

Comments submitted to:
U.S. Environmental Protection Agency (Docket ID HQ-OAR-2015-0199)

Submitted by John Bringenberg representing the
Colorado Solar Energy Industries Association, COSEIA
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Thank you for the opportunity to submit Comments regarding EPA's proposed Clean Power Plan. I am John Bringenberg and from Denver, Colorado representing the Colorado Solar Energy Industries Association as its president of the board and chair of policy. COSEIA is among the largest state solar trade and policy organizations representing over 200 business members including solar operators, developers, financiers, equipment manufacturers and resellers and service providers to the solar industry.

The EPA has requested comments on the Clean Power Incentive Program (CEIP), the Proposed Federal Plan and Model Trading Rules due on January 21. Our comments to specific questions posed by the EPA follow.

EPA Question: What should EPA consider when defining criteria, terms and requirements under the CEIP?

RESPONSE: There are few moments in our history where an important federal program with such strong imperatives for all people can also engage the public at multiple levels including grass roots. While it is clear that the EPA will include large and utility scale solar in its CPP plans, it is especially important that the EPA also recognize and take full advantage of the grass roots participation of citizens for renewable energy and energy efficiency. This includes all sizes of solar installations and thermal solar which directly offsets electricity generation. Just like with historic WWII Victory Gardens, by investing in a 20 – 40 year electric generation system, average citizens will take great pride and will be long remembered for their contribution to reducing our carbon footprint. For this reason, it is absolutely vital that every practical contribution to lower carbon be recognized and accounted for in the Federal and States Plans. CEIP should be available to any renewable or energy efficiency technology, whether large, small or aggregated – even in cases where measurements can only be approximated or predicted.

COSEIA believes that there is a requirement in the public trust for a clearing house settlement of ERC's to assure they are not miscounted or double counted and to assure that they are meeting their intended public benefit of increasing zero carbon energy generation and reducing carbon based fuel. However, such a system should not be so technical or onerous so as to exclude important sectors of the market place.

As well, COSEIA would like to point out the underestimated importance and potential impact of solar thermal technologies. In Colorado, as in most states, two third to three fourth of the energy used by buildings is to address thermal loads, typically space heating and water heating. These heating loads are addressed dominantly with natural gas, and this gas is ever more procured through hydraulic fracturing with horizontal drilling or 'fracking'. In turn, although reliable final data lacks in this regards, research from leading academic and research organizations reveals alarming rates of methane leaks in the fracking process. Methane is highly heat-trapping in its first years of release into the atmosphere; these leaks can negate any benefit of natural gas' lesser carbon emissions during combustion. COSEIA believes a wholesome approach to heat-trapping gases is critical, to include both carbon and methane. Whereas there is a good focus on clean electricity, there has been little focus on clean heating energy generation. Although a majority of heating loads are addressed with natural gas, a significant portion is also addressed with propane, fuel oil and electricity. Solar thermal and other mature renewable thermal technologies such as geothermal which directly offset electricity generation have an important role to play in decreasing our reliance on fossil fuels and their subsequent heat-trapping emissions.

Further, COSEIA recommends that the EPA seek to design a value proposition into its CEIP program such that a system of any size can be counted as generating zero carbon renewable energy through technologies including PV or Thermal solar with direct offsets of electricity generation, and receive compensation. In establishing such a system, the EPA should allow for the transfer and resale of the Emission Reduction Credits (ERC's) associated with the system as part of the CEIP award, and to further support a floor price for a natural public marketplace for the trading of ERC's.

Currently these trading systems are in their infancy and do not operate naturally in most electricity markets which are not deregulated and do not have competitive retail providers. Therefore, a system that is national in scope and supported by the EPA's ERC floor price can enable buyers and sellers to emerge in the private sector to acquire these benefits. Such a system is needed to establish and support the market while providing long range benefits for all size investors in renewable energy including the important smaller citizen- based investors. Such a national trading system will be of enormous

importance in providing incentives for the broader adoption of zero carbon renewable energy at all scales of deployment --from small rooftop systems to commercial and industrial and to utility scale.

EPA Question: What definition(s) of 'low-income community' should be required for eligible energy-efficiency (EE) projects?

RESPONSE: COSEIA recommends that States provide a definition for "low income" or "low income community" that is consistent with their programs for electric and gas utility low income benefits. These definitions are often based on the proportion of energy costs as a percentage of the overall household income. Thus an energy user that qualifies under a States program should also qualify for any special CEIP benefits for low income.

EPA Question: What criteria should be used to define eligible wind and solar projects, as well as eligible EE projects implemented in low-income communities? (e.g., by sector (residential, commercial, etc.) or by geography (where a project takes place and who benefits from it))

RESPONSE: The common denominator for low income qualification is a residential rate payer who meets a level of support by a State's or utility's programs to aid low income rate payers. These ratepayers may own and control their home and property or may rent their living arrangements. This is a market that can especially benefit from the lower lifetime cost of PV and Thermal solar energy (which directly offsets electricity generation) as compared with predicted increases in costs of fossil fuel and projected potential carbon taxes. Therefore, to address and serve this market it is important to allow aggregated solar and wind solutions such as community solar gardens and aggregated rooftop solar financing mechanisms. In this way, third party aggregators are in a more favorable position to finance renewable energy projects eliminating the high upfront costs of capitalizing such improvements which is prohibitive for nearly all low income qualified rate payers. As a practical matter, aggregators of shared or behind the meter solar projects in particular should meet criteria to establish those projects as directly benefiting low income rate payers for long term benefits geographically. It is important to note that to the extent electricity and thermal energy needs of these ratepayers can be shifted to renewable

energy, capitalized by aggregators using special low income funding, such programs directly ease the burden of existing public low income utility entitlement programs which simply offset the cost of traditional energy with no end in sight.

EPA Question: What should be the evaluation, measurement and & verification (EM&V) requirements for eligible projects; the requirements for M&V reports of quantified megawatt-hour (MWh); and the requirements for verification reports from an independent verifier?

RESPONSE: Larger commercial, industrial and utility scale solar projects are nearly 100% metered and measured with reliable revenue grade equipment, so it should be straightforward to establish M&V reports from ongoing commercial monitoring systems. Residential and small commercial rooftop distributed solar is often not measured in the same way. Residential on-site solar includes both PV and Thermal solar systems which directly offset electricity generation and are owned and controlled by the home owner and those aggregated by solar companies using leases, power purchase agreements and other financing mechanisms. It is imperative that the EPA include and provide CEIP credits to encourage individuals and small business owners to participate at a grass roots level in the reduction of carbon and the attack on climate change, regardless of their choice as to how to finance their carbon reduction.

Therefore, COSEIA recommends the following parameters for EM&V for all residential on site PV and thermal solar and commercial solar systems smaller than 10kW or equivalent.

- Where a revenue grade meter or production meter is unavailable, the EPA should rely on information about system capacity and production registered with the local jurisdiction at the time of permitting. This production can be cross calculated from NREL- developed production estimates including PV Watts.
- While these systems will produce renewable energy for 30 years or more, it is appropriate to provide incentives for the first 20 years where the performance of the panels is still under manufacturer warranty and its performance can be predicted.
- Algorithms can be developed to account for lifetime degradation and other practical reductions in performance such as from azimuth, pitch, and orientation and obstructions and also with industry accepted conversions from thermal BTUs to kWh for thermal solar to attribute direct offsets of electricity generation.

- CEIP credits for all residential systems and those commercial systems under 10kW should be available in two formats elected by the end user.
 1. As a stream of annual payments based on the algorithm of performance, or
 2. As a one-time upfront payment equal to the net present value of the predicted 20 year CEIP.
- For systems where the environmental benefits are owned and controlled by a third party aggregator, the same rules would apply.
- For systems where the environmental benefits are owned and controlled by a third party, the third party should be permitted to submit bulk reports of, such aggregated M&V data maintained and certified by the aggregator to standards no less than above.

EPA Question: *For RE resources with a nameplate capacity of 10 Kilowatt or more and for RE resources with a nameplate capacity of less than 10 Kilowatt for which metered data are available, we request comment on the appropriateness of the requirement to use a revenue quality meter for monitoring generation, and we request comment on the definition of revenue quality meter. We request comment on the appropriateness of other types of meters for monitoring generation. We request comment on whether 10 Kilowatt is the appropriate threshold, under which an eligible resource can be issued ERCs for generation based on data other than metered generation, and if not, what would be the appropriate threshold.*

RESPONSE: COSEIA believes that the requirement of revenue grade metering for grid interconnected PV systems under 10kW provides an unnecessary cost burden which will reduce the adoption of distributed solar generation in this class. Yet, this grass roots class of solar has high importance because of the vast potential for participation at a residential and small business level. Therefore, we recommend the following standards be required of all interconnected distributed solar generation. We believe that both solar electric systems and solar thermal systems can be accounted for in this way, with the understanding that thermal BTUs can be translated to kWh as a direct offset of electricity generation.

1. Each utility approving the interconnection shall maintain a database and make that database available or file that database on a quarterly basis. The Database will include such information as:

- a. System Size in kW
 - b. System address
 - c. System commission date
 - d. System pitch, azimuth and orientation
 - e. Expected annual production as provided by the solar installation contractor
 - f. Other information as deemed important for long range data compilation.
2. An algorithm can verify the production numbers submitted with this information and on an exception basis seek corrections to any anomaly.
 3. CEIP credits can be awarded directly to the owner of the system based on these production estimates.
 4. Third party aggregators of systems under 10kW can provide bulk aggregation submission using similar algorithms to verify expected performance.

EPA Question: *What commencement date is appropriate for a project to qualify as eligible for the CEIP?*

RESPONSE: An important consideration for the EPA's long range program is disruption of the current momentum of the renewable energy industry. This could be an unintended consequence of establishing CEIP for launch in 2020 with no benefit to commencing a project prior to that date. In fact ,conversion from fossil fuel to renewable electricity as early as possible has an important compounding benefit toward the goal of reduced carbon. Therefore, COSEIA recommends that the program incorporate benefits for projects completed before a retroactive date such as December 2016. While these benefits may not be definitive by that date, such a provision will provide industry participants the assurance that they will not need to hold up their projects to gain some participation.

EPA Question: For RE resources of all sizes and means of monitoring, we request comment on the appropriate requirements for allowing generation data to be aggregated, including comment on the provisions in the proposed model rule and any alternatives to them.

1. We request comment on whether all of the generating units have the same essential generation characteristics, in order for their data to be aggregated, and if so, what is the appropriate definition of “essential generation characteristics” (e.g., are essential generating characteristics determined on a resource by resource basis, or can generation from a group of wind turbines be aggregated with generation from a group of solar panels?)
 - a. RESPONSE: COSEIA does not comment.

2. We seek comment on the appropriate thresholds for the aggregated of individual units (e.g., nameplate capacity of less than 150 Kilowatt per unit and the units collectively do not exceed a total nameplate capacity of 1 MW when aggregated, as in the proposed model rule).
 - a. RESPONSE: COSEIA disagrees with the current proposed model rule because we believe that any restriction or barrier to CEIP credits is an unnecessary and artificial market barrier to broader adoption of zero carbon renewable energy. We recommend that portfolios of renewable energy projects exist and will continue to emerge with a broad range of RE assets including utility scale projects, Commercial and Industrial, aggregated community and virtual metered sites, and small residential and commercial. Therefore aggregators of renewable energy systems regardless of their size should be able to aggregate with no upper limit so long as they adhere to evaluation, measurement and & verification (EM&V) requirements set forth by the EPA.

3. For non-metered units of less than 10 Kilowatt, we request comment on whether the final model rule should specify the specific estimating software or algorithms by which generation data should be measured, and if so, we request broad comment on the appropriate estimating software or algorithms and the appropriate characteristics for such estimating software or algorithms.
 - a. RESPONSE: COSEIA believes that this very important category of distributed generation by citizen contributors to reduced carbon emissions must be recognized and rewarded. Individual investment and adoption of zero carbon energy generation must be acknowledged and encouraged. As a practical matter, we also believe it makes sense to utilize software and algorithms to estimate production and performance from these systems rather than to impose the cost and barrier of costly revenue grade metering equipment and

reporting. We recommend using the NREL- supported PV watts system of performance prediction for this class.

4. We request comment on any other requirements that should be included in the final model rule regarding EM&V of RE resources. For all energy generating resources (such as RE, but also including applicable resources requiring EM&V described below), we request comment on the appropriate place of measurement of the generation, including comment on whether measurement should be at the bus bar or at a different location (or in the case of meters on units of less than 10 Kilowatt, at the AC output of the inverter or elsewhere), whether measurement should be before or after parasitic load (and how to separate out parasitic load).
 - a. RESPONSE: COSEIA recommends that for systems of 10kW or less, more simplified algorithms based on NREL's PV watts tables be used with appropriate discounting to account for predicted system degradation or other environmental and technical factors. To accomplish this, the EPA should require maintenance of a database by the interconnecting utility to register all distributed generation projects with specific necessary data points such as size, date of commissioning, azimuth, pitch, orientation and such other data as will allow a reliable algorithm to account for the generation. Beyond this, no other technicality or system of measurement should be considered necessary unless a more cost effective system emerges over time.
 - b. We believe that for behind the meter solar thermal systems, those algorithms which approximate equivalent kWh energy production should be required, and there should be no lower limit on the eligibility of these systems for CEIP credits.

5. In addition, for all energy generating resources, we request comment on whether generation data should go through a control area settlement process prior to issuance of ERCs, and if so, what level of specificity with respect to that process we should include in the final model rule. If not, or if the unit does not go through a control area settlement process, we request comment on how the data collection should be specified in the final model rule.
 - a. RESPONSE: COSEIA believes that there is a requirement in the public trust for a clearing house settlement of ERC, to assure they are not miscounted or double counted and to assure that they are meeting their intended public benefit of increasing zero carbon energy

generation and reducing carbon based fuel. However, such a system should not be so technical or onerous so as to exclude important sectors of the market place.

COSEIA recommends that the EPA seek to design a value proposition into its CEIP program such that a system can generate annual compensation for performance of a zero carbon renewable energy system such as PV or Thermal solar which directly offset electricity generation. In establishing such a system, the EPA should allow for the transfer and resale of the Emission Reduction Credits (ERCs) associated with the system as part of the CEIP award, and to further support a floor price for a natural public marketplace for the trading of ERC's. Currently trading systems for Renewable Energy Credits (RECS) are in their infancy and do not operate naturally in most electricity markets which are not deregulated and do not have competitive retail providers. Therefore, a system that is national in scope and supported by the EPA's ERC floor price can enable buyers and sellers to emerge in the private sector to acquire these benefits. Such a system is needed to rationalize and support the market and long range benefits for all size investors in renewable energy including the important smaller citizen based investors. The value of such a system cannot be overstated in providing incentives for broader adoption of zero carbon renewable energy at all scales of deployment from small rooftop to commercial and industrial and to utility scale..

6. Finally, we request comment on the frequency with which data should be collected, for all energy generating resources, of all sizes.
 - a. RESPONSE: COSEIA believes that data should be collected and accounted for on a quarterly basis for all systems above 100kW. For systems below 100kW, data and accounting should be collected on an annual basis.