Industrial Energy Consumers of America

The Voice of the Industrial Energy Consumers

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December 20, 2013

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Preliminary Comments on Regulating GHGs for Existing Electric Generating Units

IECA: COMBINED HEAT AND POWER (CHP) AND WASTE HEAT RECOVERY (WHR) FACILITIES SHOULD BE EXEMPT FROM THE RULE

The Industrial Energy Consumers of America (IECA) is a nonpartisan association of leading manufacturing companies with $1.0 trillion in annual sales, over 1,500 facilities nationwide, and with more than 1.4 million employees worldwide**.** Most IECA members are energy-intensive and trade-exposed (EITE) manufacturers. This means that reliable and affordable energy supplies are critical to competing with foreign manufacturers that typically operate in countries without stringent, and costly environmental regulation. Many of these competitors are subsidized by their governments.

IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, refining, glass, industrial gases, pharmaceutical, brewing, and cement.

IECA was founded on the belief that a robust, diverse, reliable and affordable supply of energy is required to sustain economic growth, quality of life for our citizens, and the competitiveness of industry. But IECA members also recognize the importance of preserving environmental quality for our communities, employees and shareholders. Done correctly, environmental regulations can both preserve environmental quality, and minimize adverse impacts on business competitiveness.

EXECUTIVE SUMMARY

The majority of U.S. combined heat and power (CHP) and waste heat and recovery (WHR) facilities are owned and operated by EITE industries. These industries have a significant demand for both steam and electricity. CHP/WHR is used because it can reduce the cost of power and steam, and provide a reliable source of energy. Because CHP/WHR facilities are a distributed energy source, it also increases stability of the electrical grid. By not purchasing electricity from the grid, use of CHP/WHR reduces U.S. energy consumption, criteria pollutants, and GHG emissions as illustrated in the charts hereafter.

However, few industrial CHP/WHR facilities have been built since the passage of the Energy Policy Act of 2005 because it created new regulatory barriers to the construction and economics of new facilities. How the EPA GHG rule treats CHP/WHR is very important. The EPA GHG rule

can result in the shut down or reduce use of the existing CHP/WHR units, or it can greatly expand the number of new CHP/ WHR facilities, and increase use of existing capacity.

We urge:

a. EPA's guidelines to stipulate that CHP/WHR units meet the guidelines by default (because they necessarily will meet unit-level requirements);
b. Provide increased flexibility, such that CHP/WHR projects at the plant can be implemented without delay and without triggering New Source Review (NSR) permitting requirements; and
c. Reward greater use of industrial CHP/WHR;
    i. This includes measures that allow distributed energy from both new and "existing" CHP/WHR facilities to compete with other GHG reduction options; and
    ii. Credit for avoided emissions from power exported to the grid by industrial CHP/WHR facilities.

DETAILED POINTS

1. CHP/WHR facilities should be exempt from the rule.

EPA should provide broad exemptions for all CHP/WHR units to encourage the efficiencies and environmental benefits of CHP/WHR systems. The basis for such an exemption is clear – the use of power generated by CHP/WHR units will always be more efficient than the standards EPA is setting for non-CHP/WHR facilities.

Federal statutes and rules have recognized the environmental benefits of CHP/WHR through regulatory exemptions since the 1990 Amendments to the Clean Air Act. These existing exemptions have already significantly reduced CO_2 emissions over the past three decades. The GHG rules for new and existing sources should expand upon, and not contract, regulatory exemptions for CHP/WHR.

Any new rule that might result in the decommissioning of an existing CHP/WHR unit would increase CO_2 emissions, as facilities would replace power from CHP/WHR with power from the grid. EPA recognizes that the potential for increased renewable energy production is greatly limited by the problem of transmission congestion, and any reduction of existing CHP/WHR units would likely increase transmission congestion, as well as transmission losses.

Additional units should be exempt from GHG rules for the following reasons:

a. In view of the commercial and environmental importance of CHP/WHR units, and the practical difficulties and costs of retrofitting older units, existing CHP/WHR units should be categorically exempted from any new rule;
b. EPA's proposal to add an additional regulatory exemption for CHP/WHR in the GHG rules for new EGUs based on actual use in addition to the exemption based on construction purpose is laudable, but does not go far enough. The case for exempting CHP/WHR generation from GHG rules is even stronger than in other regulatory contexts

because CHP/WHR offers both significant reductions in CO_2 emissions and vitally important alleviation of transmission congestion problems;

c. Existing CHP/WHR units that are not currently exempt from Subpart Da because they were constructed for the purpose of providing half, rather than one third, of their power to the grid may shutdown if they are now forced to comply with new GHG emissions limitations;
d. Broadening regulatory exemptions for CHP/WHR in the GHG context may stimulate development of additional CHP/WHR units that would result in decreased CO_2 emissions and less transmission congestion; and
e. The negative effects from GHGs are global, not local. As was acknowledged in the recent debate over potential cap and trade legislation, GHG regulation carries a risk of "leakage" of jobs and emissions. Overly stringent or costly GHG rules could hasten the export of American industrial capacity beyond the reach of American regulation to locations with relatively higher GHG emissions. An even broader exemption for CHP/WHR in the GHG rules would help prevent export of jobs and likely net increase of GHG emissions.

Exemptions for CHP/WHR in the GHG rules and otherwise should be broad and nondiscriminatory:

a. Existing CHP/WHR units are as diverse as American industry. Regulatory exemptions for CHP/WHR that discriminate based on technology, efficiency, or fuel source will likely lead to the shutdown of existing CHP/WHR units and risk increasing CO_2 emissions, transmission congestion, and transmission loss;
b. Exemptions for existing CHP/WHR units should be broad and nondiscriminatory. The exemptions should be designed to cover all existing CHP/WHR units and should not discriminate on the basis of efficiency, technology, or fuel source;
c. The breadth of regulatory exemptions for CHP/WHR in the GHG rules is particularly important because the shutdown of even the least efficient existing CHP/WHR units will increase CO_2 emissions, transmission congestion, and transmission loss. EPA should accordingly err on the side of breadth;
d. The use of CHP/WHR is beneficial no matter what fuel is used to create heat because fuel selection is dominated by other regulatory and economic considerations. Because exemptions for CHP/WHR in the GHG rules will have no impact on fuel selection, fuel source discrimination is unnecessary;
e. Traditionally, CHP/WHR exemptions have been broad, nondiscriminatory, and successful in achieving emissions reductions. For example, the acid rain provisions in the 1990 Clean Air Act Amendments included independent exemptions based on construction purpose and actual use. Under this exemption, a unit is exempt either if the unit is constructed with the purpose of providing no more than one-third of its potential electric output capacity to the grid or if the unit actually supplies no more than one-third of its potential electric output capacity to the grid. This broad and nondiscriminatory statutory exemption is responsible for significant emissions reductions, including greenhouse gas emissions, and also decreased transmission congestion and transmission losses; and
f. EPA erred in failing to maintain broad and nondiscriminatory exemptions when it issued the Clean Air Interstate Rule and the Clean Air Transport Rule by adopting the narrow Public Utility Regulatory Policies Act definition of cogeneration that discriminated based

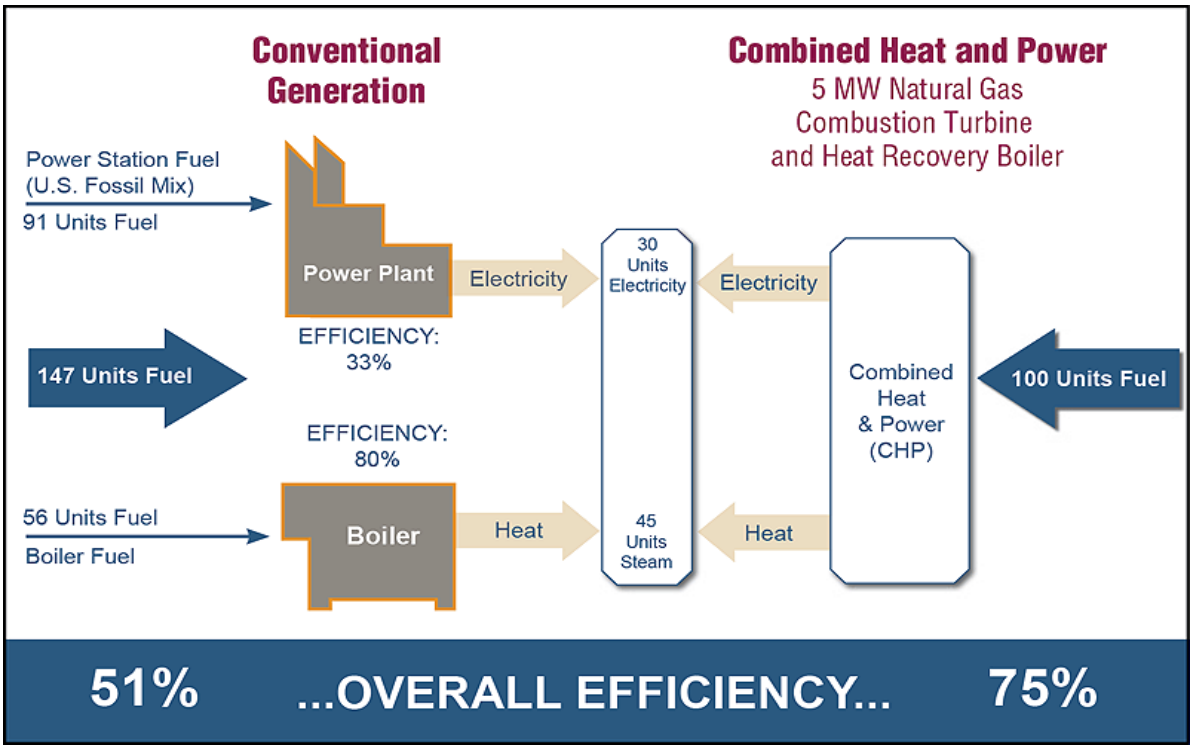
on efficiency. At the time, EPA believed that most existing cogeneration units would be covered by this definition. See 70 Fed. Reg. 25,162, 25,277 (May 12, 205) ("EPA believes that most solid fuel-fired cogeneration units will meet the proposed efficiency standard.") But as it turned out, many older units fell outside of the efficiency based definition even though these older units offered significant environmental benefits. EPA's use of a narrow and discriminatory definition in the Clean Air Interstate Rule and the Clean Air Transport Rule was counterproductive and may have decreased CHP/WHR utilization and thereby increased emissions, transmission congestion, and transmission loss. EPA should not repeat this mistake in the GHG rules.

Recognition of benefits from existing CHP/WHR units should be even broader than those in EPA's proposed rules for new EGUs.

EPA's proposed GHG rules for new EGUs made available on September 20, 2013 contained some useful recognition for CHP/WHR units, but those conditions should be expanded to completely exclude all existing CHP/WHR sources. If EPA does not exclude all CHP/WHR units, and adopts a framework for existing sources similar to the proposal for new sources, the conditions should be expanded:

a. In order to be subject to the rule, a CHP/WHR unit should have to be designed to sell, and actually sell, more than half of its potential electric output to the grid;
b. The period for determining applicability should be no less than three years on a rolling average basis;
c. Facilities that are exempt from the rule should only be required to maintain reliable information sufficient to establish their exemption, and should not be subject to extensive monitoring, record-keeping, reporting, and requirements; and
d. Clarify that any unit that was exempt from Subpart D will also be exempt from the Proposed Standards.

2. CHP/WHR is at minimum, 24 percent more energy efficient than conventional electric generation.



Source: DOE, EPA

3. CHP/WHR provides tremendous environmental benefits, but at a significant upfront increased capital cost.

CHP Energy and CO2 Savings Potential

Category	10 MW CHP	Natural Gas Combined Cycle (10 MW Portion)
Annual Capacity Factor	85%	70%
Annual Electricity	74,446 MWh	61,320 MWh
Annual Useful Heat	103,417 MWht	None
Footprint Required	6,000 sq ft	N/A
Capital Cost	$20 million	$10 million
Annual Energy Savings	308,100 MMBtu	154,649 MMBtu
Annual CO_2 Savings	42,751 Tons	28,172 Tons
Annual NOx Savings	59.4 Tons	39.3 Tons

Source: DOE, "Combined Heat and Power: A Clean Energy Solution, August 2012

4. Industrial CHP/WHR facilities are a major capital investment versus the alternative, and the payback time usually does not compete well with other capital projects.

For example, as illustrated below, the capital required to build a CHP unit is five times higher than simply installing a boiler and the internal rate of return (IRR) is only 10 percent, and requires a payback period of almost seven years. Most industrial capital investments require three to four year payback periods.

COMPARATIVE ECONOMICS BETWEEN CHP AND NATURAL GAS BOILERS

	New Natural Gas Boilers	New Natural Gas CHP	Comparison
Peak Boiler Capacity, MMBtu/hr input	120	120	
Peak Steam Capacity, MMBtu/hr	96	96	
Avg Steam Demand, MMBtu/hr	76.8	76.8	
Boiler Efficiency	80%	NA	
CHP Capacity, MW	NA	14	
CHP Electric Efficiency	NA	31%	
CHP Total Efficiency	NA	74%	
Annual Steam Use, MMBtu	614,400	614,400	0
Annual Steam Use, MMlbs	558.6	558.6	0
Annual Power Generation, kWh	NA	106,400,000	106,400,000
Fuel Use, MMBtu/year	768,000	1,317,786	549,786
Annual Fuel Cost	$4,608,000	$7,906,719	$3,298,719
Annual O&M Cost	$729,600	$1,687,200	$957,600
Annual Electric Savings	0	($6,703,200)	($6,703,200)
Net Annual Operating Costs	$5,337,600	$2,890,269	($2,447,331)
Steam Costs, $/MMBtu	$9.56	$5.18	($4.38)
Capital Costs	$4,200,000	$21,000,000	$16,800,000
10 Year Net Cash Flow (output)	**$65,389,602**	**$54,138,850**	($11,250,752)
Incremental CHP Payback			6.9 years
10 Year IRR - CHP vs. Gas Boiler			10%
10 Year NPV – CHP vs. Gas Boiler			$2,411,765

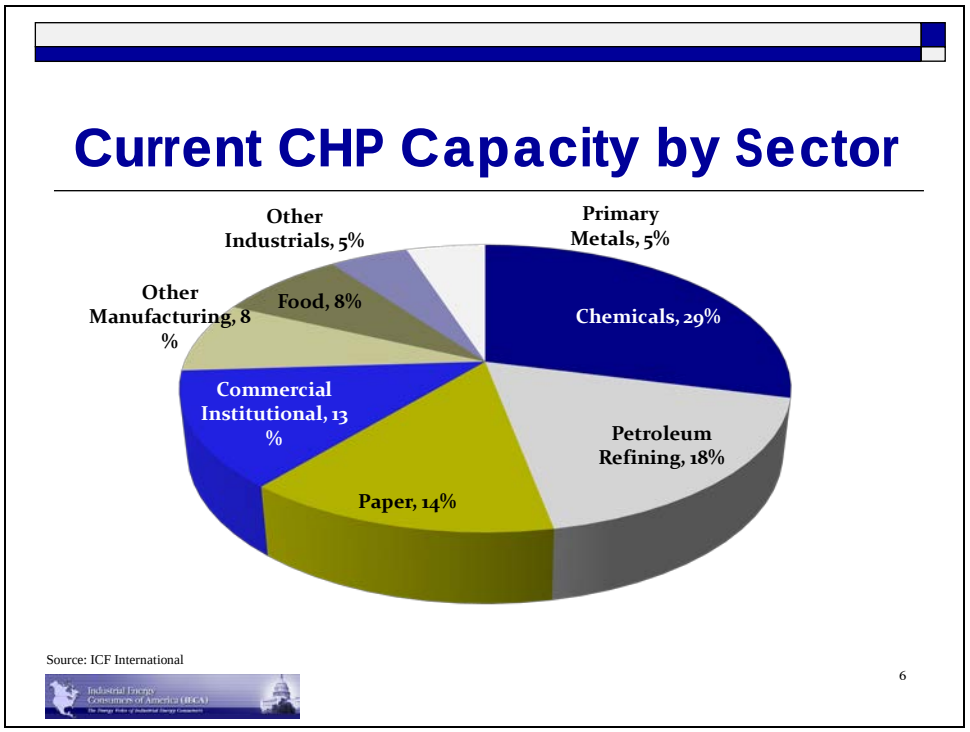
Source: ICF International

Notes: Based on 8,000 hours of operation, 7 cents per kWh electricity price, and $6/MMBtu natural gas price. CHP system cost of $1,500/kWh, O&M costs of $0.009/kWh and 31 percent electrical efficiency. CHP availability of 95 percent and portion of electric price avoided by on-site generation of 90 percent are assumed values. Natural gas boiler estimated cost of $35/MBtu input was provided by Worley Parsons. Net cash flow is based on a sum of 10-year operating costs, escalated at 3 percent annually, including capital cost as a Year 1 cost. All efficiency values and natural gas prices are expressed as higher heating values.

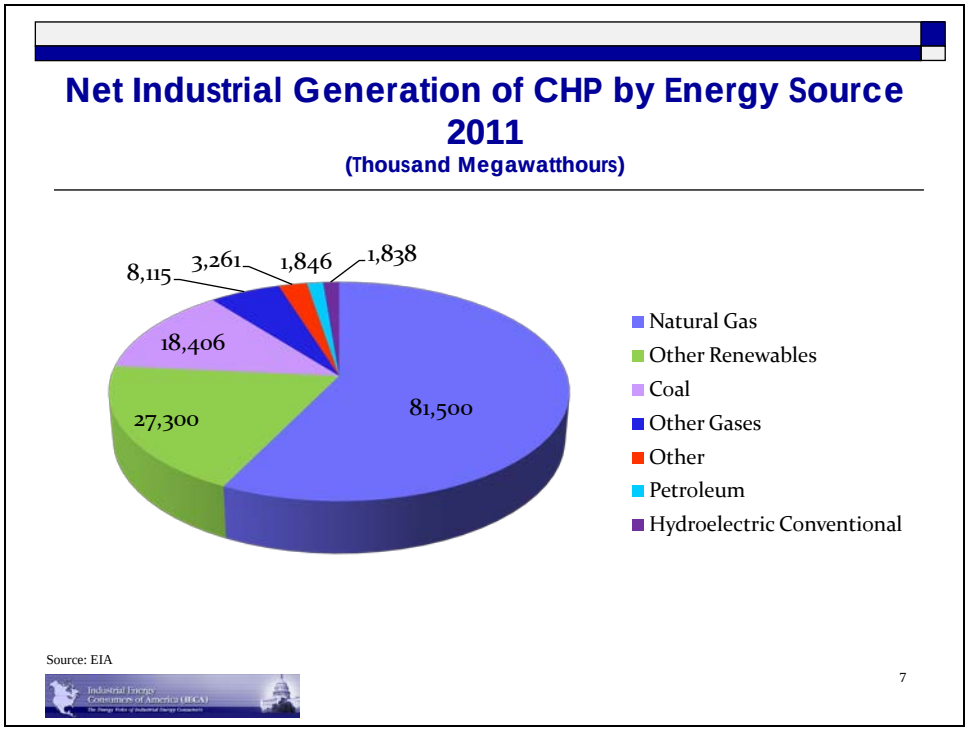
5. Since 2004, fewer new CHP/WHR facilities have been built.

The Energy Policy Act of 2005 created regulatory barriers to the construction of industrial CHP/WHR facilities. However, there is potential to expand use of industrial CHP if the regulatory and economic conditions are right.

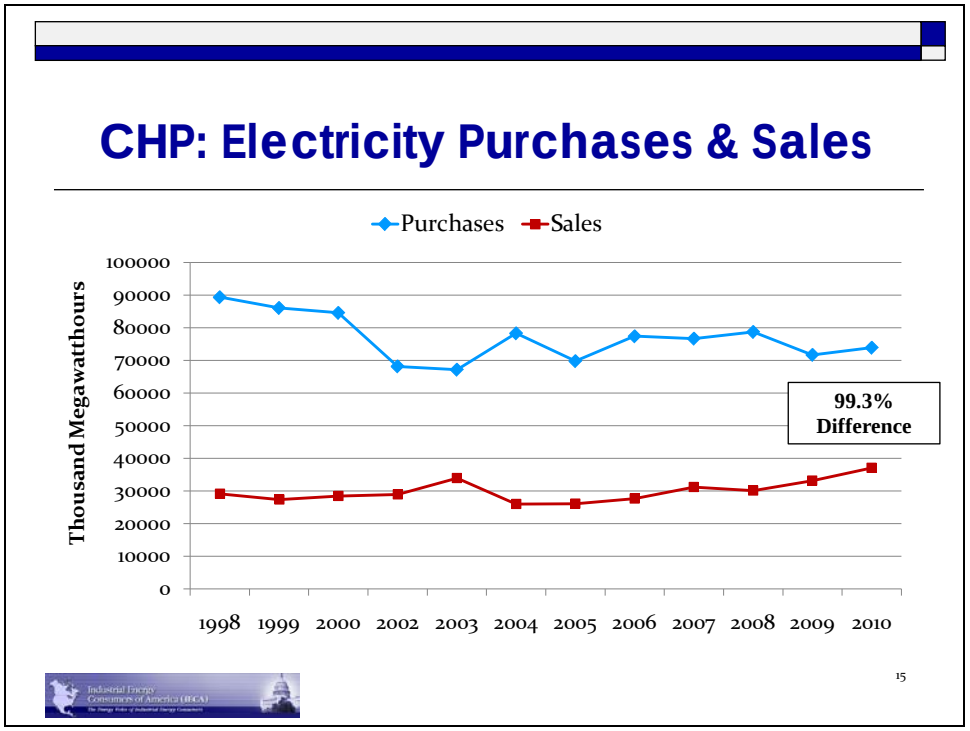
6. Industrial CHP/WHR energy sources are diverse, which supports reliability of the grid.



7. CHP/WHR capacity of 127,000 megawatt hours is about 9 percent of U.S. electricity capacity.



8. Industrial CHP/WHR capacity is underutilized.



9. CHP/WHR provides superior GHG reductions versus wind and solar.

CHP Value Proposition

CHP vs. Solar

Metric	CHP (1 MW)	Solar Photovoltaic (1 MW)
Annual Capacity Factor	85%	18%
Annual Electricity	7,446 MWh	1,577 MWh
Annual Useful Heat	8,273 MWh	None
Annual Energy Savings	33,633 MMBtu	15,475 MMBtu
Footprint Required	1,500 sq ft	100,000 sq ft
Annual CO_2 Offset	8,739 tons	1,280 tons
Annual CO_2 Produced	4,300 tons	0
Annual CO_2 Saving	3,739 tons	1,280 tons
Savings over life of plant ($)	$4.5 million	$2.1 million
Capital Costs ($)	$2.4 million	$4.6 million
Carbon Abatement Costs ($/ton)	-$28	$98

Source: ICF International

CHP Value Proposition

CHP vs. Wind

Metric	CHP (10 MW)	Wind (10 MW)
Annual Capacity Factor	85%	34%
Annual Electricity	74,446 MWh	29,784 MWh
Annual Useful Heat	103,417 MWh	None
Footprint Required	6,000 sq ft	76,000 sq ft
Capital Cost	$20 million	$24.4 million
Cost of Power	7.6 ¢/kWh	7.5 ¢/kWh
Annual Energy Savings	316,218 MMBtu	306,871 MMBtu
Annual CO_2 Savings	42,506 tons	27,546 tons
Annual NOx Savings	87.8 tons	36.4 tons

Source: ICF International

Thank you for the opportunity to provide preliminary input. EITE industries are an important stakeholder, and we welcome the opportunity to work with EPA to help ensure that existing and new CHP/WHR facilities are rewarded and not harmed by the GHG rule. We look forward to meeting with you on this important issue.

Sincerely,

Paul N. Cicio
President