

Docket No. M-00051865

Implementation of the Alternative Energy Portfolio Standards Act of 2004

Comments of the Solar Energy Industries Association

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### Request to Intervene And Standing

The Solar Energy Industries Association, established in 1974, is the national trade association of solar energy manufacturers, dealers, distributors, contractors, installers, architects, consultants, and marketers, working to expand the use of solar technologies in the global marketplace. The Association has more than 200 members nationwide. We have participated on behalf of the solar industry in several previous proceedings at the state and national level, and our members have been involved in the shaping of Pennsylvania's Portfolio Standard from an early stage. We therefore respectfully submit these comments to the Public Utility Commission and request an opportunity to participate in the technical conference on Wednesday, January 19, and in such future meetings, conferences, notices, and working groups as may be necessary for the successful implementation of the standard.

### Comments

#### Force Majeure (Availability and qualification of eligible alternative energy resources):

It is to be expected that the Pennsylvania standard would contain a force majeure clause, preventing the unnecessary penalization of regulated entities in the face of an unforeseeable Act of God. Such clauses are a standard legal device, with an equally standard set of defining precedents.

The force majeure clause in the standard specifies a means by which the Commission may reduce or partially waive the Standard should sufficient renewable attributes not be "reasonably available in the marketplace."

Of course, the marketplace *per se* does not yet exist – the method of exchange has yet to be set, and the customer's demand for attributes, arising as it will from a not yet realized regulation, has not been allowed to work its effect on the market. If, as seems clear, the intent of the standard is to encourage new supply to meet a regulatory demand, it would be dramatically premature to declare the market incapable of supplying any given demand until a representative set of actual transactions had taken place.

If there is a precautionary desire to establish the general feasibility of the standard, several comparisons may be useful. We refer here only to solar technologies, though similar arguments can be made for other renewable resources. (We assume herein a gradual installation of solar resources to meet the standard requirements in all regulated years, assuming that the regulated entities will choose to maximize the usage of their banking and deferral privileges.)

Total Pennsylvania Solar Requirements - Assuming annual demand of approximately 140 million MWh, the Standard would require approximately 2 MW of photovoltaics in its first year, and a total of approximately 30 megawatts cumulative by its 5<sup>th</sup> year.

Resource Base and Available Area – In a recent study performed for the Energy Foundation, Navigant Consulting estimated the technical potential for rooftop – only photovoltaic devices. Beginning with Census data on the numbers and type of commercial and residential buildings, Navigant filtered out those roofs that were structurally incompatible, shaded by trees, equipment or other buildings, or oriented in an unusable direction. They then used national meteorological data and national lab’s simulation of photovoltaic performance to develop a technical potential for the power that could be generated from this space.

The resulting estimate, which can be viewed as an upper bound on the state’s rooftop solar potential, was 23,646 megawatts by 2010. In Year 5, the requirements contemplated would demand approximately .13% (or, less than one five-hundredth) of Pennsylvania’s rooftop solar potential - omitting other opportunities such as parking structures, brownfields, etc., etc.

Global and National Manufacturing – In 2003, world manufacturing of solar photovoltaic (PV) devices was approximately 750 megawatts of new capacity. 2004 annual manufacturing is estimated at 1050 – 1100 megawatts, with future growth continuing at more than 25% per year. The majority of this product is manufactured in the United States, Germany, and Japan, with substantial import and export activity in each. The additional solar deployment necessitated by the Pennsylvania standard would never absorb even one percent of global solar manufacturing capacity.

Considering only domestic production presents a similar picture. With approximately 140 megawatts manufactured in 2004, the United States industry could meet Pennsylvania’s current requirements with ease, and massive future expansion is already underway. The nations’ largest solar manufacturers – BP Solar and Sharp Solar – have both announced that they will be doubling US production capacity over the coming year.

Project Requirements and Similar Programs – The New Jersey Renewables Portfolio Standard requires nearly 90 megawatts of solar photovoltaics to be installed by 2008 (approximately 10 W per capita, compared to the AEPS standard of approximately 2.5 in year 5. ) More than 6% of this requirement (6 megawatts) had already been met by June of last year. The state has experienced stratospheric growth in solar business, with dozens of new businesses appearing. National manufacturers are investing major money into developing the New Jersey market, and trade is booming. Of particular note, many Pennsylvania-based contractors note that they are traveling to New Jersey to do the vast majority of their business.

The total installed capacity required in year 1 – approximately 1.8 MW - can be put in perspective by examining a similar project. Fala direct marketing in Long Island recently erected a 1.01 megawatt project on their headquarters facility (below.) Two such projects



– with their total output shared among all Pennsylvania’s utilities - would meet the entirety of standard requirements for the first year or more of regulation.

### Deferrals and cost recovery

SEIA supports full and equitable cost recovery from consumers across all rate classes for all reasonable costs of compliance, and deferral of advance credit purchases as appropriate. We urge the Commission to encouraging early acquisition and banking of credits as much as possible, as this can only improve the smooth operation of the standard.

However, as discussed elsewhere in our comments, this recovery must not include cost recovery for noncompliance penalties or alternative compliance fees. Incurring these fees signals a failure to comply with of state standards; they cannot therefore be considered a reasonable cost of doing business. As is becoming a common design feature of state portfolio policies, it is to be hoped that the nonrecoverable ACP will serve as a “self-enforcement” clause in the rule, minimizing administrative burden on the Commission or its designee, while ensuring that force majeure will not be unnecessarily inoked during early stages of market development.

### Creation of alternative energy credits program and trading platform / Portfolio requirements of other states and regional coordination

New York and New Jersey are both well underway with the development and implementation of renewable attribute trading platforms; the PJM is assisting in this process with their development of the Generation Attributes Tracking System. We would encourage the commission to minimize costs (both of administration and attributes) and to avoid double-counting of attributes by supporting a single platform that is maximally interoperable with these neighboring states. As PJM is the only regional entity that can be said with justification to be operating any part of Pennsylvania’s transmission system; synchronization with PJM policy on attributes trading should therefore be sufficient to capture all eligible resources.

### Alternative compliance payments

It is clear that the purposes of the AEPS – the installation of new, secure, and environmentally beneficial generation for the citizens of Pennsylvania - cannot be met (or can be met only very indirectly) by the mere payment of fines, The ACP is and should be viewed as essentially a “speeding ticket” for inadequate participation (and thereby a “pressure valve” that effectively caps the maximum cost of attributes in the market.) We urge the PUC to keep the ACP as the option of last resort – thereby providing maximum encouragement to a thriving market for renewable attributes, which decreases prices for all parties.

The sponsors clearly recognized the need for a different track for compliance with the solar photovoltaic component of the standard, given that retail-sited technologies' very high capital intensity and currently higher prices as compared to bulk renewable generation; in this section, they set the ACP explicitly at a multiplier of current market prices, further clarifying its role as a self-enforcing penalty clause. This higher level for enforcement of the separate photovoltaic requirements is essential to the development of solar resources in the state. As with the general ACP, it is key to meeting the standards' objectives that any funds collected as an alternative compliance measure for this section be used for specifically solar development.

We anticipate that average prices for solar RECs (as with RECs traded through a system similar to New Jersey's solar REC trading website,) could be established and tracked within the PJM with relative ease, making enforcement of this higher ACP as simple as it is necessary.

Development of technical standards for verification of energy efficiency and demand side management activities, and proposed depreciation schedules for alternative energy credits resulting from such measures;

Notably, among the resources identified as eligible for consideration in the PA RPS is "solar thermal". Solar thermal devices of the type used in Pennsylvania – that is, medium-temperature collectors employed for residential heat and hot water and solar process heat – are comparably inexpensive when compared to other renewables, or even to current fossil prices. The generation and tracking of attributes from these solar water heating ("SWH") systems is therefore a desirable means of minimizing the cost of compliance. Individual systems can save up to 1000 Btu per square foot per day – reducing home gas demand by as much as 75%, even in freezing climates such as Pennsylvania's.

SWH credits have been successfully documented and traded in the past. In September, 2004, Lakeland Electric transferred 25 megawatt-hours of solar water heating credits to Sterling Planet for use in a green electricity product.

These credits were individually metered, using a utility-grade device, which monitors the volume of water or heat-transfer fluid moving through the collector, and the heat transferred therein. The tags are therefore highly trackable and verifiable, even down to the individual system level. However, transaction costs for these devices might become prohibitive for small home applications – the most attractive market segment when it comes to enhancing consumer energy choices, and it is likely beyond the range of accuracy contemplated for energy efficiency measures within the standard.

The nonprofit Solar Rating and Certification Corporation ([solar-rating.org](http://solar-rating.org)) has developed the OG-300 system for rating the annual output of almost all residential solar water heaters, in most major cities in the United States. Their procedures are extremely rigorous, involving climatic and quality testing of randomly-selected modules from manufacturer stock, and a detailed meteorological model of the entire United States. The final system is capable of differentiating likely annual output for system in Harrisburg, Erie, Philadelphia, Pittsburgh, and Wilkes-Barre.

We believe that the OG-300 system, coupled with random sampling and verification of a small number of systems, should provide an adequate means of establishing energy savings assignable to solar water heaters, and we would urge the Commission to develop a means of formalizing this procedure as early as possible – preferably with the involvement of those organizations most experienced with equipment rating and transactions of this type.

#### Development of technical standards for interconnection and net metering

Bringing Pennsylvania’s interconnection and net metering standards in line with current best practices is absolutely critical to the development of any small-scale clean energy in the state; without harmonized standards throughout the region, it will be extremely difficult to develop sufficient small, clean energy resources to meet the stated portfolio standards.

On interconnection, there is a growing technical and procedural consensus around the methods to be employed so as to provide adequate protection to grid operation, safety, and maintenance without erecting undue barriers to entry in the small generator marketplace. The newest version of the National Association of Regulatory Utility Commissioners’ guidelines, the documents produced during the recent re-convening of the FERC Small Generator Interconnection consensus process, and the latest version of the PJM interconnection procedures are all highly similar to one another, building on the solid technical base of standards issued by the IEEE and other internationally-recognized organizations.

We applaud the Commission’s ANOPR of November 18, 2004 (Docket No. L-00040168), in which the Commission notes its desire to:

- “(1) eliminate unnecessary barriers to entry in the distributed generation market;
- (2) promote distributed generation in order to provide peak demand responsiveness;
- (3) enhance grid reliability;
- (4) increase transparency in the interconnection process;
- (5) create uniformity and thereby ease the difficulty presented by a patchwork of different procedures; and
- (6) lower the overall cost of locating and placing distributed generation across the Commonwealth.”

We urge the Commission to expedite this process, making only such changes to these agreed-upon standards as are absolutely necessary to meet any differences that might exist between Pennsylvania and those other states already using or adapting these guidelines.

We would note that optimal realization of the six objectives above would also require a statewide harmonization of net metering standards. Currently, each utility operates its own net metering tariff. This complex patchwork of regulations makes it highly difficult to develop a coherent statewide marketing structure or product line, or to assay new business opportunities in different parts of the state. Further, many utilities apply arbitrary and very low limits to the maximum size of net metered systems – 10, 40, or 50 kW, irrespective of the load demands of an individual customer generator. These arbitrary and very low thresholds would make it extremely difficult to develop a true market for customer-generator power in the state.

The experience of the last several years in various states has proven that small clean energy systems of hundreds of kilowatts or more can be easily and effectively net metered; neighboring New Jersey allows units of up to 2 megawatts to be net metered statewide. Annual “true-up” of expenses, simple meter and application requirements, and other refinements make this one of the national “best practices” models for net metering. According to the requirements of this legislation, we would urge Pennsylvania to follow suit as soon as possible, adapting this standard only where necessary with an eye towards establishing a single statewide net metering standard that would facilitate compliance with the AEPS requirement.

#### Photovoltaic Band Size and Eligibility

We would like to bring to the particular notice of the Commission a piece of clarifying language – in the final version of the bill, the photovoltaic requirement has the added word “TOTAL”, with the final language therefore reading:

“(2) Of the electric energy required to be sold from Tier I sources, the TOTAL percentage that must be sold from solar photovoltaic technologies is for: ....”

, clarifying that the photovoltaic requirement is to be calculated from total energy sold in the state, rather than as a percentage of Tier I . This is consistent with our later communications and clarification with the authors and sponsors of the bill.