

Submitter's Name/Affiliation: Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)

Contact: Steven Nadel or Rachel Gold, ACEEE

Email: snadel@aceee.org or rgold@aceee.org

Phone: 202-507-4000

Executive Summary

ACEEE strongly believes that energy efficiency should be included in any CES. Energy efficiency is generally the least-expensive energy resource option, mitigating the financial impact of complying with a CES. If energy efficiency is excluded, the cost of a CES will be significantly higher. A 2009 ACEEE study found that energy efficiency programs cost U.S. electric utilities an average of 2.5 cents per kWh saved. By comparison, new power plants cost from 5.7-34 cents per kWh at the generation level, not including transmission and distribution costs. Energy efficiency saves money, helping to stabilize and even lower electric costs for American families.

We believe that the CES should include demand-side efficiency measures as well as improvements to transmission and distribution systems. We do not believe that small improvements to existing dirty coal-fired power plants should be included as the intent of the CES is to move towards cleaner energy sources and not just small reductions in use of dirty resources. However, as a path forward on how best to include natural gas, we support providing partial credit for new high-efficiency natural gas power plants that replace dirtier and less-efficient existing power plants, with the amount of the credit based on the emissions savings relative to the plant that is retired. Only clean and efficient new gas plants would be eligible. We suggest including natural gas plants with an average annual system efficiency of 46% or more, or alternatively, those with a design efficiency, under standard test conditions of 60% or more (based on the lower heating value of natural gas).

We recommend that either the Department of Energy (DOE) or the Federal Energy Regulatory Commission (FERC) be directed to develop national evaluation standards that utilities would need to follow in measuring energy savings. A good starting place for legislative language on evaluation is the evaluation provisions in S. 548 in the 111th Congress.

In terms of specific targets, if a CES includes renewable energy, nuclear, coal with CCS, new energy efficiency, and new high-efficiency natural gas that replaces dirtier resources, then we would recommend a target of 55% in 2020, ramping up to 80% in 2035. By setting strong targets substantial space is created so that all new clean resources will have ample opportunity to compete in the market without the need for caps or set-asides. Existing clean resources would provide about 30% of power by 2020 and planned additions more than 10%, leaving 10-15% of new clean resources needed. In the 2012-2020 period we expect these new resources to come primarily from energy efficiency, renewable energy, and natural gas. Post-2020 we would expect new nuclear and coal with CCS plants to be significant additions to the mix. Specific estimates are provided in our more detailed comments. We recommend that no floors or ceilings be provided for individual resources. Instead, the winners should be determined through competition in the market.

Question 1. What should be the threshold for inclusion in the new program?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should there be a threshold for inclusion or should all electric utilities be subject to the standards set by a CES?*

We recommend that there be some threshold, so that very small utilities do not need to comply. For very small utilities, the burdens of developing and implementing a compliance plan may not be offset by the benefit of the small amount of clean energy they would contract for. However, we believe that medium-sized utilities can and should comply. We recommend a size threshold in the range of 500,000-1 million kWh of annual sales. A review of electricity sales information in EIA's 2009 Electricity Annual shows that a threshold of 500,000 MWh would cover 610 utilities accounting for 92% of U.S. electric sales while a threshold of 1 million MWh would cover 349 utilities accounting for 86% of U.S. sales. In contrast, a threshold of 4 million MWh would cover only 141 utilities accounting for 74% of sales. The 4 million MWh threshold excludes quite a few investor-owned utilities including Rochester Gas & Electric, Central Hudson Gas & Electric and Orange and Rockland (all NY), Madison Gas & Electric (WI), Central Illinois Light Company (IL), Delmarva Power Co. (MD), United Illuminating (Connecticut) Central Vermont Public Service (Vermont's largest utility) and Western Massachusetts Electric Co. (MA).

Question 1. What should be the threshold for inclusion in the new program?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should any states or portions of states be specifically excluded from the new program's requirements?*

We believe that all states should participate in the program, as long as their utilities are large enough to qualify. In the case of Hawaii, this would likely include two utilities with sales over 1 million MWh (HECO and Maui); there are no utilities between 500,000-1 million MWh). In Alaska, 3-4 utilities in the "rail belt" would be included (Golden Valley, Chugach, and Anchorage are all above 1 million MWh while Matanuska is above 500,000 MWh.

Question 1. What should be the threshold for inclusion in the new program?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *How should a federal mandate interact with the 30 existing state electricity standards?*

The federal mandate should establish a national floor, but states should be permitted to set their own standards. This is how all the federal RES and EERS proposals have been structured. The same resources should be able to count towards the federal and state standards provided they meet the appropriate federal and state definitions of clean resources.

Question 2. What resources should qualify as “clean energy”?

Submitter’s Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *On what basis should qualifying “clean energy” resources be defined? Should the definition of “clean energy” account only for the greenhouse gas emissions of electric generation, or should other environmental issues be accounted for (e.g. particulate matter from biomass combustion, spent fuel from nuclear power, or land use changes for solar panels or wind, etc.)?*

Using a single attribute such as greenhouse gases is simple and workable. While we are not opposed to including other attributes, these will make the standard much more complicated and potentially contentious.

Question 2. What resources should qualify as “clean energy”?

Submitter’s Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- Should qualifying clean energy resources be expressly listed or based on a general emissions threshold? If it is determined that a list of clean energy resources is preferable, what is the optimal definition for “clean energy” that will deploy a diverse set of clean generation technologies at least cost? Should there be an avenue to qualify additional clean energy resources in the future, based on technological advancements?

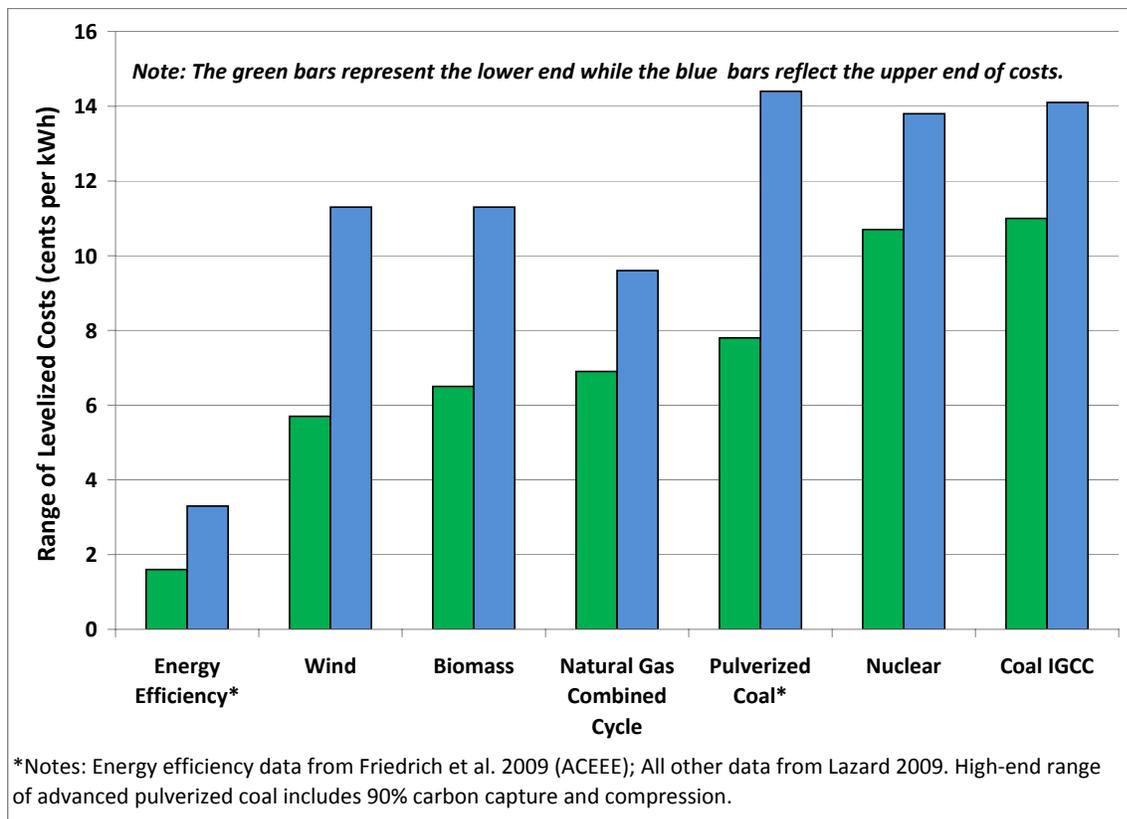
We prefer listing specific resources to start so that Congress and project developers have certainty on what is included as the CES gets off the ground. We believe that criteria should be set so that the Secretary of Energy, or other appropriate official, can add resources.

Question 2. What resources should qualify as “clean energy”?

Submitter’s Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What is the role for energy efficiency in the standard? If energy efficiency qualifies, should it be limited to the supply side, the demand side, or both? How should measurement and verification issues be handled?*

We strongly believe that energy efficiency should be included. Energy efficiency is generally the least-expensive energy resource option, mitigating the financial impact of complying with a CES. If energy efficiency is excluded, the cost of a CES will be significantly higher. A 2009 ACEEE study found that energy efficiency programs cost U.S. electric utilities an average of 2.5 cents per kWh saved.¹ By comparison, new power plants cost from 5.7-34 cents per kWh at the generation level, not including transmission and distribution costs.² Energy efficiency saves money, helping to stabilize and even lower electric costs for American families. The chart below illustrates the relative cost of different power resources, showing only some of the most common resources.



¹ Friedrich, Eldridge, York, Witte and Kushler. 2009. *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved through Utility-Sector Energy Efficiency Programs*, Report Number U092. Washington, DC: American Council for an Energy-Efficient Economy.

² Lazard. 2009. “Levelized Cost of Energy Analysis, version 3.0.” <http://efile.mpsc.state.mi.us/efile/docs/15996/0145.pdf> .

Question 2. What resources should qualify as “clean energy”?

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We believe that the CES should include demand-side efficiency measures as well as improvements to transmission and distribution systems. We do not believe that small improvements to existing dirty coal-fired power plants should be included as the intent of the CES is to move towards cleaner energy sources and not just small reductions in use of dirty resources. However, as a path forward on how best to include natural gas, as discussed below, we support providing partial credit for new high-efficiency natural gas power plants that replace dirtier and less-efficient existing power plants

We recommend that either the Department of Energy (DOE) or the Federal Energy Regulatory Commission (FERC) be directed to develop national evaluation standards that utilities would need to follow in measuring energy savings. The legislation could provide guidance to DOE or FERC. We believe that states should review utility evaluations (unless they don’t want to) and DOE should periodically review what states have done. A good starting place for legislative language on all of these concepts would be the evaluation provisions in S. 548 in the 111th Congress (a bill introduced by Senator Schumer).

Question 2. What resources should qualify as “clean energy”?

Submitter’s Name/Affiliation: Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)

- *Should retrofits or retirements of traditional fossil-fuel plants be included in the standard?*

As discussed above, we believe that a CES should be primarily devoted to use of truly clean energy sources such as energy efficiency, renewable energy, nuclear, and coal with carbon capture and storage. We do not believe that *all* natural gas should be included since natural gas plants still have significant greenhouse gas emissions. That said, we believe there is a useful role for natural gas provided the natural gas plant replaces a dirtier and less-efficient plant. Therefore, we support credits for clean and efficient natural gas plants based on the emissions reduction from the linked retirement of a dirtier plant. To define “clean and efficient” for natural gas plants, we suggest those with an average annual systems efficiency of 46% or more, or alternatively, those with a design efficiency, under standard test conditions of 60% or more (based on the lower heating value of natural gas). In no case should a utility receive double-credit for the same power plant. They would either get credit as a clean-source in their own right, or for replacing a dirtier source, but not both.

Question 2. What resources should qualify as “clean energy”?

Submitter’s Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should the standard be focused solely on electricity generation, or is there a role for other clean energy technologies that could displace electricity, such as biomass-to-thermal energy?*

We are open to including other clean energy technologies that specifically can be shown to reduce electricity use. These can be evaluated in the same way as energy-efficiency measures, but would need to be supplemented with a definition of what constitutes a “clean” technology.

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should the standard's requirements be keyed to the year 2035 or some other timeframe?*

2035 is a reasonable timeframe for establishing goals as this is long enough to get significant construction of long-lead-time plants such as nuclear or coal with CCS. Interim targets should also be set, starting with targets that apply a few years after enactment.

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- *What interim targets and timetables should be established to meet the standard's requirements?*

We support the President's suggestion for a 80% by 2035 target. Since existing clean sources account for nearly 30-40% of sales (this includes renewables and nuclear with the range depending on whether partial credits for existing natural gas are included), we can see a target of about 50-65% in 2020 (starting with the baseline and adding 10% energy efficiency savings, around 10% renewable generation, and maybe 5% of new natural gas that replaces dirtier sources). Between 2020 and 2035, we suggest a straight-line ramp-up with regular goals (annual or every 2-3 years) but are open to other suggestions.

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What are the tradeoffs between crediting all existing clean technologies versus only allowing new and incremental upgrades to qualify for credits? Is one methodology preferable to the other?*

We think the question of whether to include existing clean energy technologies should be answered by energy source, since the answer can vary.

Renewable energy and nuclear – Including existing will provide an incentive for owners to keep existing plants in operation.

Energy efficiency – This should be subject to clear evaluation rules and therefore only efficiency savings going forward should be included. A reasonable starting point might be savings achieved in 2012 and subsequent years, although a case could be made to start in 2011 (early actors get credit) or 2013 (only after evaluation rules are fully established).

Coal with CCS – No commercial-scale plants are now in operation so the two approaches are the same.

Natural gas – As noted above, we prefer crediting natural gas only for the energy and emissions savings achieved relative to plants that are retired. This should be prospective and not provide credits for plants/upgrades/retirements that happened before the CES even received serious consideration.

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should partial credits be given for certain technologies, like efficient natural gas and clean coal, as the President has proposed? If partial credits are used, on what basis should the percentage of credit be awarded? Should this be made modifiable over the life of the program?*

We are supportive of the President's proposal to include coal with CCS, with the amount of credit based on the percentage of greenhouse gases that are sequestered. In the case of natural gas, we prefer limiting credits to only the savings achieved relative to linked retirements. In both of these cases, the amount of credit is subject to plant-specific emissions. However, if credits are provided to new natural gas plants without any retirements, then credit should also be partial, based on estimated emissions reductions. If the plant being retired is not known, then assumptions will need to be made about the baseline, which would likely be contentious. Also, the credit should be limited to only the most efficient combined cycle plants in order to promote high-levels of energy savings and emissions reductions (e.g. those with an average annual systems efficiency of 46% or more, or alternatively, those with a design efficiency, under standard test conditions of 60% or more [based on the lower heating value of natural gas]).

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Is there a deployment path that will optimize the trade-off between the overall cost of the program and the overall amount of clean energy deployed?*

Energy efficiency will be critical for meeting targets in the early years of the program as efficiency resources are readily and quickly available in all states. Renewable energy and natural gas can often be implemented with a few year lead time. On the other hand, sources like nuclear and coal with CCS will primarily be developed in the post 2020 period.

For a CES with a start date of 2012, one scenario might be as follows (this assumes that natural gas only counts if it is new and linked with retirement of an existing dirtier plant):

Target	Year	Deployable Resource to Meet Standard
35-40%	2015	Efficiency and existing qualifying sources, renewables already being planned
55%	2020	Additional efficiency, renewables and clean natural gas linked with retirements of dirtier plants
80%	2035	All previous plus any new nuclear and clean coal

Question 3. How should the crediting system and timetables be designed?

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- *What would be the effect of including tiers for particular classes of technology, or for technologies with different levels of economic risk, and what would be a viable way of including such tiers?*

We generally believe that all sources should compete in the market and that specific floors or ceilings should not be provided for particular clean energy technologies. Instead, the overall goal should be set high enough so that all clean energy technologies have a good opportunity to participate.

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should the same credit be available to meet both the federal mandate and an existing state standard or should a credit only be utilized once?*

Yes, the same efficiency measure or clean technology should be able to meet both federal and state standards, provided the measure or technology meets both the state and federal definitions.

Question 3. How should the crediting system and timetables be designed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Should there be a banking and/or borrowing system available for credits and, if so, for how long?*

Some form of banking and borrowing can be useful as this provides additional implementation flexibility. However, only limited borrowing should be permitted so as to avoid potential problems with an entity heavily borrowing and then not following through on its commitments. Therefore, we recommend that borrowing be limited to only the first two years of the program in order to help with initial start-up of the program but thereafter no borrowing be permitted. We do not think limits need to be placed on banking, provided the targets are aggressive. If the targets are easy to meet, then banking may not be needed.

Question 4. How will a CES affect the deployment of specific technologies?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *How valuable would clean energy credits have to be in order to facilitate the deployment of individual qualified technologies?*

In the case of energy efficiency, we anticipate that energy efficiency will be the least expensive clean resource and therefore a CES will promote substantial amounts of efficiency investments and savings across any reasonable range of clean energy credit prices. 26 states now have energy efficiency savings targets that collectively will reduce U.S. electricity use by about 6% in 2020. With a strong CES, we would expect the amount of efficiency savings to increase to at least 10% in 2020, with the additional savings in states that either don't have savings targets or that have only modest targets. By 2035, we would expect on the order of 25% energy efficiency savings – about 1% per year – although higher level of savings would be possible.

We will let experts on other resources comment on their resources.

Question 4. How will a CES affect the deployment of specific technologies?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *How might a CES alter the current dispatch order of existing generation (such as natural gas-fired power plants), which has been driven by minimization of consumer costs, historically?*

We leave this to dispatch experts.

Question 4. How will a CES affect the deployment of specific technologies?
 Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What is the expected electricity generation mix for a target of 80 percent clean energy by 2035, under the President's proposal or an alternative construct?*

If the target is 80% by 2035, we would expect an approximate mix in 2035 as provided in the table below. These are rough estimates and not based on detailed modeling.

Estimated Impacts of a CES

Total Electricity Generation by Fuel	2011		2035 Base			2035 with CES		
	TWh	% of Gen	TWh	% of Gen	GHG MMT	TWh	% of Gen	GHG MMT
Coal	1,809	44.1%	2,197	42.7%	2,068	886	20.0%	834
With CCS	1,809	44.1%	9	0.2%	8	89	2.0%	84
Conventional	0	0.0%	2,188	42.6%	2,060	797	18.0%	750
Petroleum	44	1.1%	47	0.9%	37	24	0.5%	19
Natural Gas	979	23.9%	1,274	24.8%	423	1,274	28.7%	423
Combined cycle	391	9.5%	586	9.9%	195	683	15.4%	227
Combustion and steam turbines	587	14.3%	688	14.9%	228	591	13.3%	196
Nuclear Power	803	19.6%	879	17.1%	0	955	21.5%	0
Renewable Sources	455	11.1%	725	14.1%	0	1,285	25.0%	0
Other	12	0.3%	16	0.3%	12	16	0.4%	12
Total Electricity Generation	4,102	100.0%	5,139	100.0%	2,540	4,440	100.0%	1,288
Efficiency			411	8.0%	0	1,110	25.0%	0
Total			5,550		2,540	5,550		1,288
% qualifies under CES				44.3%			80.7%	
Change from basecase						14%		49%

Key assumptions in estimates:

- 2011 and 2035 base figures from EIA AEO 2011 early release except as follows:
 - Amount of coal with CCS not specified; we estimate 2 plants of 600 MW each by 2035.
 - Generation (kWh) by combined cycle and other gas plants not specified. We allocate based on generating capacity as specified in the AEO.
 - Amount of efficiency also not specified. We estimate 8% of total generation in 2035.
- For the CES in 2035 case:
 - 20 coal with CCS plants (600 MW each)
 - Conventional coal is the swing resource and adjusts to meet demand not met by other resources.
 - Petroleum reduced 50%.
 - Growth in combined cycle increases by 50%
 - Growth in combined cycle comes at the expense of other natural gas generation.
 - Growth in nuclear will double relative to the base case.
 - Renewable energy 25% of total resources.
 - Energy efficiency 25% of generation (we think efficiency could be a higher share, but we wanted to be conservative in our assumptions)
- Percent that qualifies under a CES gives 75% credit to coal with CCS and 50% credit to combined-cycle natural gas.

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Question 4. How will a CES affect the deployment of specific technologies?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Could different crediting and requirements than those proposed by the President be more effective in deploying clean technologies?*

Yes, as suggested throughout these comments we strongly believe that energy efficiency must be included in a CES, without any caps on energy efficiency. Also, as noted in our various answers, we suggest limiting natural gas to the savings relative to linked retirements instead of giving credit to all natural gas. Natural gas does have significant greenhouse gas emissions and we should not be promoting unlimited amounts of natural gas in a CES. As the numbers in the answer above show, we don't need all natural gas to count in order to reach an 80% by 2035 target.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What are the anticipated effects on state and regional electricity prices of a CES structured according to the President's proposal? What are the anticipated net economic effects by region?*

We have not done an analysis on this yet. However, we note that since the President does not include energy efficiency, the costs of his proposal will be significantly higher than if efficiency is included. A rough estimate is provided below.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Would other CES formulations or alternative policy proposals to meet a comparable level of clean energy deployment have better regional or net economic outcomes?*

Adding efficiency would significantly reduce costs. As a rough estimate, if 3 cents/kWh efficiency (a moderate increase relative to the 2.5 cents/kWh found in a 2009 ACEEE study) replaces 9 cents/kWh combined cycle gas, and efficiency achieves 25% savings in 2035, then using the EIA AEO 2010 projection of 2035 electricity sales, the savings on electric bills in just 2035 would be \$70 billion (in 2009 dollars, without discounting).

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *How might various price levels for the ACP affect the deployment of clean energy technologies?*

As noted above, energy efficiency is typically costing utilities around 2.5 cents per kWh saved although we expect this cost to rise some as low-hanging fruit is harvested. Therefore, we recommend that an ACP be no lower than 3 cents per kWh so that power providers have an incentive to pursue energy efficiency instead of paying the ACP.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What options are available to mitigate regional disparities and contain costs of the policy?*

Including energy efficiency will have a substantial impact on reducing regional disparities as all regions have extensive energy efficiency resources. Energy efficiency will be particularly helpful in regions such as the southeast and Great Plains where electric generation is primarily old coal power plants and utilities have done little to promote efficiency, leaving substantial low-hanging fruit (or as Energy Secretary Chu has said, "fruit lying on the ground").

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What are the possible uses for potential ACP revenues? Should such revenues be used to support compliance with the standard's requirements? Should all or a portion of the collected ACP revenues go back to the state from which they were collected? Should ACP revenues be used to mitigate any increased electricity costs to the consumer that may be associated with the CES?*

We recommend that ACP payments be used to fund R&D and deployment on energy efficiency and other clean energy sources. For example, these funds could be given to states in which utilities have made ACP payments and used to fund state-operated energy efficiency and renewable energy programs. The legislation should provide some guidance on permitted uses.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)

- *Should cost containment measures and other consumer price protections be included in a CES?*

If energy efficiency is included, we do not think cost containment measures will be needed. This said, we are open to considering specific proposals.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *How much new transmission will be needed to meet a CES along the lines of the President's proposal and how should those transmission costs be allocated?*

We leave this question to transmission experts, noting that efficiency not only doesn't add to transmission needs, it has the capability to significantly reduce transmission burdens.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Are there any technological impediments to the addition of significantly increased renewable electricity generation into the electrical grid?*

We leave this question to others.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What are the costs associated with replacing or retrofitting certain assets within the existing generation fleet in order to meet a CES?*

We have not analyzed this issue.

Question 5. How should Alternative Compliance Payments, regional costs, and consumer protection be addressed?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What level of asset retirements from within the existing generation fleet are anticipated as a result of a CES?*

We have not analyzed this issue. However, we note that a variety of new emissions, cooling water and coal ash regulations are likely to drive significant plant retirements in the next decade and therefore the impact of a CES on retirements is not likely to be felt until the 2020's and later.

Question 6. Are there policies that should be considered to complement a CES?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *To what extent does a CES contribute to the overall climate change policy of the United States, and would enactment of a CES warrant changes to other, relevant statutes?*

A strong CES will likely contribute to significant greenhouse gas reductions. To estimate the approximate savings in 2035 we took the EIA estimate of greenhouse gas emissions from the electric power sector and modified these based on our rough estimates of clean energy market shares in 2035. Our analysis is provided in our response to question 4. Based on this analysis, we estimate that emissions will be reduced by 1252 MMT in 2035 relative to EIA's estimate in the AEO 2011 Reference Case, a reduction of 49% in power sector greenhouse gas emissions. Thus, we estimate that a CES could have very substantial impacts on greenhouse gas emissions.

Question 6. Are there policies that should be considered to complement a CES?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What are the specific challenges facing individual technologies such as nuclear, natural gas, CCS, on- and offshore wind, solar, efficiency, biomass, and others?*

We will comment only on energy efficiency, our area of expertise. There are a variety of market barriers that impede adoption of cost-effective energy-efficiency measures by energy consumers. These include:

- Difficulty finding information on specific energy efficiency opportunities for their homes and appliances and on how best to find experienced, reputable contractors to implement energy efficiency improvements.
- Rush purchases when an existing appliance or piece of equipment breaks down, providing no time to comparison shop and leading consumers to purchase whatever is readily available;
- Limited stocking and availability of efficient products;
- Purchases by builders and landlords who do not pay appliance operating costs and hence have no financial incentive to value efficiency; and
- Frequent bundling of efficient features with other “bells and whistles,” which raise the price of efficient products and dissuade many purchasers.
- High consumer implicit discount rates (consumers heavily discount future cost savings), which leads to consumers emphasizing initial costs and giving only limited consideration to long-term energy savings.
- Access to capital – while some consumers have capital to make efficiency investments, others do not.

Utility energy-efficiency programs, as encouraged by a CES, can address many of these barriers and will therefore be a big help for electricity-saving measures. Utility programs can provide information, encourage stocking of efficient equipment, and provide incentives and capital to address these other barriers.

Question 6. Are there policies that should be considered to complement a CES?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Will the enactment of a CES be sufficient for each technology to overcome its individual challenges?*

Responding just on energy efficiency, a CES will be a big help, but additional policies will be needed to remove existing market barriers, particularly for the parts of the economy not subject to a CES (transportation, natural gas, fuel oil, etc.).

Question 6. Are there policies that should be considered to complement a CES?

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- *Should there be an examination of energy-connected permitting?*

We leave this question for others.

Question 6. Are there policies that should be considered to complement a CES?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *Are there specific supporting policy options that should be considered for coal, nuclear, natural gas, renewable energy, and efficiency?*

Regarding energy efficiency, we recommend a variety of complementary policies at the federal level including:

- Equipment efficiency standards, such as those contained in INCAA.
- Upgraded building codes, such as the provisions in ACELA last Congress.
- Renewed and improved federal tax credits. The new homes, appliance and heavy-duty vehicle incentives should be extended and the residential and commercial incentives modified to better promote comprehensive home and commercial building retrofits that reduce energy use 20% or more.
- Improved energy efficiency finance, including CEDA and other complementary approaches.
- Improved energy R&D including ARRA-E, the Innovation Hubs, and some of the other long-running R&D programs. CES addresses mostly deployment and not the long-term R&D needed to bring new technologies to market.
- Improved regulation of wholesale power markets so that cost-effective energy efficiency investments are valued by those markets when transmission, generation and ancillary services investments are considered.

In addition, similar and complementary policies should be pursued at the state and local levels.

Question 6. Are there policies that should be considered to complement a CES?

Submitter's Name/Affiliation: **Steven Nadel/American Council for an Energy-Efficient Economy (ACEEE)**

- *What is the current status of clean energy technology manufacturing, and is it reasonable to expect domestic economic growth in that sector as a result of a CES?*

We would expect significant growth in the production of efficient products ranging from lamps and light fixtures to electric motors to HVAC systems. Most of these are manufactured in the U.S.