



# The Alliance for Industrial Efficiency

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The Alliance for Industrial Efficiency appreciates this opportunity to comment on the Request for Information regarding the Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) Grant program for FY2015. 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 the use of clean and efficient power generating systems such as combined heat and power (CHP) and waste heat to power (WHP). The Alliance has a long track record of engagement in this area and has communicated previously with DOE on a number of issues relating to CHP deployment. **Our comments respond to Category 3.1 in the Request for Information.** Specifically, we urge DOE to extend the program to include CHP and WHP.

We are grateful that DOE recognized CHP and WHP in the 2014 AFFECT program.<sup>1</sup> The program's 2014 awards – including the 7.9 MW Aberdeen Proving Ground CHP system – will deliver energy savings and emissions benefits. This success could be expanded to other sites with continued funding in FY2015. We urge DOE to expand FY 2015 AFFECT funding to include CHP and WHP as these technologies are consistent with the program's stated goals.

CHP and WHP offer substantial environmental and economic benefits. Conventional power generation is incredibly inefficient, with roughly two-thirds of energy inputs (68 percent) lost as wasted heat. By producing both heat and power from a single fuel source, CHP systems dramatically lower energy use and associated emissions – generating energy almost 50 percent more efficiently than conventional power plants.<sup>2</sup> Savings are even larger with WHP, which captures heat that would typically be vented from an industrial facility and uses it to make electricity with no additional combustion and no incremental emissions. This increased efficiency brings substantial environmental benefits, on par with other zero-emitting resources such as solar and wind energy. In one scenario, DOE has estimated that increasing the amount of CHP generating capacity from its current eight-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.

CHP and WHP are cost-effective compared to other clean-energy technologies. The average cost per ton of CO<sub>2</sub> savings for CHP generation in 2012 was just \$468, as compared to \$3,382 (Solar PV) and \$882 (Wind).<sup>3</sup> This cost-effectiveness likely contributes to the well-demonstrated scalability and size of CHP projects: the 2014 AFFECT-winning CHP projects had a combined capacity of 22 MW; while more numerous, the combined capacity of the program's solar project awards was only 12.2 MW.<sup>4</sup>

CHP and WHP also make our electricity system more resilient – a top priority for critical federal facilities. First, CHP and WHP systems alleviate burdens on transmission and distribution lines because they provide localized, on-site electricity generation. Second, because CHP and WHP systems can operate independent of the grid, they can remain operational during a power

outage. After Hurricane Sandy, more than eight-million people along the eastern seaboard lost power. But hospitals, universities and sanitation facilities with CHP kept the lights on.<sup>5</sup>

This ability to stay operational during natural disasters or blackouts is critical to our national security, safety and public health. Unlike other distributed generation sources – like distributed solar – CHP systems can deliver a consistent energy supply even when the sun is not shining or the wind is not blowing. Thus, CHP's unique combination of grid independence and consistent energy supply make it especially well-suited for use in federal facilities.

The potential for CHP and WHP deployment in the United States is great. A 2012 ICF report found 130 GW of technical CHP potential in the U.S. commercial and industrial sectors.<sup>6</sup> A separate 2012 analysis found 7 to 10 GW of additional WHP potential.<sup>7</sup> CHP currently supplies roughly one gigawatt (GW) of energy to the federal government. A 2014 DOE presentation identified more than two GW of additional potential across 996 federal sites.<sup>8</sup>

While CHP and WHP potential in the U.S. is substantial, at 9 percent of current U.S. electric capacity, current deployment is well below the levels in other industrialized economies like Germany (13%), Russia (31%) or Denmark (53%).<sup>9</sup> A 2014 Report by Navigant Consulting projects that global capacity of industrial CHP systems will grow at a compound annual growth rate of 30 percent annually through the year 2023.<sup>10</sup> Despite this potential, the U.S. market has stagnated in recent years. As the U.S.' largest single user of energy,<sup>11</sup> the federal government's continued adoption of CHP and WHP in its facilities would help overcome this trend. Indeed, federal financial support of CHP projects through the AFFECT program could help the U.S. to become a global leader in this area.

We are grateful that the Administration recognizes the value of CHP and WHP. In 2012, the Administration set a goal of deploying 40 GW of new CHP capacity by 2020.<sup>12</sup> Last year's AFFECT grant winners contributed 22 MW toward this goal. Last month, EPA honored three CHP projects with combined energy savings equal to the electricity required to power 63,000 homes. EPA Administrator Gina McCarthy acknowledged that, "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>13</sup> Last June, DOE celebrated the newly slated 6.3 MW CHP project at Argonne National Laboratory saying, "This new power plant will be a great addition to Argonne's ongoing sustainability program, which continues to help this laboratory save money while supporting our goals of energy efficiency and environmental protection."<sup>14</sup> DOE's Technical Assistance Partnerships (TAPs) identify CHP and WHP opportunities and provide analytical, outreach and technological services for projects around the country. But these projects' greatest need is financing. The exclusion of CHP and WHP from the 2015 grant program undermines other federal efforts and will prevent these cost-effective, proven technologies from reaching their full potential.

CHP and WHP offer a consistent supply of grid-independent energy at an affordable cost – with energy and carbon savings to boot. Federal support of these technologies is critical. The assets outlined in this letter make CHP and WHP well-suited technologies for use at federal facilities, which should be eligible for support through the AFFECT grant program. By expanding AFFECT to once again include CHP and WHP, DOE will send a strong signal about the benefits of these technologies and encourage their use. What's more, because CHP is cost-effective, every AFFECT grant dollar put into CHP will conserve more energy than it would with any other technology. In light of these benefits, we urge DOE to expand the FY 2015 AFFECT grant program to include CHP and WHP.

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<sup>1</sup> U.S. Department of Energy, “Energy Department Announces \$5 Million to Develop Clean Energy Projects at Federal Facilities.” Last updated September 22, 2014. <http://energy.gov/eere/articles/energy-department-announces-5-million-develop-clean-energy-projects-federal-facilities> (Accessed 10/20/2014).

<sup>2</sup> U.S. EPA, “Efficiency Benefits.” Last updated April 10, 2013. <http://www.epa.gov/chp/basic/efficiency.html> (Accessed 10/30/2014).

<sup>3</sup> Based on Data from DOE-EPA, 2012, *supra* note 10, at 8

<sup>4</sup> U.S. Department of Energy, September 2014. <http://1.usa.gov/1r1gUOy>

<sup>5</sup> U.S. Department of Housing and Urban Development, Hurricane Sandy Rebuilding Taskforce. “Hurricane Sandy Rebuilding Strategy,” Presentation to President of the US, August 2013.

<http://portal.hud.gov/hudportal/documents/huddoc?id=hsrebuildingstrategy.pdf> (accessed 11/7/14)

<sup>6</sup> U.S. Dep’t of Energy and U.S. EPA, 2012, “Combined Heat and Power: A Clean Energy Solution,” at 13 ([http://www.epa.gov/chp/documents/clean\\_energy\\_solution.pdf](http://www.epa.gov/chp/documents/clean_energy_solution.pdf)).

<sup>7</sup> U.S. EPA, CHP Partnership, May 2012, “Waste Heat to Power Systems,” at 2.

<sup>8</sup> Federal Energy Management Program (FEMP), May 7-8, 2014, “Combined Heat and Power for Federal Facilities and the DOE CHP Technical Assistance Partnerships,” Presented at the Federal Utility Partnership Working Group Seminar. [http://energy.gov/sites/prod/files/2014/05/f15/fupwg\\_may2014\\_chp3\\_doe\\_ta.pdf](http://energy.gov/sites/prod/files/2014/05/f15/fupwg_may2014_chp3_doe_ta.pdf) (Accessed 11/7/14)

<sup>9</sup> U.S. Dep’t of Energy, Oak Ridge National Laboratory, 2008, “Combined Heat and Power: Effective Energy Solutions for a Sustainable Future,” at 22 (<http://info.ornl.gov/sites/publications/files/Pub13655.pdf>).

and International Energy Agency, 2009, “Cogeneration and District Energy: Sustainable Energy Technologies for Today ... and Tomorrow,” at 11 (<http://www.iea.org/files/CHPbrochure09.pdf>).

<sup>10</sup> Navigant Research, “Industrial Combined Heat and Power Capacity Will Grow 30 Percent per Year through 2023.” May 7, 2014 (<http://www.navigantresearch.com/newsroom/industrial-combined-heat-and-power-capacity-will-grow-30-percent-per-year-through-2023>) (Accessed 10/22/2014).

<sup>11</sup> U.S. Dep’t of Energy, September 2014. <http://1.usa.gov/1r1gUOy>

<sup>12</sup> U.S. EPA, Aug. 2012, “Combined Heat and Power: A Clean Energy Solution” [http://www.epa.gov/chp/documents/clean\\_energy\\_solution.pdf](http://www.epa.gov/chp/documents/clean_energy_solution.pdf) (Accessed 11/3/14)

<sup>13</sup> U.S. EPA, Sept. 30, 2014, News Release: “EPA Honors Manufacturers with ENERGY STAR Award / Eastman Chemical, Janssen R and D, and Merck use Combined Heat and Power systems to cut carbon pollution, save money, and combat climate change.” <http://yosemite.epa.gov/opa/admpress.nsf/596e17d7cac720848525781f0043629e/41a49d0a9fa717d985257d63004f5b7f!OpenDocument> (accessed 10/31/14)

<sup>14</sup> U.S. Dep’t of Energy Sustainability Performance Office, “DOE Sustainability SPOTlight.” Issue 33, June 2014. <http://sustainability-ornl.org/Documents/DOE%20SPOTlight%20-%20June%202014.pdf> (Accessed 10/22/2014)