



January 21, 2016

Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

Re: Comments on the opportunity for industrial energy efficiency in Colorado's State 111(d) Plan in response to EPA's Clean Power Plan

To Whom It May Concern:

The Alliance for Industrial Efficiency (hereinafter, "The Alliance") appreciates the opportunity to comment at this early stage on Colorado's Clean Power Plan (CPP) state compliance plan. The Alliance is a diverse coalition that includes representatives from the business, environmental, labor and contractor communities. Our national membership includes more than 200 electrical, mechanical and sheet metal contractors in Colorado. The Alliance Steering Committee also includes Ormat Technologies, who owns and operates a 3.5-megawatt recycled energy ("waste heat") facility in Peetz, Colorado, among other projects throughout the country. The Alliance is 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). The Alliance has previously alerted state policymakers about the potential role of industrial efficiency as a CPP compliance option. In fact, in September 2015, we wrote to Governor Hickenlooper, the Colorado Energy Office, and the Colorado Public Utilities Commission to urge Colorado to capitalize on the largely untapped potential of industrial energy efficiency (IEE) to help meet state greenhouse gas reduction (GHG) targets in the CPP (please see attached letter).

We commend Colorado's implementation of forward-thinking energy policies, such as the Clean Air Clean Jobs Act, the state renewable energy standard, the state's methane rules, and the 2015 Colorado Climate Plan. These actions represent significant steps forward in reducing state carbon emissions and creating a reliable, diverse, and affordable energy mix for Colorado. We are also encouraged by your exploration of the potential of energy efficiency as a compliance option under the CPP. We further applaud the Colorado Energy Office for convening an Energy-Efficiency Workshop in October, which explored how energy efficiency could fit into the state's CPP compliance strategy.

As you move forward with CPP implementation, we urge the Colorado Department of Public Health and Environment (CDPHE) to continue to adopt forward-thinking energy policy. In particular, we strongly recommend that the CDPHE consider industrial energy-efficiency options, particularly combined heat and power (CHP) and waste heat to power (WHP), for inclusion in Colorado's state compliance plan. These technologies provide a valuable tool to reduce emissions and are appropriate whether the state decides to develop a mass-based or rate-based plan.



I. Industrial Energy Efficiency Offers a Cost-Effective Option for Clean Power Plan Compliance

The U.S. Environmental Protection Agency (EPA) has confirmed that states can use industrial efficiency to help meet their emission targets under the Clean Power Plan.¹ Indeed, energy efficiency should be the cornerstone of a least-cost compliance strategy. Industrial energy efficiency represents not only an opportunity for achieving significant, low-cost emissions reductions, but also a means of supporting in-state jobs, economic competitiveness, and improved energy reliability. By including policies that advance industrial efficiency in its plan, Colorado will strengthen its manufacturing base, promote economic growth, increase grid reliability, and reduce emissions while lowering everyone's electric bills.

We urge Colorado to focus on industrial energy efficiency because the industrial sector is one of the sectors with the greatest potential for saving both energy and money. The industrial sector, which includes manufacturing, mining, construction and agriculture, accounts for roughly one-third of all end-use energy demand in the United States (417 trillion British thermal units) and continues to be the largest energy user in the U.S. economy. Studies have estimated that up to 32 percent of industrial energy use could be saved through cost-effective efficiency measures.² As states and power companies look to meet GHG emission reductions under the CPP, efficiency remains the least-cost resource and accordingly serves as the lowest cost compliance option identified by EPA in the proposed rule.³ Industrial energy efficiency holds particular promise; industrial energy efficiency is the cheapest source of energy efficiency.⁴

By adopting industrial energy-efficiency measures, Colorado will cut its manufacturing costs, make its manufacturers more competitive in international markets, and create jobs. Efficiency measures designed to improve a facility's energy productivity enable manufacturers to reduce costs, increase competitiveness and insulate themselves from volatile energy prices in the future. Industrial efficiency technologies such as CHP can be twice as efficient as the separate generation of thermal energy and electricity, which allows manufacturers to reduce their energy costs. What's more, manufacturers can reinvest the money they save on energy to expand production and hire more employees. Industrial efficiency offers economic benefits society-wide, helping to postpone or eliminate the need for expensive generation and transmission investments, and keeping energy costs down for all consumers.

¹ See, e.g., U.S. EPA, Oct. 23, 2015, 80 Fed. Reg. 64662, 64666, "Final Rule: Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Unit" ("Each state will have the opportunity to take advantage of a wide variety of strategies for reducing CO₂ emissions from affected EGUs, including demand-side EE programs and mass-based trading..."; U.S. EPA, August 20, 2015, "FACT SHEET: Energy Efficiency in the Clean Power Plan" (<http://www.epa.gov/cleanpowerplan/fact-sheet-energy-efficiency-clean-power-plan>).

² U.S. DOE, June 2015, "Report to Congress: Barriers to Industrial Energy Efficiency," at iii (http://www.energy.gov/sites/prod/files/2015/06/f23/EXEC-2014-005846_6%20Report_signed_v2.pdf).

³ Jeff Hopkins, May 2015, "Modeling EPA's Clean Power Plan: Insights for Cost- Effective Implementation" (<http://www.c2es.org/publications/modeling-epas-clean-power-plan-insights-cost-effective-implementation>).

⁴ SEE Action, 2014, "Industrial Energy Efficiency: Designing Effective State Programs for the Industrial Sector," Prepared by A. Goldberg, R.P. Taylor, and B. Hedman, Institute for Industrial Productivity, at ES-1 ("Experience has shown that the industrial sector historically saves more energy per program dollar than other customer classes.")



II. CHP Offers Environmental, Economic, and Reliability Benefits

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. Waste heat to power (WHP) can generate electricity with no additional fuel and no incremental emissions. Due to its scale, a single CHP or WHP investment can achieve significant emission reductions.

EPA recognizes these benefits. In fact, the Clean Power Plan final rule highlights CHP’s thermal efficiency,⁵ notes that CHP and WHP are eligible for ERCs,⁶ and exempts most industrial CHP systems.⁷ Elsewhere, the preamble to the final rule acknowledges that “CHP units are low-emitting electric generating resources that can replace generation from affected [electric generating units] EGUs.” EPA has 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,⁸ and by issuing awards to various CHP ENERGY STAR® projects in recognition of their emissions reductions.⁹ 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.”¹⁰

CHP and WHP can be effectively utilized in both a rate-based and a mass-based plan, so will be an appropriate compliance option regardless of which path Colorado ultimately adopts. Under a rate-based plan, CHP and WHP installations at industrial facilities can offset the higher emission rates of affected EGUs. The CPP explicitly provides that CHP and WHP installations can sell emission rate credits (ERCs) to EGUs in exchange for that benefit.¹¹ The revenue from ERC sales can offset the cost of CHP and WHP installations, encouraging private investment in these projects.

Under a mass-based plan, revenues from state auctions of emission allowances to owners of affected EGUs can be used to underwrite the cost of industrial efficiency investments, including

⁵ U.S. EPA, Oct. 23, 2015, 80 Fed. Reg. 64966 at 64996, “Proposed Rule: Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014” (“CHP units are typically very thermally efficient”).

⁶ *Id.* at 64902 (“Electric generation from non-affected CHP units may be used to adjust the CO₂ emission rate of an affected EGU”).

⁷ *Id.* at 64953, §60.5850, “What EGUs are excluded from being affected EGUs?”

⁸ U.S. EPA, 80 Fed. Reg. 64510, 64532, October 23, 2015, “Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units; Final Rule.”

⁹ U.S. EPA, “Combined Heat and Power Partnership: Winners of the 2015 Energy Star CHP Award” (<http://www.epa.gov/chp/award-winners>).

¹⁰ 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>).

¹¹ U.S. EPA, Oct. 23, 2015, 80 Fed. Reg. 64662 at 64902, “Final Rule: Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units” (“Electric generation from non-affected CHP units may be used to adjust the CO₂ emission rate of an affected EGU, as CHP units are low-emitting electric generating resources that can replace generation from affected EGUs.”); and at 64902 (“WHP units that meet the eligibility criteria under section VIII.K.1 may be used to adjust the CO₂ emission rate of an affected EGU”).



CHP and WHP. Alternatively, some emission allowances can be set aside and given to industrial owners and operators who agree to undertake industrial energy efficiency projects or install CHP or WHP systems. These “set aside” allowances can be auctioned or otherwise monetized to provide revenue to offset the cost of these projects and programs, thus encouraging private investment in these emission-reduction strategies.

III. The Potential for CHP in Colorado

Across the country, CHP represents 12 percent of U.S. electricity generation, but significant potential remains. In fact, the Department of Energy and EPA estimate that CHP could produce as much electricity as 250 conventional power plants.¹² Such full-scale deployment would create jobs in the design, construction, installation and maintenance of equipment; reduce fuel use and energy costs; and lower greenhouse gas emissions.

In Colorado specifically, there is significant opportunity to implement CHP. Currently, the state has 25 CHP sites, generating 641 megawatts of clean and efficient power.¹³ It is estimated that Colorado has 1,450 megawatts of remaining technical and commercial potential.¹⁴

Further, manufacturing accounts for 7.3 percent (\$21.6 billion in 2013) of the total gross state product and employs 5.7 percent of the workforce.¹⁵ As noted above, Colorado’s industrial sector consumed 28.3 percent of the total energy used statewide in 2013 (or 417 trillion British thermal units).¹⁶ The size of the state’s manufacturing industry and the significant technical potential for CHP indicates that Colorado has a tremendous opportunity for CHP implementation.

IV. Treatment of CHP and WHP in the Clean Energy Incentive Program

CDPHE has requested comment on the eligibility for incentives under the Clean Energy Incentive Program (CEIP). We appreciate CDPHE’s interest in encouraging early action through the CEIP and offer recommendations about the inclusion of CHP and WHP in the state’s plan. EPA has developed the Clean Energy Incentive Program (CEIP) as an approach to encourage early action to reduce greenhouse gas emissions. CHP and WHP provide substantial environmental and non-air quality health benefits that would be particularly meaningful in low-income communities. We have recommended to EPA that they expressly state that CHP and WHP projects in low-income communities are eligible for participation in the CEIP. If EPA confirms that CHP and WHP are eligible measures for use in the CEIP, we likewise encourage CDPHE to include these measures in the state compliance plan.

¹² U.S. DOE-EPA, Aug. 2012, “CHP: A Clean Energy Solution,” at 13 (reporting 130 GW of technical potential) (http://www.epa.gov/chp/documents/clean_energy_solution.pdf).

¹³ U.S. DOE Combined Heat and Power Installation Database, <https://doe.icfwebservices.com/chpdb/state/CO>.

¹⁴ Bruce Hedman, Anne Hampson, and Ken Darrow, American Gas Association, “The Opportunity for CHP in the United States,” May 2013, (https://www.aga.org/sites/default/files/legacy-assets/Kc/analyses-and-statistics/studies/efficiency_and_environment/Documents/The%20Opportunity%20for%20CHP%20in%20the%20United%20States%20-%20Final%20Report.pdf).

¹⁵ National Association of Manufacturers, “Colorado Manufacturing Facts,” February 2015, (<http://www.nam.org/Data-and-Reports/State-Manufacturing-Data/2014-State-Manufacturing-Data/Manufacturing-Facts--Colorado/>).

¹⁶ U.S. Energy Information Administration, “Colorado: State Profile and Energy Estimates,” December 2015, (<http://www.eia.gov/state/?sid=CO#tabs-2>).



1. 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.¹⁷

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.¹⁸

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 background.¹⁹ 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.

2. 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.²⁰ Power outages can be very costly for companies. For example, a one-hour outage at an industrial manufacturing facility may cost a

¹⁷ NRDC, *supra* note 64.

¹⁸ *Id.*

¹⁹ The Urban Institute, June 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>).

²⁰ Ribeiro, David, *et al.*, Oct. 2015, "Enhancing Community Resilience through Energy Efficiency" at 1 (<http://aceee.org/sites/default/files/publications/researchreports/u1508.pdf>).



company up to \$50,000 in losses.²¹ Furthermore, the U.S. Department of Energy estimates that outages cost U.S. businesses up to \$150 billion per year.²² 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.²³ 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.²⁴ 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, in the face of extreme weather events such as blizzards or tornados.

V. Conclusion

Despite the many benefits of industrial efficiency, a number of barriers impede greater adoption, including the internal competition for capital that often undervalues efficiency investments, utility business models that dis-incentivize utilities to fully promote industrial efficiency and CHP, and information barriers that make it harder for manufacturers to make informed decisions.

We commend Colorado for implementing policies and programs that support energy efficiency, such as the state's net metering and interconnection standards and tax credits for renewable energy systems. As Colorado develops its Clean Power Plan compliance strategy, we urge you to continue to consider strong complementary policies that address these hurdles to full deployment of all cost-effective energy efficiency in the industrial sector, and provide programs and incentives that reflect the true value of efficiency. Such policies will further allow power companies to meet compliance obligations under the CPP in a cost-effective manner. We hope that you will seize the potential for industrial efficiency in Colorado's holistic approach to Clean Power Plan compliance so that your state can strengthen industry, increase grid reliability, and cost-effectively reduce emissions.

Thank you for the opportunity to comment.

Sincerely,

Jennifer Kefer, Director
Alliance for Industrial Efficiency

²¹ ORNL, *supra* note 7.

²² The Pew Charitable Trust, *supra* note at 6.

²³ NRDC, *supra* note 17.

²⁴ 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.")