COMBINED
HEAT AND POWER
ALLIANCE

Comments on the Section 45Y Electricity Production Credit and Section 48E Clean Electricity Investment Credit from the Combined Heat and Power Alliance

Submitted Electronically

Internal Revenue Service
CC: PA:01:PR (REG–119283–23),
Room 5203,
P.O. Box 7604, Ben Franklin Station,
Washington, DC 20044

RE: Combined Heat and Power Alliance Comments on REG–119283–23

Introduction

The Combined Heat and Power Alliance ("CHP Alliance" or "CHPA") is the leading national voice for the deployment of combined heat and power ("CHP"). We are a diverse coalition of business, labor, contractor, non-profit organizations, and educational institutions united in educating the public about how CHP and waste heat to power technologies can reduce emissions, improve business competitiveness, and reduce energy costs, while enhancing the grid and overall reliability.

The CHP Alliance welcomes the opportunity to comment on the Notice of Proposed Rulemaking (REG–119283–23) and to

a) share comments on emissions accounting methods for the greenhouse gas (GHG) emissions of CHP facilities,
b) address specific questions about CHP raised by the proposed rule, and
c) comment on other key matters of interest identified by our members, including waste energy recovery property and hydrogen energy storage property.

The CHP Alliance believes the proposed rule needs fundamental redirection. As currently constituted with its GHG lifecycle analysis (LCA) focused solely on fuel inputs, the proposed rule:

- Risks eliminating any combustion and gasification resources from qualification for the Section 45Y tax credit, even if they achieve significant emission reductions compared to the electricity grid currently or in the coming decades. Without a comparison to the baseline emissions, almost no combustion or gasification processes could reach a truly zero emissions threshold; even green hydrogen would be unlikely to qualify under the

proposed rule's LCA methodology. From our interpretation of the proposed rule, the only C&G that *might* be able to qualify is a fuel like renewable natural gas (RNG) or a fuel paired with carbon capture that could result in a LCA below zero by capturing emissions that would have otherwise been released into the atmosphere. This narrow definition is inconsistent with the intent of Congress and may substantially delay achievement of the legislation's goal of rapid emission reductions in the electric sector—specifically, to reduce GHG emissions from electricity production by 75% from 2022 emissions (i.e., to reduce GHG emissions from the electricity sector to 25% of 2022's emissions). This is especially true at a time of rising electricity demand.

- Discriminates against energy efficiency by not accounting for its proven capability to avoid electric sector emissions. By solely focusing on fuel inputs, the proposed rule fails to account for more efficient combustion, such as CHP, which Treasury's LCA method should incentivize for any combustion or gasification process and fuel. Since the proposed rule sets displaced electric generation emissions from the marginal generators that CHP displaces outside the boundaries of the LCA, adopting the proposed rule risks increasing emissions in the electricity sector by excluding the benefits that energy efficient CHP facilities provide in reducing overall GHG emissions.
- Is inappropriate for assessing emission reductions in the electricity sector. To determine the net rate of GHG emissions for combustion and gasification facilities under Section 45Y(b)(2)(B), the statute only requires "taking into account" the lifecycle greenhouse gas emissions definition in Section 211(o)(1)(H) of the Clean Air Act, which describes emissions related to stages of the production and use of fuels. The statute does not require adopting an approach to determining the net rate of GHG emissions that is solely rooted in the LCA of the Renewable Fuel Standard (RFS), which was not created for the purpose of assessing the net emissions impacts of introducing new facilities into the electricity marketplace.
- Is inconsistent with leading methodologies to assess emissions reductions in the electricity sector, such as the World Resources Institute's Greenhouse Gas Protocol and the Environmental Protection Agency's (EPA) guidance, which the private sector has used extensively for many years. Those methods assess what emissions any new combustion source would avoid or displace on the grid, a very different approach from what the proposed rule envisions.

The CHP Alliance recommends Treasury offer an option to use a "net" rate of GHG emissions, as required by Section 45Y(b)(2)(B), defined as the difference between the emissions from the qualifying facility and the emissions that would have occurred otherwise to produce the same amount of electricity and/or thermal energy. In other words, the final rule needs to fully account for the higher emission electric generation that CHP and other combustion and gasification facilities displace. Using this same "net" rate methodology, the CHP Alliance also continues to urge the Treasury Department to allow CHP units, which use renewable and decarbonized fuels such as biomass, renewable natural gas, green hydrogen, and renewable propane, to qualify for

the tax credits. These recommended accounting methods align with the GHG Protocol for Project Accounting and the EPA's analysis for the electricity sector.

This approach would increase the number of clean fuels that would qualify for the credits and would properly incentivize efficient combustion using CHP. Such an approach could *avoid up to approximately 85 million tons of carbon dioxide per year*, if CHP units are installed in the place of planned natural gas development.[1] This would notably accelerate the achievement of Congress' 45Y and 48E objective of reducing GHG emissions from the electric power sector by 75% compared to 2022 levels. And if CHP units were to replace marginal emissions from coal generation instead of planned natural gas development, the emission reduction potential from CHP would be even higher.

In its previous comments, the CHP Alliance has proposed that the Treasury Department's final rule should make natural gas-fired CHP eligible for the 45Y and 48E tax credits. The stringent requirements along with annual measurement and verification standards of the CHP Alliance's proposed approach will ensure that CHP projects will only qualify if they meet clear emission reduction standards. The Alliance's proposed approach:

- Establishes standards by region to assure a project's emission reductions by relying on CHP's high efficiency and high-capacity factors to deliver "net negative" emission reductions because it avoids emissions from dirtier generation (i.e. coal-fired or natural gas combined cycle power plants), which would otherwise be on the grid.
- Would only grant the tax credits to CHP units that are cleaner than the marginal grid emissions in each region of the country and cleaner than combined cycle natural gas plants. The marginal grid emissions rate in every region is more than twice as high as that of a 16 MW natural gas-fired CHP unit, which has an emissions rate of 515 lbs. CO_2 per MWh. The national weighted average of the regional marginal grid emissions rate is 2.8 times as high as the CHP unit.
- Delivers emission reductions faster than non-combustion resources which Treasury has already made eligible for the tax credits in the proposed rule. A 15 MW CHP system delivers the same CO_2 reduction in 8 years as a 15 MW solar photovoltaic unit does in 25 years, because of its high efficiency and capacity rate.

CHP's ability to deliver immediate emission reductions, to avoid a counterfactual scenario with much higher emissions from the electricity sector during a time of rapidly rising electricity demand, and to do so more quickly than solar and wind technologies are all the elements that Treasury should consider as it determines the GHG emissions rate methodology for CHP.

These comments further elaborate on our earlier comments by addressing methods of accounting for combustion resources and specific considerations for CHP technologies. These comments

[1] Based on internal CHPA calculations.

explain why the GHG accounting approach we propose is consistent with the legal requirements and policy objectives of Sections 45Y and 48E. In addition, these comments respond to specific questions raised in the preamble of the proposed rule where the Treasury Department and Internal Revenue Service (IRS) seek comments, as well as other matters of interest.

CHP Emissions Accounting Approach

The CHP Alliance recommends calculating the net rate of greenhouse gas ("GHG") emissions to determine the eligibility of natural gas-fired CHP facilities under Sections 45Y and 48E in comparison to the boiler and grid electricity GHG emissions the CHP facility would displace. This methodology would account for the fact that adding a CHP facility to the grid typically displaces higher emission energy resources, resulting in a "net negative" GHG emissions impact. This approach is consistent with the GHG Protocol for Project Accounting, a well-established GHG emissions accounting method, which recognizes that the efficiency of a CHP project will reduce the marginal emissions on the grid, thus reducing global net GHG emissions. The EPA has also long employed avoided emissions methodologies, including when considering the impact of new CHP facilities, in order to account for the role of energy efficiency in reducing GHG emissions. For example, EPA's resource for state and local governments on quantifying the health benefits of renewable energy and energy efficiency improvements begins with establishing a baseline emissions profile followed by quantifying expected emission reductions and provides methods for accounting for the displacement of marginal grid resources.[2]

CHP systems require less fuel to produce a given energy output, which results in lower emissions per unit of energy output. Calculating the GHG emissions savings of a CHP system requires accounting for both the thermal and electric outputs of the CHP system. Section 45Y recognizes the value of both outputs, since it allows taxpayers to claim the production tax credit for both electric and thermal output of a CHP system, and both should be considered when calculating GHG emissions rates. The CHP system's thermal output displaces the GHG emissions from thermal energy generated using a boiler or other equipment, and the power outputs typically displace emissions from grid electricity. To quantify the GHG emissions savings of a CHP system, the emissions from the CHP system are subtracted from the fuel use that would normally occur without the system in place—normally generating heat from an onsite boiler and using power from offsite generation powering the grid.[3] To the extent the CHP facility generates fewer

[2] Environmental Protection Agency. November 8, 2023. *Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy: A Guide For State and Local Governments*. https://www.epa.gov/statelocalenergy/quantifying-multiple-benefits-energy-efficiency-and-renewable-energy-guide-state

[3] See U.S. Environmental Protection Agency, Combined Heat and Power Partnership. June 2021. *Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems.* *https://www.epa.gov/sites/default/files/2015-07/documents/fuel_and_carbon_dioxide_emissions_savings_calculation_methodology_for_combined_heat_and_power_systems.pdf*

emissions than separate heat and power generation, the *net* emissions impact of adding a CHP system into the electric grid is less than zero.

Determining the avoided electricity emissions resulting from CHP facilities is best achieved by referencing marginal GHG emission rates for electric generation. Electricity from CHP typically displaces utility-delivered electricity from the regional power grid mix of generation plants. Because of this, marginal emissions rates are the most representative option when considering displacement caused by distributed energy resources (DERs), like CHP. The installation of DERs reduces grid demand, which lowers the need for marginal grid resources serving incremental customer loads. The resources that are scaled back or avoided when grid demand is reduced tend to be fossil generating resources.[4] The marginal generators in most regions of the U.S. tend to be fossil peaking plants, which tend to emit higher rates of NO_x and other pollutants and tend to be located near lower-income communities.[5] EPA created the Avoided Emissions and generaRation Tool (AVERT) to estimate marginal emissions rates associated with U.S. grid regions. Using marginal emissions, such as from EPA's AVERT, avoids significantly underestimating the potential emission reductions impacts from DER.[6]

To determine the net rate of GHG emissions, the final rule should incorporate more than the proposed fuel-based LCA methods. The CHP Alliance's March 25, 2024 letter offering supplemental comments on Notice 2022-49 proposed that CHP projects would need to continue demonstrating they are operating at or below a standard avoided emissions rate, which is the lower of: (1) 750 lbs. CO_2 per MWh (the CO_2 emissions of a typical combined cycle natural gas power plant); or (2) the regional marginal emissions rate as reported by the EPA's AVERT which was in place the year the construction of the facility began. Under this approach, the "alternative fate" of the natural gas fuel is considered not in the sense of an electric generation versus no/other use scenario, but as an efficient versus inefficient use of the feedstock to generate useful electric and/or thermal energy. Likewise, the performance baselines against which CHP facilities should be judged are relative to the emissions from combined cycle gas facilities and the marginal GHG emissions rates in the region where the CHP facility is located.

For example, the onsite power provided by a typical industrial natural gas-fired CHP unit operating at a net electric emission rate of 515.3 lbs. CO_2/MWh[7] would, in most regions of the

[4] See U.S. Environmental Protection Agency, Combined Heat and Power Partnership. April 2022. "EPA Analysis: How CHP Reduces Greenhouse Gas Emissions on a Cleaner Grid." p. 5.

[5] See Seth Mullendore. Sept. 7, 2023. "Peaker Power Plant Data Show Persistent Economic and Racial Inequities." https://www.cleanegroup.org/peaker-power-plant-data-show-persistent-economic-and-racial-inequities/

[6] See U.S. Environmental Protection Agency, Combined Heat and Power Partnership. April 2022. "EPA Analysis: How CHP Reduces Greenhouse Gas Emissions on a Cleaner Grid." p. 5.

[7] CHP net electric emissions based on 16MW GT & fired HRSG system offsetting 82% efficient NG packaged boilers. Unfired power to heat ratio of 0.794, overall efficiency (including fired steam) of 78.7%. The net emissions rate of 515.3 lbs. CO_2/MWh is calculated from the additional fuel needed to operate the CHP compared to packaged boilers, approximately 550,000 MMBtu/year, multiplied by the CO_2 emissions factor for natural gas, 116.9 lbs. CO_2/MWh, and divided by the net electrical production of the CHP, approximately 125,000 MWh.

country, displace marginal grid power generated by a natural gas combined cycle (NGCC) power plant with emissions of 865.9 lbs. CO_2/MWh[8], delivering a net rate of emissions of -397.2 lbs. CO_2/MWh including the elimination of transmission and distribution losses for the displaced grid power (the table below shows specific steps in this calculation). As noted above, if the marginal generating resource being displaced was instead to be coal (which is not impossible given unpredictable global events and natural gas prices), the net emissions from replacing coal with a natural gas-fired CHP unit would be of an even higher magnitude, given the very high emissions factor of coal which can exceed 2,000 lbs. CO_2/MWh.[9]

Table 1: CHP Emissions Rate Calculations Example

Example natural gas-fired CHP emissions calculations	
Emission rate of natural gas-fired CHP unit	515.3 lbs. CO_2/MWh
Emission rate of NGCC power plant	865.9 lbs. CO_2/MWh
Average U.S. grid transmission & distribution losses (eGRID 2022)	5.1%
Amount of grid NGCC generation that 1 MWh of CHP can displace	1.0537 MWh
Emissions from grid NGCC generation that 1 MWh of CHP can displace	1.057 * 865.9 lbs. CO_2/MWh = 912.5 lbs. CO_2/MWh
Net emissions from use of natural gas-fired CHP instead of grid NGCC generation	CHP 515.3 – Grid NGCC 912.5 = -397.2 lbs. CO_2/MWh

EPA analysis of smaller natural gas-fueled CHP systems ranging between 100 kW and 7.5 MW also achieve emission reductions relative to the U.S. Average Uniform EE AVERT Factor. The EPA analysis also showed the same sized CHP systems provide emission reductions even relative to cleaner grids in California[10] — where renewable energy penetration is high — when operating at the 60% or better efficiency as required under Sections 45Y and 48E. Close to real time, locational marginal emissions data is becoming widely available to enable accurate and timely verification of emissions savings from such projects on an hourly basis. While the examples above are based on combustion-based CO_2 emissions factors, the approach can also be applied using LCA GHG values, as long as that LCA is applied to both the CHP and marginal grid power outputs.

[8] NGCC emissions based on 369 plants in eGRID 2022 indicated to be combined cycle, NG fuel, non-CHP. Overall efficiency is 46.8%.

[9] See U.S. Energy Information Administration, "How much carbon dioxide is produced per kilowatthour of U.S. electricity generation?". https://www.eia.gov/tools/faqs/faq.php?id=74&t=11.

[10] U.S. Environmental Protection Agency, Combined Heat and Power Partnership. April 2022. "EPA Analysis: How CHP Reduces Greenhouse Gas Emissions on a Cleaner Grid."

For natural gas-fired CHP to qualify for credits under Section 48E and 45Y, the project must demonstrate that it will achieve a net emissions rate less than or equal to 0 lbs. CO_2/MWh after factoring in reductions in grid emissions, however, in no case shall a CHP qualify if the emissions rate of the facility, before accounting for grid reductions, is greater than 750 lbs. CO_2/MWh.[11]

Figure 1: Calculating the Net GHG Emissions from CHP

How to Calculate CHP Net Emissions Rate	
Grid Emission Rate	
Natural Gas Combined Cycle Plant Emissions	750.0 lbs CO2 / MWh
Transmission & Distribution Losses	+40.3 lbs CO2 / MWh
Total Grid Emissions Rate	790.3 lbs CO2 / MWh
CHP Net Emissions Rate	
CHP Unit Emissions Rate	515.0 lbs CO2 / MWh
Total Grid Emissions Rate	-790.3 lbs CO2 / MWh
CHP Net Emissions Rate	-275.3 lbs CO2 / MWh

As the grid's overall emissions continue to decline, new CHP projects will need to meet ever lower emission standards to qualify for tax credits. For a CHP facility to qualify for the tax credit, CHP projects would need to continue to demonstrate they are meeting or beating the standard for avoided grid emissions. Specifically, their annual net electric emissions average must be less than or equal to the lower of (1) 750 lbs. CO_2/MWh or (2) the marginal emissions rate as reported by the EPA's AVERT that was in place the year construction of the facility began. The CHP industry has made great strides in manufacturing equipment that is able to operate using a variety of renewable fuels such as renewable natural gas (RNG), biogas, biomass, and renewable propane, as well as hydrogen. As the country's marginal emission rates come down, CHP has a pathway to achieve additional emission reductions as these fuels become more widely available.

[11] 750 lbs. CO_2/MWh is the emissions rate for current state of the art natural gas combined cycle generating units (the most efficient central station natural gas-fueled generation technology) per DOE's Annual Energy Outlook assumptions

Table 2: EPA's AVERT Regional Marginal Emissions Rates[12]

Avoided CO2 Rate (lb. per MWh)	
	Uniform EE
National Weighted Average	1,429
California	1,037
Carolinas	1,511
Central	1,740
Florida	1,044
Mid-Atlantic	1,363
Midwest	1,712
New England	1,065
New York	1,048
Northwest	1,604
Rocky Mountains	1,840
Southeast	1,446
Southwest	1,342
Tennessee	1,338
Texas	1,294

For each calendar year, all hourly CHP net electric emissions should be tracked and reported for hours the CHP operates to produce an annual average in lbs. CO_2 per MWh. CHP owners who have filed for the Section 48E Investment Tax Credit (ITC) will be required to report their emissions using this methodology within 90 days of the end of each operating year. Any CHP that received an ITC but does not meet the 750 lbs. CO_2/MWh ceiling or the avoided emissions rate for the region in place, will be subject to recapture in accordance with the IRS's five-year recapture provision.

For CHP owners who choose to file for the Section 45Y Production Tax Credit (PTC), this credit must be filed for each year within 90 days of the end of a calendar year following the unit's commercial operation. To qualify for the PTC payment, the CHP net emissions annual average must be less than or equal to the lower of (1) the marginal emissions rate published by AVERT for the region within which the CHP operates or (2) 750 lbs. CO_2/MWh.

Finally, with regards to methodology, it is worth noting that any approach that the Treasury takes that requires use of long-run future marginal emissions projections could be prohibitively challenging or problematically inaccurate. The sustainable engineering and environmental consulting firm Stantec reviewed the accuracy of recent emissions projections for CHPA, and when comparing actual carbon emissions from the U.S. electricity sector to the previously

[12] AVERT 2023: https://www.epa.gov/avert/download-avert

predicted carbon emissions for that year, they found that longer-term projections were subject to accuracy concerns. While projections within two years of the forecast were generally within 90% accuracy, projections longer than two years from the forecast were generally below 90% accuracy.[13] Long-term electricity sector emissions projections are subject to significant uncertainty, and the electricity sector can be influenced by any number of unexpected factors, including global affairs, new policies, new technology development, and political and market behavior. For these reasons, CHPA does not recommend an approach that requires long-run electricity grid projections and instead recommends use of the most recently available marginal grid emissions rate.

The Proposed Approach is Legally Consistent with Section 45Y

This section of the CHPA's comments was developed by Crowe LLP, a global accounting, consulting, and technology leader that brings expertise and a commitment to integrity, objectivity, and independence. With over 35 years of experience in clean and traditional energy sectors, Crowe is well-versed in the industry's evolution and technical challenges. Crowe was engaged to provide tax law insights on the Proposed Regulations under Sections 45Y and 48E as sought by the CHPA, contributing to the discourse on including natural gas-fueled CHP systems within the IRC §§ 45Y and 48E tax credit provisions.

As the Treasury and IRS work to implement the Inflation Reduction Act (IRA), we respectfully urge that the approach maximizes the emission reduction potential of natural gas-fueled CHP systems. The CHP Alliance's findings and input from various stakeholders, including businesses, contractors, non-profit organizations, and educational institutions, highlight the significant role of CHP in reducing emissions, meeting renewable thermal energy demand, and enhancing energy efficiency—all key to adhering to the IRA's clean energy objectives.

It is the view of the CHP Alliance that the provisions under Section 45Y (and thus Section 48E) were intended to be more inclusive of other energy technologies to achieve the overall objective of reducing GHG emissions in the production of electricity. The CHP Alliance asserts that it was the intent of Congress to expand the type of property that would qualify for the clean electricity production credit to include CHP property, as Section 45Y(g)(2) provides special rules that apply to that type of property.

Senator Ron Wyden, Chairman of the Senate Finance Committee, was widely seen as a driving force behind pushing the Inflation Reduction Act through the Senate. Through several comments he made during the lead up to the passing of the bill, it is clear his intention was to champion all emissions reductions in a technology neutral manner.

[13] Internal analysis provided to CHPA by Stantec. Based on U.S. Energy Information Administration: see https://www.eia.gov/outlooks/aeo/data/browser/#/?id=62-AEO2023&sourcekey=0 for forecast data and https://www.eia.gov/environment/emissions/carbon/ for actual data.

We have included below a few examples which indicate his intentions clearly:

> Senator Ron Wyden quoted in a press release from his Senate office, August 7, 2022:
>
> *For the first time, the tax code is going to reward emissions reductions, and encourage the development of new clean energy technologies as soon as they come online. No longer will Congress need to legislate technology by technology, making it easier to innovate and bring new technologies to market.*
>
> Senator Ron Wyden quoted in a press release from his Senate office, August 7, 2022:
>
> *We turned to emissions-based, technology-neutral tax incentives, and spent nearly a decade preparing this bill. My lodestar has been achieving the greatest emissions and cost-savings possible with 50 votes. That's why the Inflation Reduction Act's clean energy tax package is about 90 percent of the Clean Energy for America Act that the Senate Finance Committee approved in May 2021.*[14]

These comments from the Chairman of the Senate Finance Committee clearly support technology neutral technologies. This would support the inclusion of CHP under Section 45Y and Section 48E given their impact on reducing GHG emissions. Consideration should be given to providing special rules for C&G (Combustion & Gasification) Facilities to meet the net zero emissions requirement and qualify for the electricity production tax credit.

CHP Alliance's position begins with the definition of a Qualified Facility under § 1.45Y-2(a) *Qualified Facility*, indicating that:

> *For purposes of the § 45Y credit, the term qualified facility means a facility owned by the taxpayer that meets the following requirements:*
>
> *(1) The facility is used for the generation of electricity,*
>
> *(2) The facility is placed in service after December 31, 2024, and*
>
> *(3) The facility has a greenhouse gas emissions rate of not greater than zero (as determined under rules provided in §1.45Y-5).*

We focus on the GHG emissions rate outlined above in item (3) and how to establish a reasonable and appropriate methodology for fuel combustion and gasification systems.

[14] Senator Ron Wyden senate office press release, August 7, 2022. https://www.wyden.senate.gov/news/press-releases/wyden-clean-energy-prescription-drug-pricing-legislation-passes-senate

Regarding the definition of a Qualified Facility under § 1.45Y-2(a), the relevant proposed section of the regulations in § 1.45Y-5(d)(1) *Determining a GHG emissions rate for C&G (Combustion & Gasification) Facilities*, states:

> *Greenhouse gas emissions rates for C&G Facilities must be determined by a lifecycle analysis (LCA) that complies with this paragraph (d) and paragraph (e) of this section. The greenhouse gas emissions rate for a C&G Facility equals the* ***net rate*** *of greenhouse gases emitted into the atmosphere by such facility (taking into account lifecycle greenhouse gas emissions, as described in § 211(o)(1)(H) of the Clean Air Act) in the production of electricity, expressed as grams of CO2e per kWh.*

and § 1.48E-5(d) *C&G Facilities*, states:

> *The rules provided in §1.45Y-5(d) apply for purposes of determining greenhouse gas emissions rates for C&G Facilities for purposes of § 48E and this section.*

Furthermore, the definition of "lifecycle greenhouse gas emissions" as described in § 211(o)(1)(H) of the Clean Air Act states:

> *The aggregate quantity of greenhouse gas emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes), as determined by the [EPA] Administrator, related to the full fuel lifecycle, including all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.*

It is important to note that Section 45Y of the IRA requires the determination of the "net rate of greenhouse gases" the facility emits into the atmosphere and does not require conducting a lifecycle analysis as prescribed under § 211(o)(1)(H) of the Clean Air Act to determine whether the aggregate emissions of the fuel the facility uses are less than zero. The determination of a "net rate of greenhouse gases" for a facility requires consideration of an appropriate alternative approach, because the lifecycle analysis described in § 211(o)(1)(H) only addresses aggregate fuel emissions and is incapable of determining the net GHG emissions of an electric generating facility, such as a CHP unit.

The CHP Alliance also points out the use of the language "taking into account" from IRA Section 45Y(b)(2)(B) referencing the definition of lifecycle greenhouse gas emissions from § 211(o)(1)(H) of the Clean Air Act. If the IRS reads this language as mandatory "shall" language, then the interpretation may limit the qualification of natural gas-fueled CHP systems from the benefits of tax credits available in §§ 45Y and 48E. The CHP Alliance disagrees with this interpretation and advocates the IRS should read "taking into account" as taxpayers "may" take

the definition of lifecycle GHG emissions methodology from the Clean Air Act into account, but there is flexibility to accept a reasonable, appropriate alternative calculation of "net rate of greenhouse gases emitted."

There are multiple examples of mandatory "shall" language in the IRC statutes that specifically require an action or deference to other statutes in the federal register. We've included several examples of such language below, which are instructive to the obligatory usage of the word "shall":

> § 45(b)(6)(A) *In General,* under the heading *Increased Credit Amount for Qualified Facilities:*
>
> *In the case of any qualified facility which satisfies the requirements of subparagraph (B), the amount of the credit determined under subsection (a) (determined after the application of paragraphs (1) through (5) and without regard to this paragraph)* ***shall*** *be equal to such amount multiplied by 5.*
>
> § 45(b)(7)(A) *In General,* under the heading *Prevailing Wage Requirements:*
>
> *The requirements described in this subparagraph with respect to any qualified facility are that the taxpayer shall ensure that any laborers and mechanics employed by the taxpayer or any contractor or subcontractor in—*
>
> > *45(b)(7)(A)(i)*
> > *The construction of such facility, and*
> >
> > *45(b)(7)(A)(ii)*
> > *With respect to any taxable year, for any portion of such taxable year which is within the period described in subsection (a)(2)(A)(ii), the alteration or repair of such facility,* ***shall*** *be paid wages at rates not less than the prevailing rates for construction, alteration, or repair of a similar character in the locality in which such facility is located as most recently determined by the Secretary of Labor, in accordance with subchapter IV of chapter 31 of title 40, United States Code. For purposes of determining an increased credit amount under paragraph (6)(A) for a taxable year, the requirement under clause (ii) is applied to such taxable year in which the alteration or repair of the qualified facility occurs.*
>
> § 45(b)(8)(A)(i) *Percentage of Total Labor Hours*, under the heading *Apprenticeship Requirements:*
>
> *Taxpayers* ***shall*** *ensure that, with respect to the construction of any qualified facility, not less than the applicable percentage of the total labor hours of the construction, alteration,*

*or repair work (including such work performed by any contractor or subcontractor) with respect to such facility **shall**, subject to subparagraph (B), be performed by qualified apprentices.*

§ 48(a)(8)(A) *In General*, under the heading *Interconnection Property*:

*For purposes of determining the credit under subsection (a), energy property **shall** include amounts paid or incurred by the taxpayer for qualified interconnection property in connection with the installation of energy property (as defined in paragraph (3)) which has a maximum net output of not greater than 5 megawatts (as measured in alternating current), to provide for the transmission or distribution of the electricity produced or stored by such property, and which are properly chargeable to the capital account of the taxpayer.*

§ 48(a)(12)(A) *In General*, under the heading *Domestic Content Bonus Credit Amount*:

*In the case of any energy project which satisfies the requirement under subparagraph (B), for purposes of applying paragraph (2) with respect to such property, the energy percentage **shall** be increased by the applicable credit rate increase.*

§ 48(a)(14)(A) *In General*, under the heading *Increase in Credit Rate for Energy Communities:*

*In the case of any energy project that is placed in service within an energy community (as defined in section 45(b)(11)(B), as applied by substituting "energy project" for "qualified facility" each place it appears), for purposes of applying paragraph (2) with respect to energy property which is part of such project, the energy percentage **shall** be increased by the applicable credit rate increase.*

Furthermore, there are several instances in IRA Sections 45V and 45Z where Congress mandated the emissions methodologies the IRS must use through "shall" language. If the intention of Congress was to require the IRS to strictly adhere to the definition of lifecycle GHG emissions from § 211(o)(1)(H) of the Clean Air Act for purposes of Sections 45Y and 48E, they would have consistently applied the "shall" language.

We've included these pertinent examples of such language below, which are instructive to the obligatory usage of the word "shall":

> § 45V(c)(1)(B) *GREET Model*, under the heading *Lifecycle Greenhouse Gas Emissions:*
>
> *The term "lifecycle greenhouse gas emissions" **shall** only include emissions through the point of production (well-to-gate), as determined under the most recent Greenhouse gases, Regulated Emissions, and Energy use in Transportation model (commonly referred to as the "GREET model") developed by Argonne National Laboratory, or a successor model (as determined by the Secretary).*
>
> § 45Z(b)(1)(B)(ii) *Non-Aviation Fuel*, under the heading *Establishment of Emissions Rate:*
>
> *In the case of any transportation fuel which is not a sustainable aviation fuel, the lifecycle greenhouse gas emissions of such fuel **shall** be based on the most recent determinations under the Greenhouse gases, Regulated Emissions, and Energy use in Transportation model developed by Argonne National Laboratory, or a successor model (as determined by the Secretary).*
>
> § 45Z(b)(1)(B)(iii) *Aviation Fuel*, under the heading *Establishment of Emissions Rate:*
>
> *In the case of any transportation fuel which is a sustainable aviation fuel, the lifecycle greenhouse gas emissions of such fuel **shall** be determined in accordance with—*
>
> *45Z(b)(1)(B)(iii)(I) —*
> *the most recent Carbon Offsetting and Reduction Scheme for International Aviation which has been adopted by the International Civil Aviation Organization with the agreement of the United States, or*
>
> *45Z(b)(1)(B)(iii)(II) —*
> *any similar methodology which satisfies the criteria under section 211(o)(1)(H) of the Clean Air Act (42 U.S.C. 7545(o)(1)(H)), as in effect on the date of enactment of this section.*

These many examples of IRC statutes indicate where the intent was to require action or specific direction for taxpayers by using "shall" in the language. These examples are directly relevant as they come from IRC Sections 45 and 48 for energy property. Furthermore, it is well established that the word "shall" indicates a mandatory intent, as decided in United States v. Myers, 106 F.3d 936, 941 (10th Cir. 1997). It is the standard government legal statutory construction to utilize the word "shall" if and only if the statute requires obligatory adherence. The intentional usage of "taking into account" in reference to the Clean Air Act's definition of lifecycle

greenhouse gas emissions under § 45Y(b)(2)(B) does not imply the same strict meaning as the wording from the statutes above, where the word "shall" was incorporated. It provides latitude for the IRS to accept a reasonable calculation of the net rate of GHG emissions specific to natural gas-fueled CHP.

With the latitude that the "taking into account" language provides, the IRS does not have to rely upon the definition of lifecycle GHG emissions stated in the Clean Air Act. This latitude is furthered by the proposed § 1.45Y-5(d)(2)(vii), which states that the lifecycle analysis may consider alternative fates and account for avoided emissions as they relate to Combustion and Gasification facilities. Under the proposed regulations, alternative fate means "a set of informed assumptions (for example, production processes, material outcomes, market-mediated effects) used to estimate the emissions from the use of each feedstock were it not for the feedstock's new use due to the implementation of policy (that is, to produce electricity)," and avoided emissions means "the estimated emissions associated with the feedstock, including the feedstock's production and use, that would have occurred in the alternative fate (if such feedstock had not been diverted for electricity production) but are instead avoided with the feedstock's use for electricity production." While these proposed regulations attempt to narrow the definitions of alternative fates and avoided emissions, the IRS may utilize its latitude to establish the components of the lifecycle analysis and does not require strict adherence to § 211(o)(1)(H) of the Clean Air Act. Including local or regional electric grid emissions as avoided emissions would incentivize significantly greater investment in CHP systems and reduce net GHG emissions.

The recent United States Supreme Court decision made in the *Loper Bright Enterprises v. Raimondo*[15] case to overturn general Chevron deference to federal agencies in the interpretation of ambiguous law must also be considered when assessing the appropriate methodology for calculating a net rate of GHG emissions. This decision resulted in the courts no longer giving up their interpretive authority of ambiguous statutes and instead asserts that "statutes, no matter how impenetrable, do – in fact, must – have a single, best meaning. That is the whole point of having written statutes; every statute's meaning is fixed at the time of enactment." Future courts will need to use this reasoning to apply general statutory interpretation to the statutes under the Sections 45Y and 48E. Therefore, the IRS's final regulations related to these statutes should utilize the "best meaning" when considering the definition of the "net rate of greenhouse gas emissions" as it relates to Combustion and Gasification facilities and the overall quantification methodology for greenhouse gas emissions.

Accordingly, the CHP Alliance's proposal included in this comment letter represents an appropriate alternative method for quantifying GHG emissions where the technical feasibility of calculating net GHG emissions for natural gas-fueled CHP systems is grounded in established methodologies and the potential for these systems to displace higher-emission sources on the grid. The CHP Alliance's proposed methodology is consistent with the World Resources

[15] *Loper Bright Enterprises* v. *Raimondo*, 603 U. S. ___ (2024)

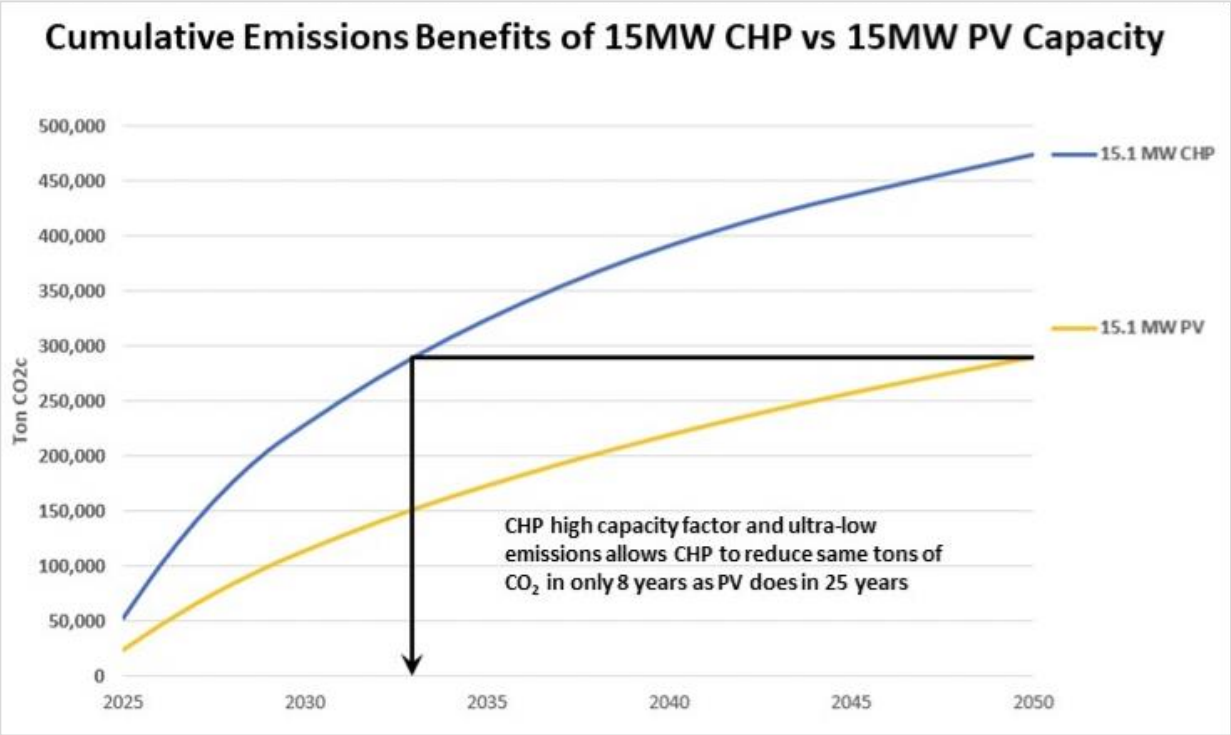
Institute's Greenhouse Gas Protocol and the EPA's guidance. Past EPA guidance has included the employment of avoided emissions methodologies when considering the impact of new CHP facilities in order to account for the GHG emissions reductions due to the role of energy efficiency. The analysis must begin with establishing a baseline emissions profile followed by quantifying expected emission reductions and providing methods for accounting for the displacement of marginal grid resources in order to account for energy efficiency improvements. This approach acknowledges that CHP systems can lead to a "net negative" GHG emissions impact, provided the IRS allows for a reasonable calculation methodology to determine the "net rate of greenhouse gases" emitted by the facility. The IRS has the legal latitude to allow for the CHP Alliance's methodology because it need only "take into account" § 211(o)(1)(H) of the Clean Air Act. Because this section of the Clean Air Act does not sufficiently address electrical generation property, it is consistent to follow the World Resources Institute's Greenhouse Gas Protocol and the EPA's guidance on electrical generation.

Reaching Tax Policy Objectives Amid Energy Demand Growth

Incentivizing accelerated CHP deployment advances the goal of these tax credits to reduce GHG emissions from the electric power sector to 25% of 2022 levels. Senator Wyden anticipated the Inflation Reduction Act would achieve an approximately 70% reduction in emissions over the next decade.[16] CHP systems installed through 2035 and operating through 2050 are expected to produce a net reduction in GHG emissions by reducing demand for marginal grid resources. For example, the high efficiency and high annual capacity factor of a 15 MW CHP system using natural gas can eliminate the same amount of GHG emissions in eight years as a zero-carbon solar photovoltaic system of the same capacity can eliminate in 25 years (see Figure 1). Note that Figure 1 shows curved rather than linear data, because avoided emissions are based on the National Renewable Energy Lab (NREL) Cambium long-run marginal electricity sector emissions dataset which changes over time.

[16] Ron Wyden. Aug. 6, 2022. "Wyden Delivers Floor Speech in Support of the Inflation Reduction Act." [2022-08-06] Wyden Delivers Floor Speech in Support of the Inflation Reduction Act | The United States Senate Committee on Finance and Office of Senator Ron Wyden. Aug. 7, 2022. "Wyden Clean Energy, Prescription Drug Pricing Legislation Passes as Part of the Inflation Reduction Act. Wyden Clean Energy, Prescription Drug Pricing Legislation Passes Senate as Part of Inflation Reduction Act | U.S. Senator Ron Wyden of Oregon

Figure 2: Emission Reduction Comparison of CHP and PV[17]



More broadly, if 10 GW of CHP units were deployed in the coming years *instead of already planned new natural gas generation*, it could avoid approximately 13.1 million tons of CO_2 per year. This is, of course, in addition to the approximately 200 million tons of CO_2 per year that are already reduced due to currently installed CHP. Table 2, below, shows the potential avoided emissions and their percentage of power sector emissions that could be realized by installing CHP instead of the approximately 65 GW of new natural gas-fired generation that has been recently announced or is in development or construction.[18]

[17] Prepared by Sterling Energy Group, LLC. Net CHP emissions rate of 515 lbs./MWh, based on industrial CHP with fired HRSG offsetting 82% efficient packaged boiler with overall efficiency of 78.7% HHV at a 95% capacity factor, and PV at a 27% capacity factor. Avoided electricity grid emissions are based on the NREL Cambium 2023 Mid Case, SRMER (see https://www.nrel.gov/analysis/cambium.html).

[18] Based on internal CHPA calculations.

Table 3: Potential Future Avoided GHG Emissions from CHP

Capacity (MW)	% of Planned New Natural Gas Capacity	Tons/year of CO_2 emissions avoided	% of 2022 Power Sector Emissions
10,000	15.5%	13,100,000	0.7%
32,314	50%	42,500,000	2.4%
64,627	100%	85,000,000	4.8%

The United States is beginning to see growing demand for energy driven by sectors where CHP is well-positioned to provide energy services below marginal electric grid emissions levels.[19] The North American Electric Reliability Corporation (NERC) reports: "Electricity peak demand and net energy growth rates in North America are increasing more rapidly than at any point in the past three decades." In addition, NERC's energy growth forecasts over their 10-year assessment period are higher than any point in the past decade.[20] Despite increasing numbers of transmission projects in planning and development, the United States will continue to face near-term electric system capacity constraints amid growing demand. NERC reports: "Siting and permitting challenges continue to inflict delays on transmission expansion planning."[21] The findings from expert discussions reported from the EFI Foundation's recent workshop indicate widespread belief among informed electric market actors that recent projections likely underestimate the load growth in the next five years. In addition, the report indicates grid planners are looking to bring new natural gas power plants online and extend the lives of coal-fired units online in the near-term to meet this demand.[22]

CHP offers an efficient and deployable, but underutilized, energy solution for growing U.S. industries, which might otherwise turn to higher emission alternatives without tax incentives. The DOE and EPA have long recognized the potential for CHP technologies to meet data center needs with fewer emissions.[23] Even before the potential growth in data centers to support artificial intelligence, the Energy Department estimated a technical potential to deploy 985 MW

[19] NYTimes. March 14, 2024. *A New Surge in Power Use Is Threatening U.S. Climate Goals.* https://www.nytimes.com/interactive/2024/03/13/climate/electric-power-climate-change.html.

[20] North American Electric Reliability Corporation. December 2023. *2023 Long-Term Reliability Assessment.* p. 33. https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2023.pdf

[21] Ibid. p. 35.

[22] Energy Futures Initiative Foundation. April 9, 2024. *Managing Unprecedented Electricity Demand Growth on the Path to Net Zero Emissions.* https://efifoundation.org/wp-content/uploads/sites/3/2024/04/Load-growth-April-9-2024.pdf

[23] See Ken Darrow and Bruce Hedman. March 2009. *Opportunities for Combined Heat and Power in Data Centers.* (Prepared for Oak Ridge National Laboratory). https://www.energy.gov/eere/amo/articles/opportunities-combined-heat-and-power-data-centers-march-2009. and U.S. Environmental Protection Agency. August 2007. *The Role of Distributed Generation and Combined Heat and Power (CHP) Systems in Data Centers.* https://www.epa.gov/sites/default/files/2015-07/documents/the_role_of_distributed_generation_and_combined_heat_and_power_chp_systems_in_data_centers.pdf

of CHP capacity at data centers—compared to only 28 MW of existing capacity.[24] Growing energy demand, corporate climate commitments, and energy supply constraints are finally pushing more data center operators to seriously consider CHP as an option for their operations. The availability of the tax credit will be a crucial determinant for data center operators and developers considering CHP. As the United States has begun to reconsider its assumptions around supply chain resilience for critical industries, many manufacturing industries are working to grow their operations, which requires more energy. CHP has a strong track record supporting a variety of U.S. manufacturing industries including chemicals, petroleum products, food, pulp and paper, primary metals, lumber, and other industries.[25] As older CHP facilities are retired, having tax credits available would encourage current CHP hosts to repower those facilities with newer, more efficient CHP technologies that are capable of using cleaner fuels.

Deploying CHP also supports the deployment of other clean energy resources by reducing the need for new transmission lines and enabling microgrids. CHP and other DER technologies can help avoid or defer the need for investments in additional transmission and generation resources by dispersing demand for grid electricity and serving as a non-wires solution for meeting rising grid demand. DERs also help relieve congestion issues and avoid transmission line losses.[26]

CHP units provide reliable power to communities in microgrids—sometimes in concert with other clean energy generation and storage technologies. CHP facilities are found in 37% of U.S. microgrids in service.[27] Microgrids enable multiple sources of electric generation technology, including CHP, solar, wind, and energy storage, while also lessening the load on transmission lines and allowing for more renewables to come online amidst challenging interconnection queues. In order to capitalize on the opportunity to use CHP in concert with other technologies, the Department of Energy has transitioned the CHP Technical Assistance Partnerships to the Onsite Energy Program. These efforts not only reduce GHG emissions but also strengthen local power grids and critical community services against climate-related risks such as stronger storms. Allowing more pathways for qualified CHP facilities will help enable more DERs and microgrids, which can help reach the IRA's Section 45Y emission reduction target more rapidly and also strengthen energy resiliency.

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[24] U.S. Department of Energy. March 2016. *Combined Heat and Power (CHP) Technical Potential in the United States.* p. 25. https://www.energy.gov/sites/prod/files/2016/04/f30/CHP%20Technical%20Potential%20Study%203-31-2016%20Final.pdf

[25] See Combined Heat and Power Alliance. October 2020. "Combined Heat and Power (CHP) and American Manufacturing." https://chpalliance.org/wp-content/uploads/2020/10/CHP-Manufacturing-in-America-Factsheet.pdf

[26] See Gridworks, Gridlab. August 2018. *The Role of Distributed Energy Resources in Today's Grid Transition.* https://gridlab.org/wp-content/uploads/2022/10/GridLab_RoleOfDER_online.pdf

[27] Combined Heat and Power Alliance. January 2021. *Combined Heat and Power and a Changing Climate: Reducing Emissions and Improving Resilience.*

Section 48E Recapture Provision

The CHP Alliance respectfully requests that the final rule clarify that the recapture provision under Section 48E(g) applies to the net rate of GHG emissions as described under Section 45Y(b)(2)(B) in the case of combustion and gasification facilities.

Upstream Emissions and Lifecycle Analysis

When considering the upstream emissions associated with natural gas-fired CHP facilities, the CHP Alliance believes the LCA should allow credit for lower emission gas supplies. Methane emissions vary substantially across companies and geographies, so estimates of the GHG emissions from natural gas should be allowed to use assumptions for project-specific leakage rates to encourage suppliers to reduce methane leakages.

Responses to CHP-Specific Questions from the Treasury Department and IRS

Question: "(1) To determine the amount of greenhouse gases emitted by a CHP facility, the LCA must include the greenhouse gas emissions emitted by that facility in the production of useful thermal energy. For purposes of the LCA of a CHP facility, what principles should govern how emissions from the production of useful thermal energy are calculated?" (p. 47807)

> The CHP Alliance and its predecessor organization, the Alliance for Industrial Efficiency, have long advocated for the use of "output-based standards" of emission calculation for CHP facilities in order to ensure proper credit for energy efficiency.[28] EPA recognizes output based emissions standards, particularly in the case of CHP units, as a valid approach to evaluating emissions impacts that accounts for energy efficiency.[29] Under output-based standards, compliance is based on emissions per unit of energy generated (i.e. pounds per megawatt-hour), rather than the amount of fuel used. By contrast, an "input-based" standard sets emission levels based on the amount of fuel used (e.g., pounds of pollutant per million Btu). Measurements based on input-based standards incentivize inefficiency in the U.S. energy system. CHP systems fare better under output-

[28] See David Gardiner. May 9, 2014. Letter to the U.S. Environmental Protection Agency. Re: Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, EPA–HQ–OAR–2013–0495, 79 Fed. Reg. 1430 (January 8, 2014). https://www.dgardiner.com/wp-content/uploads/2014/05/Alliance-for-Industrial-Efficiency_Comments-on-111b_5_9_2014.pdf

[29] See U.S. Environmental Protection Agency, Combined Heat and Power Partnership. August 2014. *Output-Based Regulations: A Handbook for Air Regulators.* https://www.epa.gov/sites/default/files/2015-07/documents/output-based_regulations_a_handbook_for_air_regulators.pdf

based emissions accounting because CHP produces two useful energy outputs (thermal energy and electricity). The output-based approach credits both of these products, rewarding generators with the highest output of megawatt hours per output of pollution.

When constructing an output-based measurement, we recommend that 100% of the thermal output be credited. Section 45Y does not place any limits on providing credit for the thermal production from CHP units,[30] so in calculating emissions it follows that 100% of the thermal output also be incorporated.

Question: "(2) What principles should be used to determine the baseline for useful thermal energy production by a CHP facility? For example, should the baseline for the heat production for a CHP facility be an alternative form of thermal energy production such as natural gas boilers, such that emissions from the production of thermal energy from the boilers would be subtracted from the facility's emissions? Alternatively, is it more appropriate if the baseline for a CHP facility is no thermal energy production by the facility?" (p. 47807)

Analysis of the emission reduction impact of adding CHP systems assumes displacement of on-site thermal energy from natural gas boilers. Net on-site emissions are derived by subtracting boiler emissions from the CHP emissions. For example, an EPA analysis assumed the CHP systems would displace GHG emissions equivalent to on-site thermal energy from natural gas boilers with 80% efficiency.[31] Consider an industrial site that consumes 2,100,000 MMBtu of natural gas per year to generate steam using packaged boilers and purchases 180,000 MWh of electrical power for their process. The boilers generate approximately 122,800 tons of CO_2 emissions on site. If they install a natural gas-fired combustion turbine based CHP plant to meet the same thermal and electrical demands, then the natural gas consumption at the site increases by 550,000 MMBtu/year, which increases on site emissions to 155,000 tons of CO_2. This is a net increase of 32,200 tons of CO_2. However, because the CHP generates 125,000 MWh/year, their electrical purchases decrease from 180,000 to 55,000 MWh. The emissions intensity of the electricity generated by the CHP unit is the net increase in emissions (32,000 tons of CO_2) divided by the electrical generation (125,000 MWh), which is about 515.3 lbs. CO_2/MWh. As noted previously, this net rate of emissions compares favorably to a combined cycle plant that might otherwise serve the facility through purchased electricity and saves almost 400 lbs. CO_2/MWh.

[30] Assumes the definitional minimum of 20% for thermal and electric production is satisfied.

[31] Environmental Protection Agency, Combined Heat and Power Partnership. April 2022. "EPA Analysis: How CHP Reduces Greenhouse Gas Emissions on a Cleaner Grid."

Table 4: CHP Emissions Rate Calculation Example with Thermal Energy

Facility emissions prior to CHP unit	
Natural gas consumption (boilers)	2,100,000 MMBtu
Onsite emissions from natural gas (boilers)	122,800 tons CO_2
Purchased electricity	180,000 MWh
Facility emissions after installing CHP unit	
Natural gas consumption (CHP unit)	2,100,000 + 550,000 = 2,650,000 MMBtu
Onsite emissions from natural gas (CHP unit)	155,000 tons CO_2
Electricity generated by CHP unit	125,000 MWh
Purchased electricity	180,000 - 125,000 = 55,000 MWh
Emissions Rate	
Net increase in onsite emissions	155,000 - 122,800 = 32,200 tons CO_2
Net emissions rate of the electricity generated by the CHP unit	32,200 tons CO_2 * (2000 lbs./ton) / 125,000 MWh = 515 lbs. CO_2/MWh

Question: "(3) There may be scenarios in which a facility generates electricity that is used (a) by the electricity generation facility in the production of electricity or (b) in the production of fuel ultimately consumed by that facility to generate electricity. For example, a wastewater treatment plant's post processing materials are digested to produce biogas; this biogas is then used in a CHP facility that produces electricity; this electricity is consumed by the wastewater treatment facility. In such scenarios, what principles should be used to determine how emissions from the consumption of electricity in the production of electricity or in the production of the fuel consumed by the facility are calculated? Similarly, there may be scenarios in which a facility self-consumes thermal energy that it produces, for example, if a facility generates steam as a byproduct that is used (a) by the facility to turn a turbine that generates electricity or (b) to clean or compress fuel ultimately consumed by that facility to generate electricity. What principles should be used be used to determine emissions from the self-consumption of thermal energy by the CHP facility?"

CHP provides a valuable thermal and electric energy system that supports the primary mission of wastewater treatment plants, which is to safely and efficiently process wastewater and prevent sewer overflow events that contaminate waterways and drinking water supplies. Wastewater treatment plants require high temperature heat to support anaerobic digestion required to treat wastewater and support the production of useful byproducts such as class A biosolids used as fertilizer. Without CHP, wastewater treatment plants rely on less efficient, higher emissions methods of generating heat, such as the electric grid or fossil fuel boilers. In addition, the electricity generated using CHP facilities protects water treatment facilities from unexpected power outages—preventing

dangerous sewage spills. Without CHP, wastewater facilities rely on less reliable and higher emission grid electricity, and even dirtier backup generation when the grid fails.[32]

The CHP Alliance members are not aware of any circumstances under which a wastewater treatment facility, or any other CHP facility host, would consume electricity from the CHP facility for the sole or primary purpose of generating electricity. Facilities hosting CHP facilities use the electricity and thermal energy onsite to meet the needs of the host facility or export that energy via the electric grid or district energy system respectively. To the extent such facilities support the production of useful biogas from the wastewater stream that can be used for future fuel for the CHP system, the IRS should consider that the primary purpose of the CHP energy is to treat wastewater and not craft rules that would discourage productive use of any byproducts as fuel. The CHP Alliance does not believe that such rules would fulfill a useful purpose, as they would not prevent any perverse or undesirable outcome. In fact, the opposite is true, since wastewater facilities not using wastewater byproducts as fuel would instead have to rely on imported fuels and grid electricity while wastefully flaring the biogas.

With respect to CHP energy used to produce or condition fuels, the CHP Alliance also believes that CHP facilities should be judged on their own emissions merits rather than any assessment of the purposes for which the useful energy is used. It would be inappropriate to disqualify energy generated from a CHP facility used for these purposes, while allowing tax credits for other facilities, such as solar or wind energy, used to support fuel conditioning, extraction, or similar activities. In addition, any electricity generated as a result of recovering waste heat or pressure changes from any industrial process should be recognized as non-combustion and zero-emission for the reasons described in our comments on waste heat recovery property below.

CHP Facilities Using Clean and Renewable Fuels & Multi-Technology DERs

As the marginal grid emissions decline to lower levels with the deployment of more clean energy resources incentivized by these tax credits, the CHP industry's innovations and greater availability of clean fuels can continue supporting GHG emission reductions. As the CHP Alliance detailed in our comments to the IRS regarding Notice 2022-49,[33] the Treasury Department and IRS should give high priority to recognizing CHP facilities using clean fuels

[32] See Combined Heat and Power Alliance. February 2020. "Combined Heat and Power (CHP) Potential in Wastewater Treatment Plants." https://chpalliance.org/wp-content/uploads/2020/02/CHP-Factsheet_WastewaterTreatment_FINAL2.pdf

[33] See Combined Heat and Power Alliance. November 4, 2022. "Combined Heat and Power Alliance Comments on Notice 2022-49." https://chpalliance.org/wp-content/uploads/2019/08/CHP-Alliance-Comments-for-Notice-2022-49_11.04.22.pdf

(e.g., biomass, biogas, renewable natural gas (RNG), renewable propane, and hydrogen) as eligible facilities when assembling lists of eligible technologies. With these clean fuels in short supply, CHP facilities offer an opportunity to use them most efficiently.

Waste Energy Recovery Property

The CHP Alliance respectfully requests the Treasury Department and IRS recognize all waste energy recovery property (WERP) facilities as categorically non-combustion and gasification facilities—consistent with previous findings of the Department of Energy and National Laboratories.[34] WERP facilities are inherently zero-emission, as they generate electricity solely from waste energy using a heat engine or equivalent technology, producing no new emissions and often displacing electricity produced using carbon-based fuels. By utilizing wasted heat or pressure energy, WERP technologies produce electricity, which offsets onsite consumption or exports to the electric grid without creating any new emissions. WERP technologies do not meet the definition of a combustion or gasification facility, regardless of the underlying process that produces the wasted heat or pressure energy, because the purpose of that underlying process is not electricity generation. Recognizing all WERP facilities as non-combustion and gasification in the final rule avoids imposing an unnecessary burden of proof for technologies which have already been demonstrated to produce no greenhouse gas emissions.

Hydrogen Energy Storage Property

The proposed rule appears to apply the general definition of energy storage property concerning the production of electricity to the definition of "hydrogen energy storage property." However, under Section 48, the statute's distinction with respect to hydrogen "(or, in the case of hydrogen, which stores energy)" does suggest a broader range of energy uses than conversion to electricity alone. This would also be consistent with the intent for Sections 45Y and 48E to support the production of thermal and electric energy outputs from CHP systems. The Clean Energy for America Act had proposed a definition of energy storage solely focused on storage for electricity. However, in subsequent versions of the energy storage credit in the Build Back Better Act and Inflation Reduction Act, the distinct parenthetical language on hydrogen storage for "energy" was added. The CHP Alliance respectfully requests that the final rule, and related guidance with respect to Section 48, clarify that hydrogen energy storage property where hydrogen is stored for the purpose of producing electric and thermal energy is qualified under Section 48 and 48E as eligible energy storage property.

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[34] See Department of Energy, Office of Energy Efficiency and Renewable Energy. April 2021. "Waste Heat to Power." https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/Waste_Heat_to_Power_Fact_Sheet.pdf and Amelia Elson, Rick Tidball, and Anne Hampson. March 1, 2015. *Waste Heat to Power Market Assessment*. https://info.ornl.gov/sites/publications/files/Pub52953.pdf

Respectfully,

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