April 8, 2016

Minnesota Pollution Control Agency
520 Lafayette Road N
St. Paul, MN 55155

Re: Comments on the opportunity for industrial energy efficiency in Minnesota'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 Minnesota's Clean Power Plan (CPP) state compliance plan. We commend the Minnesota Pollution Control Agency's (MPCA) ongoing support for the CPP and its continued dedication in developing a state compliance plan despite the Supreme Court stay of the rule.[1] We understand that the legislature is advancing a bill (House Bill 333) that would prohibit the MPCA from submitting a plan to EPA unless first approved by the state legislature.[2] This bill would slow down the implementation of Minnesota's Clean Power Plan by adding an unnecessary layer of legislative approval. Additionally, if there is gridlock in the legislature, the state might lose the chance to implement its own plan, and instead would have to adhere to a forthcoming EPA federal plan. Such a plan is less likely to take advantage of innovative compliance options, like industrial efficiency. We commend MPCA for continuing the planning process even in the face of legislative opposition. We write now to encourage the state to explicitly include industrial efficiency as a compliance option in its state plan.

The Alliance is a diverse coalition that includes representatives from the business, environmental, labor and contractor communities. Our national membership includes over 380 electrical, mechanical and sheet metal contractors in Minnesota. 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). Our comments make four key points:

1. Industrial energy efficiency offers a cost-effective option for CPP compliance.
2. CHP and WHP offer environmental, economic, and reliability benefits that affect multiple sectors.
3. There is significant opportunity for CHP and WHP deployment in Minnesota.
4. CHP and WHP provide substantial environmental and non-air quality health benefits that would be particularly meaningful in low-income communities and should be included in the state's Clean Energy Incentive Program (CEIP).

[1] StarTribune, Feb. 16, 2016, "Minnesota vows to move ahead with clean power," ("While the Court's temporary stay is disappointing, it does nothing to diminish our resolve in Minnesota to keep moving forward on clean energy initiatives, including the development of our state's Clean Power Plan," Gov. Mark Dayton said in a statement Wednesday. "We shouldn't need a federal edict to understand how vital it is that we keep doing everything in our collective powers to reduce harmful greenhouse gas emissions, improve energy efficiency and advance Minnesota's clean energy economy.") (http://www.startribune.com/minnesota-vows-to-move-ahead-with-clean-power/368563271/).
[2] H.F. 333, 89th Gen. Assem. (MN 2016).

We applaud the state for holding multiple CPP listening sessions in February and March to discuss the state's strategy toward meeting the objectives of the CPP. Additionally, Minnesota's forward-thinking policies, such as the Next Generation Energy Act, the state renewable energy standard, and the state's energy efficiency resource standard create frameworks for CHP to help address Minnesota's energy goals. Such policies represent significant steps forward in reducing state carbon emissions and creating a reliable, diverse, and affordable energy mix for Minnesota.

As the state moves forward with CPP implementation, we urge the MPCA to continue to adopt progressive energy policies. In particular, we strongly recommend that MPCA consider industrial energy-efficiency options, including combined heat and power (CHP) and waste heat to power (WHP), in Minnesota's state compliance plan. These technologies provide a valuable tool to reduce emissions and are appropriate whether the MPCA 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.[3] 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, Minnesota will strengthen its manufacturing base, promote economic growth, increase grid reliability, and reduce emissions while lowering everyone's electric bills.

We urge Minnesota to focus on industrial energy efficiency because the industrial sector has the greatest potential for saving both energy and money. The industrial sector, which includes manufacturing, mining, construction and agriculture, accounts for 34.2 percent of all end-use energy demand in Minnesota (636.3 trillion British thermal units).[4] Studies have estimated that up to 32 percent of industrial energy use could be saved through cost-effective efficiency measures.[5] As states and power companies look to meet GHG emission reductions under the CPP, efficiency remains the least-cost resource. At an average cost of 2.8 cents per kilowatt hour (kWh) nationwide, energy-efficiency programs are one-half to one-third the cost of other new electricity resource options, such as building new power plants.[6] Industrial energy efficiency holds particular promise since it is the cheapest source of energy efficiency. Indeed, a recent study found that the

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[3] *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 CO_2 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).

[4] U.S. Energy Information Administration, "Minnesota: State Profile and Energy Estimates," December 2015 (http://www.eia.gov/state/?sid=MN#tabs-2).

[5] 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).

[6] ACEEE, Maggie Molina, 2014, "The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Efficiency Programs" (http://aceee.org/sites/default/files/publications/researchreports/u1402.pdf).

average total industrial energy-efficiency program cost in the U.S. was half that of the residential sector.[7]

By adopting industrial energy-efficiency measures, Minnesota will cut its manufacturing costs, make its manufacturers more competitive in international markets, attract new business to the state, and create jobs. States that create incentives for industrial efficiency can attract manufacturers who want to take advantage of these opportunities. Industrial efficiency also 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.

II. CHP Offers Environmental, Economic, and Reliability Benefits

We believe there is a particular opportunity to promote CHP and WHP in Minnesota's compliance plan. These technologies are appropriate CPP compliance strategies as they offer significant emissions 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,[8] notes that CHP and WHP are eligible for emissions rate credits (ERCs),[9] and exempts most industrial CHP systems.[10] 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,[11] and by issuing awards to various CHP ENERGY STAR® projects in recognition of their emissions reductions.[12] 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

[7] 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.") and at 6 (Figure 4) (http://energy.gov/sites/prod/files/2014/03/f13/industrial_energy_efficiency.pdf).
[8] 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").
[9] 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").
[10] *Id.* at 64953, §60.5850, "What EGUs are excluded from being affected EGUs?"
[11] U.S. EPA, 80 Fed. Reg. 64510, 64532, October 23, 2015, "Final Rule: Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units; Final Rule."
[12] U.S. EPA, "Combined Heat and Power Partnership: Winners of the 2015 Energy Star CHP Award" (http://www.epa.gov/chp/award-winners).

cleaner power sector while boosting the efficiency and competitiveness for many U.S. manufacturers."[13]

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 Minnesota 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 ERCs to EGUs in exchange for that benefit. The revenue from ERC sales can offset the cost of CHP and WHP installations, encouraging private investment in these projects.

MPCA can incent CHP and WHP projects in a mass-based plan by: (1) investing auction revenue in favored activities, (2) establishing a set-aside for energy efficiency (designating CHP and WHP as eligible activities), or (3) adopting an updating, output-based allowance allocation scheme. These approaches are briefly elaborated below.

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 CHP and WHP. This approach was adopted in RGGI, where the vast majority of auction revenue was used to support energy efficiency projects. Approximately 62 percent of cumulative RGGI investments have supported energy efficiency programs in the region, saving participants a total $2.3 billion on energy bills.[14] 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.

If Minnesota develops a mass-based plan, the Alliance recommends a direct allocation approach, which would ensure that investments in CHP, WHP and industrial energy efficiency (IEE) are awarded value for reducing power sector CO_2 emissions. Under a direct allocation approach, such projects would automatically receive allowances during the initial distribution of allowances based on a set formula. This is distinct from an allowance set-aside, where eligible projects would have to apply for a limited pool of set-aside allowances. Under a direct allocation approach, eligible CHP, WHP, and IEE projects (i.e., those beginning operation after 2012) would receive allowances equal to the CO_2 emissions avoided by the facility (after netting out facility emissions) at the start of the compliance period.

Under an updating, output-based allocation, new non-affected CHP and other eligible facilities would register with the state and measure, monitor and report emissions and output (or energy savings). On an annual basis, the state would take stock of output (or energy savings) during the

[13] 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).
[14] Regional Greenhouse Gas Initiative (RGGI), Apr. 2015, "Investment of RGGI Proceeds Through 2013," at 28 (http://rggi.org/docs/ProceedsReport/Investment-RGGI-Proceeds-Through-2013.pdf).

prior year (or years) across all facilities that are eligible for an allocation. Facilities would receive an allocation based on output (or energy saved) during this "look-back" period.[15]

Direct allocation has several advantages compared to set-asides. It treats eligible projects the same as affected units for purposes of receiving allocations and does not require periodic project-based applications to secure allowances. A set-aside is comprised of a reserved pool of allowances established at the beginning of a compliance period. Owners of eligible resources must then apply for allowances on an annual basis, subject to a limit on the size of the set-aside. To institute a set-aside, the state must determine up-front the size of the set-aside pool and will likely be unable to award set-aside allowances to all eligible activities. A direct allocation does not require the same up-front determination. As a consequence, it is administratively simpler for both state agencies and for potential allowance recipients.

III. The Potential for CHP in Minnesota

Across the country, nearly 83 gigawatts of CHP capacity exist at more than 4,400 industrial and commercial facilities, representing over 12 percent of annual U.S. power generation.[16] However, significant potential remains. In fact, a recent Department of Energy (DOE) report found that the total remaining U.S. on-site CHP technical potential is just under 149 gigawatts.[17] Realizing this potential would create jobs in the design, construction, installation and maintenance of equipment; reduce fuel use and energy costs; and lower greenhouse gas emissions.

In Minnesota specifically, there is significant opportunity to implement CHP. Currently, the state has 56 CHP sites, generating 973 megawatts of clean and efficient power.[18] DOE estimates that the state has 4,310 megawatts of remaining CHP and WHP on-site technical potential capacity (identified at 6,326 sites), with 1,495 megawatts of remaining on-site technical potential in the industrial sector alone.[19]

Further, manufacturing accounts for 14 percent ($43.7 billion in 2013) of the total gross state product and employs 11.2 percent of the workforce.[20] As stated earlier, Minnesota's industrial sector consumed about 34.2 percent of the total energy used statewide in 2013 (or 636.3 trillion British thermal units).[21] The size of the state's manufacturing industry and the significant technical potential for CHP indicates that Minnesota has a tremendous opportunity for additional CHP implementation.

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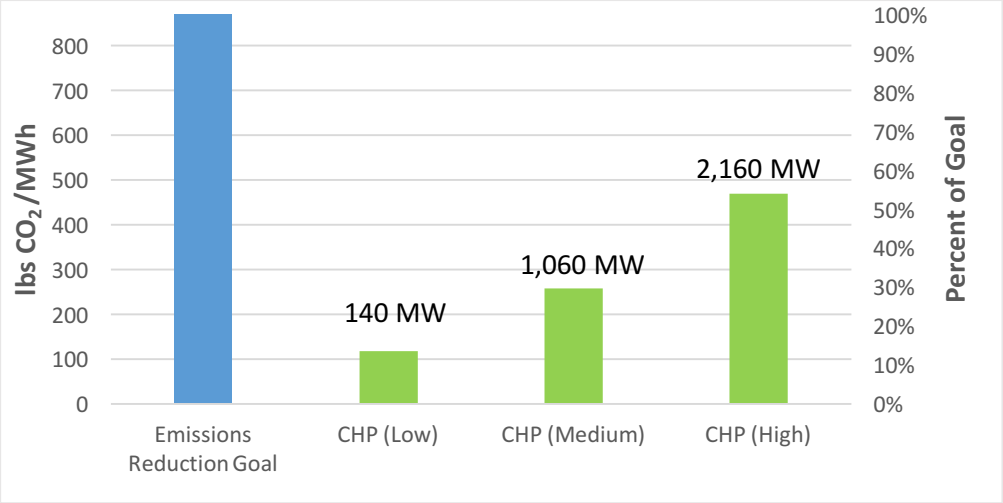
[15] Updating, output-based allocation has been done successfully in states participating in the NOx trading program, including in Massachusetts and New Jersey. It is also essentially the approach EPA proposes for the updating, output-based allocation to gas units out of the set-aside to address leakage in a federal plan.
[16] U.S. Department of Energy, Mar. 2016, "Combined Heat and Power (CHP) Technical Potential in the United States," at 5 (http://energy.gov/sites/prod/files/2016/03/f30/CHP%20Technical%20Potential%20Study%203-18-2016%20Final.pdf).
[17] *Id.*
[18] U.S. DOE Combined Heat and Power Installation Database, (https://doe.icfwebservices.com/chpdb/state/MN).
[19] U.S. DOE, *supra* note 16.
[20] National Association of Manufacturers, Feb. 2015, "Minnesota Manufacturing Facts," (http://www.nam.org/Data-and-Reports/State-Manufacturing-Data/2014-State-Manufacturing-Data/Manufacturing-Facts--Minnesota/).
[21] U.S. Energy Information Administration, *supra* note 2.

As Figure 1 indicates, if Minnesota were to install 10 percent of its CHP technical potential (the "low" scenario), the state would be able to meet about 13 percent of its emissions reduction target. Installing 25 percent of Minnesota's CHP technical potential (the "medium" scenario) would allow the state to meet about 30 percent of its emissions reduction goal. A more ambitious scenario, in which the state deployed 50 percent of its remaining CHP technical potential (i.e., roughly 2,160 megawatts), would allow the state to meet about 54 percent percent of its total emissions reduction goal from CHP alone.[22] Reductions would be even greater if coupled with other energy-efficiency investments.

Figure 1. Impact of CHP on emissions reductions compared to EPA goal[23]



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

The Alliance also offers recommendations regarding the inclusion of CHP and WHP in the Clean Energy Incentive Program (CEIP). EPA has developed the CEIP as an approach to encourage early action to reduce greenhouse gas emissions. As elaborated below, 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 MPCA to include these measures in the state compliance plan.

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.

[22] These estimates reflect a rate-based target; however, CHP would play a similar role under a mass-based plan.
[23] American Council for an Energy-Efficient Economy, Feb. 2015, "State and Utility Pollution Reduction Calculator Version 2 (SUPR 2)," (http://aceee.org/research-report/e1601).

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.[24]

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.[25]

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.[26] 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. Because a CHP system can operate independently of the grid, these systems have the ability to serve power and thermal needs during extreme weather events that may compromise the grid. 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 attribute is especially important for critical infrastructure, such as hospitals and emergency rooms.

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

[24] 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).
[25] *Id*.
[26] 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/research/publication/can-targeting-industries-improve-earnings-welfare-recipients-moving-welfare-work).

amenities, including several hospitals that were able to continue serving patients.[27] 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.[28] 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.

Furthermore, power outages can be very costly for manufacturers. In fact, the U.S. Department of Energy estimates that outages cost U.S. businesses up to $150 billion per year.[29] Manufacturing facilities with CHP systems would be able to continue operations even when the grid is down, increasing their economic competitiveness.

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 Minnesota for implementing policies and programs that support energy efficiency, such as the state's net metering and interconnection standards. As Minnesota 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. In particular, we strongly encourage you to explicitly recognize CHP and WHP in Minnesota's compliance plan. Such provisions 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 Minnesota'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

[27] NRDC, *supra* note 17.
[28] *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.")
[29] The Pew Charitable Trusts, Oct. 2015, —Distributed Generation: Cleaner, Cheaper, Stronger, - Industrial Efficiency in the Changing Utility Landscapell at 6 (http://www.pewtrusts.org/~/media/assets/2015/10/cleanercheaperstrongerfinalweb.pdf).