January 30, 2014

Dear Chairman Baucus:

The Alliance for Industrial Efficiency (AIE) submits the following comments on the Finance Committee's Discussion Draft on Energy Tax Reform. The Alliance is a diverse coalition representing the business, environmental, labor and contractor communities and is committed to enhancing manufacturing competitiveness through industrial energy efficiency. Although the Alliance is very supportive of the broad goals and general direction of the Proposal, we are concerned about its failure to adequately credit Combined Heat and Power (CHP).

The Alliance commends the Finance Committee for developing a technology-neutral tax proposal. As the Summary Document notes, tax policy has historically "picked winners and losers with no discernable policy rationale." We have long been concerned by the failure of the existing Section 48 tax credit to extend to Waste Heat to Power (WHP) and are grateful that the Committee acknowledges this oversight in its summary document. We are grateful that the Proposal maintains the existing Section 48 tax credit through 2016, and are hopeful that the Finance Committee can address its failure to provide for WHP through a technical correction in an extender's package. Indeed, WHP enhances manufacturing competitiveness and produces clean electricity with no incremental emissions and should be encouraged.[1]

While we wholeheartedly support the use of a technology-neutral tax proposal, we believe that the existing proposal includes some unnecessary complexity. We support the Committee's interest in providing a larger tax credit for the cleanest technologies. This will encourage developers to reduce emissions. As such, a 20 percent credit for facilities that are nearly emissions-free is appropriate (Tier 1 facilities in TABLE 1, below). Rather than asking taxpayers and the IRS to calculate different credits to each facility, however, we suggest a tiered tax credit. Under this approach, credits would be assigned in the following manner:

**TABLE 1: Tiered Tax Credit Approach**

| Relative "cleanness" | Emissions (g/kWh) | Size of Investment Tax Credit |
|---|---|---|
| Tier 1 | 0 to 94 | 20% |
| Tier 2 | 94 to 186 | 15% |
| Tier 3 | 187 to 278 | 10% |
| Tier 4 | 279 to 372 | 5% |

[1] APPENDIX A provides additional background on this issue along with language for a technical correction to the existing tax credit to ensure that WHP is properly incentivized.

We believe this tiered approach simplifies the Proposal, while preserving the integrity of its technology-neutral design.

The Alliance further believes that the proposal should include CHP. CHP is an extremely cost-effective and clean electricity production technology. In its rules, the Environmental Protection Agency (EPA) has repeatedly recognized CHP as a clean power production technology and has developed an effective approach to convert thermal output measurements to equivalent electrical output measurements, which can be used to determine a CHP project's eligibility.

Our comments commend the Committee for developing a technology-neutral tax proposal and respond to three questions raised by the Discussion Draft:

1. We believe that the tax credits in the Committee's draft can and should be modified to allow CHP to qualify for the production and investment tax credits in a way that maintains the technology-neutral approach envisioned in the draft;
2. We agree that the clean electricity tax credits should be phased out once electricity generation reaches a certain benchmark of cleanliness; and
3. We believe that tax credits should be available for clean-energy retrofits on facilities that were placed in service before 2016.

**Key Questions**

1. We believe that the tax credits in the Committee's draft can and should be modified to allow combined heat and power to qualify for the production and investment tax credits in a way that maintains the technology-neutral approach envisioned in the draft. CHP is an extremely cost-effective power production technology, which EPA has consistently recognized as an effective emissions-reduction technology.

The Alliance believes that the Proposal can and should incorporate CHP into the investment and production tax credits that go into effect beginning in 2017. 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."[2] For this reason, it is important to consider both thermal and electric output when determining a system's emission rate.

[2] 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).

EPA has adopted a straightforward approach for converting thermal output (Btus) to the "equivalent" electric output (kWh).[3] 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 Proposal (i.e., less than 372 grams $CO_2$e/ kWh). If a facility plans to claim the PTC, rather than the ITC, it can receive appropriate compensation ($0.023 per kilowatt of *electric* generation). Thermal output will thus only be considered to determine emissions and eligibility, but not the amount of the credit.

EPA's Proposed Standards of Performance for Greenhouse Gas Emissions from New Electric Generating Units credit thermal output from CHP systems.[4] The tax reform Proposal should similarly credit thermal output, although we recommend that EPA modify the proposed rule by crediting 100 percent of a facility's thermal output (as written, the proposed rule "discounts" a facility's thermal output by providing only a 75 percent credit). We will provide similar recommendations to EPA during the public comment period on the greenhouse gas rule. We believe the Proposal should direct EPA to offer the same thermal credit to CHP under the tax credit that it does under its New Source Performance Standards for greenhouse gases from new power plants. In other words, the Proposal should establish "equal treatment" under both regulatory and tax matters for CHP and its thermal energy credit. The Alliance is prepared to support the Proposal if it were to incorporate CHP in this manner.

As written, the Summary Document asserts that the Proposal does not extend to energy efficiency, clean vehicles, transmission, CHP, or storage, choosing instead to "focus energy tax policy on stimulating domestic, clean production of electricity and transportation fuels…in order to promote energy security and a clean environment." The Committee claims that this choice was made to "target tax incentives on areas that appear to have the largest bang-for-the-buck in reducing air pollution and enhancing energy security." The Committee then asks for input on whether the tax credit should "be directed at these other sectors of the energy economy."

We believe that supporting deployment of CHP is consistent with the Committee's goals for at least four reasons:

a. <u>CHP Is a Domestically Produced Energy Source</u>

CHP is consistent with the Committee's goal of focusing "energy tax policy on stimulating domestic, clean production of electricity." As APPENDIX B illustrates, a large portion of the CHP

[3] *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). Several state rules recognize full thermal output. *See* U.S. EPA, CHP Partnership, Feb. 2013, "Accounting for CHP in Output-Based Regulations," at 7-9 (citing California's multi-pollutant regulations and Texas permit by rule and standard permitting program) (http://www.epa.gov/chp/documents/accounting.pdf).

[4] U.S. EPA, Jan. 8, 2014, "Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units," 79 Fed. Reg. 1430, 1515-16, § 60.5580 (available online at http://www.gpo.gov/fdsys/pkg/FR-2014-01-08/pdf/2013-28668.pdf).

supply chain is based in the United States. Moreover, by reducing energy use for end users, CHP can ultimately lower fuel costs and make U.S. manufacturers more competitive.

a. CHP Is an Energy Production Technology

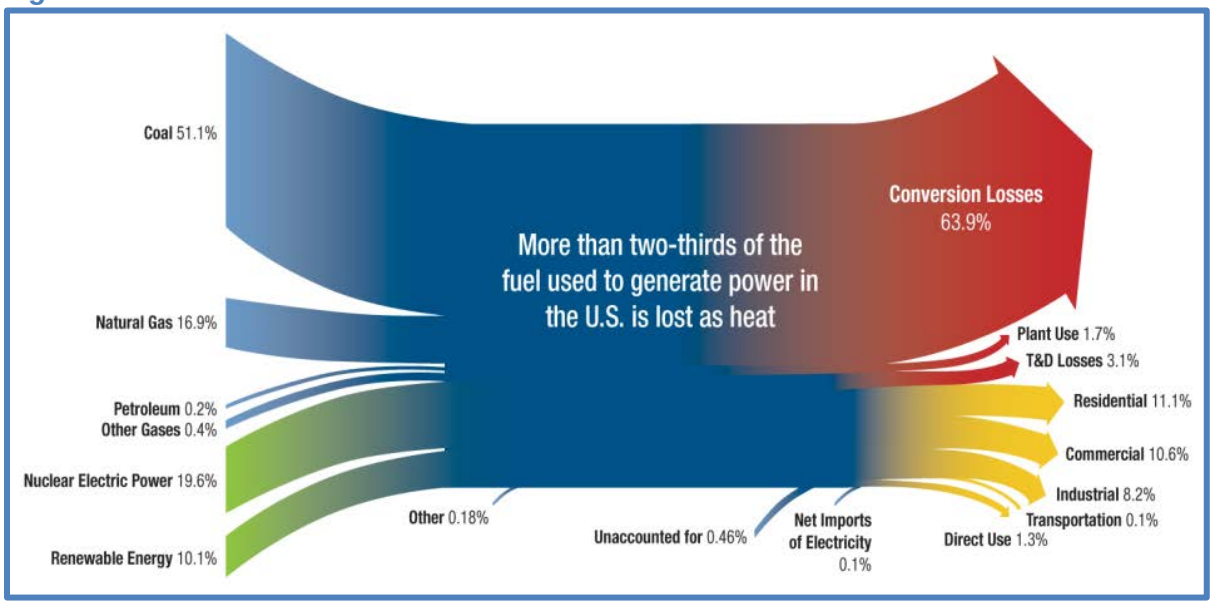
The Summary Document asserts that it does not include incentives for energy efficiency, but focuses its support on the "clean production of electricity." CHP produces both thermal energy and electricity from a single fuel source.[5] As such, it is properly characterized as a production technology and should not therefore be excluded from the Proposal.

b. CHP Reduces $CO_2$ Emissions

The Committee has developed a technology-neutral tax proposal that is intended to create incentives for electricity sources that are 25 percent cleaner than the average for all electricity production facilities. As elaborated below, CHP can reduce $CO_2$ emissions by fifty percent over the separate generation of heat and power, yet it is not eligible for the credit. Given these substantial environmental benefits, the Proposal should be extended to include CHP.

Conventional, central power generation is woefully inefficient. In fact, on average, only 33 percent of energy inputs are converted into electricity, with roughly two-thirds lost as wasted heat. Additional line losses occur during the transmission and distribution of power from the central generator to the end user. (FIGURE 1)

**Figure 1 - Fuel Loss with Conventional Power Generation[6]**



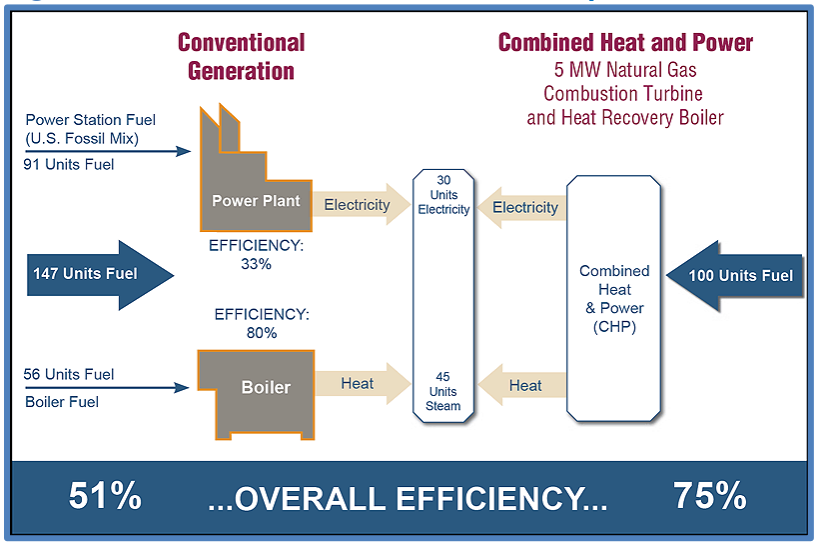

[5] *See, e.g., id.,* at 3 ("What Is CHP") (defining CHP as "a highly efficient method of providing power and useful thermal energy (heating or cooling) at the point of use with a single fuel source.").

[6] Oak Ridge National Laboratory (hereinafter "ORNL"), Dec. 1, 2008, *Combined Heat and Power: Effective Energy Solutions for a Sustainable Future*, at 6 (http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf).

This inefficiency means we waste the majority of the fuel used to produce electricity – leading to greenhouse gas emissions and unnecessary expense for end users.

CHP turns this inefficiency on its head. By generating both heat and power from a single fuel source, CHP can operate at efficiencies of 70 to 80 percent. In this way, CHP reduces the fuel that is needed to generate heat and electricity at universities, hospitals, and industrial facilities throughout the country. And because they reduce energy inputs, these technologies dramatically lower carbon emissions. FIGURE 2 illustrates the efficiency savings of CHP. As depicted in FIGURE 2, CHP systems typically achieve total system efficiencies of 60 to 80 percent, compared to a combined efficiency of only 51 percent for the separate generation of heat and power. This is largely because producing electricity at a central power plant is so inefficient (33 percent in Figure 2). By definition, CHP decreases the fuel used at a central power plant, in exchange for increasing on-site fuel use. The facility depicted in FIGURE 2 historically used 56 units of fuel to power its boiler, but is now using 100 units of fuel on site – to both power its boiler and produce electricity. While on-site fuel use has increased (from 56 units to 100 units), system-wide fuel use has declined significantly (from 147 units to 100 units).

**Figure 2 CHP Is More Efficient than the Separate Generation of Heat and Power**[7]

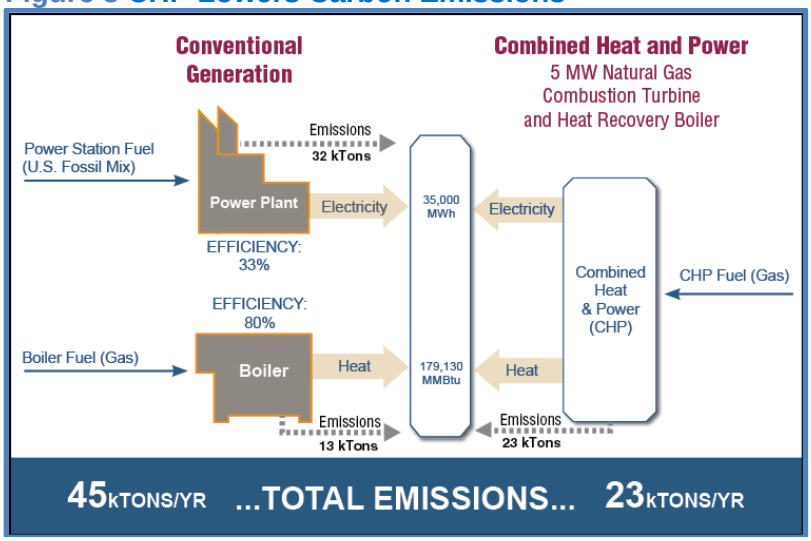



These efficiency savings translate to substantial air quality benefits. This is because using less fuel to produce the same amount of energy produces fewer emissions. In fact, as FIGURE 3 illustrates, CHP can produce one-half the carbon emissions of the separate generation of heat and power.[8] (23,000 tons/ year compared to 45,000 tons/ year).

[7] U.S. EPA, CHP Partnership, Aug. 2012, *Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems*, at 5 (http://www.epa.gov/chp/documents/fuel_and_co2_savings.pdf) (figure assumes 33% efficiency for central power plant efficiency, based on eGRID 2012 (2009 data), which reflects the national average of 35.6% combined with transmission and distribution losses.

[8] U.S. EPA, Combined Heat and Power Partnership, *Environmental Benefits* (graphic) (http://www.epa.gov/chp/basic/environmental.html) (visited Sept. 27, 2013).

**Figure 3 CHP Lowers Carbon Emissions**[9]




Indeed, CHP has a significant role to play in reducing greenhouse gas emissions. In 2008, Department of Energy's Oak Ridge National Laboratory ("ORNL") assessed the economic and environmental benefits of a "high deployment strategy," wherein CHP would provide 20 percent of U.S. electric capacity by 2030 – up from nine percent today.[10] This scenario is on par with DOE's projections for wind,[11] and current nuclear power production.[12] ORNL found that such full-scale deployment would be equivalent to the power produced by more than 480 conventional power plants,[13] displacing 5.3-quadrillion BTUs of fuel from conventional sources – or half the total energy currently consumed by U.S. households.[14] It could reduce carbon 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. What's more, if CHP provided 20 percent of U.S. electric capacity, over 60 percent of the projected increase in $CO_2$ emissions between now and 2030 could be avoided.[15] (TABLE 2)

**TABLE 2: CHP Projections (2030) and Environmental Benefits**

| | 2006 | 2030 |
|---|---|---|
| Total Electricity Generating Capacity | 85 GW (8.9% current capacity) | 241 GW (20% predicted capacity) |
| Annual Energy Savings | 1.9 Quads | 5.3 Quads |
| Annual $CO_2$ Reduction | 248 MMT | 848 MMT |
| Number of Car Equivalents Taken Off Road | 45 Million | 154 Million |

[9] *Id.*
[10] ORNL, Dec. 1, 2008, *Combined Heat and Power: Effective Energy Solutions for a Sustainable Future*, at 4 (http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf).
[11] U.S. Department of Energy, 2008, *20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply* (http://www.nrel.gov/docs/fy08osti/41869.pdf)
[12] EIA, 2013, *Electric Power Annual, Table* 1.1. (http://www.eia.gov/electricity/annual/)
[13] ORNL, *supra* note 10, at 4 reports 240,900 MW. Estimate assumes typical power generation of 500 MW from a traditional power plant.
[14] *Id.* at 4.
[15] *Id.*

The ORNL scenario is based on the additional deployment of 156 gigawatts of CHP from 2008 to 2030. Notably, a 2010 report confirmed 130 gigawatts of technical CHP potential in the commercial and industrial sectors.[16] This indicates that – with the right policies and incentives in place – the ORNL deployment scenario is tenable.

In August 2012, the White House took a first step toward achieving these carbon savings, issuing Executive Order 13264, which set a goal of increasing deployment by 40 gigawatts, or 50 percent by 2020, bringing total CHP deployment to over 120 gigawatts. While only half of CHP's technical potential, realizing this goal would nonetheless lead to significant carbon savings. In fact, in a report issued alongside the Executive Order, DOE and EPA projected that realizing this goal would reduce energy use by one quadrillion Btus (1 Quad) (the equivalent of 1 percent of all energy use in the U.S.) and lower greenhouse gas emissions by 150 million metric tons (equivalent to the emissions from over 25-million cars).[17]

EPA has consistently recognized CHP as a compliance option in its emerging GHG rules. EPA has already recognized the value of CHP as a proven cost-effective technology to reduce greenhouse gas emissions by incorporating CHP in its BACT guidance,[18] its 111(b) rule, and through awards to various CHP Energy Star projects for their emissions reductions.[19] Of particular note, as noted above, the Proposed Standards of Performance for Greenhouse Gas Emissions from New Electric Generating Units explicitly recognize the greenhouse gas benefits provided by the thermal energy produced from CHP systems.[20]

The Energy Tax Reform proposal is designed as a "technology-neutral set of energy tax incentives that focuses on promoting domestic energy production and reducing pollution." Given CHP's potential to reduce pollution, it should be a key element of this proposal.

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[16] ICF-USCHPA-WADE, Oct. 2010, *Effect of a 30 Percent Investment Tax Credit on the Economic Market Potential for Combined Heat and Power*, at 11-12 (Tables 3 & 4) (projecting roughly 65 gigawatts of technical potential in each the industrial and commercial/ institutional sectors, for a total of 130 gigawatts); *see also* DOE, EPA, Aug. 2012, *Combined Heat and Power: A Clean Energy Solution*, at 13 (reaffirming these findings) (http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf); personal communication with Anne Hampson, ICF Consulting, Nov. 22, 2013 (noting that their current estimates for CHP on-site technical potential are 126 gigawatts).

[17] DOE, EPA, Aug. 2012, at 3.

[18] *See, e.g.,* U.S. EPA, Office of Air and Radiation, EPA–HQ–OAR–2010–0841; FRL–9228–2, Nov. 2010, *PSD and Title V Permitting Guidance for Greenhouse Gases*, March 2011, "PSD and Title V Permitting Guidance for Greenhouse Gases," at 29, 30 & 31 (hereinafter "BACT Guidance") ("Applying the most energy efficient technologies at a source should in most cases translate into fewer overall emissions of all air pollutants per unit of energy produced"; "The second category of energy efficiency improvements includes options that could reduce emissions from a new greenfield facility by improving the utilization of thermal energy and electricity that is generated and used on site." and "For example, an applicant proposing to build a new facility that will generate its own energy with a boiler could also consider ways to optimize the thermal efficiency of a new heat exchanger that uses the steam from the new boiler.").

[19] *See, e.g.,* U.S. EPA, Combined Heat and Power Partnership (listing winners of the agency's Energy Star CHP Awards and highlighting carbon reductions) (http://www.epa.gov/chp/partnership/current_winners.html) (visited Jan. 10, 2014).

[20] U.S. EPA, Jan. 8, 2014, "Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units," 79 Fed. Reg. 1430, 1515-16, § 60.5580 (available online at http://www.gpo.gov/fdsys/pkg/FR-2014-01-08/pdf/2013-28668.pdf).

c. CHP Is Cost Effective

Finance staff ostensibly chose to exclude energy efficiency and CHP "in order to target tax incentives on areas that appear to have the largest bang-for-the-buck in reducing air pollution and enhancing energy security." In fact, CHP can reduce emissions at substantially lower cost than other clean-energy sources, which *are* included in the proposal. CHP can reduce carbon emissions at less than 15 percent the cost of distributed solar and roughly half the cost of wind. (TABLE 3) It is one of the cheapest sources of clean power generation (FIGURE 4).

**TABLE 3: CHP Value Proposition**[21]

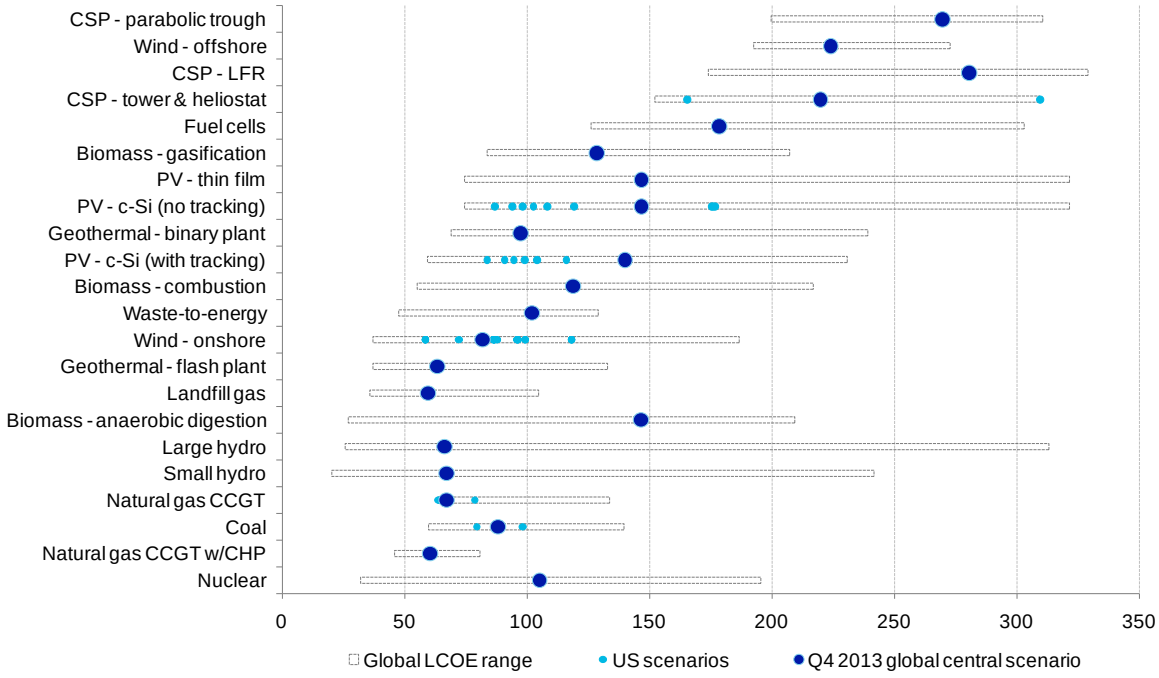
| Category | 10 MW CHP | 10 MW PV | 10 MW Wind | Combined Cycle (10 MW Portion) |
|---|---|---|---|---|
| Annual Capacity Factor | 85% | 22% | 34% | 70% |
| Annual Electricity | 74,446 MWh | 19272 MWh | 29784 MWh | 61320 MWh |
| Annual Useful Heat | 103,417 $MWh_t$ | 0 | 0 | 0 |
| Footprint Required | 6,000 $ft^2$ | 1,740,000 $ft^2$ | 76,000 $ft^2$ | N/A |
| Capital Cost | $20 million | $60.5 million | $24.4 million | $10 million |
| Annual Energy Savings | 308,100 MMBtu | 196,462 MMBtu | 303,623 MMBtu | 154,649 MMBtu |
| Annual $CO_2$ Savings | 42,751 Tons | 17,887 Tons | 27,644 Tons | 28,172 Tons |
| Annual NOx Savings | 59.4 Tons | 16.2 Tons | 24.9 Tons | 39.3 Tons |
| **Cost Per Ton of $CO_2$ Savings** | **$468** | **$3,382** | **$883** | **$355** |

The values in TABLE 1 are based on:

- 10 MW Gas Turbine CHP with 28% electric efficiency and 68% total efficiency, 15 PPM NOx;
- Capacity factors and capital costs for PV and Wind based on utility systems in DOE's Advanced Energy Outlook 2011;
- Capital cost and efficiency for natural gas combined cycle system based on Advanced Energy Outlook 2011 (540 MW system proportioned to 10 MW of output), NGCC 48% electric efficiency, NOx emissions 9 ppm;
- Electricity displaces National All Fossil Average Generation (eGRID 2012): 9,572 Btu/kWh, 1,743 lbs $CO_2$/MWh, 1.5708 lbs NOx/MWH; 6.5% transmission and distribution losses; CHP thermal displaces 80% efficient on-site natural gas boiler with 0.1 lb/MMBtu NOx emissions)

[21] U.S. EPA & U.S. DOE, Aug. 2012, "Combined Heat and Power: A Clean Energy Solution," at 8 (http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_clean_energy_solution.pdf).

**FIGURE 4: Levelized Costs of Energy across Power Generation Technologies, Q4 2013 ($/MWh)[22]**




2. We agree that the clean electricity tax credits should be phased out once electricity generation reaches a certain benchmark of cleanliness.

The Committee seeks comment on the appropriateness of phasing out the proposed tax credits for production of clean electricity and transportation fuel once the electricity generation and transportation fuel markets reach certain benchmarks of cleanliness. We agree that this approach is far preferable to basing eligibility on the level of deployment of a particular technology. The goal of tax reform is to stimulate investments in clean, domestic energy sources. It is not to select "winners and losers" among these energy sources.

Significantly, CHP currently represents roughly 9 percent of U.S. electric capacity.[23] Under some scenarios, it can provide as much as 20 percent of U.S. power.[24] Even the less ambitious

[22] Bloomberg New Energy Finance and Business Council for Sustainable Energy, Feb. 2014, "Sustainable Energy in America 2014 Factbook (Figure 19) (citing Bloomberg New Energy Finance, EIA. Note: LCOE is the per-MWh inflation-adjusted lifecycle cost of producing electricity from a technology assuming a target internal rate of return (IRR) of 10% across all technologies. Analysis is based on numbers derived from actual deals (for inputs pertaining to capital costs per MW) and from interviews with industry participants (for inputs such as debt/equity mix, cost of debt, operating costs, and typical project performance). Capital costs are based on evidence from actual deals, which may or may not have yielded a margin to the sellers of the equipment; the only 'margin' that is assumed for this analysis is 10% after-tax equity IRR for project sponsor. The dark-colored circles correspond to a global central scenario, with the exception of nuclear, gas, and coal – where the dark-colored circles correspond to a US-specific central scenario (ie, accounting for U.S. fuel prices). 'CCGT' stands for combined cycle gas turbine; 'c-Si' stands for crystalline silicon; 'CSP' stands for concentrated solar power; 'LFR' stands for linear Fresnel reflector.)

goal reflected in the recent CHP Executive Order would increase CHP deployment by 50 percent from today's levels. Any tax reform proposal based exclusively on level of deployment would not extend to this clean-energy technology, discouraging continued investment despite its emission benefits.

3. We believe that tax credits should be available for clean-energy retrofits on facilities that were placed in service before 2016.

The staff discussion draft generally limits the proposed production and investment tax credits to facilities that begin to operate after 2016. Many clean-energy investments are made as retrofits to existing systems. We encourage the Committee to clarify that taxpayers will be eligible for the credit if it replaces or retrofits that portion of the facility that produces electricity after 2016, even where the business itself predates this cutoff.

We are also concerned about the availability of the Tax Credit for WHP Property. While the Proposal retains the existing Section 48 tax credit until 2016, as the Committee notes, this credit does not extend to WHP. We are grateful that the Committee acknowledges this oversight in its summary document; however, want to ensure that such units are eligible for financial support prior to 2016. Given this historic omission, it will be necessary to allow facilities to claim the new credit prior to 2016 or to make a technical correction to Section 48 to clarify its applicability to WHP. APPENDIX A provides language to this effect.

## CONCLUSION

The Alliance for Industrial Efficiency is encouraged by the Finance Committee's Energy Tax Reform Proposal; however, we are concerned about its treatment of CHP. We believe CHP and WHP provide a scalable, cost-effective approach to reducing emissions, increasing manufacturing competitiveness, and enhancing electric reliability. We look forward to working with the Finance Committee to help realize the full potential of CHP and WHP as this process moves forward.

Sincerely,

David Gardiner
Executive Director
Alliance for Industrial Efficiency

APPENDIX A: Tax extenders technical correction
APPENDIX B: Representative CHP Suppliers in the United States

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[23] Oak Ridge National Laboratory (hereinafter "ORNL"), Dec. 1, 2008, *Combined Heat and Power: Effective Energy Solutions for a Sustainable Future*, at 4 (http://www1.eere.energy.gov/industry/distributedenergy/pdfs/chp_report_12-08.pdf).
[24] *Id.*

Technical Modification to Clean Energy Investment Tax Credit

**Present Law and Background**

The Emergency Economic Stabilization Act of 2008 added combined heat and power system property to the list of technologies eligible for an investment tax credit under section 48 of the Internal Revenue Code. However, waste heat to power receives no tax benefits.

Waste heat to power uses industrial waste heat (or other energy-laden waste streams) that is released into the atmosphere, and captures that energy to generate heat and electricity with no incremental emissions.

In the 2008 legislation, combined heat and power system property was not defined in a way that clearly allowed waste heat to power facilities to qualify for the credit—although waste heat to power systems were included in the assumptions the Congressional Budget Office used to score the legislation. Consequently, clarifying that section 48 extends to waste heat to power would not increase the cost of the existing credit.

**Proposed Change**

The proposal explicitly allows waste heat to power systems to qualify for the section 48 investment tax credit. The proposed change excludes waste heat resources resulting from a process whose primary purpose is the generation of electricity using fossil fuels.

**Why the Proposed Change Is Needed**

- The proposed change would correct an error in the 2008 legislation and reflect the original intent of Congress to incentivize both combined heat and power and waste heat to power systems.
- In the Energy Information Administration's forecasts, the largest growth in primary energy consumption from 2011 to 2040 is in the industrial sector.[1] Incentivizing the capture of waste heat targets a high growth sector of energy consumption with a measure that encourages the use of an abundant, clean, and underutilized resource that is readily available to industry.
- Waste heat to power can help states reach their renewable portfolio standard requirements or goals. 15 states have legislative and regulatory policies that treat waste heat as a renewable resource.[2]

[1] U.S. Department of Energy. Energy Information Administration. 2013. *Annual Energy Outlook 2013.* pp. 60. http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf

[2] U.S. Environmental Protection Agency. May 30, 2012. *Waste Heat to Power Systems.* pp. 7-8. http://www.epa.gov/chp/documents/waste_heat_power.pdf

**Energy Credit for Waste Heat to Power Property**

(a) IN GENERAL.—Subparagraph (A) of section 48(a)(3) of the Internal Revenue Code of 1986 is amended by striking ''or'' at the end of clause (vi), by inserting ''or'' at the end of clause (vii), and by adding at the end the following new clause:

''(viii) waste heat to power property,''.

(b) WASTE HEAT TO POWER PROPERTY.—Subsection (c) of section 48 of such Code is amended by adding at the end the following new paragraph:

''(5) WASTE HEAT TO POWER PROPERTY.—

''(A) WASTE HEAT TO POWER PROPERTY.—The term 'waste heat to power property' means property comprising a system which generates electricity through the recovery of a qualified waste heat resource.

''(B) QUALIFIED WASTE HEAT RESOURCE DEFINED.—The term 'qualified waste heat resource' means—
''(i) exhaust heat or flared gas from any industrial process,
''(ii) waste gas or industrial tail gas that would otherwise be flared, incinerated, or vented,
''(iii) a pressure drop in any gas for an industrial or commercial process, or
''(iv) such other forms of waste heat resources as the Secretary may determine.

''(C) EXCEPTION.—The term 'qualified waste heat resource' does not include any heat resource from a process whose primary purpose is the generation of electricity utilizing a fossil fuel.

''(D) TERMINATION.—The term 'waste heat to power property' shall not include any property placed in service after December 31, 2021.''

(c) INCREASED ENERGY PERCENTAGE.—Clause (i) of section 48(a)(2)(A) of such Code is amended by inserting after the new subclause (V) the following new subclause:

''(VI) energy property described in paragraph (3)(A)(viii), and''.

(d) EFFECTIVE DATE.—The amendments made by this section shall apply to periods after the date of the enactment of this Act, under rules similar to the rules of section 48(m) of the Internal Revenue Code of 1986 (as in effect on the day before the date of the enactment of the Revenue Reconciliation Act of 1990).

# REPRESENTATIVE U.S. CHP AND WASTE HEAT TO POWER SYSTEM VENDORS AND DEVELOPERS

## Turbines /Generators

- GE, New York
- Dresser Rand, Massachusetts
- Ormat Technologies Inc., Nevada
- Siemens, Illinois, New Jersey
- Solar Turbines Incorporated, California
- Turbosteam, Massachusetts
- TurboCare, Massachusetts

## HRSG/ Boiler

- Tulsa Heaters, Oklahoma
- Deltek, Minnesota
- Nebraska Boiler
- McBurney, Florida
- Detroit Stokers, Michigan
- Riley Stoker, Massachusetts
- Babcock & Wilcox, Ohio

## Reciprocating Engines

- Caterpillar, Illinois
- Cummings Engines, Maine
- Waukesha, Wisconsin

## Condensers/Flue Gas Heat Recovery Systems

- Graham, New York
- Direct Contact, Washington
- Condex, Illinois
- Steam Plant Systems, New York

## Instrumentation and Controls

- ABB, California
- Foxborough, Massachusetts
- Endressn + Hauser, Indiana

### Engineering

- ESI of Tennessee, Georgia
- ATSI, New York
- Ambitech, Illinois
- Ford, Bacon and Davis, Louisiana
- Harris Group, Oregon
- Middough, Oak Brook
- Abener, Missouri
- MPR, Washington DC
- Weaver Boos Consultants, Illinois
- Penta Engineering, Missouri

### Cooling Towers

- Nebraska Boilers
- Marley Cooling Towers, Kansas and New Jersey
- Cooling Tower Technologies, Louisiana
- Cooling Towers Depot, Colorado

### WHP Equipment/ Product Manufacturers

- Alphabet Energy, California
- Calenetix, California
- Echogen, Ohio
- Electratherm, Nevada
- GE Heat Recovery Solutions, Florida
- Ormat, National
- TAS Energy, Texas

### Water Treatment

- Nalco, Illinois
- GE Betz, New York

### Construction

- The Industrial Company (TIC), Colorado
- Kiewit, Texas
- Holm, West Virginia
- Graycor, West Virginia
- CH2M Hill, Pennsylvania
- HOHL, New York
- Nitro, West Virginia

**Environmental Consultants**

- ERM, Chicago
- WSP, Virginia
- Podesta, West Virginia

**Project Developers**

- GE Heat Recovery Solutions, California & Florida
- Gulf Coast Green Energy, Texas
- KGRA Energy Corporation, Illinois
- Ormat Technologies Inc., Nevada
- Primary Energy, Illinois
- Recycled Energy Development, Illinois
- Robust Energy, Texas
- Turbo Thermal, Texas
- Veolia Energy, Massachusetts