



December 15, 2015

EPA Docket Center  
Attention Docket ID No. EPA-HQ-OAR-2015-0734  
Environmental Protection Agency, Mail Code: 28221T  
1200 Pennsylvania Ave., NW  
Washington, DC 20460

**Re: Comments on EPA considerations when defining criteria, terms, and requirements under the Clean Energy Incentive Program (CEIP)**

Dear Administrator McCarthy:

The Alliance for Industrial Efficiency (hereinafter, “The Alliance”) appreciates this opportunity to comment on the Clean Energy Incentive Program (CEIP) regarding criteria, terms, and requirements of the program. The Alliance is a diverse coalition that includes representatives from the business, environmental, labor, and contractor communities. We are committed to enhancing manufacturing competitiveness and reducing emissions through industrial energy efficiency, particularly through the use of clean and efficient power generating systems such as combined heat and power (CHP) and waste heat to power (WHP). With our recommendations, the CEIP may help to advance these goals.

The Alliance has a long track record of engagement in this area. We have [filed comments](#) on both the 111(b) and 111(d) rulemakings, submitted a [white paper](#) detailing recommendations for advancing CHP and WHP through the Existing Source Rule along with a [separate letter](#) elaborating complementary state policies, and testified at public hearings on the proposal in [November 2013](#), [July 2014](#), and November 2015. The following comments rely on some of these earlier materials.

**I. CHP and WHP as Eligible Energy-Efficiency Measures for Low-Income Communities**

EPA seeks comment on the criteria that should be used to define eligible wind and solar projects, as well as eligible energy-efficiency projects that are implemented in low-income communities under the Clean Energy Incentive Program (CEIP).<sup>1</sup> Through the Clean Power Plan, EPA seeks to “reduce GHG emissions that contribute to climate change and its harmful impacts on public health and the environment.”<sup>2</sup> While we appreciate EPA’s recognition of the benefits of energy efficiency to reduce greenhouse gas emissions and the importance of

<sup>1</sup> U.S. EPA, Oct. 21, 2015, “Clean Energy Incentive Program Next Steps” at 1 ([http://www2.epa.gov/sites/production/files/2015-10/documents/ceip\\_next\\_steps\\_10\\_21\\_15.pdf](http://www2.epa.gov/sites/production/files/2015-10/documents/ceip_next_steps_10_21_15.pdf)).

<sup>2</sup> U.S. EPA, Oct. 23, 2015, 80 Fed. Reg. 64662, at 64665, “Final Rule: Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units.”



increasing low-income community access to energy-efficiency programs, we are concerned that the definition of energy efficiency is too narrow. We strongly urge EPA to extend eligibility for the CEIP to combined heat and power (CHP) and waste heat to power (WHP) projects, which offer many environmental, economic, and reliability benefits that are particularly meaningful in low-income communities. Utilizing CHP systems in affordable housing will improve residential energy efficiency and reduce greenhouse gas emissions. CHP and WHP installed in manufacturing facilities will create and preserve labor-intensive jobs in low-income communities and reduce greenhouse gas emissions. Since job creation is a crucial contributor to the health of low-income communities, the CEIP should include manufacturing energy efficiency, and specifically CHP and WHP as eligible measures.

We recommend that EPA expressly state that CHP and WHP projects in low-income communities are eligible for participation in the CEIP.

## **II. CHP and WHP Offer Environmental, Economic, and Reliability Benefits**

CHP and WHP offer benefits that are consistent with the goals of the Clean Power Plan. By generating both heat and electricity from a single fuel source, CHP dramatically lowers emissions and increases overall fuel efficiency – allowing utilities and companies to effectively “get more with less.” CHP can operate using more than 70 percent of fuel inputs. As a consequence, CHP can produce electricity with roughly one-quarter the emissions of an existing coal power plant.<sup>3</sup> Due to its scale, a single CHP investment can achieve significant emissions reductions. WHP, which uses waste heat as its energy source to generate electricity and requires no additional fuel and generates no incremental emissions, provides similarly significant benefits.

The Administration recognizes these benefits. In fact, the final rule highlights CHP’s thermal efficiency,<sup>4</sup> notes that CHP is eligible for ERCs,<sup>5</sup> and exempts most industrial CHP systems.<sup>6</sup> Elsewhere, the preamble acknowledges that “CHP units are low-emitting electric generating resources that can replace generation from affected EGUs.”<sup>7</sup> The Clean Power Plan likewise

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<sup>3</sup> Natural Resources Defense Council, Apr. 2013, “Combined Heat and Power Systems: Improving the Energy Efficiency of Our Manufacturing Plants, Building, and Other Facilities,” at 6 (<http://www.nrdc.org/energy/files/combined-heat-power-ip.pdf>); David Gardiner & Associates and Institute for Industrial Productivity, Jul. 2015, “Combined Heat and Power as a Compliance Option under the Clean Power Plan” (reporting incremental emissions of Natural gas CHP of 450 to 600 lbs/MWh, compared to 2000 to 2200 lbs/MWh for coal) (<http://www.dgardiner.com/wp-content/uploads/2015/08/CHP-Pathway-Final-Report-8-18-15.pdf>).

<sup>4</sup> 80 Fed. Reg. at 64902 (“CHP units are typically very thermally efficient”).

<sup>5</sup> *Id.* at 64902 (“Electric generation from non-affected CHP units may be used to adjust the CO<sub>2</sub> emission rate of an affected EGU”).

<sup>6</sup> 80 Fed. Reg. at 64953, §60.5850.

<sup>7</sup> *Id.* at 64902.



makes WHP eligible for ERCs,<sup>8</sup> recognizes WHP can “substitute for generation from affected EGUs or avoid the need for generation from affected EGUs, thereby reducing CO<sub>2</sub> emissions,”<sup>9</sup> and highlights that “the incremental electric generation output from the WHP facilities could be considered zero-emitting, for the purposes of meeting the emission guidelines, and the MWh of electrical output could be used to adjust the CO<sub>2</sub> emission rate of an affected EGU.”<sup>10</sup> EPA has already recognized the value of CHP as a proven cost-effective technology to reduce greenhouse gas emissions by providing technical assistance to large energy users through the Combined Heat and Power Partnership, exempting most industrial CHP units from regulation under the 111(b) rule, and by issuing awards to various CHP ENERGY STAR® projects in recognition of their emissions reductions.<sup>11</sup> Last year, upon awarding several industrial facilities for their investments in CHP, Administrator McCarthy explained, “The CHP technology offers a strategy to help meet the goals of the President’s Climate Action Plan for a cleaner power sector while boosting the efficiency and competitiveness for many U.S. manufacturers.”<sup>12</sup>

In August 2012, the Administration announced a goal of installing 40 gigawatts of new CHP by 2020.<sup>13</sup> Achieving this goal would annually save energy users 1 quadrillion Btu and reduce CO<sub>2</sub> emissions by 150 million metric tons.<sup>14</sup> Under a more ambitious scenario, the Department of Energy estimates that increasing CHP from its current 8-percent share of U.S. electric power to 20 percent by 2030 would reduce CO<sub>2</sub> emissions by more than 800-million metric tons per year – the equivalent of removing more than half of the current passenger vehicles from the road. This amounts to a 10-percent reduction in projected U.S. energy-related CO<sub>2</sub> emissions in 2030.<sup>15</sup> Such full-scale deployment would be equivalent to the power produced by more than 480 conventional power plants,<sup>16</sup> displacing 5.3-quadrillion Btus of fuel from conventional sources – or half the total energy currently consumed by U.S. households.<sup>17</sup> (Table 1)

<sup>8</sup> 80 Fed. Reg. at 64950 (§60.5800(a)(4)(5)).

<sup>9</sup> 80 Fed. Reg. at 64894-95.

<sup>10</sup> *Id.* at 64903.

<sup>11</sup> U.S. EPA, Jun. 29, 2015, “Winners of the 2015 ENERGY STAR® CHP Award”

(<http://www.epa.gov/chp/award-winners>).

<sup>12</sup> U.S. EPA, Sept. 30, 2014, “Press Release: EPA Honors Manufacturers with ENERGY STAR Award”

(<http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/41a49d0a9fa717d985257d63004f5b7f!OpenDocument>).

<sup>13</sup> U.S. Dep’t of Energy & U.S. EPA, Aug. 2012, “Combined Heat and Power: A Clean Energy Solution” at 3 ([http://energy.gov/sites/prod/files/2013/11/f4/chp\\_clean\\_energy\\_solution.pdf](http://energy.gov/sites/prod/files/2013/11/f4/chp_clean_energy_solution.pdf)).

<sup>14</sup> *Id.* at 5.

<sup>15</sup> U.S. Dep’t of Energy, Oak Ridge National Laboratory, Dec. 1, 2008, “Combined Heat and Power: Effective Energy Solutions for a Sustainable Future,” at 4 (<http://info.ornl.gov/sites/publications/files/Pub13655.pdf>) (reporting avoided 2030 emissions under 20-percent scenario); DOE-EPA, *supra* note 14, at 11. (reporting current avoided CO<sub>2</sub> emissions); and Energy Information Administration, Apr. 14, 2014, “Energy-Related Carbon Dioxide Emissions by Sector and Source, United States,” in *Annual Energy Outlook 2014* (<http://www.eia.gov/forecasts/AEO/>) (reporting projected CO<sub>2</sub> emissions in 2030).

<sup>16</sup> ORNL, *supra* note 15, at 4 (<http://info.ornl.gov/sites/publications/files/Pub13655.pdf>) (reporting 240,900 MW. Estimate assumes typical power generation of 500 MW from a traditional power plant).

<sup>17</sup> *Id.* at 21.

**Table 1 – CHP Projections (2030) and Environmental Benefits**

	2012 <sup>18</sup>	2030 <sup>19</sup>
Total Electricity Generating Capacity	82 GW (8% current capacity)	241 GW (20% capacity)
Annual Energy Savings	1.8 Quads	5.3 Quads
Annual CO <sub>2</sub> Reduction	240 MMT	848 MMT
Number of Car Equivalents Taken Off Road	40 Million	154 Million

In addition to its emission benefits, CHP enhances electric reliability. Because CHP systems produce electricity at the point of use, the losses associated with transmission and distribution (T&D) can be eliminated. This reduces energy use and defers or eliminates the need for costly new T&D investment. As EPA recognizes in the preamble to the final rule, “[t]he opportunity for improvement is large because, on average, line losses account for approximately seven percent of all electricity generation.”<sup>20</sup> Moreover, because these systems can operate independent of the grid, they can continue to provide heat and electricity during extreme weather events, which may compromise the grid. They can also be sited to relieve grid congestion, further enhancing reliability. The poor condition of the U.S. grid led the American Society of Civil Engineers to give the system a D+ grade in its regular assessment of U.S. infrastructure in 2013. In a recent survey of senior utility executives, respondents identified aging infrastructure as the top issue facing the industry.<sup>21</sup> Distributed CHP projects can enhance the reliability of the aging grid.

The potential for additional CHP installations is significant. CHP currently represents 83 gigawatts of clean and efficient power in the United States, accounting for 8 percent of installed U.S. electric generating capacity and over 12 percent of U.S. electricity generation.<sup>22</sup> Each year, this installed capacity decreases energy use by almost 1.9 quadrillion Btus, and avoids the release of over 248-million metric tons of CO<sub>2</sub> into the atmosphere.<sup>23</sup> Industry estimates indicate that an additional 132 GW of CHP is technically feasible.<sup>24</sup> These opportunities exist nationwide – and should therefore be encouraged by the Clean Power Plan. (Figure 1) In addition, a 2015

<sup>18</sup> DOE-EPA, *supra* note 13, at 11.

<sup>19</sup> ORNL, *supra* note 15, at 12.

<sup>20</sup> 80 Fed. Reg. at 64758.

<sup>21</sup> Pew Charitable Trusts, Oct. 2015, “Distributed Generation: Cleaner, Cheaper, Stronger,” at 7 (citing American Society of Civil Engineers, “2013 Report Card for America’s Infrastructure, Energy Report” and Utility Drive, “State of the Electric Utility: 2015 Annual Survey Report”).

<sup>22</sup> DOE-EPA, *supra* note 13, at 11.

<sup>23</sup> ORNL, *supra* note 15, at 11.

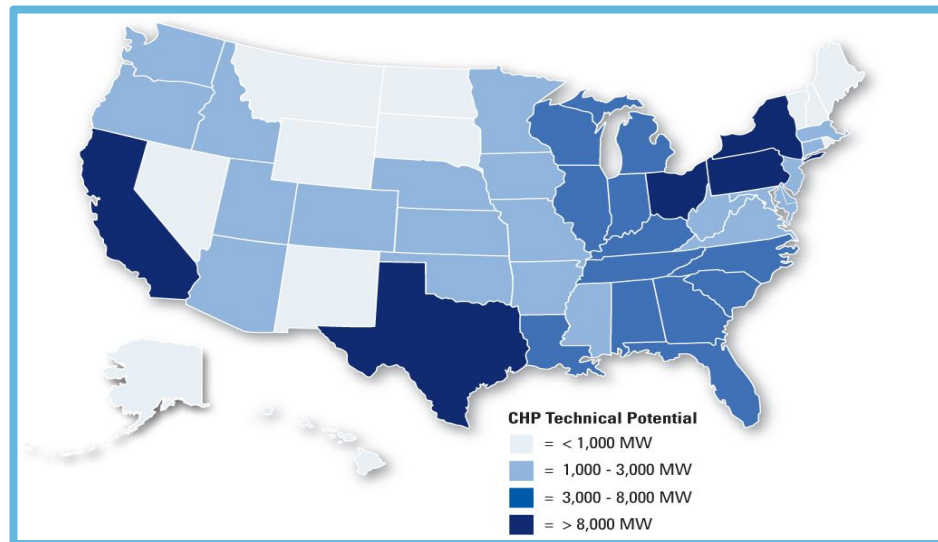
<sup>24</sup> ICF Int’l, Oct. 2010, “Effect of a 30 Percent Investment Tax Credit on the Economic Market Potential for Combined Heat and Power,” ([http://www.localpower.org/WADE\\_USCHPA\\_ITC\\_Report.pdf](http://www.localpower.org/WADE_USCHPA_ITC_Report.pdf)).



Waste Heat to Power Market Assessment report estimates there are about 15 GW of potential WHP projects in the U.S.<sup>25</sup>

In light of these varied benefits and the remaining potential, EPA should take steps to ensure that CHP implemented in housing projects and both CHP and WHP installed at manufacturing and other facilities in low-income communities are eligible for participation in the CEIP.

**Figure 1 – CHP Technical Potential<sup>26</sup>**



### **III. Investment in CHP Benefits Low-Income Communities**

Since energy use is a necessity and does not change with income level, low-income residents bear a disproportionate burden for energy costs as compared to their higher-income counterparts. Housing surveys have shown that low-income tenants' utility costs are nearly equal to those of higher-income renters, with energy accounting for a larger proportion of their incomes and overall housing costs.<sup>27</sup> The larger burden on low-income renters may also be due in part to the lower energy efficiency of low-income housing, which would require more energy for the desired level of comfort or service.<sup>28</sup>

Increased investment in CHP would benefit low-income communities in several ways. First, utilizing CHP systems in affordable housing can significantly improve home energy efficiency, reduce energy costs, and help to reduce GHG emissions throughout the airshed. Installing CHP and WHP systems in industrial facilities presents additional benefits to low-income communities

<sup>25</sup> Oak Ridge National Laboratory, Mar. 2015, "Waste Heat to Power Market Assessment," at 2, (<http://web.ornl.gov/sci/buildings/docs/ORNLM-2014-620%20Waste%20Heat%20to%20Power.pdf>).

<sup>26</sup> DOE-EPA 2012, *supra* note 14.

<sup>27</sup> U.S. Department of Housing and Urban Development, Sept. 2013, "American Housing Survey for the United States: 2011," (<https://www.census.gov/content/dam/Census/programs-surveys/ahs/data/2011/h150-11.pdf>).

<sup>28</sup> Joint Center for Housing Studies of Harvard University, Dec. 2013, "Reducing Energy Costs in Rental Housing" at 1 ([http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/carliner\\_research\\_brief\\_0.pdf](http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/carliner_research_brief_0.pdf)).



by creating and preserving jobs. Finally, CHP systems not only provide power reliability and resiliency benefits for residential households, but businesses as well, resulting in daily operating cost savings and enhanced competitiveness.

1. There is significant potential for CHP applications at low-income housing projects and CHP and WHP in manufacturing facilities.

Multi-family programs implemented by the U.S. Department of Housing and Urban Development (HUD) assist a total of five-million renters in the U.S., with over \$5 billion spent annually for utilities in HUD affordable housing program properties.<sup>29</sup> These affordable housing sites present a significant opportunity for CHP installations. A 2013 report found that only 26 public housing developments use CHP; however, the potential is far greater.<sup>30</sup> For instance, DOE estimates 4.3 gigawatts of remaining technical potential for CHP in multi-family buildings.<sup>31</sup> Expansion of CHP is very plausible in upcoming years due to increased reliability and cost-effectiveness of CHP systems; a decrease in the cost of natural gas, which is the most common fuel for CHP systems; and the expansion of state and utility incentives for CHP installations.<sup>32</sup>

Of particular note, HUD and EPA have been working together to implement the HUD CHP initiative – outlined in HUD’s *Energy Action Plan* – which promotes the use of CHP in multi-family buildings.<sup>33</sup> HUD’s *Energy Action Plan* consists of 21 proposed activities that HUD can undertake to support the energy-efficiency goals of the President’s National Energy Policy. HUD determined that reducing energy bills by just five percent could yield savings of \$2 billion over the next 10 years for the agency.<sup>34</sup> As part of the *Energy Action Plan*, the CHP Initiative seeks to introduce building owners to the value of CHP and assist them with initial site screening. Including CHP as an eligible energy-efficiency measure for the CEIP would complement the EPA/HUD CHP initiative and provide additional opportunity for CHP growth in low-income communities.

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<sup>29</sup> Groberg, Robert, et al. “Promoting Combining Heat and Power (CHP) for Multifamily Properties” at 1 ([http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp\\_multifamily\\_properties.pdf](http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_multifamily_properties.pdf)).

<sup>30</sup> U.S. Department of Energy, U.S. Department of Housing and Urban Development, U.S. EPA, Sept. 2013, “Guide to Using Combined Heat and Power for Enhancing Reliability and Resiliency in Buildings” ([http://www3.epa.gov/chp/documents/chp\\_for\\_reliability\\_guidance.pdf](http://www3.epa.gov/chp/documents/chp_for_reliability_guidance.pdf)).

<sup>31</sup> U.S. Department of Energy, Dec. 2015, “Combined Heat and Power Installation Database”; E-mail from Claudia Tighe, DOE to Jennifer Kefer, Executive Director of the Alliance for Industrial Efficiency, Dec. 9, 2015 (Note that technical potential is not limited to public housing, but reflects CHP potential for all multi-family dwellings).

<sup>32</sup> NRDC, *supra* note 3.

<sup>33</sup> U.S. Department of Housing and Urban Development, May 2009, “HUD CHP GUIDE #2: Feasibility Screening For Combined Heat And Power In Multifamily Housing” at 2 (<https://portal.hud.gov/hudportal/documents/huddoc?id=chpguide2.pdf>).

<sup>34</sup> U.S. Department of Housing and Urban Development, “HUD Energy Action,” (<http://www.hud.gov/energy/energyactionbrochure.pdf>).





Furthermore, EPA acknowledges and supports the implementation of CHP projects to benefit low-income communities. In a 2014 guide, EPA cites the 2012 installation of a 400 kW CHP system at Glenside Homes by the Reading (Pennsylvania) Housing Authority, as well as examples from the New Bedford and Watertown (Massachusetts) Housing Authorities. The Glenside Homes CHP project resulted in an annual estimated cost savings of \$75,000 to \$100,000, while the New Bedford CHP project is estimated to save the housing authority nearly \$400,000 over 10 years.<sup>35</sup> These projects illustrate the potential economic benefits CHP projects can deliver to low-income communities.

2. Investing in CHP and WHP at manufacturing sites helps create and preserve jobs in low-income communities by increasing the economic competitiveness of these employers.

Investment in CHP and WHP systems stimulates the local economy both directly and indirectly. CHP and WHP projects create direct jobs in manufacturing, engineering, installation, operations, and maintenance, which in turn, increase the economic competitiveness of companies that install the systems and receive the energy savings benefits. Individuals employed as a result of CHP and WHP installations are able to spend their received income on goods and services within their local communities, while businesses and consumers can reinvest the energy bill savings they receive from those systems into other goods and services as well. For example, businesses may reinvest energy bill savings in support of facility expansion or other capital projects or to hire and/or retain workers. All of this activity creates and retains jobs and induces economic growth in local communities.<sup>36</sup>

A 2013 NRDC issue paper states that each GW of installed CHP capacity may be reasonably expected to create and maintain between 2,000 and 3,000 full-time equivalent jobs throughout the lifetime of the system. These jobs would be in manufacturing, construction, operations and maintenance, as well as indirect jobs from redirection of industrial energy expenditures and the spending of commercial and residential energy bill savings on other goods and services.<sup>37</sup>

Manufacturing facilities are particularly important employers in many low-income communities. They are often large facilities that offer a variety of skilled employment opportunities for individuals with varying educational backgrounds. Many types of manufacturing jobs also offer starting salaries above the minimum wage. An Urban Institute study investigating the relationship between earnings and industry found for single mothers receiving welfare, manufacturing provided above average annual earnings regardless of educational

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<sup>35</sup> U.S. EPA, 2014, "Combined Heat and Power: A Guide to Developing and Implementing Greenhouse Gas Reduction Programs" at 6, 18 (<http://www3.epa.gov/statelocalclimate/documents/pdf/CHPguide508.pdf>).

<sup>36</sup> NRDC, *supra* note 3.

<sup>37</sup> *Id.*



background.<sup>38</sup> This research suggests that manufacturing jobs may provide above average annual earnings for low-income community members and provide a strong opportunity for local economic growth. Encouraging CHP deployment in these communities would help create these opportunities.

3. CHP also offers additional benefits – beyond GHG reductions – that will be meaningful in low-income communities

CHP offers many benefits beyond GHG reductions and energy savings that are significant for low-income communities. CHP systems provide power reliability and have the ability to serve power and thermal needs during outage events. The ability to provide critical emergency power and to keep vital services online during a grid disruption provides resiliency and reliability and reduces vulnerability in low-income communities. This would allow manufacturing facilities with CHP systems to continue operations even when the grid is down.<sup>39</sup> Power outages can be very costly for companies. For example, a one-hour outage at an industrial manufacturing facility may cost a company up to \$50,000 in losses.<sup>40</sup> Furthermore, the U.S. Department of Energy estimates that outages cost U.S. businesses up to \$150 billion per year.<sup>41</sup> Therefore, the benefit of utilizing CHP in industrial facilities is very valuable.

As a testament to the power resiliency of CHP systems, during both Hurricane Katrina in 2005 and Hurricane Sandy in 2012, facilities with CHP continued to have access to power and thermal amenities, including several hospitals that were able to continue serving patients.<sup>42</sup> Indeed, while more than eight-million residents in the Mid-Atlantic lost power during Hurricane Sandy in October 2012, CHP systems helped several large energy users — New York University, Long Island’s South Oaks Hospital, Co-op City in the Bronx and New Jersey’s Bergen County Utilities Authority — stay warm and bright. These islands of power acted as places of refuge for emergency workers, displaced people, and evacuated patients from medical facilities without power.<sup>43</sup> The increased reliability that CHP systems provide is especially important for critical infrastructure, like hospitals. Including a CHP option in the CEIP would help bring this power resiliency to low-income communities.

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<sup>38</sup> The Urban Institute, Jun. 2002, “Can Targeting Industries Improve Earnings for Welfare Recipients Moving From Welfare-To-Work?: Preliminary Findings” at 11 (<http://www.urban.org/sites/default/files/alfresco/publication-pdfs/410537-Can-Targeting-Industries-Improve-Earnings-for-Welfare-Recipients-Moving-from-Welfare-to-Work-.PDF>).

<sup>39</sup> Ribeiro, David, et al., Oct. 2015, “Enhancing Community Resilience through Energy Efficiency” at 1 (<http://aceee.org/sites/default/files/publications/researchreports/u1508.pdf>).

<sup>40</sup> ORNL, *supra* note 15.

<sup>41</sup> The Pew Charitable Trusts, Oct. 2015, “Distributed Generation: Cleaner, Cheaper, Stronger, - Industrial Efficiency in the Changing Utility Landscape” at 6 (<http://www.pewtrusts.org/~media/assets/2015/10/cleanercheaperstrongerfinalweb.pdf>).

<sup>42</sup> NRDC, *supra* note 36.

<sup>43</sup> See, e.g., U.S. EPA, June 18, 2014, 79 Fed. Reg. 34830, 34899, “Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units” (noting that CHP “reduce[s] demand for centrally generated power and thus relieve[s] pressure on the grid.”)





#### **IV. Conclusion**

We support EPA's development of the Clean Energy Incentive Program as an approach to encourage early action to reduce GHG emissions. As elaborated above, CHP and WHP provide substantial environmental and non-air quality health benefits that would be particularly meaningful in low-income communities. Consequently, we recommend that EPA expressly state that CHP and WHP projects in low-income communities are eligible for participation in the CEIP. This simple change will encourage greater use of CHP and WHP and help realize their environmental, economic, and reliability benefits in low-income communities.