

January 14, 2005

***HAND DELIVERED***

Commonwealth of Pennsylvania  
Secretary's Bureau  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

Re: Docket No. M-00051865

Implementation of the Alternative Energy  
Portfolio Standards Act of 2004, Act 213

Technical Conference  
January 19, 2005

Dear Secretary McNulty:

Enclosed please find a draft of our *Technical Guidance* document on resource eligibility per Section 2 of the statute. In addition, we are submitting comments and recommendations regarding the Act's Net metering/Interconnection provisions.

Respectfully Submitted,

Daniel J. Desmond  
Deputy Secretary of the  
Office of Energy and Technology Development  
Pennsylvania Department of Environmental Protection

**Department of Environmental Protection**  
**Alternative Energy Portfolio Standards Act, Act 213**  
**Section 2 Technical Guidance (*Draft*)**

**Department Authority**

Section 7(b) of Act 213 provides for the following responsibilities for the Pennsylvania Department of Environmental Protection: “The Department shall ensure that all qualified alternative energy sources meet all applicable environmental standards and shall verify that an alternative energy source meets the standards set forth in section 2.” This document provides further guidance on applicable environmental standards and clarifies resource eligibility requirements set forth in section 2.

**Eligibility Standards Required for All Qualifying Resources**

Environmental Standards

As per Section 7(b) “...all qualified alternative energy sources [must] meet all applicable environmental standards...”

Permits – in order to qualify as an eligible alternative energy source, sources that require environmental permits must initially certify to the Department that they have all required state and federal environmental permits. If there is a modification or other instance, which requires issuance of a new permit, sources must re-certify. The Department will share this information on an annual basis with the system administrator. Failure to provide this certification or to have acquired all required state and federal environmental permits disqualifies sources from eligibility until such time as all required permits are obtained and certification is provided to the Department.

Compliance – Sources seeking to qualify as eligible must annually certify to the Department that they experienced no major environmental compliance violations during the reporting year. If a source reports that it has experienced a major compliance violation, alternative energy credits, equivalent to the number of megawatt hours generated during the period of major non-compliance, shall be disqualified from eligibility.

Permitting and Compliance for Alternative Energy Resources Outside of Pennsylvania – The use of alternative energy resources, located outside of Pennsylvania to meet Pennsylvania’s AEPS requirements, raises particular implementation issues because Act 213 imposes a mandatory duty on the Department to “ensure that all qualified facilities comply with all applicable environmental standards” even if the resources are located outside of Pennsylvania. To ensure that all generation located outside of the Commonwealth of Pennsylvania, but within the specified geographic scope of the Act meets all applicable environmental requirements, that the Department assumes will be equivalent to those of the Commonwealth of Pennsylvania, the Department will require that persons apply to the Pennsylvania Department of Environmental

Protection for a permitting and compliance determination. The Department will make the determination of compliance with all applicable environmental requirements before generation from sources may qualify. Qualifying facilities under this section must continue to comply with the permitting and compliance requirements set forth in the above sections.

The Department can verify the accuracy of self-certification reports with environmental agencies in other states and the federal government as necessary to ensure compliance with the act.

### Eligible Resource Delivery Requirements

Section 3 requires that eligible generation must be from electricity from qualifying resources sold to retail customers in Pennsylvania. Acquisition of credits or energy attributes alone is not sufficient to qualify as eligible generation.

Pennsylvania Electric Generation Companies and Electric Distribution Companies must acquire eligible electric power from within their Regional Transmission Organization. Electric power from RTOs where Pennsylvania EGCs and Pennsylvania EDCs are not a member does not qualify as an eligible resource.

### **Eligibility Standards Required for Specific Qualifying Resources**

Eligibility for alternative energy resources defined in Section 2, for which further clarification is not provided below, shall be determined based on the language found in the act. In addition to ensuring that qualified sources meet all requirements in Section 2, the Department is also directed to verify that all qualified sources are in compliance with all applicable environmental standards.

“Solar photovoltaic or other solar electric energy.” (Paragraph 1 of definition of alternative energy sources (AEPS)) – Electricity generated from solar photovoltaics and from other forms of solar electric energy, such as solar thermal applications, used to generate electricity shall generate alternative energy credits. Projects can be utility scale solar photovoltaic systems or small, distributed systems. Eligible credits can be derived from a single project or by aggregation of small projects.

“Solar thermal energy.” (Paragraph 2 of AEPS definition) – Electricity generated from solar thermal applications shall generate alternative energy credits. Eligible credits can be derived from a single project or by aggregation of small projects.

“Wind Power.”(Paragraph 3 of AEPS definition) – includes utility scale wind that provides electricity to the transmission grid as well as small scale systems that are utilized for net metering or that provide supplemental electricity to the distribution system.

“Low-impact hydropower”(Paragraph 5 of AEPS definition) – Is an eligible Tier 1 resource providing that it meets all of the requirements set forth in Paragraph (5) of the definition. Only *incremental* hydroelectric development that meets these requirements is eligible. Incremental

development includes new eligible facilities as well as improvements that increase electric output or capacity from existing hydroelectric sites. Only the additional generation from the incremental improvements shall be eligible for Tier I alternative energy credits. All other hydroelectric generation shall qualify as eligible Tier II generation.

Any hydroelectric resource seeking to qualify as “Low-impact” under Act 213 shall provide notification to the Department that it is seeking LIHI (Low Impact Hydroelectric Institute) certification at the time it submits its certification package to LIHI. The Department may consult with state natural resource agencies and the federal government to ensure that the requirements of Paragraph (5) are met in addition to LIHI certification.

“Geothermal energy.” (Paragraph 6 of AEPS definition) – includes only electricity derived from geothermal resources that provides electricity to the transmission or distribution system or is used for net metering. Geothermal energy for purposes of generating alternative energy credits does not include geothermal energy generated for heating and cooling.

“Biomass energy”(Paragraph 7 of the AEPS definition) – Biomass energy is defined as an eligible Tier I resource. This section seeks to further clarify Tier I biomass eligibility.

Paragraph (7)(i) pertains to bio-energy crops. Typical bio-energy crops include, but are not limited to, switchgrass and other warm season grasses, hybrid willow and hybrid poplar. Deployment of eligible crops shall not result in negative impacts to wildlife, water quality or soil erosion, as determined by the Department and on an annual basis. The Department shall allow for self-certification of these requirements but reserves the right to verify the accuracy of these reports, in person, and to request verification assistance from other state natural resource agencies and federal government as warranted.

Paragraph (7)(ii) refers to woody and other cellulosic biomass feedstock materials that are waste residues from other primary operations. It should be noted that “...by-products of the pulping process and wood manufacturing process including bark, wood chips, sawdust and lignin in spent pulping liquors” are considered Tier II resources. This section clarifies which related biomass resources qualify under Tier I. The Department has determined that bark, sawdust and clean, untreated wood chips from lumber mills, manufacturers or other producers that otherwise meet the definition of solid non-hazardous, cellulosic waste material that is segregated from other waste materials shall be considered as an eligible Tier I resource. Bark, sawdust and wood chips harvested in a manner certified as sustainable by the Forest Sustainability Council or a successor organization designated by the Department shall also be considered an eligible Tier I resource.

“Biologically-derived methane gas.” (Paragraph 8 of the AEPS definition) – examples of qualifying sources under this definition include electricity generation from landfill gas capture projects, farm-based methane digesters, and non-farm based methane digesters, including digesters employed at municipal solid waste treatment facilities.

“Fuel cells.” (Paragraph 9 of the AEPS definition) – fuel cells that produce electricity shall generate alternative energy credits regardless of fuel input. Most fuel cell applications will be

distributive and will either net-meter or provide electricity to the distribution grid. All electricity generated from fuel cells shall be considered eligible to generate alternative energy credits. Eligible credits can be derived from a single project or by aggregation of small projects.

“Waste Coal.” (Paragraph 10 of the AEPS definition) – This includes electric generating power plants that utilize waste coal as a fuel and meet the criteria set forward in Section 2(10). At a minimum, criteria include combined fluidized bed boiler technology, limestone injection system and fabric filter particulate removal system. The Department may develop alternative criteria by regulation.

“Coal-Mine Methane.” (Paragraph 11 of AEPS definition) – For purposes of qualifying as a Tier I fuel for electricity generation, coal-mine methane is fugitive methane which is released from its natural geologic sequestration as a result of coal-mining activity and would be vented to the atmosphere, or destroyed without useful energy recovery. It does not include commercially developed coal bed methane.

“Distributed Generation System.” (Paragraph 13 of AEPS definition) – Qualifying distributed generation systems shall be limited to generation derived from Tier II alternative energy sources.

“Municipal Solid Waste.” – Electricity generated through municipal solid-waste incineration at existing facilities that were permitted as of February 28, 2005, the effective date of the act, meet all of the environmental conditions set forth in this guidance and Act 213.

“Integrated Combined Gas Gasification Technology” (Paragraph 7 of AEPS definition) – Electricity generated from IGCC power plants shall generate alternative energy credits. IGCC uses a combined cycle format with a gas turbine driven by the combusted syngas, while exhaust gases are heat exchanged with water/steam to generate superheated steam to drive a steam turbine. Only electricity generated from IGCC power plants shall generate alternative energy credits. The use of IGCC to create feedstocks for manufacturing or liquid fuels is not eligible for the generation of alternative energy credits.

“Demand Side Management” (Paragraph 12 of the AEPS Definition) – Eligible demand-side management measures contribute the same benefits to the electric distribution system as “customer-generators” and should be eligible for Alternative Energy Credits under the Act.

“Energy Efficiency” -- Citation – S.2(12)(i) energy efficiency technologies, management practices or other strategies in residential, commercial, institutional or government customers that reduce electricity consumption by those customers. Energy Efficiency for purposes of this section refers to reductions in overall electricity usage (i.e. number of kWhs). The program should contain the following elements:

1. Eligible customer sectors – residential, commercial, industrial and government. The program should also allow for aggregation of small, individual projects.
2. Measurement and Verification – electric energy customers (“customers”) shall apply to the system administrator to qualify projects. “Customers” must show project costs and measures implemented, energy modeling or engineering results from project

- implementation, and show verifiable measurements or estimates that can be confirmed empirically. To be eligible, measures must identify a verifiable starting baseline. For manufacturing facilities this baseline should be based, in part, on units of output. For other customers the baseline will be based, in part, on energy use per square foot compared to the relevant building energy code for new construction. The baseline should be based upon (weather-normalized, when appropriate) energy usage in the year prior to the implementation of the act. At the end of the reporting year, reductions from the base year shall count towards the generation of alternative energy credits. Reductions will be evaluated based on overall customer demand.
3. Unit of measure – one MWh of reductions from the baseline shall equal one alternative energy credit, which shall qualify as eligible for meeting tier II compliance. Credits earned through energy efficiency shall be effective for one year with new credits earned, based on reductions from the base year (with potential for annual adjustments for technology improvements), each year the act is in effect.
  4. Reporting requirements, customers seeking to earn credits shall provide electricity utilization data to the system administrator.
  5. Credit ownership – the customer owns the rights to all alternative energy credits and may sell them on the open market to a system aggregator or an EDC or EGC, unless the customer makes other arrangements, such as agreeing to sell the rights to alternative energy credits to an investor that has provided funding to install and/or implement demand-side management measures.

Energy efficiency shall include new construction and major energy system retrofits. The following recommendations should govern the generation of alternative energy credits for new building construction or major retrofits that significantly improve the operating efficiency of the building energy system. Energy reduction for the purposes of this program refers to reductions in total energy usage (i.e. kWh). The program should contain the following elements:

1. Eligible Customers – residential, commercial and industrial. Buildings that are constructed to standards such as LEED, Energy Star, or other rigorous architectural and engineering standards where energy savings can be easily documented shall be eligible.
2. Measurement and Verification –Qualifying buildings would earn alternative energy credits by comparing typical electricity usage with a conventionally constructed and engineered building’s energy consumption based on watts per square foot. Credits earned in one reporting period can be sold for use in the following reporting period. Credits can be earned and sold on an annual basis.
3. Unit of measure – one MWh or electricity reduction compared to the regional square foot building average shall equal one alternative energy credit.
4. Reporting Requirement – owners seeking to earn credits shall provide verified electricity utilization data to the system administrator. The system administrator shall annually update average building usage figures and make that data available to the public.
5. Credit Ownership – the owner of the qualifying building shall own all alternative energy credits and may sell them on the open market to a system aggregator or an

EDC or EGC, unless the customer makes other arrangements, such as agreeing to sell the rights to alternative energy credits to an investor that has provided funding to construct the building.

Load management or demand response – Citation S.12(ii) -- The following recommendations should govern the generation of alternative energy credits related to load reductions and demand response. We recommend that the PUC consider requiring EDCs to provide real-time pricing technology to any customer requesting it. EDCs could recover any costs of providing this technology, over and above the benefits to the EDC of real-time pricing, as part of the cost recovery provisions of Act 213.

1. Eligible customer sectors – should focus on larger industrial users with at least 1 MW of load at time of load shift. Only users shifting load voluntary (i.e. that are not part of an RTO or utility compensation plan for interruptible load shifting) can qualify for alternative energy credits under the act.
2. Eligible activities – credits earned through this section shall accrue only through load shifting, load reductions and energy efficiency shall generate credits per the rules set forward above. *Shifting load by switching to local backup generation that is more polluting than the generation otherwise displaced (such as uncontrolled diesel generation) shall not be eligible for credits.*
3. Measurement and Verification – to be eligible, load shifts must occur during periods of mandatory interruptions. The customer shall provide billing information to the system administrator verifying load shifts to cope with periods of peak demand.
4. Unit of measure – One MWh of voluntary load shifting during a period of mandatory interruption shall count as one alternative energy credit. Alternative energy credits generated through voluntary load shifting shall be aggregated at the end of the reporting period.
5. Credit ownership – The customer owns the rights to all alternative energy credits and may sell them on the open market to a system aggregator or an EDC or EGC, unless the customer makes other arrangements, such as agreeing to sell the rights to alternative energy credits to an investor that has provided funding to install and/or implement load shifting/demand response technologies.

Industrial By-product/Energy Reuse -- Citation – S.2(13)(iii) industrial by-product technologies consisting of the use of a by-product from an industrial process, including the reuse of energy from exhaust gases or other manufacturing by-products that are used in the direct production of electricity at the facility of a customer.

The program should contain the following elements:

1. Eligible Resources – electricity generated from the capture of waste heat or industrial exhaust gases shall generate alternative energy credits.
2. Measurement and Verification – each customer shall provide the system administrator with a record, based on a conventional meter, of the number of MWh generated in each reporting period.

3. Unit of measure – one MWh shall equal one alternative energy credit.
4. Credit ownership – Customers shall own all alternative energy credits, unless other contractual arrangements have been made.
5. Environmental Compliance – The customer must possess all necessary environmental permits and may not have major compliance violations. That customer shall certify on annual basis that it has all required environmental permits and is does not have a major compliance violation. For instances of non-compliance with this section, the customer shall be treated under the guidelines set forth by DEP in the Section 2 Technical Guidance document. The Department may verify compliance records with other state environmental agencies or the relevant federal agencies.

**Department of Environmental Protection**  
**Recommendations and Comments on Act 213's Net Metering and**  
**Interconnection Provisions**

Section 5 of Act 213 requires the PUC to develop statewide technical and net metering interconnection rules for customer-generators intending to operate renewable onsite generators in parallel with the electric utility grid, consistent with rules defined in other states within the service region of the RTO that manages the transmission system in any part of PA.

The Act defines a customer-generator as “A nonutility owner of a net metered distributed generation system with a nameplate capacity of not greater than 50 kilowatts if installed at a residential service or not larger than 1,000 kilowatts at other customer service locations, except for customers whose systems are above one megawatt and up to two megawatts who make their systems available to operate in parallel with the electric utility during grid emergencies as defined by the regional transmission organization, or where a microgrid is in place for the purpose of maintaining critical infrastructure, such as homeland security assignments, emergency services facilities, hospitals, traffic signals, wastewater treatment plants or telecommunications facilities, provided that technical rules for operating generators interconnected with facilities of an electric distribution company, electric cooperative or municipal electric system have been promulgated by the Institute of Electrical and Electronic Engineers and the Pennsylvania Public Utility Commission.” We recommend that for consistency among PJM states, including New Jersey, non-residential customer-generators up to 2 MW should be allowed to net-meter and interconnect.

The customer-generator should be credited at the full retail rate for excess generation each month, such credit to be carried over from one monthly billing period to the next, until the end of the annualized period. At the end of the annualized period, the electric supplier/provider should compensate the customer-generator for any excess kWh generated, at the supplier/provider's avoided cost of wholesale power.

DEP has been made aware of several problems that potential owners of small distributed generation systems have encountered, either involving confusion in the requirements for interconnection, or through EDC rate policies that adversely impact the economics of these systems. For these reasons, DEP urges the Commission to adopt rules that favor customer-generators in such a way as to remove these barriers to project implementation.

Among the projects encountering economic disincentives have been farm-based anaerobic digestion systems. Most of these farm digesters, and potentially some mid-size wind energy or other renewable energy systems, are greater than 50 kW (existing proposed projects are typically 60 to 200 kW in capacity, although they could be larger). Many of these farm customers are residential service locations, and the legislation sets the cutoff for residential service at 50 kW. It is important to structure the rules so that these farm projects can benefit from net metering. This can be accomplished by allowing a customer operating a farm-based renewable energy system to qualify as an “other customer service” regardless of their actual residential customer service status, and thereby become eligible to net meter up to 2 MW.

These kinds of on-farm net metered systems can supplement farming income, improve energy security in rural communities and reduce the impact of nutrient runoff in watersheds when implemented in tandem with environmental best practices.

Therefore, Rural Cooperatives or other generation or transmission and other electricity distribution service providers should be included in the development of these regulations.

New Jersey's net metering and interconnection standard regulation provides favorable access to renewable distributed generation projects. As far as technical interconnection standards go, New Jersey's requirement, based on IEEE 1547 and UL1741, is generally compatible with PJM's recently adopted (12/16/04) technical requirements and standards. For these reasons, we recommend basing Pennsylvania's regulation, in part, on New Jersey's recent rule (N.J.A.C. 14:4-9), effective October 4, 2004.

We prefer that both interconnection and net metering issues be addressed in a common regulation, rather than separately. Since both of these issues affect distributed generation system installation, and both involve the customer interacting with the electric distribution company, it would benefit the customer-generator to address these issues through a single regulatory process.

Net metering should apply to Tier 1 energy resources only. The interconnection standards should apply to all Tier 1 and Tier 2 resources. *We should avoid making conditions any more favorable to "dirty" generation sources, such as uncontrolled diesel generation that is being used with increasing frequency for peak shaving.*

New Jersey's net metering standard applies to customer-generator facilities with generating capacity that does not exceed the customer's peak electric needs. This seems reasonable, as a facility generating much more power than needed could be seen to be competing unfairly with the EDC.

EDCs should develop a tariff and should make net metering available on a first-come, first-served basis.

Each supplier/provider or EDC should submit an annual net metering report to the Commission, which the Commission should make publicly available. The annual report should include:

1. The total number of customer-generator facilities;
2. The total estimated rated generating capacity of its net metering customer-generators;
3. The total estimated net kilowatt-hours received from customer-generators; and
4. The total estimated amount of energy produced by the customer-generators, which should be calculated using protocols approved by the Commission.

A customer-generator that is eligible for net metering owns the alternative energy credits associated with the electricity it generates, unless there is a contract with an express provision that assigns ownership of these credits to another party. The customer-generator is the owner of the alternative energy credits, and can trade or sell them.

*Fees and costs associated with net-metering and interconnection should be nominal and such that they should not place an undue economic or procedural burden on a customer generator.*

### Meters and Metering

A customer-generator facility used for net metering should be equipped with metering equipment that can measure the flow of electricity in both directions at the same rate. This is typically accomplished through use of a non-ratcheting single bi-directional meter. A customer-generator may choose to use an existing electric revenue meter if it can meet appropriate conditions. If the existing meter is not sufficient, the EDC should install a new revenue meter at the company's expense. Any subsequent revenue meter change necessitated by the customer-generator, whether because of a decision to stop net metering or for any other reason, should be paid for by the customer-generator.

The electric distribution company should not require more than one meter per customer-generator. However, an additional meter may be installed under either of the following circumstances:

1. The electric distribution company may install an additional meter at its own expense if the customer-generator consents; or
2. The customer-generator may request that the EDC install a meter, in addition to the revenue meter addressed in (c) above, at the customer-generator's expense. In such a case, the EDC should charge the customer-generator no more than the actual cost of the meter and its installation.

### General Interconnection Provisions

(a) Each EDC should provide the following three review procedures for applications for interconnection of customer-generator facilities:

1. Level 1 – an EDC should use this review procedure for all applications to connect inverter-based customer-generator facilities, which have a power rating of 50 kW or less, and which meet the certification requirements in the next section. Level 1 interconnection review procedures are set forth the section after;
2. Level 2 – an EDC should use this review procedure for applications to connect customer-generator facilities with a power rating of 1 MW or less, or 2MW or less if otherwise eligible under this rule, which meet the certification requirements in the next section. Level 2 interconnection review procedures are set forth the section after; and
3. Level 3 – an EDC should use this review procedure for applications to connect customer-generator facilities with a power rating of 2MW or less if otherwise eligible under this rule, which do not qualify for either the level 1 or level 2 interconnection review procedures. Level 3 interconnection review procedures are set forth the section after.

(b) Each EDC should designate an employee or office from which an applicant can obtain basic application forms and information through an informal process. On request, this employee or office should provide all relevant forms, documents, and technical requirements for submittal

of a complete application for interconnection review under this section, as well as specific information necessary to contact the EDC representatives assigned to review the application.

(c) Upon request, the EDC should meet with an applicant who qualifies for level 2 or level 3 interconnection review to assist them in preparing the application.

(d) An application for interconnection review could be submitted on a standard form, available from the EDC and posted on the Commission's website. The application form should require the following:

1. Basic information regarding the applicant and the electricity supplier(s) involved;
2. Information regarding the type and specifications of the customer-generator facility;
3. Information regarding the contractor who will install the customer-generator facility; and
4. Certifications and agreements regarding utility access to the customer-generator's property, emergency procedures, liability, compliance with electrical codes, proper operation and maintenance, receipt of basic information; and
5. Other similar information that is necessary to determine compliance with this chapter.

(e) An EDC should not be responsible for the cost of determining the rating of equipment owned by a customer-generator, or of equipment owned by other local customers.

(f) The provisions of this subchapter that apply to interconnection are primarily intended for customer-generator facilities that are eligible for net metering; that is, renewable generation facilities with a capacity no greater than two megawatts. However, these provisions may be used for review of other interconnections at the discretion of the EDC.

(g) If the interconnection of a customer-generator facility is subject to interconnection requirements of FERC or PJM, the provisions of this subchapter that apply to interconnection should apply to that facility only to the extent that they do not conflict with the interconnection requirements of FERC or PJM.

(h) If an applicant for interconnection disagrees with an EDC's determination of fact or need regarding matters covered in this subchapter, or if any person has a complaint regarding matters covered herein, the applicant or other person should follow PUC's rules for complaint.