The Alliance for Industrial Efficiency

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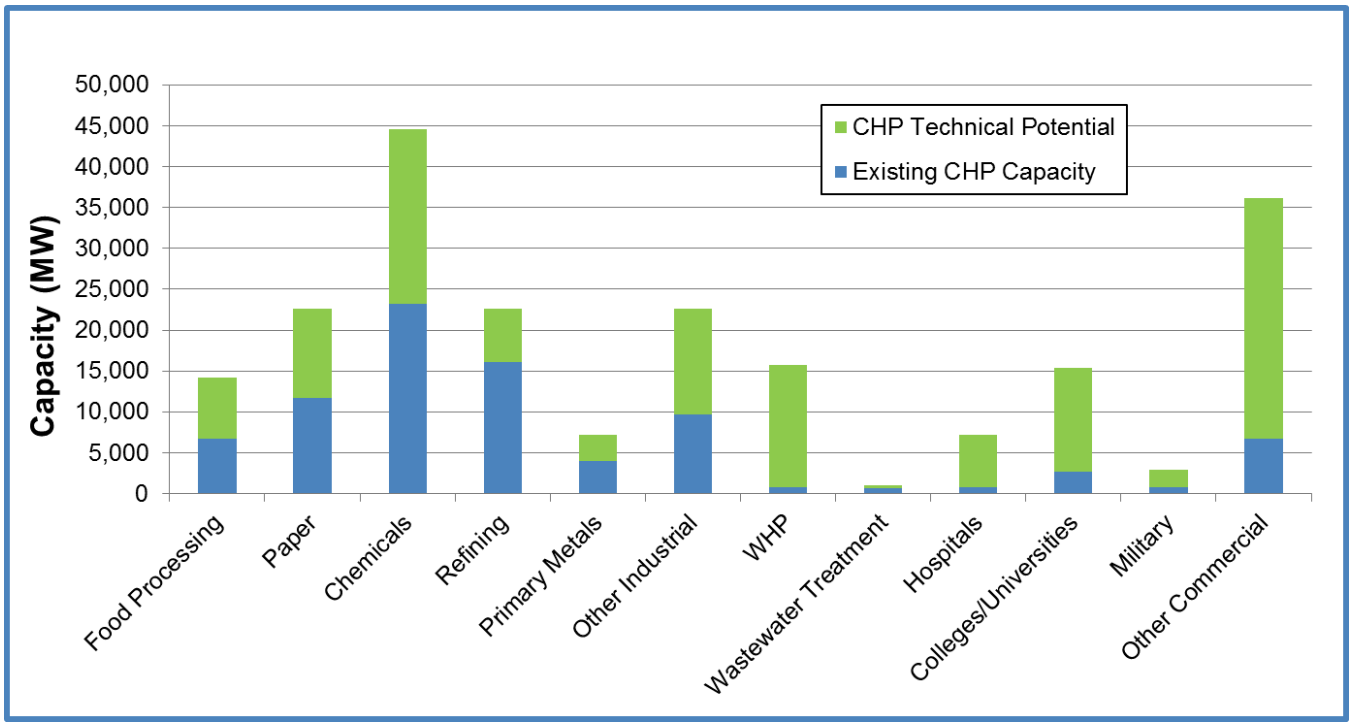
The Alliance for Industrial Efficiency (AIE, "The Alliance") understands that the Senate Finance Committee is seeking stakeholder input on comprehensive tax reform. The Alliance is a diverse coalition representing the business, environmental, labor and contractor communities and is committed to enhancing manufacturing competitiveness through the use of combined heat and power (CHP) and waste heat to power (WHP). We appreciate this opportunity to submit comments to the Senate Finance Committee's Community Development & Infrastructure Working Group and urge the Committee to develop a proposal that supports deployment of CHP and WHP. Because many CHP and WHP hosts do not have significant corporate tax liability, this goal will not be advanced by a proposal that simply lowers the corporate tax rate and eliminates the Modified Accelerated Cost Recovery System (MACRS). Rather, any tax reform legislation or proposal must include a strengthened Section 48 Investment Tax Credit, preserve MACRS, and extend eligibility for Master Limited Partnerships to CHP and WHP.

Conventional power generation is incredibly inefficient. In fact, roughly two-thirds of fuel inputs are lost as wasted heat before they can be converted to useful electricity. Additional losses occur during the transmission and distribution of electricity from central power plants to end-users. CHP and WHP help overcome this inefficiency, offering significant economic, reliability, and environmental benefits in the process. CHP produces both heat and electricity from a single fuel source, making it significantly more efficient than the separate generation of heat and power. WHP captures waste heat from existing industrial processes to produce additional electricity with no incremental emissions. These technologies should be a key part of the Committee's tax reform discussions.

We note that CHP is already a significant part of the US energy system. In fact, Thomas Edison included a CHP system in the nation's first power plant in 1882. CHP can be used wherever there is a high thermal demand. This means that it can be installed in factories, hospitals, and hotels. More than 80 percent of existing installations are in the industrial sector; however (as Figure 1 illustrates), there is significant remaining potential in commercial and institutional settings (universities, hospitals, wastewater treatment facilities). In fact, a 2012 DOE-EPA analysis reports that the remaining technical potential is roughly evenly divided between the industrial and commercial/ institutional sectors, with roughly 65 gigawatts of remaining technical potential in each (Figure 1).[1] Last month, DOE's Oak Ridge National Laboratory published a WHP market assessment finding an *additional* 15 gigawatts of potential WHP installations.[2] What's more, unlike other clean-energy sources, CHP and WHP are not limited to places where the wind is blowing or the sun is shining; they offer a proven, cost-effective energy source with potential in every state in America.

Figure 1 CHP – Technical Potential for Additional CHP at Existing Commercial and Industrial Facilities



Unfortunately, a variety of barriers prevent CHP and WHP from realizing their full potential. As an initial matter, the utility business model generally rewards utilities for producing and selling electricity. Consequently, utilities are unlikely to support technologies like CHP and WHP that allow factories, universities and hospitals to become more efficient and produce their own power. While CHP facilities

[1] DOE-EPA, Aug. 2012, "Combined Heat and Power: A Clean Energy Solution," at 13 (http://www.epa.gov/chp/documents/clean_energy_solution.pdf).
[2] ICF for Oak Ridge National Lab, March 2015, "Waste Heat to Power Market Assessment" (ORNL 2015) (http://www.heatispower.org/wp-content/uploads/2015/02/ORNL-WHP-Mkt-Assessment-Report-March-2015.pdf).

can operate independent of the grid, they usually require supplemental or standby/back-up service from the utility to provide power needs over and above the output of the CHP system and during periods when the system is down due to routine maintenance or unplanned outages. Inconsistent and burdensome interconnection standards and costly standby or backup charges may discourage projects from being built. Large up-front costs can also be a barrier to deployment. According to EPA, the average capital costs for a CHP installation range from $1,200 to $4,000 per kilowatt, depending on the selected technology ("prime mover"), size and site conditions.[3] DOE estimates similar costs ($1,200 to $4,500 per kilowatt) for WHP systems (again, with costs varying for different technologies and system size). This means that the total installation cost of a 3-megawatt CHP or WHP system can range from $5.7 million to over $10-million dollars.[4]

Favorable tax policy can help overcome these barriers. Indeed, since its adoption in 2008, CHP hosts have been able to modestly offset these costs through the Section 48 investment tax credit ("ITC"). The inclusion of CHP in the ITC reflects Congress' recognition of the benefits of CHP and the need to encourage its use. We also appreciate the availability of 5-year accelerated depreciation for CHP that is reflected in the existing credit.

Unfortunately, the utility of the existing ITC has been limited, due to a number of shortcomings in its design. These shortcomings must be addressed to help CHP and WHP realize their full potential. Accordingly, as elaborated below, we urge the Finance Committee to remedy these shortcomings in its tax reform proposal. In particular, we offer the following seven recommendations to inform the Senate's tax reform proposal:

1. The Tax Credit Must Include Both CHP and WHP

Though WHP can produce electricity with no additional fuel and no incremental emissions, due to a drafting error, it was excluded from the existing ITC. Last fall, the Senate Finance Committee approved language to correct this deficiency through 2016. We urge the Committee to incorporate similar language in its tax reform package so that both CHP and WHP will benefit.

2. The Credit Should Not Be Limited to Small Projects

The benefits of the ITC are currently limited because of size and capacity constraints, which restrict its use to the first 15 megawatts for projects smaller than 50 megawatts. These capacity limits place an undue restriction on larger projects, which offer the greatest benefits. The Committee should extend the applicability of the ITC by eliminating the size cap for eligibility and allowing it to apply to the first 25 megawatts of eligible projects.

[3] EPA, Sept. 2014, "Catalog of CHP Technologies," at Table 2-4 (http://www.epa.gov/chp/documents/catalog_chptech_full.pdf) (reporting capital costs ranging from $1,200 to $4,300/ kW, dependent on prime mover and size).
[4] EPA 2014 (Tables 3-4 and 3-5); ORNL 2015 (Table 5).

3. The Credit Should Be Increased to 30 Percent

Congress currently provides a 10 percent ITC for eligible projects. Notably, other clean-energy sources are eligible for a 30 percent credit. Accordingly, we urge the Committee to incorporate a 30 percent tax credit for highly efficient CHP and WHP projects to offer parity with other clean-energy sources.

4. Expiration Should Be Based on the Date a Project Commences Construction

We understand that the Committee is not looking to provide energy tax credits in perpetuity. To the extent tax reform retains the existing credit and expiration dates, it should also base the expiration of the Section 48 tax credits on the date that a project commences construction, rather than the date it becomes operational. Under current law, CHP projects must be placed in service (i.e., the facility must be substantially complete and operational) before the ITC expires (i.e., December 31, 2016). CHP projects require significant permitting and financing and often require multi-year development timelines. By adopting a "commence construction" standard, CHP project hosts will have more certainty that they will be able to benefit from the tax credit. Failing to make this change would effectively prevent any projects that are not already in the works from taking advantage of the credit. The commence construction standard was successfully included in Section 45 last year and we are working with other renewable trades to encourage adoption of similar language in Section 48.

5. CHP and WHP Should Likewise Be Eligible for Master Limited Partnerships

In addition to the limitations in the existing ITC, CHP and WHP (like other clean-energy sources) have historically not been able to benefit from Master Limited Partnerships (MLPs). Any tax reform proposal that includes MLPs should expand this tax structure to clean and renewable energy projects, including CHP and WHP. Doing so will place these technologies on an equal footing with other energy sources, which have benefited from MLPs for almost 30 years. While not a substitution for the ITC or MACRs, expanding MLPs would provide an alternative financing mechanism for the industry and encourage deployment.

6. The Proposal Must Account for Both Thermal and Electric Output

If the Committee adopts a technology-neutral approach, we urge it to recognize both the thermal and electric output from CHP systems. We are generally supportive of efforts to provide technology-neutral tax credits to clean and renewable energy sources and believe that CHP and WHP could fare well under such an approach. In particular, we support a tax reform proposal that is based on a technology's emissions relative to the electric grid. As noted above, by producing both heat and electricity from a single fuel source, CHP offers significant efficiency gains over central power generation. In fact, EPA reports that CHP can produce electricity with roughly half the emissions of the separate generation of heat and power. Because WHP captures waste heat from an existing industrial process and uses it to produce additional electricity with no additional fuel or combustion, WHP generates no incremental emissions.

Significantly, the characteristic that makes CHP both clean and efficient is its ability to produce *both* thermal and electric output simultaneously. The system's environmental benefits will only be recognized if both of these products are considered. In fact, in a white paper on methods for calculating CO_2 savings from a CHP system, EPA determined, "To calculate the fuel and CO_2 emissions savings of a CHP system, both electric and thermal outputs of the CHP system must be accounted for."[5] For this reason, it is important to consider both thermal and electric output when determining a system's emission rate. While we supported the spirit and intent of the earlier Baucus tax reform proposal, its failure to consider thermal output rendered CHP ineligible for tax incentives. CHP not only reduces energy use, but also *produces* thermal energy and electricity. In this way, it is *both* a production and efficiency technology.

EPA has proposed a straightforward approach for converting thermal output (Btus) to the "equivalent" electric output (kWh).[6] Using this approach, the EPA can determine an effective emissions rate based on the total energy output from the CHP unit. This approach is relatively simple because EPA would not need to consider details about the boiler that is displaced by the CHP system. Taxpayers would be eligible for the tax credit if the emissions rate (accounting for both thermal and electric output) is lower than the threshold set by the Finance Committee. If a facility plans to claim the PTC, rather than the ITC, it can receive appropriate compensation based on the electricity produced by the system. Thermal output will thus only be considered to determine emissions and eligibility, but not the size of the award.

EPA has applied this methodology to a publicly available emissions calculator for calculating displaced fuel (and associated carbon emissions) for a CHP system.[7] This calculator considers both thermal and electric output from a CHP system. Notably, the sample calculation in an EPA white paper introducing the calculator and illustrating its application demonstrates that a 5 megawatt natural gas-fired combustion turbine and heat recovery boiler CHP system that provides heating for an industrial process at a facility in Pennsylvania reduces carbon emissions by 47 percent relative to the separate production of heat and power.[8]

7. MACRS Acceleration Should Be Preserved

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[5] U.S. Environmental Protection Agency, CHP Partnership, Aug. 2012, "Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems" (available online at http://www.epa.gov/chp/documents/fuel_and_co2_savings.pdf).

[6] *See, e.g.,* New Source Performance Standard (NSPS) for Stationary Combustion Turbines (40 CFR Part 60, Subpart KKKK) (crediting 100% of thermal output); *but see, e.g.,* New Source Performance Standard (NSPS) for Electric Utility Steam Generating Units (40 CFR Part 60, Subpart Da) (crediting 75 percent of thermal output from CHP systems).

[7] U.S. EPA, CHP Partnership, CHP Emissions Calculator (visited Jan. 16, 2014) (http://www.epa.gov/chp/basic/calculator.html); *See also* U.S. EPA, CHP Partnership, Aug. 2012, *Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems* (http://www.epa.gov/chp/documents/fuel_and_co2_savings.pdf).

[8] U.S. EPA, CHP Partnership, Aug. 2012, "Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems," at 19 (Appendix A, Figure 7) (available online at http://www.epa.gov/chp/documents/fuel_and_co2_savings.pdf).

Under Section 48, CHP systems are able to claim accelerated depreciation. This substantially reduces the time period in which capital expenditures are recovered. Such accelerated depreciation is particularly important for the CHP industry because (as noted above) high capital costs are generally incurred upfront. This faster return of capital may lower the risk premium, thus making a new investment more attractive.[9] Without MACRS, it would take significantly longer for an investor to recover his up-front costs, making financing less desirable. Accordingly, we urge the Committee to retain MACRS for CHP (and to extend to WHP) going forward.

CONCLUSION

The Alliance for Industrial Efficiency appreciates this opportunity to submit comments to the Senate Finance Committee. We believe that effective tax policy can provide critical incentives for home-grown, reliable clean-energy sources, like CHP and WHP. We support the long-term certainty that tax reform could provide to CHP and WHP developers. We urge you to strengthen and extend the ITC, maintain MACRS for CHP and expand it to WHP, and make MLPs available to CHP and WHP.

We look forward to working with the Community Development and Infrastructure Working Group and the entire Finance Committee to develop cost-effective, meaningful tax policy that will advance our mutual interests.

Sincerely,

Jennifer Kefer, Director
Alliance for Industrial Efficiency

[9] "MACRS Depreciation and Renewable Energy Finance," US PREF, November 2013, at p. 5, *available at* (http://uspref.org/images/docs/MACRSwhitepaper.pdf).