independent)	Eligible: solar, wind, hydroelectric, biomass, geothermal, Energy efficiency: manufacturing processes, new building, retrofits, and new appliances Low income assistance Public outreach and education

* With respect to the funds that are collected by these two investor-owned utilities, 67 percent of the funds must be allocated to energy efficiency programs and projects, while 17 percent must be allocated to renewable energy programs and projects. The remaining 16 percent may be divided between low-income assistance and education.

[26] Oregon's RPS legislation, which was passed in 2007, requires that at least 8 percent of the state's retail electricity load will be served by small-scale renewable energy projects. Small-scale is defined as 20 megawatts or less. In order to coordinate the RPS and the SBC, the use of the funds that are collected through the SBC is restricted to renewable energy projects that are 20 megawatts or less.

Pennsylvania Public Benefits Fund

The electric industry restructuring legislation, which was passed in 1996, did not establish an energy related PBF. Still, renewable or sustainable energy funds were created without legislation as part of individual regulatory settlements with the five major investor-owned distribution companies. Each utility has a Sustainable Energy Fund. The goals are to promote the development and use of renewable energy and to advance clean-coal technologies, energy conservation and efficiency, and sustainable energy businesses. Each utility has an oversight board and a designated fund administrator.

- Metropolitan Edison Region Sustainable Energy Fund, which is administered by the Berks County Community Foundation
- Penelec Region Sustainable Energy Fund, which is administered by the Community Foundation for the Alleghenies
- Sustainable Development Fund for Southeastern Pennsylvania, which is administered by the Reinvestment Fund
- West Pennsylvania Power Sustainable Energy Fund, which is administered by the Penn State University in partnership with Energetics Inc.
- Sustainable Energy Fund of Central Eastern Pennsylvania, which is administered by a nonprofit organization

Pennsylvania PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Utility-specific Sustainable Energy Funds	$0.0001/kwh (0.1 mill/kwh) Initially $0.00005/kwh (005 mill/kwh) Subsequently	Approximately, $55 million (Total collected from SBC) Lump sum payments to Met-Ed fund ($2.5 million), Penelec fund ($2.5 million), PECO fund ($18.5 million over five years)	No expiration date has been set	No legislative authority	Designated by the utility Pennsylvania Sustainable Energy Board (1999) *	Renewable energy, clean coal technology, energy efficiency, conservation, sustainable energy businesses

The Pennsylvania Sustainable Energy Board was formed to enhance the communications among the utility-specific Sustainable Energy Funds and state agencies. The Board's members include representatives from the Pennsylvania Public Utilities Commission, Pennsylvania Department of Environmental Protection, Pennsylvania Department of Community and Economic Development, the Pennsylvania Office of Consumer Advocate, the Pennsylvania Environmental Council, and designees from each region within Pennsylvania.

Rhode Island Public Benefits Fund

Rhode Island's electricity industry restructuring law, which was passed in 1996, created the Rhode Island Renewable Energy Fund (RIREF). This fund provides low-income assistance and supports demand-side management (DSM) and renewable energy resources.[27] Residential, commercial, and industrial electricity customers are eligible to access the resources in this fund. Utilities, institutional, and the general public also may request funds from the RIREF. Initially, the SBC was a statewide SBC that was set in 1997. Subsequently in 2002, the statewide SBC was transformed into separate surcharges for renewable energy and DSM on the bills of the electricity customers and will be in effect for the next ten years. The administration of the fund was transferred in 2007 to the utilities with oversight provided by the Rhode Island Office of Energy Resources (RIOER). The RIOER was required to develop a plan by July 2007 to make the RIREF self-sustaining by January 1, 2013. Until that time, the DSM programs were administered by the electricity distribution companies and were subject to review by the Rhode Island Public Utilities Commission. Unlike the other states with energy related PBFs, as of 2004, Rhode Island requires the RIOER to maximize the combined impact and efficiency of the RIREF and Rhode Island's Renewable Portfolio Standard. Moreover, as of 2006, Rhode Island requires increased cooperation between the RIREF and RPS.

On January 1, 2007, the RIREF was extended to include natural gas distribution companies as mandatory participants. The gas SBC, which is a statewide surcharge/dekatherm, is approved by the Rhode Island Public Utilities Commission and is used only to support gas demand-side management projects. However, not all forms of gas end-use will be assessed the surcharge. Gas that is used for distributed generation and certain other applications of a very limited nature is exempt from the surcharge. This SBC will be collected from gas customers between 2007 and 2012.

[27] Funds in the RIREF can be used to support activities that are directly related to implementing eligible renewable energy projects. For example, funds in the RIREF can be used to support facilities that generate solar, wind, wave tidal, ocean thermal, geothermal, hydroelectricity, and sustainably managed biomass in the New England Power Pool control area because renewable energy systems that are located within the New England Power Pool control area are eligible to obtain assistance from the appropriate administrator of the RIREF.

Rhode Island PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects *
Rhode Island Renewable Energy Fund **	$0.0023/kwh (2.3 mills/kwh) statewide (1997) $0.003/kwh (3 mills/kwh) renewable energy (2002) $0.002/kwh (2 mills/kwh) demand-side management (2002) Up to $0.15 per dekatherm (2007) non-exempt gas usage	Approximately $2.4 million	No date set for expiration of the fund. Fund will be reviewed by Rhode Island Legislature in 2012	R.I. Gen. Laws § 39-2-1.2, enacted 08/07/1996, effective 01/01/1997 H 8025, enacted 06/29/2006, effective 06/29/2006	Rhode Island Public Utilities Commission (1996 – 2006) Electricity distribution companies for DSM programs (1996 - 2006) Electric utilities (2007) Rhode Island Office of Energy Resources (2007) oversight authority Gas utilities (2007) Rhode Island Public Utilities Commission (2007) review of gas DSM projects	Wind, biomass, hydroelectric, geothermal, anaerobic digestion, landfill gas, tidal and wave energy, ocean thermal, co-firing renewable transportation fuels, micro-turbines and fuel cells using renewable fuels, photovoltaic, passive solar space heat, solar space heat, water heat, thermal electric, and thermal process heat. Energy efficiency projects must be demand-side management

* Although titled as the Rhode Island Renewable Energy Fund, this fund's resources also support energy efficiency projects and measures and provides assistance to low-income electricity users. For example, owners of property that has been certified as low-income housing property are eligible for financial assistance to install solar thermal systems.

** Because the RIOER is required by statute to increase the cooperation between the RIFER and Vermont's RPS, the RIREF supports (1) activities to assure RPS is met and compliance is minimized, (2) activities and programs to increase the supply and procurement of RECs at or below the regional spot price, (3) customer-sited installations of DSM and green power purchases, and (4) research, development and demonstration of new renewable energy technologies.

Texas Public Benefits Fund

Texas does not have an energy-related PBF, per se. Furthermore, unlike Iowa, there is no legislation that allows the customers of Texas' utilities to make contributions to their utilities in support of renewable energy. However, these customers do have an option of purchasing green power that supplements the renewable energy that is developed as a result of the Texas RPS legislation.

Texas PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
No specific PBF	No specific source of revenue	No estimate available	No date of expiration is set	§ 39.904 of Texas Utility Code, PUCT Substantive Rule 25.173, enacted 12/16/1999, effective 01/10/2000 SB 20 of 2005, enacted 08/01/2005, effective 09/01/2005	All utilities Public Utility Commission of Texas (oversight)	Eligible renewable energy resources: solar water heat, solar thermal electric, photo-voltaic, landfill gas, wind, biomass, tidal and wave energy, ocean thermal, hydroelectric, geothermal electric, geothermal heat pumps

Vermont Public Benefits Fund

Energy-related legislation passed in 1999 provided the Vermont Public Service Board (VPSB) with the authority to approve a SBC that is assessed to all electricity customers to support energy efficiency. As a result, each utility has its own SBC, which is a kWh surcharge for each utility that is based on factors that are unique to each utility's service territory. These utility-specific SBCs are reviewed periodically by the VPSB and adjusted when necessary. Utility ratepayers may be exempted from the applicable SBC when they implement an extraordinary amount of cost-effective energy efficiency at its own expense or when they incur extraordinary costs to deploy their cost-effective energy efficiency measures.

Efficiency Vermont, which is administered by the Vermont Energy Investment Corporation, was established in 2000. The Clean Energy Development Fund, which is administered by the Vermont Department of Public Utilities (VDPU), was established in 2005 as a result of the passage of additional energy-related legislation. This fund is used to promote the development and deployment of cost-effective and environmentally sustainable electric resources. The VDPU is required to show a preference for combined heat and power (CHP) and renewable resources. Cost-effective is defined as contributions to establish effective energy efficient projects that are not likely to be established in the absence of funding from the Clean Energy Development Fund. Entergy is the single contributor to this fund. In general, the Clean Energy Development Fund supports renewable energy resources, CHP, and cost-effective energy efficiency resources. However, the public policy position is that this fund should be used to support projects that sell electric power in commercial quantities to Vermont's utilities, or alternatively, to support projects that provide benefits to buildings that are publicly-owned or leased by the State of Vermont. Furthermore, the fund should be used to support renewable energy production on farms and to support small scale renewable energy for businesses and homes.

Vermont PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding *	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Efficiency Vermont	Varies by year, utility, and customer type Caps on total size of the fund	Capped at $17.5 million (until 2005 by legislation) Capped at $19 million (for 2006 by VPSB) Capped at $24 million (for 2007 by VPSB) Capped at $30.75 million (for 2008 by VPSB)	No date set for expiration of the fund.	30 V.S.A. Section 209 CVR 30-000-051, effective, March 1, 2000	Vermont Energy Efficiency Corporation (non-profit organization that is subject to 2 audits) Vermont Department of Public Utilities (conducts program verification process)	Energy-efficient building design, new construction, renovation, equipment, lighting, and appliances State and local government, institutions, nonprofit organizations, schools, residential, commercial, industrial, and agriculture customers are eligible
Clean Energy Development Fund	Entergy is the only contributor to this fund. It pays into this fund for the right to store all of its spent nuclear fuel at Yankee until March 21, 2012, which is the date on which Yankee's operating license expires. Any unspent portion of Entergy's annual payment is carried forward, and none can be used to satisfy the general obligations of the State of Vermont.	$6 million to 7.2 million through March 2012	No date set for the expiration of this fund.	10 V.S.A. § 6523, enacted 06/21/2006, effective, 07/01/2005 Act 208 of 2006, enacted 05/31/2006, effective 05/31/2006	Vermont Department of Public Utilities	Energy Efficiency: cogeneration/CHP, Comprehensive Measure for Whole Building, other energy efficiency measures broadly defined. Renewable energy: solar water heat and space heat, solar thermal electric, solar thermal process heat, photovoltaic, wind, low-emission advanced biomass, geothermal heat pump, CHP/co-generation using biomass fuels, landfill and sewer methane recovery, and anaerobic digestion. Municipal solid waste is not eligible.**

* The primary objectives to be achieved by the use of Efficiency Vermont are (1) reduce the size of future power purchases, (2) reduce the creation of greenhouse gases, (3) limit the need to upgrade transmission and distribution infrastructure, and (4) minimize the cost of electricity.

** The system efficiency for CHP must be at least 65 percent, and the system design must meet Vermont's air quality standards. Thus far, the Clean Energy Development Fund has provided support to anaerobic digestion, CHP, and the Vermont Solar and Small Wind Incentive Program.

Washington Public Benefits Fund

The State of Washington does not have an energy-related PBF per se. Furthermore, unlike the Iowa, there is no legislation that allows the customers of Washington's utilities to make contributions to their utilities in support of renewable energy. However, these customers do have an option of purchasing green power. All of Washington's utilities, regardless of whether they are rate regulated by the Washington Utilities Board, must offer green power options to their customers. All utilities must inform their customers of this option on a quarterly basis. The details of the each utility's Green Power Option must be approved by the State of Washington. The Washington Utilities and Transportation Commission is charged with overseeing the Green Power Options that are developed by the investor-owned utilities.

Washington PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
No specific PBF Green Power Option	No specific source of revenue	No estimate available	October 1, 2012	RCW 19.29A.090	All utilities Washington Utilities and Transportation Commission (oversight)	Eligible green power: wind, solar, wave and tidal energy, geo-thermal, landfill gas, fish-friendly hydroelectric, certain type of biomass, wastewater treatment gas

Wisconsin Public Benefits Fund

Wisconsin's Focus on Energy is a PBF that has been created as a result of legislation that was passed in 1999. Focus on Energy supports energy efficiency, renewable energy, and energy assistance for low-income customers. Wisconsin's five investor-owned utilities are required to finance energy efficiency and renewable energy programs with the proceeds that are gathered in two ways.[28] First, public benefit fees are paid by all of the utility's customers.[29] Second, mandatory contributions from the utilities are produced by SBCs.[30] Large electricity users always are allowed to fund and implement energy efficiency or renewable energy projects on their own. However, with the approval of the Wisconsin Public Service Commission, these large electric users may reduce their SBC payment by the amount of the project's cost. Meanwhile, affected utilities may reduce their collections of SBC revenues by an equal amount.

The investor-owned utilities are required to participate in the Focus on Energy Program. If an investor-owned utility decides not to develop and implement its own energy efficiency and renewable energy projects,[31] then this utility is required to collect the public benefit fees and SBC from its customers and contribute the revenue to the Focus on Energy Program.

[28] Each investor-owned electricity and natural gas utility is required to spend 1.2 percent of its annual gross revenue on energy efficiency and renewable energy programs.
[29] The public benefit fees are administratively determined by the Wisconsin Department of Administration.
[30] The 1999 electric industry restructuring legislation enables the investor-owned utilities to recover their mandatory contribution to the Focus on Energy Program from their ratepayers.
[31] Renewable energy and energy efficiency projects are together the main body of the Focus on Energy Program.

In the past, the municipal electric utilities and the cooperatives had the option of either participating in Focus on Energy or committing to their own energy related community programs.[32] The Wisconsin Public Service Commission oversaw these community programs, but presently does not oversee the cooperatives' and municipal electric utilities' commitment to their energy related community programs. The Wisconsin Public Service Commission does, however, receive audit results and detailed reports from the cooperatives and municipal electric utilities.

Focus on Energy provides financial assistance to Wisconsin's residents, businesses, schools, institutions, and local governments in the form of rebates, grants and loans. Focus on Energy also provides information, technical assistance, and other services to them. Focus on Energy was restructured in March 2005, and the restructuring took effect in July 2007. Instead of having the investor-owned utilities administer the energy efficiency and renewable energy projects, the utilities are required to turn over the administration of these programs to private contractors. The Wisconsin Public Service Commission's responsibilities were not changed by the restructuring of Focus on Energy.

Wisconsin PBF Overview

Public Benefit Fund	System Benefit Charge	Annual Funding	Termination Date	Legislative Authority	Administrator	Qualifying Programs and Projects
Focus on Energy	Public benefit fee (Administratively determined) * Level of utility-specific SBC is based on the level of the utility's expenditures on energy efficiency and renewable energy in the past **	Approximately, $82.4 million annually *** $16 million annually (public benefits fee) $46 million annually (SBC) $22.4 million annually (other expenditures by the utilities) ****	No expiration date is set	Wis. Stat. § 16.957, enacted 10/27/1999 SB 459 of 2005, enacted 03/17/2006, effective 07/01/2007	Investor-owned utilities (SBCs) Wisconsin Department of Administration (public benefits fees) *****	Focus on Energy Program

* A cap on public benefit fees is assigned to the largest energy users.
** There are not any caps on the SBCs, but the amounts that the largest electricity users are required to pay to the utilities are frozen.
*** The Wisconsin Public Service Commission is authorized to specify a higher annual funding level.
**** Wisconsin's utilities independently support energy efficiency and renewable energy projects even though they are required to contribute to Focus on Energy. With the approval of the Wisconsin Public Service Commission, the utilities can fund new energy efficiency projects for their commercial, industrial, institutional, and agricultural customers.
***** In the course of administering the public benefits portion of Focus on Energy, the Wisconsin Department of Administration enters into contracts with the Wisconsin Energy Conservation Corporation, which, in turn, subcontracts with the Wisconsin Renewable Energy Network, which implements renewable energy and energy efficiency programs.

[32] The 1999 legislation placed a cap on the public benefits fees that supported the energy related community programs.