

CCDC

California Clean DG Coalition

Comments from the California Clean DG Coalition Regarding May 1 ARB Staff Workshop on CHP and Cap & Trade

The California Clean DG Coalition ("CCDC") appreciates the opportunity to provide these comments regarding the California Air Resources Board's ("ARB") Staff Workshop on May 1, 2013 to discuss adjustments to the Cap and Trade Program for Universities and Combined Heat and Power ("CHP"). CCDC is an ad hoc group interested in promoting the ability of distributed generation ("DG") system manufacturers, distributors, marketers and investors, and electric customers, to deploy DG. Its members represent a variety of DG technologies including combined heat and power ("CHP"), renewables, gas turbines, microturbines, reciprocating engines, and storage. CCDC is currently comprised of Capstone Turbine Corporation, Caterpillar, Inc., Cummins Inc., DE Solutions, Inc., GE Energy, Holt of California, NRG Energy, Penn Power Systems, Peterson Power Systems, Recycled Energy Development, SDP Energy, Solar Turbines, Inc., and Tecogen, Inc.

ARB proposes transitional assistance for Universities that have taken early actions and provided leadership to reduce GHG emissions through investments in efficiency and renewable energy. For Universities that are subject to the Cap and Trade Program, most or all of which have an operational CHP system, allowances equal to their three year historical fuel use baseline (excluding electricity exports) would be provided for 2013 and decline in proportion to the cap through 2020. CCDC supports this action and recommends that eligibility be broadened to include other institutional and private entities who have demonstrated similar early action and leadership behavior.

ARB staff also proposes that the Cap and Trade first compliance period threshold for entities with CHP should be based on either steam emissions or electricity emissions exceeding 25,000 MTCO₂e, which keeps entities from triggering Cap and Trade only because of efficient CHP. We agree with the proposed methodology. However, CCDC recommends that the offsetting boiler efficiency assumption be changed from 85% to 80% which is a more realistic value for present day facilities serving large steam loads. We also recommend that the words "useful heat" be substituted for "steam," as steam is not always the heat transfer medium in a CHP system.

The "but for" CHP patch applies to an estimated 11 entities and does not go beyond the 1st compliance period. ARB stated that in the 2nd compliance period, all CHP facilities, whether through Cap and Trade or through a carbon adder in the price of natural gas, will be on the same economic playing field and Cap and Trade will improve the incentive for CHP. CCDC disagrees with this statement. ARB recognizes that efficient CHP displaces less efficient wholesale fossil generation sources from the California grid. The ARB emissions benchmark is

0.431 MTCO₂e/MWh.¹ However, because the grid is not comprised of 100% natural gas power, the true economic linkage between the carbon cost adder in natural gas and the carbon cost adder in electricity does not exist.

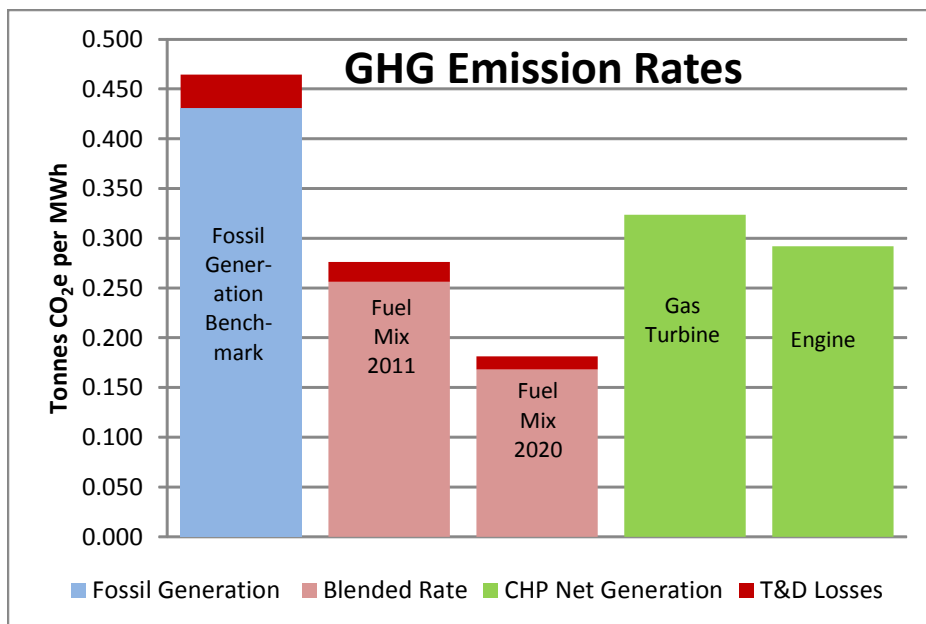
According to the California Energy Commission, fossil power generation comprised 43.8% of the State's energy mix in 2011.² And of the 13.7% unspecified fuel sources, we assumed that ½ was natural gas and the other ½ was large hydro. As shown in the figure to the right, this mix corresponds to a blended delivered emission rate of 0.256 MTCO₂e/MWh, 41% less than the true benchmark. Based on an estimate of the fuel mix in 2020, the blended emission rate is 61% less than the true benchmark.

CA Fuel Mix	2011 CEC	2020 Estimate	Emission Benchmark MTCO ₂ /MWh	
Natural Gas	35.6%	34.0%	0.431	
Nuclear	15.3%	15.0%		
Eligible Renewables	14.2%	33.0%		
Coal	8.2%	0.0%	0.892	
Large Hydro	13.0%	13.0%		
Unspecified	13.7%	10.0%		
1/2 Natural Gas	6.9%	5.0%	0.431	
1/2 Large Hydro	6.9%	5.0%		
Total	100.0%	100.0%		
Fossil Total	50.7%	39.0%		
Natural Gas Total	42.5%	39.0%		
CA Fuel Mix 2011			0.256	Electric Price to CO2 Benefit Ratio
CA Fuel Mix 2020			0.168	59%

The chart below compares the emission impact of these various emission weighting approaches against two typical CHP systems. As shown, CHP's GHG emission benefit goes from a positive when compared against the ARB electricity benchmark to a negative when compared against the whole fuel mix comprising California's wholesale electric grid.

¹ This corresponds with a 42% efficient natural gas plant.

² http://energyalmanac.ca.gov/electricity/total_system_power.html; unspecified power are generally out of state short term power purchases from plants that do not have a contract with a California utility. Northwest spot purchases are served by surplus hydro and gas-fired power plants. The Southwest spot market purchases are primarily combined cycle power.



The table below compares the economic value of CHP to the State at allowance costs of \$10 and \$40 per tonne against the economic cost to CHP users when allowance costs for fossil generation are blended in to the electricity price along with non-fossil sources. As shown, the difference between the cost and the value exceeds 1.0 cent/kWh in 2020 if allowance costs hit \$40/tonne.

CO2 Cost \$/tonne	Value \$/kWh		2011 Cost \$/kWh		2020 Cost \$/kWh		Cost-Value 2020	
	Turbine	Engine	Turbine	Engine	Turbine	Engine	Turbine \$/kWh	Engine \$/kWh
10	\$0.0014	\$0.0017	\$0.0005	\$0.0002	\$0.0014	\$0.0011	\$0.0028	\$0.0028
40	\$0.0056	\$0.0069	\$0.0019	\$0.0006	\$0.0057	\$0.0044	\$0.0113	\$0.0113

Forcing CHP to absorb an economic penalty because of Cap and Trade sends the wrong market signal to existing CHP adopters who expected a positive benefit from AB 32 and to prospective CHP adopters who will question the “green” in CHP and face uncertain economic consequences as the future price for allowances are unknown. CCDC views this as an inadvertent yet fundamental flaw in the treatment of CHP in California’s Cap and Trade Program. Many prospective CHP projects are now stalled in the development pipeline due to this dilemma. If this problem is not corrected, we are concerned that ARB’s reliance on CHP as a GHG reduction measure, including estimates for future CHP, will be seriously compromised. In addition, CHP provides additional environmental, efficiency, reliability, economic and jobs benefits that will be lost if CHP adopters risk penalties for their investment. These benefits are reason enough to ensure CHP investment is encouraged.

The State needs to true-up the effective carbon price adder paid for on-site CHP natural gas to mirror CHP's CO₂ benefit relative to CARB's electric benchmark. Possible solutions to this important issue could include the following:

- Payments to CHP owners from Cap and Trade Auction proceeds or the Natural Gas Allowance Revenue Fund
- Issuance of Allowances for CHP fuel

CCDC urges CARB and, as appropriate the CPUC, to fix this inequity as soon as possible so that CHP can live up to its GHG mitigation potential.

Sincerely,

James Halloran
Chairman CCDC