



November 1, 2016

BY EMAIL TRANSMISSION:

EPA Docket Center
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

Transmitted by e-mail to: a-and-r-Docket@epa.gov

Reference: Comments of Environmental Defense Fund on the Clean Energy Incentive Program Design Details (Docket ID EPA-HQ-OAR-2016-0033)

Environmental Defense Fund (EDF) appreciates the opportunity to submit comments in response to EPA's proposed design details for the Clean Energy Incentive Program (CEIP), a voluntary component of EPA's Clean Power Plan (CPP). The CPP will finally put an end to the era of unlimited carbon pollution from America's fossil fuel-fired power plants. Fossil fuel-fired power plants are the nation's single largest source of climate-destabilizing pollution, accounting for over one-third of our emissions of carbon dioxide. These plants are also a major source of harmful mercury, sulfur dioxide, oxides of nitrogen, particulate matter, and other dangerous contaminants.

The CEIP is a valuable opportunity to help create incentives for early action before the 2022 start of the interim compliance period for the Clean Power Plan. EDF strongly supports the important aims of this program: to help drive highly targeted investments to ensure the benefits of clean energy are available for all, and to speed the progress America is already making to address carbon pollution from the electricity sector.

In our comments, we recommend design features that will help ensure that the CEIP is truly oriented towards catalyzing new, early investments, and will help the CEIP make progress towards its environmental, economic, and equity aims, including the following key recommendations:

- EPA should properly target 2:1 CEIP credits to the households that face the greatest obstacles in accessing clean energy; we recommend a household-based, default definition of "low income," with options for states to submit an alternative definition where supported by relevant information and public engagement.
- EPA must support the environmental integrity of the CEIP by focusing CEIP credits on projects that would not have occurred in absence of the program: for example, by

appropriately targeting 2:1 credits and not providing full CEIP crediting to renewable projects that receive PTC/ITC tax credits.

- EPA should include features that will ease implementation of the final CEIP for states, tribes, and communities where it is possible to do so while maintaining the environmental integrity of the program.
- EPA should allocate at least 50% of CEIP credits to low-income projects, given analysis showing that these projects could generate a substantial magnitude of additional emission reductions and, given the value in reaching these underserved households.

Finally, as we describe further below, EPA's provision of additional information and detail on the CEIP is entirely in line with and respectful of the Supreme Court's stay decision.

These comments build on past EDF comments on the CEIP and the CPP, which we incorporate by reference in full.¹

We appreciate the opportunity to provide comments on this important rulemaking. Please direct any inquiries regarding these comments to Martha Roberts at 202-572-3243 and Pam Kiely at 202-572-3284.

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¹ See: (1) Env'tl. Def. Fund, Comments in the Non-Regulatory Docket for the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734-0226 (Dec. 21, 2015); (2) Env'tl. Def. Fund, Comments on EPA's Proposed Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014, Docket ID No. EPA-HQ-OAR-2015-0199-0753 (Jan. 21, 2016); and (3) Env'tl. Def. Fund, Comments on EPA's Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Docket ID No. EPA-HQ-OAR-2013-0602-23140 (Dec. 1, 2014).

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1. The CEIP's low-income incentive is an important opportunity to help make clean energy opportunities available to all.

The Clean Power Plan establishes eminently achievable targets for greenhouse gas emissions that are anticipated to drive valuable investment in low-cost clean energy resources.² The CEIP is an important opportunity to catalyze new, early investment in clean energy that specifically targets low-income households—one that can help these households share in the benefits of clean energy and lower their energy costs—thereby delivering numerous benefits to low-income Americans while helping to jumpstart compliance for sources regulated under the Clean Power Plan.

Low-income Americans typically face disproportionately high energy burdens and an array of distinct obstacles in accessing the benefits of low-cost renewable energy and energy efficiency: split incentives; utility disincentives; financing challenges; transactional challenges; challenges particular to multi-family housing; and others. We review research and analysis on these challenges in detail in Appendix A. These barriers underscore the value and importance of EPA's focus on low-income households in the CEIP: by providing a financial incentive as well as catalyzing attention on clean energy investments in underserved communities, the CEIP can offer an important opportunity to lower electricity bills and help make clean energy more readily available to all.

Accordingly, EDF strongly supports EPA's proposed decision to target a substantial portion— at least 50%— of the CEIP incentive to projects that benefit low-income Americans, as well as the Agency's proposed decision to provide 2:1 credit for low-income projects, as we discuss further in Section 4, below. We recognize that while this incentive may not on its own be an independently sufficient catalyst for project deployment, it can help target and spur additional investment in the communities where these investments can be most valuable. Moreover, EPA should be clear that states have total flexibility with their own pool of allowances and could increase the state matching component for low-income projects to even further incentivize investment, without mitigating the integrity of the emission reductions required by the Clean Power Plan.

Below, we provide specific comments on some of the design details that EPA has proposed for the low-income portion of the CEIP.

² See, e.g., U.S. Environmental Protection Agency, Clean Power Plan Benefits of a Cleaner, More Efficient Power Sector, available at <https://www.epa.gov/cleanpowerplan/fact-sheet-clean-power-plan-benefits-cleaner-more-efficient-power-sector>. The anticipated deployment of energy efficiency in response to the Clean Power Plan is one reason why average energy bills are expected to decrease by approximately 7% as a result of the program. See EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule 3-40 (Aug. 3, 2015) (“Under the illustrative rate-based plan scenario, EPA estimates an average monthly bill increase of 2.7 percent in 2020 and an average bill decrease of 3.8 percent in 2025 and 7 percent in 2030...These reduced electricity bills reflect the combined effects of changes in both average retail rates (driven by compliance approaches taken to achieve the state goals) and lower electricity demand (driven by demand-side energy efficiency).”).

A. EPA must select a low-income definition that properly targets program eligibility to the intended recipients of the CEIP incentive.

As EPA notes in the proposed rule, appropriately defining “low-income” is an important aspect of properly targeting CEIP incentives.

EDF recommends a carefully balanced approach that provides flexibility while helping ensure the program is appropriately targeted. EDF recommends that EPA finalize a presumptively approvable “default” definition of low-income that is appropriately targeted, while allowing states to propose an alternative definition(s) where the state provides documented public engagement and reasoned substantiation that supports the alternative. This two-part approach would provide flexibility for states to accommodate unique local programs and circumstances, while providing a clear federal baseline for states that do not wish to craft their own definition or for states that are subject to a federal plan that includes the CEIP.

In general, the definition of “low-income” should be sufficiently broad to ensure that low-income Americans who face the greatest hurdles to clean energy investment are fully able to benefit from incentives under the CEIP’s low-income reserve. However, EDF notes that an overly broad definition could undercut the important goals of the CEIP by opening CEIP eligibility—and access to valuable double CEIP credits—to households and communities that do not suffer from high energy burdens or particular challenges in accessing clean energy, and who therefore might undertake such investments without the CEIP. These projects would receive CEIP credits that might otherwise go to an intended CEIP “low-income” recipient and, in a worst case scenario, could receive a substantial share of credits due to the recipients’ greater access and ability to navigate transactional barriers to participation. This outcome could direct credits to projects that would happen regardless of the CEIP and away from low-income projects that would rely on the CEIP, undermining the program’s primary goals.

Accordingly, we recommend that EPA pursue an approach that is flexible enough to accommodate the different landscapes of low-income communities and policies in each state (e.g. the distribution of urban vs. rural poverty), yet remains tailored enough to ensure that CEIP eligibility is appropriately targeted to the low-income Americans who have historically faced difficulty accessing energy efficiency and clean energy investments and are the intended recipients of this program. Such a tailored definition should also be as straightforward as possible, in order to minimize the administrative complexity associated with implementation of the CEIP.

We now describe in greater detail our recommendations for the definition of a low-income project.

- i. EPA should select a single, household-based existing federal definition of low-income for use in a federal CEIP plan and that is presumptively approvable for states.*

EPA should finalize a single, household-based federal definition of “low-income” that EPA can use in a federal CEIP plan, and that is presumptively approvable for states to use. Households that satisfy this “default” definition, and service organizations whose client-base meets the criteria, should be eligible to benefit from CEIP projects.

A targeted “default” definition would help ensure that CEIP credits are properly focused on their intended low-income recipients. To select a presumptively approvable definition, we

encourage EPA to select from the household-based (not geographic) definitions the Agency highlighted in its proposed CEIP Design Details, including: (1) HUD Low-Income Limits, which characterizes households with income at or below 80 percent of area median income (this metric is the basis for HUD Qualified Census Tracts, but can also be applied in a non-geographic fashion); (2) Weatherization Assistance Program (WAP) eligibility guidelines; and (3) Low-Income Home Energy Assistance Program (LIHEAP) eligibility guidelines. As these definitions vary in their geographic and numerical coverage,³ EPA should take care to ensure the definition it chooses best aligns with the aims of the CEIP.

EDF strongly supports a default low-income definition that focuses on the incomes of CEIP beneficiaries, as opposed to the geographic location of those beneficiaries. Such a household-based definition will ensure the CEIP includes all households that are income-eligible, regardless of where they are located. By the same token, a household-based definition appropriately excludes households of higher income that might be located in an area that would be considered “low-income” under a geographic-based definition, but that do not face the same disproportionate barriers to accessing clean energy that lower-income households do. Furthermore, a presumptively approvable household-based definition of low-income, coupled with state flexibility to propose a well-justified alternative definition where appropriate, will ensure the CEIP is narrowly targeted to directly benefit low-income households while accommodating the unique circumstances and profiles of low-income communities in each state.

- ii. Households that qualify for benefits from existing federal low-income programs should be automatically eligible to receive CEIP benefits without having to be re-evaluated.*

In addition to setting a targeted federal definition of “low-income community,” the final CEIP should also allow households that already qualify for or participate in certain enumerated, existing federal low-income programs to automatically qualify as “low-income” under a federal CEIP program. This automatic eligibility should also be a presumptively approvable metric for determining eligibility under a state CEIP program. Rather than needing to re-verify their income, potential beneficiaries could qualify for the CEIP by simply showing proof of inclusion or qualification in such an existing program. Automatic eligibility will reduce administrative costs and lower barriers for low-income Americans to benefit from CEIP-eligible projects by streamlining the onboarding process.

When determining which existing federal low-income programs should provide automatic eligibility, EPA should carefully evaluate eligibility requirements, administration, and track records of candidate programs for inclusion under categorical eligibility, to ensure they reflect the aims and eligibility requirements of the CEIP. Some possible candidate programs EPA could evaluate include, among others: Temporary Assistance for Needy Families (TANF), Supplemental Security Income, Supplemental Nutrition Assistance Program (SNAP), WAP,

³ For example, approximately 105 million people were eligible for WAP in FY2014 and 103 million people for LIHEAP in FY2011. (Estimated using the number of eligible households in FY2011 (40.1 million) and the average U.S. household size in 2010 (2.58 per household).) See Libby Perl, *LIHEAP: Program and Funding 2015*, Congressional Research Service, no. 7-5700, 29 July 2015. <<http://neada.org/wp-content/uploads/2015/09/CRS-LIHEAP-Program-and-Funding.pdf>>; and Daphne Lofquist, et. al., “Households and Families: 2010,” U.S. Census Bureau, April 2012. <<https://www.census.gov/prod/cen2010/briefs/c2010br-14.pdf>>.

LIHEAP, Section 8 Housing Choice Vouchers, and low-income residents of projects receiving the Low Income Housing Tax Credit (LIHTC).

iii. EPA should allow states flexibility to propose alternative definitions of “low-income,” but should set procedural safeguards to help ensure proper targeting of eligibility.

EPA should provide flexibility for states implementing the CEIP through a state plan or partial state plan to deviate from the default definition where justified by analysis and public engagement. EPA should provide flexibility for a definition that prioritizes environmental justice communities, in light of the disproportionate burden they face from power plant pollution—as discussed further in Section 2A. States may also wish to reflect that the character of low-income households and communities differs significantly by state due to, for example, the varying predominance of rural versus urban poverty, and varying standards of living across geographic areas. Or as EPA properly recognized, some states may wish to capitalize on existing definitions of low-income that are being applied in successful state or local low-income clean energy efforts. Some states may appropriately wish to make CEIP incentives more available to municipal, educational, and other non-profit or institutional entities that serve low-income households. Accordingly, EPA should finalize an approach in the finalized CEIP that provides states some flexibility to diverge from the default, presumptively approvable definition of “low-income.”

To achieve this end, we recommend that EPA make clear that states may propose an alternative definition of low-income, where states supply documentation of information and public input supporting a different approach to the definition. States will need to demonstrate that they have undertaken an appropriate public engagement effort with relevant communities, and that the state has a reasoned basis for the alternative definition that it proposes. States should demonstrate, for example, that their alternative definition of “low-income” focuses more appropriately on households and communities that have historically faced greater barriers to clean energy investment, and/or aligns more closely with existing state policies and programs while still fulfilling the aims of the CEIP.

B. EPA should target low-income eligibility to projects that directly benefit low-income households.

In order to best meet the goals of the CEIP, EDF recommends that the low-income portion of the CEIP incentive focus on residential energy efficiency projects and community and residential renewable energy projects that directly benefit low-income households, as defined for the purposes of the CEIP.

i. EPA should ensure that all forms of low-income residential energy efficiency may benefit from low-income CEIP credits.

EPA should ensure that single-family, multifamily, and rental residential energy efficiency projects and programs targeted to low-income households can all fully benefit from the CEIP. Further, any energy efficiency project that can deliver quantifiable and verifiable electricity savings and directly benefit low-income households should be eligible for 2:1 CEIP matching credits from the low-income pool.

- ii. *EPA should allow renewable energy projects that provide direct, specifically targeted, quantifiable economic benefits to low-income households to qualify for 2:1 matching credits from the low-income pool.*

EDF agrees that residential and community solar projects benefiting low-income households should qualify for 2:1 CEIP matching credits from the low-income pool. We recommend that wind and geothermal, and small-scale hydropower projects should also be eligible to receive 2:1 matching credits. In order to receive 2:1 matching credits, renewable projects should be demonstrated to provide direct, specifically targeted, quantifiable economic benefits to low-income households. While residential and community scale projects are most likely to directly benefit low-income households, states could be given the flexibility to award CEIP credit to other projects when it can be demonstrated that these projects are providing direct, specifically targeted, quantifiable economic benefits to low-income households. EPA could allow states to propose a process to demonstrate such an outcome, for example through a Public Utilities Commission (PUC) order delineating how costs and benefits of a specific project are allocated across customer classes.

EDF recommends that additional energy generation project types beyond solar, wind, small-scale hydropower, and geothermal power should not be eligible for 2:1 matching credits—more generally, we agree with EPA’s proposal that CEIP credits should target technologies that are zero-emitting, essential to longer-term climate strategies, and able to be deployed within short time frames.

In addition, renewable energy projects that do not provide direct, specifically targeted, quantifiable benefits to low-income households should not be eligible to receive 2:1 matching credits from the low-income pool. Such renewable energy projects are already eligible for CEIP credits under the renewable energy pool.

- iii. *EPA should allow voltage optimization projects that directly benefit low-income households to qualify.*

Through voltage optimization, home electricity use can be reduced by 2-3%, providing an opportunity for important customer benefits.⁴ These projects can be targeted at low-income households by, for example, focusing on distribution lines that serve multifamily low-income housing.⁵

EPA should allow for eligibility for 2:1 CEIP credits for voltage optimization projects that can demonstrate that they provide direct, specifically targeted, quantifiable benefits to low-

⁴ Pacific Northwest National Laboratory, Evaluation of Conservation Voltage Reduction (CVR) on a National Level, July 2010, at 40, available at http://www.pnl.gov/main/publications/external/technical_reports/PNNL-19596.pdf. See also Smart Grid Economic and Environmental Benefits, 2013, at 15-16, available at <http://smartgridcc.org/wp-content/uploads/2013/10/SGCC-Econ-and-Environ-Benefits-Full-Report.pdf> (finding that voltage optimization projects show economic benefits that range from \$11.24 to \$32.01 per customer per year).

⁵ Analogous efforts are being carried out as part of Con Ed’s Brooklyn Queens Demand Management Program. For further detail, see the BQDM Quarterly Expenditures and Program Report, 2016, at 33, available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={DAF05260-E387-49FF-ABFB-F706B64029C5}>.

income households. As noted above for renewable projects, EPA could allow states to propose a process to demonstrate such an outcome, for example through a PUC order delineating how costs and benefits of a specific project are allocated across customer classes.

- iv. EPA should not provide eligibility for projects or programs that do not target residences or public or non-profit institutions serving low-income households.*

The CEIP is an important opportunity to alleviate low-income Americans' typically higher energy burdens. As such, the CEIP's low-income incentive should target projects that deliver the most direct benefits to low-income households, such as residential efficiency projects. Although some other projects may deliver electricity savings to low-income households, these savings may not as directly benefit low-income Americans. For example, energy efficiency projects aimed at large businesses and industrial customers should not be eligible for CEIP credits, even if the organizations operate in predominately low-income areas. Other projects that deliver less direct benefits to low-income Americans should also not be eligible.

In general, EPA should select clear limits on project eligibility in order to help ensure that the program is straightforward to administer. Clear limits will help ensure that these credits are targeted to the projects and households that would most benefit from additional incentives for valuable clean energy projects, while avoiding undue administrative complexity.

C. EPA should make clear that states have flexibility to increase the number of allowances they make available from under the cap for CEIP low-income projects.

EDF strongly urges EPA to preserve the environmental integrity of the Clean Power Plan by limiting the distribution of CEIP matching credits to projects that will lead to net reductions to carbon pollution. Hence, EDF supports EPA's current proposal to award CEIP credits at a 2:1 ratio for low-income projects, with each MWh of electricity saved generation earning 1 EPA matching ERC (or allowance equivalent) and 1 state ERC. However, EDF recognizes that some states may conclude a higher award ratio is desirable to ensure the CEIP is fully utilized and delivers maximum benefits to low-income Americans. EDF recommends that EPA clarify that states implementing a mass-based CPP plan have flexibility to increase the ratio of allowances they award to CEIP low-income projects *from under their cap*—not EPA's matching reserve—if they so choose. For example, a state could decide to award the allowance equivalent of 3 early action ERCs for every MWh of electricity saved, while EPA continues to contribute the allowance equivalent of only 1 matching ERC, for an overall award ratio of 4:1. EDF believes this approach appropriately balances the need for a strong incentive with the imperative to preserve environmental integrity.

There are opportunities for states to do this under a rate-based program as well, though EPA will need to ensure that there are additional mechanisms in place to preserve the emissions benefits of the program. We discuss one such approach in Section 2B.

2. The CEIP must be appropriately designed to incentivize new and additional clean energy projects that achieve the program’s goals and preserve environmental integrity.

EPA included the CEIP within the Clean Power Plan to recognize and incentivize early efforts to reduce emissions before the CPP compliance period. EDF strongly believes the final CEIP should continue to reflect this purpose by ensuring real emission reductions and preserving the environmental integrity of the CPP. In addition to the clear climate and health benefits that reducing power sector carbon pollution will have for all Americans, reducing emissions also advances the CEIP’s goal of helping to alleviate the disproportionate burdens that low-income communities frequently bear.

We briefly review the impacts of power sector pollution on disproportionately impacted communities before turning to the recommendations we offer for preserving environmental integrity in the final CEIP so that it helps ameliorate, rather than exacerbates, these power plant pollution burdens.

A. Low-income and minority communities face disproportionate impacts from power plant pollution.

In the CEIP proposal, EPA noted the CEIP was in part designed as a response to “comments from stakeholders describing the disproportionate burdens that some communities already bear, and stating that all communities should have equal access to the benefits of clean and affordable energy.”⁶ In addition to the higher energy burdens discussed in Appendix A, low-income Americans also bear disproportionate health impacts from co-pollutants emitted by fossil fuel-fired power plants. The CEIP can provide important co-benefits to disadvantaged communities by incentivizing early reductions in harmful pollution from the power sector, in addition to lowering low-income Americans’ energy bills and incentivizing early clean energy investments.

Low-income and minority Americans are more likely to live near coal- and natural gas-fired power plants, and therefore face disproportionately high health risks from pollution from the power sector. Below, we review the academic literature documenting these disproportionate impacts.

i. Low-income and minority Americans are more likely to live near polluting power plants.

EPA analyzed demographic data for people who live near existing coal and natural gas-fired power plants affected by the Clean Power Plan using the Agency’s EJ SCREEN tool.⁷ The analysis found that 36.3 million people (11.8% of the U.S. population) live within three miles of an affected power plant. The analysis also found that a disproportionate number of low-income and minority people live near affected plants. In particular:

- 39% of people living within three miles of an affected plant are low-income, with household incomes less than 200% of the federal poverty level. In comparison, only 34% of the U.S. population is low-income by this measure.

⁶ Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42942.

⁷ U.S. EPA, *EJ Screening Report for the Clean Power Plan*, U.S. Environmental Protection Agency, 2015.

- 52% of people living within three miles of an affected plant are characterized as minority under EJ SCREEN, compared to 36% of the U.S. population as a whole.
- 67% of affected plants have higher concentrations of low-income people living within three miles of the plant than the national median. In a random scenario, we would expect only 50% of affected plants to have nearby low-income populations with concentrations above the national median.

Independent analysis confirms EPA's findings. Analysis of U.S. Census data from 2000 found that among people living within three miles of a coal-fired power plant, 39% are minority, with a higher minority population near coal plants in urban areas.⁸ In addition, the average income for people living near coal plants in 2000 was \$18,400 per capita, compared to the national average of \$21,587 per capita.⁹

ii. Americans residing near polluting power plants are at greater risk of respiratory disease, premature births, and other health impacts.

Several studies document the increased risk of negative health impacts for people living in close proximity to fossil fuel-fired power plants:

A study by Xiaopeng Liu, et. al., found that for residents of New York State, proximity to polluting power plants is correlated with more cases of hospitalization for respiratory disease. For residents of zip codes containing at least one fuel-fired power plant (coal, oil, natural gas, landfill gas, and solid waste), the study found an 11% increase in hospitalizations for asthma; 15% increase in hospitalizations for acute respiratory infection; and 17% increase in hospitalizations for chronic obstructive pulmonary disease.¹⁰

Research by Sandie Ha, et. al., found a correlation between proximity to power plants in Florida and adverse birth outcomes. Compared to children born of women residing more than 20 km from any power plant who gave birth in 2004 or 2005, babies born of women residing within 20 km of a coal plant had 19% higher odds of term low birth weight (LBW); 7% higher odds of preterm delivery (PTD); and 19% higher odds of very preterm delivery (VPTD).¹¹

Adverse birth impacts were less severe for women living near natural gas-fired plants. Babies born of women living within 20 km of a natural gas plant had 4% lower odds of term LBW, 9% higher odds of PTD, and 9% higher odds of VPTD. Babies born of women residing within 20 km of *two or more* coal plants had 12% higher odds of LBW, 20% higher odds of PTD, and 23% higher odds of VPTD. Finally, babies born of women residing within 20 km of *two or more* gas-fired plants had 6% higher odds of LBW, 13% higher odds of PTD, and 13% higher odds of VPTD.

⁸ Adrian Wilson, et. al., *Coal Blooded: Putting Profits Before People*, Nov. 2012,

⁹ *Id.*

¹⁰ Xiaopeng Lu, Lawrence Lessner, and David O. Carpenter, "Association Between Residential Proximity to Fuel-Fired Power Plants and Hospitalization Rate for Respiratory Diseases," *Environmental Health Perspectives* 120, no. 6 (2012): 807-810.

¹¹ Sandie Ha, et. al., "Associations Between Residential Proximity to Power Plants and Adverse Birth Outcomes," *Am. J. Epidemiol.* 182, no. 3 (2015): 215-224.

iii. Fossil fuel power plants contribute high levels of harmful air pollution.

In addition to research documenting direct correlations between residential proximity to fossil fuel-fired power plants and adverse health impacts, studies of harmful air pollutants suggest additional adverse health impacts from power plants.

Fossil fuel-fired power plants emit high levels of harmful air pollutants including carbon dioxide, sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter (PM_{2.5} and PM₁₀). In 2014, fossil-fuel fired power plants in the U.S. contributed 64.0% of U.S. SO₂ emissions (of which coal plants contributed at least 86%); 14.3% of U.S. NO_x emissions (of which coal plants contributed at least 98%); and 3.4% of primary U.S. PM_{2.5} emissions.¹² Coal plant emissions also contribute to what is known as secondary PM_{2.5}, which are known to form when pollutants such as SO₂ and NO_x react in the atmosphere.¹³

iv. Air pollutants emitted by fossil fuel power plants are associated with numerous health risks.

The EPA has conducted extensive literature reviews of the health risks associated with exposure to air pollutants such as PM_{2.5}, SO₂, and NO_x.¹⁴ These reviews extensively document associations and, in some cases, causal relationships between exposure to these pollutants and respiratory problems, infant mortality and low birth weight, cardiovascular disease, and premature mortality.

Together, these findings suggest low-income and minority Americans are at greater risk of exposure to adverse health impacts from fossil fuel power plant emissions. Low-income and minority Americans are more likely to live in close proximity to a coal or natural-gas plant, and studies have shown that such proximity is correlated with greater incidence of birth-related issues and hospitalizations for respiratory disease. In addition, fossil fuel plants emit high amounts of harmful air pollutants, exposing nearby residents to elevated concentrations of SO₂, NO_x, particulate matter, and other compounds. Research has shown these pollutants are closely associated with health consequences—in many cases, causal links have been established—suggesting that people living in these more-polluted areas are at greater risk of experiencing additional adverse health impacts.

The CEIP can help alleviate these pollution burdens and improve health and well-being for disadvantaged communities and for all Americans—so long as CEIP-recipient projects catalyze additional, early emission reductions. We accordingly urge that EPA focus CEIP incentives on projects that would not have happened in absence of the CEIP. We suggest the following recommendations to help ensure this outcome.

¹² U.S. EPA, “Average Annual Emissions,” *Air Pollutant Emissions Trends Data*, U.S. Env. Protection Agency, 2014. <<https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>>. For coal plant pollution data, see U.S. EPA, “Table of Coal Unit Characteristics: 2015,” *Emissions Tracking Highlights*, U.S. Env. Protection Agency, 2015. <<https://www.epa.gov/airmarkets/emissions-tracking-highlights#Coal>>.

¹³ U.S. EPA, *2009 Final Report: Integrated Science Assessment for Particulate Matter*, U.S. Environmental Protection Agency, EPA/600/R-08/139F, 2009.

¹⁴ See U.S. EPA., *2009 Final Report: Integrated Science Assessment for Particulate Matter*; U.S. EPA., *2008 Final Report: Integrated Science Assessment (ISA) for Sulfur Oxides – Health Criteria*, U.S. Environmental Protection Agency, EPA/600/R-08/047F, 2008; and U.S. EPA., *Integrated Science Assessment for Oxides of Nitrogen – Health Criteria (2016 Final Report)*, U.S. Environmental Protection Agency, EPA/600/R-15/068, 2016.

B. EPA should ensure that the CEIP preserves the stringency of emission reductions achieved under the Clean Power Plan.

State plans including the CEIP must include a mechanism to ensure that CEIP credits provided by the state do not undermine the emission reductions required during the CPP compliance period. By including these requirements, the CEIP will preserve the environmental benefits of the CPP while spurring early action to deploy renewable energy and low-income clean energy projects.

EDF supports EPA’s proposed mechanism for maintaining stringency under mass-based state plans, namely that states with mass-based plans implement the CEIP through an allowance set-aside from the established state emission budget. This is an easily administrable approach that will ensure the integrity of the mass-based emission budgets.

For states implementing rate-based plans, we recommend a variation to EPA’s proposed “haircut” approach. Under EPA’s proposed approach, states would apply an adjustment factor to all ERCs generated by renewable energy and energy efficiency projects during the compliance period that would ensure ERCs awarded through the CEIP are fully offset. We believe this approach may place an undue burden on renewable energy and energy efficiency project developers, who should not be negatively impacted during the CPP compliance period due to early action undertaken during the CEIP period.

We instead recommend that EPA finalize an approach that adjusts the stringency of the performance rates during the interim compliance period modestly to account for the “borrowed” ERCs that have been allocated to CEIP projects.¹⁵ This proposed mechanism more directly parallels the approach for offsetting borrowed allowances in mass-based states, under which borrowed allowances are deducted from allocations to affected EGUs. In both cases, a portion of compliance instruments would be reserved for use in the CEIP; to ensure that the stringency of the program is nonetheless maintained, affected EGUs as a whole would face a commensurate incremental increase in program stringency. Because this mechanism would place the responsibility for making up the borrowed ERCs on affected EGUs, it would also preserve incentives for investment in and deployment of ERC-generating projects.

C. Projects benefiting from the PTC/ITC extension should be ineligible to receive full CEIP renewable energy awards.

In order to preserve the environmental integrity of the Clean Power Plan, CEIP incentives should be targeted to clean energy projects that would not have occurred but for the CEIP. Because that is unlikely to be the case for projects receiving the recently-extended federal production tax credit (PTC) and investment tax credit (ITC), EDF recommends that these projects be ineligible for full CEIP credits.

¹⁵ Based on the size of the federal matching pool and overall emissions from affected EGUs, we anticipate that a slight increase of stringency (on the order of approximately two percent) would be sufficient to fully offset the borrowed ERCs.

The multi-year extension of the PTC/ITC has created an even more favorable outlook for renewable energy deployment than anticipated when the Clean Power Plan was finalized. Multiple models suggest the PTC/ITC extension will significantly accelerate short-term renewable energy deployment: In the proposed CEIP Design Details, EPA cited analysis by National Renewable Energy Laboratory (NREL) that found the PTC/ITC extension could contribute to roughly 100 GW of new wind and solar capacity being installed by 2021.¹⁶ Separate analyses by Bloomberg New Energy Finance (BNEF) and The Rhodium Group confirm NREL's estimates.¹⁷

Importantly, projects that are now able to benefit from the tax extenders are likely to occur with or without the CEIP in place. The financial incentive of the PTC/ITC is expected to vastly outweigh the incentive of the CEIP. That is, CEIP credits will probably have small marginal effect for projects that already receive the PTC/ITC. As a result, EPA matching credits awarded to renewable energy projects benefiting from the tax extenders would likely not lead to additional emission reductions. Because EPA matching credits represent additional allowances (or ERC equivalent) beyond the CPP limit, awarding matching credits to renewables projects that would have occurred anyway would in fact increase CO₂ emissions.

The CO₂ emissions from awarding CEIP credits to renewables projects that would have occurred anyway could be significant, severely impacting emission reductions accomplished under the CPP. BNEF's analysis found that even without the CEIP, about 8.9 GW of new wind capacity could be added in 2020 and 2021, along with 21.5 GW of new solar.¹⁸ Using average capacity factors as reported by DOE,¹⁹ we estimate that approximately 95 million CEIP allowances could therefore be allocated to projects that would have occurred anyway.²⁰ Because these projects would happen anyway, this allocation would increase CO₂ emissions by approximately 95 million short tons—more than the energy-related CO₂ emissions emitted each year by about half of states.²¹ If EPA were to extend CEIP eligibility to projects that commence operation earlier than 2020, then the risk of increased carbon emissions is even greater. BNEF's analysis shows projects that would have happened anyway in Sep. 2018 through 2021 could claim about 154 million CEIP allowances, equivalent to 154 million additional short tons of CO₂

¹⁶ CEIP Design Details, 80 Fed. Reg. at 42952.

¹⁷ Specifically, BNEF found that with the PTC/ITC extension, new solar and new wind capacity additions could reach 59 GW and 44 GW, respectively, in 2016-2021. The Rhodium Group found that accounting for both the PTC/ITC extension and CPP, utility-scale wind and solar capacity additions could reach more than 115 GW in 2016-2021. See Amy Grace, et. al., *Impact of Tax Credit Extensions for Wind and Solar*, Bloomberg New Energy Finance, 16 Dec. 2015. <<https://data.bloomberglp.com/bnef/sites/4/2015/12/2015-12-16-BNEF-US-solar-and-wind-tax-credit-impact-analysis.pdf>>; and John Larsen and Whitney Herndon, "Renewable Tax Extenders: The Bridge to the Clean Power Plan," The Rhodium Group, 27 Jan. 2016. <<http://rhg.com/notes/renewable-tax-extendors-the-bridge-to-the-clean-power-plan>>.

¹⁸ Grace, et. al.

¹⁹ We use average capacity factors across 2013-2015 of 33% for wind and 27% for solar. See U.S. EIA, "Table 6.7.B. Capacity Factors for Utility Scale Generators Not Primarily Using Fossil Fuels, January 2013-August 2016," *Electric Power Monthly*, U.S. Energy Information Administration, 25 Oct. 2016. <https://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_6_07_b>.

²⁰ Assuming 0.8 CEIP allowances, equivalent to 0.8 short tons of CO₂ emissions, are awarded per MWh of renewable generation.

²¹ U.S. EIA, "Energy-Related Carbon Dioxide Emissions at the State Level, 2000-2013," *Environment*, U.S. Energy Information Administration, 26 Oct. 2016. <<http://www.eia.gov/environment/emissions/state/analysis/>>.

emitted (more than the annual energy-related CO₂ emissions of all but a handful of states). Rhodium’s analysis, which found up to 120 GW of new, potentially CEIP-eligible wind and solar could be built in 2018-2021 even without the CEIP,²² suggests the emissions risk could be even higher—more than double, compared to BNEF’s analysis.

In order to preserve the environmental integrity of the CPP, EDF accordingly recommends that renewable energy projects receiving PTC/ITC benefits be ineligible to receive full CEIP credits from the renewable energy pool.

D. EPA should clarify that states can use auctions to further strengthen the CEIP incentive while maintaining its environmental integrity.

EPA should clarify that states may use auctions to promote price discovery in effort to help strengthen the incentive provided under the CEIP. This would provide greater certainty to project developers about the value of any credits they may be eligible to receive, which will allow them to more effectively factor the CEIP incentive into their decision-making.

When clarifying this opportunity, EPA may also want to reference its successful use of a consignment auction under the Acid Rain program for SO₂. Under the Acid Rain program, the agency auctions approximately 2.8 percent of allowances each year, returning the revenue to covered sources in proportion to their allocation share. As discussed in a recent study by Dallas Burtraw and Kristen McCormack, this revenue-neutral consignment auction helped catalyze price discovery and trading, while reducing transaction costs.²³

EPA may also want to clarify that states can also auction off allowances from under their cap in order to provide direct financing for CEIP-eligible projects. The revenue generated could then be made available on a competitive basis to project developers. Federal matching credits, once awarded by EPA to a state based on quantified and verified MWh of electricity saved/generated, could also be auctioned off to generate additional revenue.

E. EDF supports EPA’s proposals regarding apportionment, reallocation, and retiring of CEIP credits.

EDF supports EPA’s proposal to apportion CEIP credits among states *pro rata* according to the share of emission reductions they are required to achieve under the CPP.

We also support EPA’s proposal to retire, rather than reapportion, unclaimed credits from states that do not opt into the CEIP.²⁴ It is very possible that the total number of states participating in the program will be unclear until late in the pre-compliance period. If EPA were

²² John Larsen, Whitney Herndon, and Kate Larsen, “What Happens to Renewable Energy Without the Clean Power Plan?,” *The Rhodium Group*, 25 Feb. 2016. <<http://rhg.com/notes/renewable-energy-without-the-clean-power-plan>>.

²³ Dallas Burtraw and Kristen McCormack, “Consignment Auctions of Free Emissions Allowances under EPA’s Clean Power Plan,” Resources for the Future, RFF DP16-20, June 2016. <<http://www.rff.org/files/document/file/RFF-DP-16-20.pdf>>.

²⁴ EPA proposes not to reapportion unclaimed CEIP credits to CEIP-participating states from states that choose not to opt into the CEIP, citing timing and administrative issues with such an approach. Rather, EPA proposes to simply retire unclaimed matching credits (allowances or ERCs) on January 1, 2023.

to reapportion the credits of states that decide not to opt in, the uncertainty about how many states are eligible for CEIP matching credits would complicate and inject uncertainty into projections of how many credits will be available to any one state. Any unexpected credits, provided late in the game to projects, would merely reward already ongoing projects instead of incentivizing new projects. To provide certainty and support the environmental integrity of the CEIP, we support EPA’s proposal to retire, rather than reallocate, these credits.

At the same time, we recommend EPA remain mindful of helping ensure that states that do not opt into the CEIP have fully considered the benefits of participating in the CEIP, and undertaken engagement with low-income and other community stakeholders, before choosing not to participate. The CEIP can provide much needed opportunities for low-income communities to benefit from clean energy improvements. Conversely, low-income communities in non-CEIP-participating states will be less able to benefit from the opportunities the CEIP provides.

EDF also supports EPA’s proposal to not allow states to re-distribute credits from one matching pool to the other (renewables to low-income or vice versa), and instead to retire all unused CEIP credits on January 1, 2023. An approach that allows for reapportionment of credits left in either pool at the end of CEIP period would create unnecessary administrative complication and reward projects that have already moved forward, rather than incentivizing additional projects as the CEIP intends. Finally, we support EPA’s proposal that early action CEIP credits must be allocated only from a state’s emission budget for the first interim step performance period (2022-2024), so that these credits have a near-term value.

F. EPA should revise CEIP credit eligibility to include projects that commence construction after the final deadline for submission of state plans.

EDF recommends that EPA expand the proposed temporal limitations on CEIP project eligibility so that any project that commences *construction* after the final deadline for state plan submissions—which is currently September 6, 2018—would be eligible to participate in this program. The final Clean Power Plan provided that CEIP credits would be available to renewable energy projects for which construction commenced after the date of final state plan submission, and to low-income energy efficiency projects that commenced operation after that date. In the current proposal, EPA notes that this limitation on the timing of CEIP-eligible projects may no longer make sense in light of the Supreme Court’s stay of the Clean Power Plan. Instead, EPA proposes that CEIP eligibility be limited to renewable projects that commence commercial *operation* on or after January 1, 2020, as well as low-income energy efficiency projects that commence operation on or after September 6, 2018.²⁵

EDF believes that the goals of the CEIP would be best served by tying limitations on the timing of CEIP-eligible projects to the final *deadline* for state plan submission—whether that deadline ultimately falls on September 6, 2018 or another date— and by allowing renewable energy projects that commence *construction* after that date to be eligible for CEIP credit.²⁶

²⁵ CEIP Design Details, 81 Fed. Reg. at 42,964.

²⁶ Although we have recommended that EPA base CEIP eligibility for renewable energy projects on the date they “commence construction,” we do not recommend any changes to EPA’s proposal to base eligibility of low-income

EPA’s proposed eligibility deadlines, particularly for renewable energy, may exclude some projects that would commence operation prior to January 1, 2020, but would nonetheless be undertaken as a result of the CEIP and could help advance the goals of the program. EDF’s recommended alternative makes sense because the date on which a state has submitted its plan, and formalized both its decision to participate in the CEIP and the mechanism for doing so, is the logical point at which the CEIP would begin to incentivize new investments in renewable energy and energy efficiency. Further, it is reasonable to deem renewable energy projects that commence *construction*—rather than commence *operation*—after that point to have been incentivized by the CEIP, so long as those projects do not claim the ITC/PTC.²⁷ At the same time, tying eligibility to the deadline for state plan submission is fully consistent with the Supreme Court’s stay order, because it neither penalizes nor rewards any entity for actions taken during the stay period.

Given the CEIP’s purpose of incentivizing early deployment of additional renewable energy and energy efficiency projects, we believe that enabling CEIP crediting for any eligible renewable energy project that commences construction, or low-income efficiency project that commences operation, after the CEIP incentives are in place is the most reasonable approach.

G. EPA should appropriately target 2:1 CEIP credits to low-income projects.

As discussed above, appropriately targeting the eligibility of projects for 2:1 CEIP credits in a manner that focuses on low-income households and avoids unintended eligibility for wealthier households is important to help ensure that CEIP incentives go to low-income recipients, as the program aims.

Furthermore, this appropriate targeting can enhance the environmental integrity of the CEIP. As we detail in Appendix A, low-income clean energy projects have historically faced substantial barriers to implementation. Accordingly, they have historically accounted for a small portion of implemented projects despite offering substantial potential for additional emission reductions, as we discuss further in Section 4. This long-standing dynamic supports a conclusion that new projects with proper low-income recipients are unlikely to have gone ahead without the additional incentive of the CEIP, and that a focus on these projects protects and enhances the environmental integrity of the CEIP.

energy efficiency projects on the date they “commence operation.” Given the short lead-time for energy efficiency projects, there is little practical distinction between commencement of construction and commencement of operation for such projects.

²⁷ As EDF noted in its comments on the proposed model trading rules and federal plan, the term “commence construction” can be reasonably defined in a manner that is consistent with EPA’s regulations implementing section 111 at 40 C.F.R. § 60.2, and would include pre-construction permitting or contracts that cause a continuous program of construction to be undertaken. *See* EDF Comments, Docket ID No. EPA-HQ-OAR-2015-0199-0753 (Jan. 23, 2016).

3. The CEIP should be designed to ease participation for states, tribes, and households, while preserving the environmental benefits of the CPP.

A. EPA should identify opportunities to streamline EM&V implementation where it is possible to do so while maintaining the rigor of EM&V requirements.

Well-crafted evaluation, monitoring and verification (EM&V) and allowance and ERC tracking systems are crucial to accurately targeting CEIP incentives to eligible projects. We support EPA's proposal to require states to apply to their CEIP implementation provisions the same EM&V and allowance/ERC tracking requirements enumerated in the final Clean Power Plan EGs.²⁸

We propose several recommendations that will help ensure that implementation of EM&V is streamlined and straightforward while preserving environmental integrity. Several of these suggestions summarize recommendations that EDF provided in more detail on EM&V issues in our comments on the Model Trading Rules/Federal Plan proposal (available in EPA's docket at EPA-HQ-OAR-2015-0199-0753), which we incorporate by reference.

- i. EPA should provide technical guidance on EM&V requirements for CEIP-eligible energy efficiency project types.*

We recommend EPA provide ample technical guidance for low-income communities, states, and clean project developers so that the CEIP's EM&V requirements do not pose an obstacle to participation in the CEIP.

EPA should take particular care to develop useful EM&V guidance for the limited set of eligible CEIP low-income energy efficiency project types. We emphasized in our comments on the Model Trading Rules/Federal Plan that EPA should provide template EM&V plans and monitoring reports for common types of energy efficiency measures.²⁹ In pursuing such efforts, the Agency should prioritize development of resources for CEIP-eligible project types because CEIP projects can be implemented earlier, in advance of the Clean Power Plan compliance period.

- ii. EPA should target CEIP credits to a focused universe of energy efficiency project types, which will simplify implementation.*

In prior sections of these comments, EDF recommended that EPA primarily focus CEIP-eligible low-income energy efficiency on residential energy efficiency projects. As discussed above, this approach has the important benefit of ensuring that these valuable 2:1 CEIP incentives are targeted towards low-income programs that directly benefit low-income households, as this portion of the CEIP is intended to address.

²⁸ Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. no. 205.

²⁹ EDF comments on the Model Trading Rules/Federal Plan at 60, EPA-HQ-OAR-2015-0199-0753.

EDF notes that focusing CEIP credits can also benefit CEIP *implementation*. Appropriately targeting CEIP eligibility eases implementation of EM&V by reducing the variety of project types. Fewer project types will facilitate EPA's provision of technical guidance and ease implementation of CEIP programs.

iii. EPA should develop a tracking system and a database of approved third party validators.

EPA should also reduce burdens on state regulators and ease implementation by providing important related components of a CEIP program. In particular, EPA should provide a tracking system that could be used by the states with respect to CEIP credits/allowances, to facilitate broad adoption by the highest number of states.

EPA should also identify approved validators. As EDF discussed extensively in its comments on the Model Trading Rules/Federal Plan, third party validators provide a crucial function in ensuring environmental and program integrity by double-checking the validity of energy efficiency emission reduction estimates.³⁰ Identifying and tracking available, qualified validators is a service that can be performed by states—but EPA can ease the workload and provide a head start for states by preparing an identified database of approved validators.

B. EPA should include the CEIP in a CPP Federal Plan.

We support EPA's proposal to include the CEIP in any federal plan the Agency promulgates for states. As we highlight elsewhere, the CEIP offers an important opportunity to catalyze early investment in clean energy, with a valuable focus on low-income households that historically have faced barriers to accessing clean energy and would particularly benefit from cost savings. EPA should include the CEIP in any federal plan so that these states have an opportunity to benefit from the CEIP.

The recommendations on how to ease implementation for state regulators, offered above, would have the added benefit of streamlining EPA implementation of the CEIP in federal plan states.

C. EPA should ensure that Tribal projects are fully able to participate.

EDF strongly encourages EPA to ensure that Tribes are fully able to participate in the CEIP. EPA should consult closely with Tribal representatives and ensure that the final CEIP is informed by their perspectives on how to make sure the CEIP is available and implementable for Tribal projects.

In particular, EDF notes the comments submitted by the National Tribal Air Association on CEIP implementation for Tribes.³¹ We recommend EPA consider their recommendations, including those to: (1) specifically define "Indian country"; (2) use a single federal definition of "low-income" for Tribes (NTAA suggests using the WAP eligibility rules); (3) extend eligibility

³⁰ *Id.* at 58-59.

³¹ Comments of the National Tribal Air Association on the Clean Energy Incentive Program Design Details, Docket ID No. EPA-HQ-OAR-2016-0033-0093 (Aug. 25, 2016).

to appropriate Tribal buildings; (4) allocate CEIP credits for a Tribal set-aside; and (5) create a federal CEIP plan, especially for Tribes in states that choose not to opt into the CEIP.

We support EPA's proposal to allow projects located on Tribal lands to voluntarily seek credit through a state plan that regulates affected EGUs if they are located within that state; we suggest that projects should also be eligible if they benefit that state. We also support EPA's proposal that state plans cannot disqualify an otherwise eligible project on the grounds that it is located in Indian country.

Finally, we note that Tribal governments should have the option to develop a partial plan for just the CEIP, either by taking over the implementation of the CEIP through a delegation of the federal plan (or a partial delegation covering only the CEIP) or through a partial state plan.³² As currently drafted, it is unclear that this language covers Tribal governments, even though they may be particularly interested in this option to take over a limited portion of CPP implementation.

D. EPA should conduct thorough outreach and engagement with community stakeholders, and encourage states to do the same.

In the proposed CEIP Design Details, EPA noted that for states that opt into the CEIP, the CEIP provisions in their final state plans are subject, along with the entire plan, to the requirements for meaningful community engagement and public comment that EPA outlined in the final Clean Power Plan EGs.³³ We support EPA's emphasis on community and public outreach, as meaningful consultation with communities, organizations, and members of the public is crucial to ensuring the CPP benefits all Americans, including those who are traditionally underserved. We encourage the Agency to ensure that CEIP topics are well integrated into such outreach and engagement.

Because the CEIP is in substantial part targeted to benefit low-income Americans, we recommend EPA issue additional guidance for states to engage with stakeholders while developing CEIP provisions of their state CPP plans. EPA should consider prescribing that states document in their initial and final state plan submittals that they have meaningfully conducted outreach to and consultation with low-income communities, low-income advocacy groups, environmental justice advocates, and Tribal groups within the state, in addition to other stakeholders, to aid development of their state CEIP plans.

i. EPA Stakeholder Outreach and Technical Assistance

As EPA works to finalize details of the CEIP, EDF encourages EPA to carefully consider recommendations submitted by environmental justice advocates during this comment period and to continue to engage and dialogue with their community members to determine how to best incorporate their needs into this important program. Similarly, we recommend EPA carefully consider perspectives from Tribal entities and representatives to ensure the final CEIP enables

³² See 80 Fed. Reg. at 65,032–33; see also 42 U.S.C. § 7601(d)(2)(C).

³³ Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42,956.

Tribes, including those with and without affected EGUs, to fully participate in and benefit from the CEIP.

In addition, low-income communities, environmental justice advocates, affordable housing advocates, and other key stakeholders who could benefit from the CEIP may face obstacles in accessing important information necessary to fully understand and implement the program. To ensure low-income Americans are fully able to benefit from the low-income renewable energy and energy efficiency opportunities in the CEIP, EPA should provide extensive stakeholder outreach and technical assistance in at least the following areas:

- Details of the Final CEIP: EDF recommends that EPA hold online webinars and in-person workshops to help community stakeholders understand details of the finalized CEIP, as the Agency has done for the proposed CEIP Design Details. To ensure the broadest possible participation, EPA should schedule sessions at a variety of different times and days of the week, including weekends and evenings. In addition, EPA should conduct outreach to community stakeholders to ensure they are aware when these sessions will take place.
- Low-income RE and EE Best Practices: EPA should work with low-income renewable energy, energy efficiency, and affordable housing advocates to compile guidance on available low-income clean energy programs, and best practices for developing new programs eligible for the CEIP. EPA should also facilitate communication between low-income clean energy experts and state regulators to ensure state CEIP implementation provisions reflect the best available information and strategies for achieving successful low-income renewable and energy efficiency programs and projects. EPA could, among other methods, make best practice guides and tools available on its website, and convene roundtables or workshops to help stakeholders share information on successful strategies for developing low-income renewable energy and energy efficiency projects.
- EM&V Requirements: We recommend EPA conduct workshops and provide technical guidance to help renewable energy and energy efficiency project developers understand and implement EM&V requirements for CEIP-eligible projects. Smaller developers, including non-profit and community development organizations, could benefit in particular from EM&V guidance provided by the Agency.

4. EPA should apportion at least 50% of CEIP credits to the low-income pool.

EDF strongly supports EPA's focus on low-income energy efficiency and renewable energy opportunities in the CEIP, and therefore supports allocating no less than 50 percent of matching credits towards the low-income reserve.³⁴ Moreover, analysis presented below suggests that EPA can provide further opportunities for low-income projects in the CEIP, and preserve the environmental integrity of the Clean Power Plan, by allocating *more than* 50 percent of matching credits towards the low-income reserve.

A. The potential for low-income energy efficiency could be more than double the proposed share of CEIP credits available to low-income projects.

In EPA's analysis of low-income potential, the Agency estimates that ratepayer-funded low-income energy efficiency projects (residential, commercial, and conservation voltage reduction) could save 39 million MWh of electricity in 2020 and 2021, claiming an equivalent number of CEIP early action ERCs.

EDF notes that available analysis suggests the potential for low-income efficiency savings could be substantial, of a magnitude substantially higher than EPA's analysis indicates.

Based on a study by McKinsey & Company of the economic potential (the full breadth of cost-effective savings) for energy efficiency, EDF estimates the economic potential for ratepayer-funded low-income energy efficiency savings achieved under the CEIP to be 323 million MWh saved in 2020 and 2021.³⁵ This is more than double the 50% of matching credits (equivalent to 150 million MWh savings) EPA has proposed be made available for low-income projects.

³⁴ In the proposed CEIP Design Details, EPA proposed dividing the matching pool of 300 million short tons CO₂ evenly between the RE and low-income reserves, with 50 percent of matching credits (allowances or ERCs) being made available for each. EPA has solicited information and data to support a larger apportionment for the low-income reserve.

³⁵ McKinsey's analysis found that if all cost-effective ("NPV-positive") EE were deployed, annual residential energy savings could reach 937 million MWh in 2020, with 41% of energy savings coming from electricity savings. In our analysis, we assume low-income consumers represent 35% of electricity demand (see below), that 2016-2021 retail electricity sales follow projections in EIA's Annual Energy Outlook 2016, and that historical levels of low-income EE deployment (as described in EPA's CEIP Technical Support Document on Renewable Energy and Low-Income Community Projects Potential) prevail until a CEIP eligibility date of Sep. 6, 2018. See Hannah C. Granade, et. al., *Unlocking Energy Efficiency in the U.S. Economy: Executive Summary*, McKinsey & Company, July 2009; U.S. EIA, *Annual Energy Outlook 2016*, U.S. Energy Information Administration, DOE/EIA-0383(2016), Aug. 2016.

We conclude that 35% is a reasonable estimate for low-income electricity demand based on: (1) EPA's assumption in its TSD on CEIP potential that low-income communities represent 40% of overall electricity demand; (2) the percentage of households at or below 200% of the Federal Poverty Level (33%); (3) the percentage of U.S. population that lives in communities eligible for the New Markets Tax Credit (37%); and (4) the percentage of residential electricity consumed by households earning less than \$40,000 per year in 2009 (38%). See U.S. EPA, "TSD: Renewable Energy and Low Income Community Projects Potential; U.S. EIA, "Table CE2.1 Fuel Consumption Totals and Averages, U.S. Homes," 2009 Residential Energy Consumption Survey. <<https://www.eia.gov/consumption/residential/data/2009/index.cfm?view=consumption>>.

We acknowledge that achieving the full economic potential for low-income efficiency in the lead-up to the CEIP is optimistic. Reaching the full economic potential would require achieving average annual incremental electricity savings from low-income households of 1.53% of all retail electricity sales (i.e., across all residential, commercial, and industrial consumers) from Sep. 2018 through 2021. This level of savings is equivalent to achieving approximately 12% annual incremental electricity savings relative to only the low-income residential customer class. Historic levels of low-income electricity savings have been much lower: in 2015, incremental electricity savings from low-income projects comprised only 0.014% of all retail sales.³⁶ In other words, low-income efficiency efforts would have to ramp up significantly. In addition, low-income efficiency projects are cost-effective opportunities to reduce emissions—as we discuss further in Appendix B—but they may face higher costs than other efficiency investments, such that the distribution of their availability may not fully correlate with the McKinsey potential analysis.

Nonetheless, the high potential for low-income efficiency savings demonstrates the room for growth in this sector. Under this analysis, achieving even half of the full economic potential would consume the full 50% of CEIP matching credits EPA allocated for low-income projects—without even considering any credits for renewable energy projects. The low-income energy efficiency sector has been historically underdeveloped, and opportunities have been limited by several barriers, as we discuss in Appendix A. By helping increase investments in and focus attention on low-income energy efficiency, the CEIP could serve as a tool to develop opportunities in this sector and come closer to achieving the economic potential. CEIP credits provide some additional financial incentive for deploying low-income efficiency projects. The CEIP may also send a signal to PUCs, other state regulators, and efficiency project providers that the low-income efficiency sector is ripe for development. By conducting thorough stakeholder outreach and providing technical assistance to low-income communities and other important stakeholders (as we describe further in Section 3D.), EPA could help alleviate some of the informational and other barriers preventing low-income Americans from accessing energy efficiency.

In addition, the low-income efficiency savings potential discussed here only considers savings from ratepayer-funded energy efficiency programs. Additional CEIP credits could be awarded to projects and programs that are non-ratepayer-funded, as well as to electricity generated by renewable energy projects eligible for 2:1 CEIP matching credits. We now turn to the potential for efficiency savings and low-income renewable generation from these types of projects.

³⁶ Incremental electricity savings from all ratepayer-funded energy efficiency programs (across all income levels) were 0.7% in 2015. Low-income savings comprised approximately 2% of the overall savings. *See* Weston Berg, et al., *The 2016 State Energy Efficiency Scorecard*, American Council for an Energy-Efficient Economy, Report U1606, Sep. 2016; and Claire McIlvennie, *2015 State of the Efficiency Program Industry*, Consortium for Energy Efficiency, 18 Mar. 2016.

B. Non-ratepayer-funded efficiency programs could contribute additional savings for low-income Americans.

In its analysis of LIEE potential, EPA focused solely on savings generated through ratepayer-funded efficiency programs. However, ratepayer-funded programs are not the only source of energy savings: programs run by state agencies, non-profit organizations, and other sources also contribute to energy savings. In fact, in a technical support document released alongside the Clean Power Plan EGs, EPA cites separate analyses by ACEEE, Georgia Tech, and EPA itself that report ratepayer-funded programs comprise about 75% of energy savings, with the remainder derived from other sources.³⁷ Programs such as the federally funded Weatherization Assistance Program (WAP) and Low-Income Home Energy Assistance Program (LIHEAP) also contribute additional, non-ratepayer-funded low-income efficiency savings.

C. Renewable energy projects benefiting low-income ratepayers could use more than 10% of the CEIP low-income pool.

In addition to the enormous potential for energy efficiency benefiting low-income Americans, the potential for low-income solar and other renewable deployment is also greater than EPA claimed. EPA estimated CEIP-eligible low-income solar could generate 8 million MWh of electricity in 2020 and 2021, claiming an equivalent number of CEIP credits. Our analysis shows that in fact, there is potential for more than 17 million MWh of low-income solar to be generated—more than double EPA’s estimate—in addition to generation from low-income wind, geothermal, and hydro. Overall, then, low-income renewables could comprise more than 10 percent of the proposed allocation to low-income CEIP projects.

Currently, solar installations benefiting low-income communities constitute only a small fraction of overall distributed solar deployment. Analysis by the Center for American Progress of distributed solar deployment in six states suggests that less than 5% of new rooftop solar installations benefit low-income Americans³⁸—meanwhile, as discussed above, a reasonable estimate of the low-income share of total demand is 35%. EPA should leverage the CEIP so that low-income Americans can account for a more proportional share of the investment in clean, zero-carbon technologies.

SEIA estimates that in 2018, 2019, 2020 and 2021, 12 GW, 15 GW, 18 GW and 22 GW, respectively, of new solar photovoltaic capacity will be added, with residential solar comprising 35%, 32%, 30% and 27%, respectively (Figure 2.7 and Figure 2.8).³⁹ Under these estimates, new residential solar is projected to reach 4.2 GW in 2018, 4.8 GW in 2019, 5.4 GW in 2020, and 5.9 GW in 2021. If 35% of this new capacity benefited low-income Americans, then roughly 2 GW

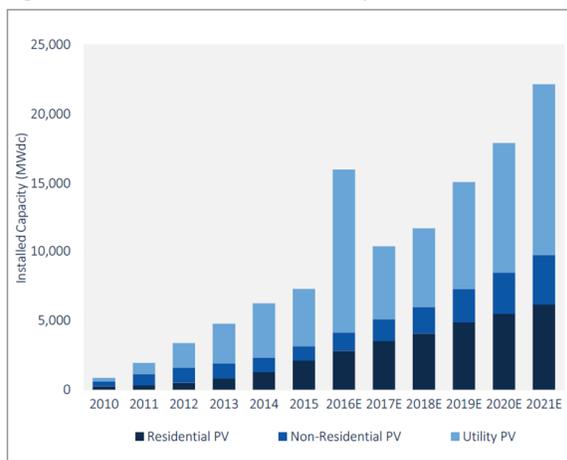
³⁷ U.S. EPA, “Demand-Side Energy Efficiency Technical Support Document,” Environmental Protection Agency, EPA-HQ-OAR-2013-0602-36842, Aug. 2015.

³⁸ See Mari Hernandez, *Solar Power to the People: The Rise of Rooftop Solar Among the Middle Class*, Center for American Progress, 21 Oct. 2013, available at <https://cdn.americanprogress.org/wp-content/uploads/2013/10/RooftopSolarv2.pdf>; and Mari Hernandez, *Rooftop Solar Adoption in Emerging Residential Markets*, Center for American Progress, 29 May 2014, available at <https://cdn.americanprogress.org/wp-content/uploads/2014/05/RooftopSolar-brief3.pdf>.

³⁹ SEIA’s models do consider the ITC extension and impact of the Clean Power Plan. See SEIA, *Solar Market Insight Report*, Solar Energy Industries Association, 2015.

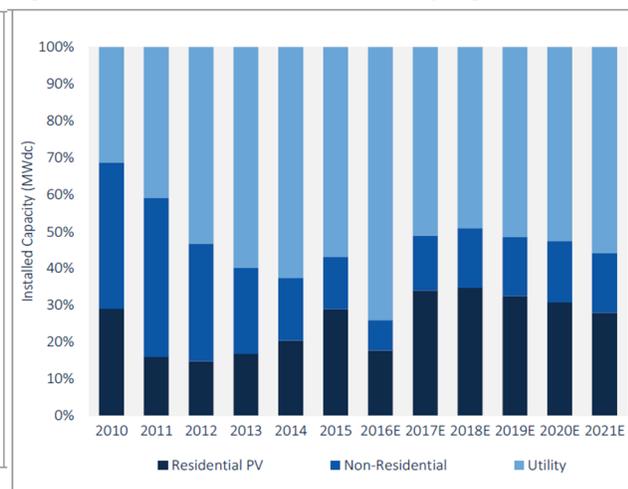
of new rooftop solar per year would be installed in low-income households from 2018 through 2021.

Figure 2.7 U.S. PV Installation Forecast, 2010-2021E



Source: GTM Research

Figure 2.8 U.S. PV Installation Forecast by Segment



Source: SEIA, Solar Market Insight Report, 2015.

SEIA’s analysis for residential solar only considers rooftop installations, and not shared/community solar. An NREL study of shared solar potential found that 1.3-2.6 GW of shared solar could be installed in 2020 alone, depending on whether state and federal policies work to cap new growth, such as through virtual net metering limits.⁴⁰ However, early evidence suggests the shared solar industry is well on its way to achieving or even exceeding NREL’s estimate: as of July 2015, Minnesota-based Xcel Energy reportedly received more than 1 GW of applications for new community solar projects in its service area alone.⁴¹ This suggests that it would actually be conservative to assume that the nation built 2.6 GW of shared solar in 2020. For this analysis, we assume that 2.6 GW of shared solar are built each year from 2018 through 2021, and that the benefits are shared equally by low-income consumers.

Assuming that these systems have an average capacity factor of 16.4%, as EPA uses in its analysis, and further assuming low-income solar projects commencing after Sep. 2018 are eligible for CEIP credits, then rooftop plus community solar benefiting low-income communities could earn approximately 17.3 million ERCs in 2020 and 2021—more than double EPA’s estimate, and comprising 12% of the proposed low-income matching pool.⁴²

⁴⁰ David Feldman, et. al., *Shared Solar: Current Landscape, Market Potential, and the Impact of Federal Securities Regulation*, National Renewable Energy Laboratory, NREL/TP-6A20-63892, April 2015. <<http://www.nrel.gov/docs/fy15osti/63892.pdf>>.

⁴¹ Herman K. Trabish, “Inside Minnesota’s disputed community solar deal,” *UtilityDIVE*, 9 July 2015. <<http://www.utilitydive.com/news/inside-minnesotas-disputed-community-solar-deal/401804/>>.

⁴² Here we conservatively assume that projects built in 2018 and 2019 receive credit for 2 years on average (considering 1/4 capacity added in 2018 given the assumed eligibility date of September), projects built in 2020 receive credit for 1.5 years on average, and that projects built in 2021 receive credited for 0.5 years on average.

5. EPA’s proposal of additional CEIP design details respects legal requirements and accords with past Agency practice.

EPA’s CEIP design details proposal respects the Supreme Court’s stay decision, follows past Agency practice, and is in line with the Agency’s traditional role of working with and responding to state requests.

A. EPA’s proposal conforms to the Supreme Court’s stay order.

In its proposal, EPA correctly concludes that moving forward with design details for the CEIP—a voluntary program that creates no immediate obligations for any entity—is consistent with the Supreme Court’s stay of the Clean Power Plan. To be sure, the Supreme Court’s stay temporarily suspended EPA’s authority to enforce the Clean Power Plan. However, neither the language of the order nor the common understanding of the effects of a stay indicates that the Agency is enjoined from working on all matters related to the rule. In the past, the Court has carefully distinguished stays from injunctions—and made clear in the case of the Clean Power Plan that it was not issuing an injunction.⁴³ The Court’s February 9 order plainly states that it grants an “application for stay,”⁴⁴ and does not contain any of the required elements of an injunction.⁴⁵

Moreover, both judicial practice and the language of the Clean Air Act confirm that a stay of a rule does not bar further administrative actions related to that rule. As the Institute for Policy Integrity recently highlighted in its careful survey of this issue, the Clean Air Act itself contemplates that EPA can continue to conduct work related to a rule even while that rule is subject to an administrative stay:

If a stay required EPA to ‘put its pencil down,’ it would be absurd for Congress to grant EPA the ability to stay its own rulemakings while reconsidering them. Reconsideration is an active process, requiring the agency to solicit comment and respond to those comments in the same way as EPA does for comments on a proposed rule.⁴⁶

⁴³ See *Nken v. Holder*, 556 U.S. 418, 419 (2009) (“An injunction and a stay serve different purposes. The former is the means by which a court tells someone what to do or not to do... By contrast, a stay operates upon the judicial proceedings itself, either by halting or postponing some portion of it, or by temporarily divesting an order of enforceability.”).

⁴⁴ *West Virginia, et al. v. EPA, et al.*, No. 15A773 (February 9, 2016).

⁴⁵ Under Rule 65(d) of the Federal Rules of Civil Procedure (FRCP), “[e]very order granting an injunction and every restraining order must state the reasons why it was issued; state its terms specifically; and describe in reasonable detail – and not by referring to the complaint or other document – the act or acts restrained or required.” The Supreme Court has noted: “[T]he specificity provisions of Rule 65(d) are no mere technical requirements. The Rule was designed to prevent uncertainty and confusion on the part of those faced with injunctive orders, and to avoid the possible founding of a contempt citation on a decree too vague to be understood.” *Schmidt v. Lessard*, 414 U.S. 473, 476 (1974).

⁴⁶ Richard Revesz & Alexander Walker, *Understanding the Stay: Implications of the Supreme Court’s Stay of the Clean Power Plan* 4-5 (Institute for Policy Integrity, 2016).

Likewise, if a stay entailed the cessation of all related work, courts could not engage in the usual practice of staying their own orders while hearing new motions.⁴⁷ Accordingly, the Supreme Court's order does not bar EPA from responding to state requests for further guidance, as EPA is doing here.

It is also clear that promulgating CEIP design rules does not amount to enforcement of the Clean Power Plan. States cannot participate in the CEIP while the stay is in effect, and EPA has postponed all CEIP-related submission deadlines until after the stay is lifted.⁴⁸ As a result, all states will have equal opportunity to take advantage of the CEIP, regardless of whether they begin preparations now or later. While the proposal will assist and inform states that want to begin planning for the CEIP, it will not disadvantage those that choose to wait.

Nor does this rulemaking have any hidden coercive effects. As EPA notes in the proposed rule, "states are not required to implement this incentive program for early action."⁴⁹ Participation in the CEIP is entirely optional, and that courts have previously declined to read coercion into purely voluntary measures. Consider, for example, the D.C. Circuit's treatment of EPA's NO_x SIP Call, a regulation under section 110 of the Clean Air Act (CAA) that required certain states to revise their ozone state implementation plans (SIPs) to address interstate NO_x pollution.⁵⁰ Following a court-imposed stay of the NO_x SIP Call, EPA modified an existing rule—pursuant to its authority under section 126 of the Clean Air Act—to require those same states to address interstate NO_x pollution.⁵¹ EPA gave states the option of complying with the Section 126 Rule by complying with the (stayed) NO_x SIP Call.⁵² The D.C. Circuit upheld this approach against judicial challenge, noting that compliance via the NO_x SIP Call provisions was optional.⁵³ Meanwhile, in the circumstances here, states cannot even participate in the CEIP while the Clean Power Plan's stay is in force, even if they would prefer to do so.

B. EPA's action accords with past Agency practice.

This rulemaking is also consistent with precedents under both Republican and Democratic administrations in which EPA has continued to develop Clean Air Act rules following the issuance of a judicial stay. During the George W. Bush Administration, for example, the D.C. Circuit stayed EPA's Equipment Replacement Provision (ERP), which amended the Routine Maintenance, Repair, and Replacement Exclusion from New Source Review requirements.⁵⁴ While the stay was still in effect, EPA granted reconsideration of the ERP, solicited and responded to comments on key components of the provision, and then denied

⁴⁷ *Id.* at 5 (citing FRCP 62(b)).

⁴⁸ Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42944.

⁴⁹ *Id.*

⁵⁰ *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1037 (D.C. Cir. 2001).

⁵¹ *Id.* at 1039.

⁵² *Id.*

⁵³ *Id.* at 1048. *See also* Revesz & Walker, *supra* note 4, at 4.

⁵⁴ *See New York v. EPA*, 443 F.3d 880, 883 (D.C. Cir. 2006).

reconsideration.⁵⁵ As EPA appropriately notes in the CEIP proposal, the Agency also continued to work on stayed rules during both the Clinton and Obama Administrations.⁵⁶

Other agencies have similarly recognized their ongoing obligation to assist states in other instances where enforcement of the regulation at issue is precluded. The Department of Labor, for example, recently offered to help states comply with the Home Care Final Rule, a wage and compensation regulation that had been vacated by a district court and was at that time under appeal to the D.C. Circuit.⁵⁷ In a letter to various state governors, the Secretary of Labor acknowledged the current state of litigation, including the continuing effect of the vacatur.⁵⁸ Nonetheless, the Secretary provided detailed guidance on how to comply with the Rule, and concluded by offering to assist the governors with any implementation plans.⁵⁹ These efforts are noteworthy because when a vacatur or a stay is in force, an Agency similarly has no authority to enforce any enumerated requirement.

C. Moving forward on CEIP design details appropriately reflects EPA’s traditional role of assisting and informing states.

The proposed rule provides critical assistance to states that have requested further guidance on this optional program including, for example, 14 states that wrote to EPA specifically requesting additional detail and information on the CEIP.⁶⁰ Indeed, the proposed CEIP was issued in large part as a response to those requests.⁶¹ It therefore continues EPA’s longstanding tradition of cooperating with states to prevent and control air pollution, which is independently authorized under provisions of the Clean Air Act other than section 111(d).

EPA is correct that its actions are entirely consistent with its clear authority to coordinate with and provide technical assistance to states on matters of air pollution prevention and control.⁶² Pursuant to 42 U.S.C. § 7403, for example, EPA may “encourage, cooperate with, and render technical services” to states researching the prevention of air pollution. Congress similarly authorized the Agency to assist in the coordination of state and local air pollution laws.⁶³ Thus, by providing states with technical guidance on the voluntary CEIP, EPA continues its well-established role of assisting states in reducing air pollution.

⁵⁵ See Revesz & Walker, *supra* note 4, at 3.

⁵⁶ For example, EPA continued to revise the Cross-State Air Pollution Rule (CSAPR) after the DC Circuit had stayed the rule’s legal effectiveness. See Clean Energy Incentive Program Design Details, 81 Fed. Reg. 42940, 42945 (June 30, 2016).

⁵⁷ See *Home Care Ass’n of Am. v. Weil*, 799 F.3d 1084, 1090 (D.C. Cir. 2015), *cert. denied*, No. 15-683 (U.S. June 27, 2016).

⁵⁸ Thomas Perez, Letter to Governors (March 20, 2015), <https://www.dol.gov/whd/homecare/letter-to-governors.pdf>.

⁵⁹ *Id.* at 2 (“I stand ready to assist you as you do so, and my staff continues to be available to provide technical assistance to your health, disability, budget, legal, labor, aging, and other offices involved in this effort.”).

⁶⁰ Letter to Acting Assistant Administrator Janet McCabe from 14 state officials, Request for Additional Information and Technical Assistance Related to the Clean Power Plan, April 28, 2016, available here http://www.eenews.net/assets/2016/04/29/document_cw_04.pdf.

⁶¹ 81 FR at 42942.

⁶² The proposed rule identifies multiple authorities under which the EPA can assist states in developing air pollution controls, including sections 102 and 103. See Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42,944.

⁶³ 42 U.S.C. 7402(a).

EPA is therefore clearly within its authority to promulgate the proposed CEIP design details and a final program. Not only are these efforts entirely consistent with the Supreme Court's stay and past Agency practice, but they also provide important guidance to states that want to start preparing for this optional, early-action program.

Appendix A: the CEIP can help alleviate the disproportionate energy costs that low-income Americans face

Recent research indicates that low-income Americans typically spend a disproportionate share of their income on energy, including electricity. As discussed above, the CPP and the CEIP can play a role in helping to alleviate these high energy costs by incentivizing cost-saving energy efficiency improvements and community renewable energy projects.

Several analyses show that low-income households spend a disproportionately high portion of their income on energy. According to two national studies, low-income households spend about 15% of their household income on energy, on average—more than four times what non-low-income households spend as a proportion of income.^{64,65} A third study of households in 48 major U.S. cities found smaller but still significant low-income household energy spending of 7.2% on average—three times greater than what non-low-income households spend.⁶⁶

Consulting group Fisher, Sheehan & Colton has estimated the “home energy affordability gap” (HEAG), the total dollar amount by which low-income energy bills exceed an “affordable” level of 6% of household income.⁶⁷ In 2015, they estimated an average HEAG of \$310 per year per household among households earning less than 200% of the Federal Poverty Level.⁶⁸

⁶⁴ A study by Oak Ridge National Laboratory reviewed annual weather-normalized expenditures for low-income and non-low-income households in FY2014 (Oct. 2013 – Sept. 2014). The study found low-income households spend on average 16.3% of their household income on energy, compared to 3.5% for non-low-income households. “Low-income households” are defined here as households eligible for Weatherization Assistance Program benefits, namely households with incomes at or below 200% of the Federal Poverty Level Guidelines. See Joel F. Eisenberg, *Weatherization Assistance Program Technical Memorandum: Background Data and Statistics on Low-Income Energy Use and Burdens*, Oak Ridge National Laboratory, April 2014. <http://weatherization.ornl.gov/pdfs/ORNLTM2014_133.pdf>. Referenced in Clean Energy Incentive Program Design Details, 81 Fed. Reg. at 42962.

⁶⁵ The U.S. Dept. of Health and Human Services publishes periodic information about low-income home energy usage under LIHEAP, a federal program to help low-income households meet their energy needs. Statistics relayed here are from the *LIHEAP Home Energy Notebook* for FY2011, which reports low-income households spend on average 13.3% of household income on electricity, compared to 3.3% for non-low-income households and 7.0% for all households. “Low-income individuals” are defined here as individuals eligible for Low-Income Home Energy Assistance Program (LIHEAP) benefits: individuals with household income not more than 150% of the Federal Poverty Level or 60% of state median income (whichever is higher). See U.S. Dep’t of Health and Human Services, *LIHEAP Home Energy Notebook for FY2011*, June 2014. <https://www.acf.hhs.gov/sites/default/files/ocs/fy2011_hen_final.pdf>. See also “LIHEAP Service Eligibility FY 2016,” *Office of Community Services*, U.S. Dept. of Health and Human Services, 11 January 2016. <<http://www.acf.hhs.gov/ocs/resource/liheap-eligibility-criteria>>.

⁶⁶ This study, conducted by the American Council for an Energy-Efficient Economy (ACEEE), found low-income households spend 7.2% of their income on energy (including both electricity and heating fuels), compared to 2.3% for non-low-income households and 3.5% for all households in the sample. Here, “low-income households” are those with household incomes less than 80% of area median income. See Ariel Dreihobl and Lauren Ross, *Lifting the High Energy Burden in America’s Largest Cities*, ACEEE, April 2016. <<http://aceee.org/sites/default/files/publications/researchreports/u1602.pdf>>.

⁶⁷ Energy expenditures include electricity, natural gas, fuel oil, and liquefied petroleum gas. See Roger D. Colton, *Home Energy Affordability Gap*, Fisher, Sheehan & Colton, 2013. <<http://www.homeenergyaffordabilitygap.com>>.

⁶⁸ Calculated using HEAG = \$41,135,434,401 and number of households = 132,741,033. See Colton; 2010-2014 American Community Survey 5-year estimates.

Furthermore, research has shown that disproportionate energy burdens are associated with negative health effects, particularly for children and the elderly.⁶⁹ Disproportionate energy bills can lead families to forgo sufficient heating and cooling, which is associated with adverse health impacts.⁷⁰ Financial stress and reduced comfort can also impact mental and social well-being.⁷¹ Families may also sacrifice other essentials such as food and medicine,⁷² and engage in riskier financial behavior such as taking out high-interest payday loans.⁷³

The CEIP offers an important opportunity to help address these impacts by catalyzing new investments in cost-saving clean energy projects in low-income households—which can help save low-income Americans money and deliver benefits for the health and well-being of these households.

A. Challenges in Accessing Energy Efficiency

In addition to disproportionately high energy burdens, low-income Americans have historically faced distinct barriers in accessing energy efficiency improvements that can alleviate high energy costs. The CEIP has the potential to help incentivize additional energy efficiency investments in low-income households in a manner that accelerates emission reductions under the Clean Power Plan—and can help overcome these barriers with additional financial incentives, or potentially even address the underlying obstacle through complementary efforts driven by increased attention on low-income efficiency spurred by the CEIP.

In this section, we describe the following barriers to energy efficiency faced by low-income communities:

- Challenges in accessing financing for capital costs that can be associated with energy efficiency projects.
- Split incentives, particularly between landlords and renters.

⁶⁹ Karl-Michael Brunner, Markus Spitzer, and Anja Christanell, “Experiencing Fuel Poverty: Coping Strategies of Low-Income Households in Vienna/Austria,” *Energy Policy* 49 (2012): 53-59.

⁷⁰ See Jeffrey Berko, et. al., “Deaths Attributed to Heat, Cold, and Other Weather-Related Events in the United States, 2006-2010,” *National Health Statistics Reports: Number 76*, Centers for Disease Control and Prevention, 30 July 2014; Jennifer F. Bobb, et. al., “Heat-Related Mortality and Adaptation to Heat in the United States,” *Env. Health Perspectives* 122, no. 8 (2014): 811-816; Diana Hernandez and Stephen Bird, “Energy Burden and the Need for Integrated Low-Income Housing and Energy Policy,” *Poverty & Pub. Pol.* 2, no. 4 (2010): 5-25; Christine Liddell and Chris Morris, “Fuel Poverty and Human Health: A Review of Recent Evidence,” *Energy Policy* 38, no. 6 (2010): 2987-2997; and Fay Wright, “Old and Cold: Older People and Policies Failing to Address Fuel Poverty,” *Social Pol. Admin.* 38, no. 5 (2004): 488-503.

⁷¹ See Liddell and Morris; and Kang Li, et. al., “Energy Poor or Fuel Poor: What are the Differences?” *Energy Policy* 68 (2014): 476-481.

⁷² Jo-Ann Choate and Mark Wolfe, *2011 National Energy Assistance Survey*, National Energy Assistance Directors’ Association, November 2011. <http://neada.org/wp-content/uploads/2013/05/NEA_Survey_Nov11.pdf>.

⁷³ Rob Levy and Joshua Sledge, *A Complex Portrait: An Examination of Small-Dollar Credit Consumers*, Center for Financial Services Innovation, August 2012. <<https://www.fdic.gov/news/conferences/consumersymposium/2012/A%20Complex%20Portrait.pdf>>.

- Transactional barriers such as lack of knowledge about energy efficiency programs, insufficiently targeted marketing, and complex application processes that can deter potential participants.
- Additional obstacles for multifamily housing tenants, including unique financial barriers, split incentives, and policy hurdles.

The CEIP’s final design should be mindful of these existing barriers in order to maximize the anticipated environmental, economic, and equity benefits of the CEIP. Accordingly, we also offer suggestions for designing the CEIP in a way that helps to mitigate these barriers wherever possible, and complements other efforts to expand clean energy investment in low-income communities.

i. Financing Challenges

Efficiency improvements typically require upfront investments. Although these initial costs are recouped over time through energy savings, low-income Americans and owners of multifamily low-income buildings often lack access to sufficient capital. These challenges can be particularly compounded for multifamily housing, due to the cost of implementing efficiency improvements in multiple units at once.⁷⁴ A variety of vehicles exist to address financing challenges, including: government-sponsored grants or loans to low-income households for efficiency improvements; utility rebates and incentives for appliance upgrades; financing that considers projected energy savings;⁷⁵ and on-bill financing (wherein a utility provides the upfront capital for an efficiency improvement, then recovers the cost by adding a charge to the recipient’s utility bill—because the efficiency upgrade reduces the customer’s energy consumption, the customer sees a net decrease in utility charges).⁷⁶ By providing an additional incentive for implementation of energy efficiency projects, the CEIP can complement these innovative financing mechanisms.

ii. Split Landlord-Renter Incentives

A split incentive exists when one party (such as a building owner) is responsible for conducting building upgrades, but another party (such as a tenant) reaps the benefits through lower energy bills. In such cases, the building owner has little incentive to undertake efficiency upgrades—and the tenant often has minimal ways to influence such investments.

Even if the landlord is willing to shift the burden of undertaking efficiency investments to a tenant, the tenant may be unwilling to bear the upfront cost of such measures for a variety of

⁷⁴ Jack Markowski, et. al., “Financing Energy Efficiency Retrofits of Affordable Multifamily Buildings,” from *Community Development Investment Review*, Federal Reserve Bank of San Francisco, 2014. <http://www.frbsf.org/community-development/files/cdir_vol10issue1-Financing-Energy-Efficiency-Retrofits-of-Affordable-Multifamily-Buildings.pdf>.

⁷⁵ *Id.*

⁷⁶ Katherine Johnson, et. al., “Lessons Learned from the Field: Key Strategies for Implementing Successful On-the-Bill Financing Programs,” *Energy Efficiency* 5, no. 1 (2012): 109-119. <<http://link.springer.com/article/10.1007/s12053-011-9109-7>>.

reasons—including lack of capital, or uncertainty about how long the tenant will remain on the property. Thus, neither the landlord nor the tenant may be incentivized to invest in energy efficiency.⁷⁷

CEIP credits, if awarded properly, can help overcome split incentive issues by providing additional incentives to parties responsible for undertaking efficiency upgrades. In situations where a split incentive exists, the CEIP may be most effective when coupled with policies that directly address the split incentive, such as green leases. Under a green lease, landlord and tenants split energy costs, so both benefit from energy bill reductions.⁷⁸ Capital costs can be gradually repaid over time through a small rate increase or utility bill surcharge. Properly applied, efficiency savings should be greater than any additional charge, resulting in net savings for the renter.

iii. Utility Disincentives

Ratepayer-funded efficiency programs administered by electric utilities are an important source of efficiency savings. However, under traditional modes of regulation, utilities can face a “throughput incentive,” motivating utilities to sell more electricity and discouraging them from implementing efficiency programs that would reduce sales.⁷⁹

A number of mechanisms can help mitigate the “throughput incentive.” For example, utility decoupling schemes break the link between energy sales and revenue by periodically and automatically adjusting rates based on actual sales to ensure utilities earn exactly their revenue requirement. When correctly implemented, decoupling removes the throughput incentive. Sixteen states and the District of Columbia have implemented decoupling schemes for electric utilities.⁸⁰ Many states have also implemented energy efficiency resource standards (EERS), which require utilities to achieve a minimum amount of energy savings over a specified timeframe. As of June 2016, 25 states have implemented some form of EERS policy to encourage or require efficiency savings.⁸¹

A review of other mechanisms that offer positive incentives for utility-run energy efficiency programs and seek to counteract the utility disincentives is contained in a 2007 report produced as part of the National Action Plan for Energy Efficiency.⁸² Performance-based and

⁷⁷ Stephen Bird and Diana Hernandez, “Policy options for the split incentive: Increasing energy efficiency for low-income renters,” *Energy Policy* 48 (2012): 506-514. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4819331/>>.

⁷⁸ Roy Torbert, “Busting landlord-tenant barriers for greater energy efficiency,” *GreenBiz*, 22 June 2012. <<https://www.greenbiz.com/blog/2012/06/22/busting-landlord-tenant-barriers-greater-energy-efficiency>>.

⁷⁹ Joseph Eto, Steven Stoft, and Timothy Belden, “The Theory and Practice of Decoupling Utility Revenues from Sales,” *Utilities Policy* 6, no. 1 (1997): 43-55.

⁸⁰ “Decoupling Policies,” *Center for Climate and Energy Solutions*, <<http://www.c2es.org/us-states-regions/policy-maps/decoupling>>.

⁸¹ ACEEE, “State Energy Efficiency Resource Standards (EERS) Policy Brief,” *American Council for an Energy-Efficient Economy*, May 2016. <<http://aceee.org/sites/default/files/eers-052016.pdf>>.

⁸² The National Action Plan for Energy Efficiency was a “private-public initiative to create a sustainable, aggressive national commitment to energy efficiency” through a collaboration among utilities and other organizations. EPA, National Action Plan for Energy Efficiency, <https://www.epa.gov/energy/national-action-plan-energy-efficiency>. It was facilitated by the EPA and Department of Energy. National Action Plan for Energy Efficiency, *Aligning Utility*

shared savings incentives allow utilities to earn rewards for meeting savings targets, usually through retaining a portion of accrued savings. Capitalization enables energy efficiency program costs to be considered capital expenditures, allowing utilities to earn a return. Enhanced rate of return programs allow utilities to earn a higher return on efficiency capital costs than they would for other capital items. Lost revenue adjustment mechanisms enable utilities to recoup revenue if sales fall below rate case projections, such as through efficiency savings or weather impacts. Finally, expensing mechanisms treat efficiency program costs as operational costs, allowing utilities to recoup their expenditures but without earning a return.⁸³

By providing new incentives to deploy energy efficiency for low-income households, the CEIP could provide encouragement for state regulators and utilities to seek solutions to any utility disincentive to invest in energy efficiency.

iv. Transactional Barriers

Transactional barriers can deter potential low-income customers from participating in programs. In particular, low-income residents may face complex and time-consuming applications for available clean energy programs, may be approached through ineffective marketing strategies, or may be unfamiliar with available programs. A report by Lawrence Berkeley National Laboratory noted the importance of expansive and tailored marketing of efficiency programs. The report found that tailoring messaging to customer priorities, using trusted messengers such as community leaders, providing repeated outreach to potential participants, and streamlining the onboarding process can all increase participation in energy efficiency programs.⁸⁴

To overcome informational barriers, policymakers and program managers can improve marketing to targeted beneficiaries, leverage existing networks (such as community organizations or networks of multifamily building owners),⁸⁵ and implement tweaks to program design and communication materials to better fit preferences and behavioral patterns of recipients.⁸⁶ While it may not be possible to address these issues directly through the CEIP, we note our recommendation in Section 3D that EPA develop guidance and best practice documents, convene stakeholder workshops, and take other steps to help states and other entities build capacity to administer these kinds of projects and share successful strategies.

Incentives with Investments in Energy Efficiency, Environmental Protection Agency, December 2007. <<https://www.epa.gov/sites/production/files/2015-08/documents/incentives.pdf>>.

⁸³ *Id.*

⁸⁴ Merrian C. Fuller, et. al., *Driving Demand for Home Energy Improvements*, Lawrence Berkeley National Laboratory, no. 3960-E, September 2010. <<https://emp.lbl.gov/sites/all/files/REPORT%20low%20res%20bnl-3960e.pdf>>.

⁸⁵ The American Council for an Energy-Efficient Economy notes, “Multifamily building owners have formed tight networks in cities nationwide, and many own multiple buildings. Consequently, utilities can enlist building owners in efficiency programs relatively easily through existing networks, and sign up multiple buildings through one decision-maker.” Anne McKibbin, *Engaging as Partners in Energy Efficiency: A Primer for Utilities on the EE Needs of Multifamily Buildings and their Owners*, American Council for an Energy-Efficient Economy, March 2013. <<http://aceee.org/sites/default/files/publications/researchreports/e137.pdf>>.

⁸⁶ Fuller, et. al.

v. *Multi-family Housing Challenges*

Low-income tenants of multifamily housing can face distinct barriers to accessing savings from energy efficiency and renewable energy investments.⁸⁷ Multifamily housing comprises a substantial segment of the low-income residential sector, so it is important that the CEIP final design is mindful of the particular challenges faced by residents of multifamily buildings.

Split incentives pose obstacles for multifamily housing tenants, especially for those in master-metered buildings that do not track unit-level energy usage.⁸⁸ In addition, multifamily buildings often have multi-tiered and dispersed ownership structures consisting of multiple decision-makers (agencies, building owners, managers, tenants, etc.), which can add complexity to decisions about clean energy upgrades.⁸⁹

Multifamily buildings also face unique barriers to financing, including uncertainty about the level of energy savings and possible failures by underwriters and building owners to accurately consider energy efficiency in appraisals. Limited windows for financing support, along with a pattern of piecemeal retrofits for multifamily buildings, can make comprehensive efficiency upgrades difficult to include in maintenance schedules.⁹⁰

Barriers also exist at a policy level. A lack of data about energy usage and performance of efficiency upgrades in multifamily housing obscures good program design. Fewer affordable housing programs specific to multifamily complexes exist at the state and local levels. In addition, variation in multifamily housing stock nationwide (in terms of age, state of repair, metering configuration, tenant structure, and other factors) precludes a “one-size-fits-all” policy approach, adding administrative and design complexity.⁹¹

Finally, multifamily building owners may also lack information about energy efficiency opportunities and available incentives that can help with financing.⁹²

B. Challenges in Accessing Renewable Energy

Low-income communities and households can benefit from rooftop and community solar, as well as other renewable energy projects that deliver clean electricity and energy savings. However, low-income solar projects can face obstacles similar to those faced by low-income energy efficiency projects, as described below. As with low-income efficiency projects, the CEIP is an important opportunity that can help address and/or overcome barriers to accessing

⁸⁷ Molly Lunn, *Overcoming Persistent Barriers to Energy Efficiency in Multifamily Housing Through Partnerships*, U.S. Dept. of Energy, 30 Jan. 2014. <

http://www1.eere.energy.gov/wip/solutioncenter/pdfs/energy_efficiency_in_multifamily_housing.pdf>. But, multifamily housing structures can also offer potential opportunities, as discussed in Note **Error! Bookmark not defined.** above.

⁸⁸ *Multifamily Energy Efficiency: Reported Barriers and Emerging Practices*, Energy Programs Consortium, Nov. 2013. <http://aceee.org/files/pdf/resource/epc_%20multifamily_housing_13.pdf>.

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Multifamily Energy Efficiency: Reported Barriers and Emerging Practices*, Energy Programs Consortium, November 2013. <http://aceee.org/files/pdf/resource/epc_%20multifamily_housing_13.pdf>.

renewable energy in low-income communities. The subsections below describe challenges to deploying low-income solar projects; analogous challenges likely exist for other renewable technologies.

i. Cost and Financing

The typical four to eight kilowatt home solar photovoltaic system costs between \$15,000 and \$29,000. Low-income households may also face additional costs from building upgrades or repairs, especially roofing, that can be necessary to support a solar system. Low-income households often lack the savings or access to credit to undertake such investments directly.⁹³ Low-income households are also more likely to lack sufficient credit to access the financing available for residential solar projects, potentially posing an additional obstacle beyond income alone.⁹⁴

Low-income households also tend to possess limited tax liability, and therefore are likely less able to utilize the Investment Tax Credit (ITC) for new solar installations.⁹⁵

Similar barriers exist for shared (or community) solar projects. Low-income customers may lack the capital necessary to participate in a shared solar project, and face similar obstacles to accessing financing, including insufficient credit scores.⁹⁶ As a result, developers may find it difficult to obtain adequate financing to implement a shared solar project in a low-income community. However, shared solar providers may be better positioned to receive the ITC, and can then pass the savings onto low-income subscribers. Providers can also use “anchor subscribers” (a few higher-income subscribers who provide capital or financial stability to support to a predominantly low-income project), in addition to other unique mechanisms, to support low-income shared solar projects.⁹⁷

⁹³ For reference, twice the federal poverty level for a family of four was \$48,600 in 2016. See ASPE, “U.S. Federal Poverty Guidelines Used to Determine Financial Eligibility for Certain Federal Programs,” U.S. Dep’t of Health and Human Services, 25 Jan. 2016. <<https://aspe.hhs.gov/poverty-guidelines>>.

⁹⁴ Evidence to this effect includes:

(1) Forty-five percent of consumers in low-income neighborhoods have no credit score or are “unscorable” (lack sufficient financial history), compared to only nine percent of consumers in higher-income neighborhoods. See Kenneth P. Brevoort, et. al., “Data Point: Credit Invisibles,” Consumer Finance Protection Bureau, May 2015. <http://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf>.

(2) In Massachusetts, 30.3% of consumers in low- to moderate-income areas had subprime credit scores in 2012, compared to only 13.1% of consumers in moderate- to upper-income areas. See Ana Patricia Muñoz, “Credit Conditions by Neighborhood Income: The Picture in Massachusetts,” *Federal Reserve Bank of Boston*, no. 2013-03, Oct. 2013.

(3) For one type of credit score, the average score for individuals living in low-income areas was 44% lower than for individuals in high-income areas, according to 2007 Federal Reserve analysis. See Board of Governors of the Federal Reserve System, *Report to the Congress on Credit Scoring and Its Effects on the Availability and Affordability of Credit*, Federal Reserve, Aug. 2007.

<<http://www.federalreserve.gov/boarddocs/rptcongress/creditscore/creditscore.pdf>>.

⁹⁵ Rob Nikolewski, “Be careful when it comes to that rooftop solar tax credit,” *San Diego Union-Tribune*, 13 Apr. 2016. <<http://www.sandiegouniontribune.com/news/2016/apr/13/solar-tax-credit/>>.

⁹⁶ IREC, *Shared Renewable Energy for Low- to Moderate-Income Consumers: Policy Guidelines and Model Provisions*, Interstate Renewable Energy Council, Mar. 2016. <<http://www.irecusa.org/publications/shared-renewable-energy-for-low-to-moderate-income-consumers-policy-guidelines-and-model-provisions/>>.

⁹⁷ *Id.*

ii. Ownership and Split Incentives

As with energy efficiency improvements, low-income renters and households in multifamily buildings face split incentives when considering rooftop solar. Split incentives can also pose barriers to participation in shared solar programs, especially in multifamily buildings that are master-metered (where electricity consumption is measured building-wide, rather than on a per-unit basis). For both rooftop and shared solar, tenants will likely have to make arrangements with their landlord in order to receive electricity bill benefits. In addition, given high turnover among low-income renters, participation in shared solar may be unattractive without mechanisms to transfer subscriptions to new tenants.⁹⁸

⁹⁸ *Id.*

Appendix B: Low-income energy efficiency provides important co-benefits and is cost-effective.

Available cost-benefit analyses generally support a conclusion that low-income energy efficiency programs are cost-effective, especially when important co-benefits are taken into account. These co-benefits are critical to achieving the CEIP's multi-faceted goals of supporting clean energy investment in underserved communities and reducing carbon pollution.

For example, a peer-reviewed study conducted by Oak Ridge National Laboratory (ORNL) of the federally funded Weatherization Assistance Program (WAP), which conducts low-income home efficiency upgrades at no cost to the consumer, determined the program-wide ratio of lifetime energy savings (including electricity, natural gas, and other fuels) to initial investment is 1.4 over the average lifetime of a project. When health and safety benefits are included, the benefit-cost ratio rises to 4.1.⁹⁹

A separate experiment by Meredith Fowlie, et. al. of 30,000 WAP-eligible homes in Michigan came to different conclusions, finding the costs of weatherization outweighed the benefits.¹⁰⁰ However, the U.S. Department of Energy found that when accounting for different parameters in the ORNL and Fowlie studies, the two studies in fact agree.¹⁰¹ DOE determined that although homes in both studies achieved 10-20% energy savings from weatherization, Fowlie, et. al., surveyed homes that used less energy than those ORNL surveyed—meaning fewer dollars were saved. DOE also determined that the costs of energy savings found by the two studies matched up once different cost accounting methods were aligned. Finally, DOE found that if Fowlie, et. al., took increasing energy prices into account, they would arrive at similar overall results as ORNL.

A benefit-cost study of the Weatherization Assistance Program in Wisconsin corroborates ORNL and DOE's findings.¹⁰² This study conducted savings projections for ten years of WAP operation in Wisconsin. Researchers projected a net benefit-cost ratio of 1.3 under a test similar to the Social Cost test, which considers energy bill savings, avoided externalities, and non-energy benefits, including health and safety impacts. When statewide economic impacts are incorporated, the benefit-cost ratio increases to 1.9. In both cases, then, the benefits of weatherization were found to exceed the costs.

⁹⁹ U.S. DOE, "Weatherization Assistance Program National Evaluations: Summary of Results," *U.S. Dept. of Energy*, Aug. 2015.

¹⁰⁰ Fowlie, M., Greenstone, M., and Wolfram, C., "Do Energy Efficiency Investments Deliver? Evidence from the Weatherization Assistance Program," U.S. National Bureau of Economic Research, Working paper no. 21331, July 2015. <<https://nature.berkeley.edu/~fowlie/WAP.pdf>>.

¹⁰¹ Kathleen Hogan, "Getting It Right: Weatherization and Energy Efficiency Are Good Investments," *U.S. Dept. of Energy*, 10 Aug. 2015. <<http://energy.gov/eere/articles/getting-it-right-weatherization-and-energy-efficiency-are-good-investments>>.

¹⁰² Miriam L. Goldberg, et. al, "Low-Income Public Benefits Evaluation: Initial Benefit-Cost Analysis," *State of Wisconsin Dept. of Administration Division of Energy*, 2 May 2003. <<https://library.cee1.org/sites/default/files/library/1172/340.pdf>>.