



## ***Solar Energy Industries Association Improvements to the American Clean Energy and Security Act***

### ***RPS Improvements***

#### **Goal**

- Pass a national Renewable Portfolio Standard that is designed to encourage the growth of all forms of renewable energy, including all solar applications (utility-scale, distributed, and solar hot water).

#### **Asks**

- Utility-Scale Solar:
  - An additional policy lever is needed to ensure that the renewable energy potential in the U.S. can be harnessed to help meet RPS goals.
  - The utility-scale mechanism should stimulate the use of renewables to meet growing peak demand across the country.
  - We propose a variable value for RECs based on the peak, shoulder, and off-peak value of electricity.
  - Without such an incentive, utility-scale solar and other resources such as geothermal will not deploy.
- Distributed Generation Solar (wholesale and retail):
  - 20% of the total RPS must be DG (wholesale and retail, non-specific to technology).
  - Include solar thermal technology using the equivalency matrix developed and accepted in the EU. (See explanation, p. 4.)
  - No size distinction for DG, only distinguished by use of FERC jurisdictional interconnection limits.
  - Limit wholesale DG to 10-20% of the total DG program.
  - DG carve out should apply to state/regional percentage as well as to entire RPS.
  - National net metering and a consistent, single, national interconnection standard (use IREC best practices model) must be a condition of REC trading.

### ***REC Improvements***

#### **Asks**

- Integrate existing REC tracking systems to reduce duplication and confusion, per REMA recommendations.
- Ownership of RECs:
  - Solar owners who financed with city-based loan programs still retain the REC.
  - For states that have no existing RPS, REC is owned by the solar system owner.
- All RECs should be fully tradable separate from electricity, no matter when placed in service.

- Mechanism to trade small quantities of RECs should be included:
  - Up-front payments for smaller PV systems using AZ model for states that lack existing incentive programs in trade for RECs.
  - The RPS should ensure that private aggregators may bundle and trade RECs from system owners who do not wish to sell to a utility.
- Penalties for non-compliance or alternative compliance payment (ACP): inflation-adjusted fixed ACP that mirrors the contract term. The national ACP should be no lower than the median ACP of all RPS programs at the time of the bill's enactment, and no lower than any state's existing ACP. If the national RPS program's ACP is set at a regional level, all states in the region should set an identical ACP that is no lower than the highest existing ACP in the region.
- Duration /length of term of REC purchases:
  - 20 years is ideal
  - no less than 10
- If nuclear becomes eligible in the RPS, require a time-value mechanism that rewards first-to-construct (not first-to-contract) generation.

## *Climate Improvements*

### **Goal**

- Climate title that optimizes deployment of all forms of solar technology by modifying existing bill programs and elements and adding additional provisions.

### **Asks**

- **Allowances**
  - For energy generated from existing solar projects, the generator should receive 1 allowance for every 2 MWh (electricity and solar thermal equivalent) generation.
  - For energy generated from new solar projects, the generator should receive 1 allowance for every 1 MWh (electricity and solar thermal equivalent) generation.
    - The allowance allocation must apply to all scales of solar generation (DG to large-scale).
    - Solar thermal (i.e., solar water heating) must be credited, in a kWh thermal equivalent.
- **Auction Revenues**
  - Five percent (5%) of the allowance auction proceeds should go into a "Solar Technology Deployment Fund." Examples of how the fund could be used include: a Southwestern solar transmission project; rebates for solar thermal space heating and cooling; Incentives for domestic manufacturing, or performance-based incentives, etc.
- **Market Barriers**
  - Any allowance value and/or auction proceeds that flows to the states or utilities would be contingent upon the adoption of renewable energy best practices (see S. 989). These best practices include:
    - Retail Net Metering
    - Adoption of Interconnection standards
    - Prohibition on restrictive covenants that hinder the use of renewable energy, such as solar collectors and panels
    - Restrictions on permitting fees
- **Preservation of State Programs**
  - Any federal legislation incentivizing the deployment of solar energy should leave in place and not preempt any more robust state incentive programs.

## *Transmission Improvements*

### **Goal**

- Develop a strong national transmission grid that enables increased renewable energy generation.

### **Asks**

- **Interconnection-Wide Transmission Planning**
  - Each interconnection should develop a comprehensive plan to identify where new transmission lines (or increased capacity on existing lines) are necessary to connect renewable energy resources to the grid.
  - The plans should include both extra-high voltage transmission lines and the lower voltage feeder lines that are necessary to facilitate the development of these new transmission lines.
  - Congress should provide FERC with adequate authority to establish a process for developing and approving these plans.
- **Interconnection-Wide Transmission Cost Allocation**
  - Ratemaking and cost recovery certainty should be provided to address the question of who should pay. Since all users benefit from a robust transmission grid and new supplies of carbon-free renewable power, regulatory policies must reflect that.
  - Facilities identified in the interconnection-wide plan as necessary for the development of these new transmission and feeder lines should be eligible for broad, regional cost allocation. Specifically, FERC should allocate, based on electricity usage, the capital and operating costs of these transmission lines across all load-serving entities on an interconnection-wide basis.
- **Streamlined Siting Processes**
  - Substantial reform of the transmission siting process is required. The most effective model for siting is the full siting authority that is given to FERC over interstate natural gas pipelines.
  - The extra-high-voltage facilities and feeder lines defined in the regional plans would be subject to FERC approval and permitting. Separate siting approval at the state level would not be required.
  - FERC would act as the lead agency for purposes of coordinating all applicable federal authorizations and environmental reviews with other affected agencies. As is the case for natural gas pipeline and hydroelectric facility permitting, FERC would be required to consider siting constraints based on habitat protection, environmental considerations, and cultural site protections identified by state agencies.

## *EU Equivalency Matrix for Solar Thermal*

Every square meter of solar thermal collectors are equivalent to a PV panel with a 700 watt capacity in terms of energy output.

Sunlight comes in one form: solar radiation or insolation. When it strikes a PV panel, it is converted into electricity, with a conversion efficiency of 10 to 20 percent, depending on the type of PV (crystalline or amorphous). When it strikes a solar thermal collector, it is converted into heat, with a conversion efficiency of 70 to 80 percent, again depending on the type of collector and the climatic conditions where it is used. Since heat and electricity are both energy, but in different forms, they can be converted into one another. One kilowatt hour is equal to 3,413 British Thermal Units of heat energy. One BTU is the amount of energy required to heat one pound of water one degree from 60 to 61 degrees Fahrenheit.

So, since 64 square feet (or approximately 6 square meters) is a common size for a solar water heating system, its instantaneous efficiency is 0.7 kW per square meter (based on the convention established by the Europeans with SEIA as a signatory) times 6 square meters, or 4.2 kW. Therefore, a 6 square meter solar water heating system produces approximately the same amount of energy as a 4 kW PV system when measured in the same way as PV panels are rated (based on their peak conversion efficiency).

It is also useful to know that it takes heat to make electricity – “Heat rate” is a measurement used in the energy industry to calculate how efficiently a generator uses heat energy. It is expressed as the number of BTUs of heat required to produce a kilowatt-hour of energy. Operators of generating facilities can make reasonably accurate estimates of the amount of heat energy in a given quantity of any type of fuel, so when this is compared to the actual energy produced by the generator, the resulting figure tells how efficiently the generator converts that fuel into electrical energy.

The most efficient electrical generators are gas turbines, with heat rates as low as 8,000 BTU/kWh:  
<http://www.gas-turbines.com/specs/heatrt.htm>

Among the least efficient are coal fired generating units at 10,000 or 11,000 BTU/kWh:  
<http://www.econsci.com/euar9801.html>