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August 11, 2008

Mr. Chuck Shulock
Office of Climate Change
Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Comments of the Energy Producers and Users Coalition and the Cogeneration Association of California on CARB Draft Scoping Plan and Appendices

Dear Mr. Shulock,

The Energy Producers and Users Coalition and the Cogeneration Association of California (EPUC/CAC) submit these comments as owners and operators of combined heat and power (CHP) facilities in California. Members of these coalitions own and operate roughly 3000 MW of existing CHP generation in California, located primarily at refineries and enhanced oil recovery operations. Several coalition members are also considering either replacement of existing CHP facilities with higher-efficiency plants or the installation of new facilities to meet growing thermal demand. In the interest of maintaining existing facilities and further developing CHP capacity, EPUC/CAC offer the following comments on CARB's Draft Scoping Plan Appendices issued on July 22, 2008:

1. CHP, as recognized by the Draft Scoping Plan and Appendices, represents an important tool that will further the state's efforts to curb GHG;
2. Draft Scoping Plan and Appendices appropriately recognize that existing market barriers preclude full realization of CHP benefits
3. CARB Draft Scoping Plan and Appendices' recommendation to establish a utility portfolio standard for CHP power would facilitate power sales needed to encourage CHP;
4. Criticism of CHP lacks support; and
5. CARB should support some form of CHP mandate for utility procurement to facilitate full realization of CHP benefits; an industrial site's decision whether to install CHP, however, should be voluntary in light of the broad implications of CHP installation.

Each of these points is discussed below.

CHP, as Recognized By Draft Scoping Plan Appendices, Represents an Important Tool To Help the State Achieve GHG Targets

The CARB Draft Scoping Plan appendices appropriately recognize the value of CHP resources to further the state's objectives in curbing greenhouse gas emissions by 6.8 $MMtCO_2$ by 2020.[1] As the appendices observe "*combustion-based power plants do not convert all of their available energy into electricity and typically lose more than half as excess heat*." CHP therefore can displace conventional generation and in the process reduce the fuel that would otherwise be consumed by the separate generation of heat and power.[2] In addition, due to CHP's proximity to load, on-site use reduces transmission losses that would otherwise occur. In short, CHP presents an important generation option that promotes fuel efficiency and GHG reductions. For this reason, AB 32 policy would not be complete without CHP.

This support for CHP is echoed in the most recent CPUC recommendations to CARB on electricity sector point of regulation issues:

> *We want to avoid unintended negative consequences for CHP, which may be a valuable source of additional GHG emissions reductions in California.*[3]

Support for CHP has also been reflected by other agencies and committees that are devoted to examining environmental issues and policies:

- *ETAAC Report*: Cal EPA's ETAAC Committee efforts are directed to identifying and making recommendations regarding activities that will facilitate emissions reductions. Its report recognizes CHP's ability to "*avoid transmission bottlenecks, decrease transmission losses and provide other operational benefits*." [4] As part of its effort to identify such investments, it recommends the promotion of CHP projects that will contribute to lower GHG emissions and criteria air pollutants.[5]

- *CEC's Integrated Energy Policy Report*: The IEPR observes that CHP resources use fuel efficiently, minimize transmission and distribution line losses and will be important in the state's effort to lower GHG: *The importance of keeping this distributed generation capacity in the system is elevated by the state's need to reduce greenhouse gas emissions as part of AB 32. Combined heat and power in particular offers low greenhouse gas emissions rates for electricity generation taking advantage of fuel that is*

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1 CARB Draft Scoping Plan Appendices, at C-76.
2 CARB Draft Scoping Plan Appendices, at C-73.
3 D.08-03-018, at 10.
4 Recommendations of the Economic and Technology Advancement Advisory Committee Final Report on Technologies and Policies to Consider for Reducing Greenhouse Gas Emissions in California, at 4-4.
5 *Id.*

already being used for other purposes. The systems use waste heat for either process or electricity generation needs which results in very efficient use of fossil fuels. Large combined heat and power units appear to offer the greatest fuel efficiency of available distributed generation technologies. Because combined heat and power systems are located close to the load, transmission and distribution line losses are minimized, further reducing greenhouse gas impacts.[6]

- *CEC's Report on CHP Market Potential*: The CEC estimates that emissions savings from a high deployment of CHP resources can be as high as 9-11 $MMtCO_2$ in annual savings.[7]

- *NARUC*: NARUC's recently adopted resolution reflects several CHP benefits: "*The deployment of CHP and waste-energy recovery technologies increases generation efficiency, reduces fossil-fuel consumption, enhances generation diversity, and has the potential to improve system reliability, decrease line losses, reduce grid congestion, and reduce emissions of air pollutants and greenhouse gases . . . .*"[8]

- *Joint Energy Action Plan 2008 Update*: The EAP 2008 Update recognizes the value of CHP resources to the state's efforts to lower GHG emissions: "*In addition, new combined heat and power applications could play a large part in avoiding future greenhouse gas emissions due to the combined efficiency of the heat and power portions of the project".*[9]

Given such a wide range of support and recognition, the draft scoping plan's recommendation to increase CHP is appropriate.

Draft Scoping Plan Appendices Appropriately Recognize That Existing Market Barriers Prevent Full Realization of CHP Benefits

The CARB Draft Scoping Plan Appendices correctly observe that while "*California has supported CHP for many years, [] market barriers stand in the way of CHP reaching its full market potential*." The CEC's report on CHP market potential references some of these barriers. An understanding of all of the major barriers is necessary to facilitate the retention and increase in CHP resources. Currently, the major barriers to both operation and development of CHP in California include the following:

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6 CEC 2007 IEPR, at 209.

7 Assessment of California CHP Market and Policy Options for Increased Penetration, dated July 2005.

8 NARUC Resolution to Encourage the Use of Combined Heat and Power, including the Recycling of Waste Energy, adopted February 20, 2008.

9 Joint Agency EAP 2008 Update, at 15.

- *Limited Power Sales Opportunities:* CHP is most efficient when sized to meet thermal demand which may result in production of more power than the host facility can use. Options for sales of excess power to the grid are inadequate, discouraging development of new, efficiency-optimized CHP resources. While the CPUC is attempting to provide needed stability to CHP through its prospective QF program, the proceeding through which this is taking place (R.04-04-003/R.04-04-025) is now in its fifth year and has become extremely contentious, undermining the state's underlying efforts to promote CHP.

- *Non-bypassable Charges*: While the CPUC, in its recent proposed decision (R.06-12-013) has made clear efforts to limit non-bypassable charges (NBCs) passed on to customer generation departing load, CHP still faces separate NBCs if it seeks to further CHP development.

- *Interconnection and Grid Interface:* CHP now face more complex interconnection rules and grid interface tariffs because the CPUC has apparently ceded its jurisdiction over this process to CAISO and the Federal Energy Regulatory Commission (FERC). As a result, CHP's ability to rely on the streamlined Rule 21 interconnection process is limited.

- *GHG Regulation Costs:* Depending on the outcome of AB 32 implementation, consumers installing CHP could face increased direct responsibility for GHG compliance costs and may be unable to pass these compliance costs through.

- *Standby Service:* Changes in cost allocation principles as applied to standby service charges has, in some cases, increased the service cost on CHP.

- *Air Quality Regulations:* Existing regulations do not fully recognize CHP operating characteristics and therefore do not provide credit for the thermal output of a CHP facility. Current restrictions on obtaining credits for criteria pollutants are affecting new CHP development.

The state has made efforts to shield small CHP units from these complexities and costs but is has not addressed these barriers for larger units despite the fact that the larger facilities offer greater benefits to the state.

In order to promote the retention of CHP and development of new resources, these barriers must be addressed. If existing barriers remain, established targets cannot be fulfilled.

A Utility Portfolio Standard for CHP Power Would Facilitate Power Sales Needed to Encourage CHP

Both the CEC and CARB's discussion of CHP reveal that one major barrier to CHP development is the limited opportunities to make power sales when excess power is generated. Both also discuss the increased societal benefits that would be realized if exports are facilitated. One way to facilitate exports is to institute a portfolio standard – whether labeled an Energy Efficiency, CHP or Low Carbon Portfolio Standard -- that includes CHP, as other states have done and as the Draft Scoping Plan appendices recommend.[10]

Facilitating CHP exports of excess power will allow facilities to be sized to maximize efficiency and to provide additional T&D capacity to utilities. The CEC, in its report on CHP market potential, in fact documents the increase in market potential that would result if wholesale export is facilitated. The CEC also notes that facilitating export is particularly important because it maximizes the efficiency of a CHP facility:

> *The power export cases also result in the highest societal benefits because they result in significant energy production at higher efficiency than central station plants.*

CARB notes that facilitating power exports will allow CHP to provide more environmental benefits:

> *Encouraging power export so CHP systems are optimally sized for onsite heat loads and large enough to provide T&D capacity to utilities.*[11]

Importantly, CARB's recommendation for an increase in CHP power is informed by the CEC's moderate market access scenario.[12] That scenario relies in part on policy that facilitates wholesale generation export.[13] In short, to maximize emission reductions from CHP, these facilities must have an economically reliable repository for excess power. These facilities also need a long-term commitment for the receipt of electrical energy associated with thermal energy production to mitigate uncertainty regarding the industrial customer's ability to conduct its core business.

To encourage the appropriate sizing of CHP, it makes sense to establish a program through which utilities, the purchasers of 80% of electricity supplies in

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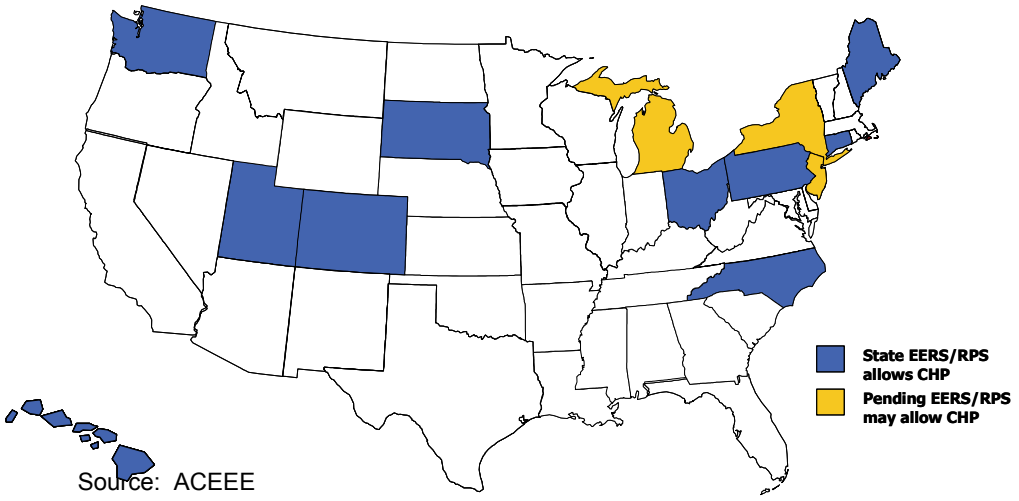
10 *See* Draft Scoping Plan Appendices, at C-75.
11 *See* Draft Scoping Plan Appendices, at C-75.
12 *See* Draft Scoping Plan Appendices, at C-74.
13 CEC's Assessment of California CHP Market and Policy Options for Increased Penetration, at xi, 2-19.

CA, procure excess CHP power.[14] In particular, sales of excess power can be facilitated through a utility portfolio standard for CHP power, as CARB recommends.[15] The adoption of a CHP portfolio standard would create the right incentive for utility procurement of CHP power. Notably, a CHP standard would promote larger CHP systems, the source of "*the majority of energy and GHG savings in the future. . . .*"[16] The American Council for an Energy-Efficient Economy (ACEEE) reports that a growing number of states are adopting energy efficiency portfolio standards (EEPS) or renewable portfolio standards (RPS), to ensure that cost-effective energy efficiency measures and renewable energy sources are used to help offset growing electricity demand. Ten states have portfolio standards that include CHP and three states – New Jersey, New York and Michigan -- have pending standards that all consider CHP. [17]

Portfolio Standards: CHP in EERS/RPS



Source: ACEEE

In addition to the possibility of some form of mandate, the form of contract and price at which a CHP sells its power to the utility also merits reexamination. CARB correctly observes that rate structures must reflect the value of electrical and environmental benefits that CHP power provides.[18] In the past, the CPUC has looked to PURPA in developing its Standard Offers and power pricing. It is not

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[14] *See* Draft Scoping Plan Appendices, at C-53 ("*Five major utilities provide about 80 percent of the electricity currently consumed in California. These utilities are: Pacific Gas and Electric Company, Southern California Edison, San Diego Gas & Electric; Los Angeles Department of Water and Power, and Sacramento Municipal Utility District*.")

[15] *See id*., at C-75.

[16] *See* Draft Scoping Plan Appendices, at C-74.

[17] Status of State CHP Policies (presentation), American Council for an Energy-Efficient Economy (ACEEE), at 12, http://www.epa.gov/chp/documents/meeting_52508_elliott.pdf.

[18] *See* Draft Scoping Plan Appendices, at C-75.

clear that this approach has lead to a reasonable program for CHP plants and therefore should be reevaluated.

Criticism of CHP Lacks Support

SCE, in its comments on the Draft Scoping Plan, raises several criticisms of CARB's recommendation to promote CHP.[19] Among other things, SCE claims that CHP have several market options to sell excess power, that incentives and waivers are already available to CHP, and that only a minority of CHP are efficient. As discussed below, SCE's comments lack support and should be disregarded.

Existing Market Opportunities For CHP Are Limited

SCE claims that CHP has market options available to it aside from the Prospective QF program though which utilities are required to purchase excess CHP power. As a preliminary matter, typically, the most efficient CHP facilities are designed to continuously serve the industrial host's thermal energy requirements while electrical energy is a "by-product" that is secondary to the thermal production. As a result, the industrial facility must be able to export any excess electrical energy to the grid in order for the industrial facility to efficiently produce the thermal energy it needs. If the industrial facility does not have a reliable and economical repository for the excess power produced by the most efficient CHP design, the industrial thermal process must be supplied in a less efficient manner. Important to the viability of an efficient CHP facility supplying thermal energy to an industrial process, therefore, is the assurance that industrial operations will not be impaired by restrictive contractual or market rules governing the sale of the excess electrical power.

Due to the operational needs of CHP, there are few if any viable "alternatives" to utility purchases of excess power. Potential alternatives, including Direct Access (DA), private transmission, participation in the CAISO markets and participation in utility requests for offers (RFOs) and bilateral negotiations all fail as reasonable alternatives as explained below.

- *DA*: In theory, DA creates additional opportunities, by offering a resource the opportunity to make a retail sale or by enhancing the number of retail providers buying in the wholesale market. Unfortunately, DA in California is currently suspended and it is not clear at this time when it may be reinstated. Even if DA is reinstated in California, it remains unclear if a single DA customer or a group of DA customers would be able to serve as a reliable purchaser of CHP excess power.

[19] SCE Comments on Draft Scoping Plan, at 24-26.

- *CAISO "markets"*: These markets are not adequate for CHP power sales. Market rules and operating protocols are too inflexible to assure the sale of some or even a majority of excess CHP power to the CAISO in a manner consistent with industrial thermal process needs. In other words, there are no assurances that the CAISO "market" will be able to reliably take the power from CHP facilities as the power is generated. The CAISO market is also, at best, a day-ahead market and therefore does not provide long-term assurances needed to support CHP project development.

- *RFOs*: Utility "all-source" RFOs are virtually unanimous in their requirement that dispatchable power be provided by the bidding resource. While these RFOs of late have technically been open to non-dispatchable CHP resources, the reality is that the utilities' selection processes favor dispatchable resources. Accordingly, no non-dispatchable CHP resources have been selected in a utility RFO.

- *Bilateral Contract*: Bilateral contract negotiations only occur at the discretion of the utility and one-year contracts provide none of the long-term assurances which a CHP facility requires for long-term investments.

In short, due to its operational requirement to supply the thermal needs of its industrial host, CHP must have a reliable purchaser of excess power that is generated as a by-product. Unless alleged alternatives are reliable and provide long-term assurances, they are not adequate to retain or encourage CHP.

Ratepayers Do Not Subsidize Larger CHP Systems

SCE claims that electricity utility customers should not be required to subsidize fossil fuel-fired CHP systems through direct incentives or through waivers.[20] To be clear, California policy has provided a number of incentives to small CHP (all less than 20 MW) but has not established similar measures to support larger CHP. In particular, small CHP has benefited over time from a number of initiatives including the following:

- Small-scale CHP, 5 MW and under, receives the benefit of a standby service waiver, while large scale projects pay the full cost of utility standby service.[21]

[20] SCE Comments on Draft Scoping Plan, at 26.

[21] Cal. P.U. Code Section 353.13(a); *see also* D.01-07-027 (ordering implementation of the standby waiver for CHP and renewable DG facilities 5 MW and under).

- Small-scale CHP, 5 MW and under, receives a waiver for up to 1 MW of departing load charges unavailable to larger scale projects.[22]

- Small-scale CHP, 5 MW and under, formerly received financial incentives under the CPUC's Self-Generation Incentive Plan;[23]

- Small-scale CHP, 20 MW and under, is eligible for the AB 1613 program that requires the utilities to purchase their energy.[24]

- Small-scale CHP offering annual energy deliveries of 131,400 MWh or less to the utility, may interconnect under simpler state-administered interconnection tariffs, while larger projects have been forced into the CAISO tariffs.[25]

As noted above, for those CHP larger than 20 MW, these incentives are not available. Any departing load charges that are not charged to large CHP is on the grounds that CHP has not caused utilities to incur these costs. SCE's assertion that the ratepayers are subsidizing CHP, therefore is misplaced and should be disregarded.

Concerns Regarding Promotion of Inefficient Topping Cycle CHP Can Be Addressed Through Use of a Double Benchmark Efficiency Standard

SCE claims, without support, that only a minority of system CHP actually are efficient.[26] While patently false, this concern as SCE notes, can be assuaged through the use of an efficiency standard.[27] To ensure that only efficient CHP is promoted consistent with AB 32 objectives, regulators can use a double benchmark efficiency standard.[28] Double benchmarking, in general, contemplates a comparison of a topping cycle CHP plant's actual emissions to the emissions that would have resulted had the same amount of electric and thermal energy been produced using stand-alone electric and heat production facilities. To derive the double benchmark, a plant's electric output is multiplied by an electric reference emissions rate, and the plant's thermal output is multiplied by a thermal

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22 D.03-04-030, at 48-49 (exempting facilities under 1 MW from the entire cost responsibility surcharge and ultra clean and low emissions CHP facilities between 1 MW and 5 MW from all cost responsibility surcharge components save the Bond Charge); *see also* D.07-05-006 (expanding the exemption from the entire cost responsibility surcharge to 1 MW of facilities sized 5 MW and under).

23 D.04-12-045.

24 Cal. P.U. Code §§2840 *et seq*.

25 D.07-09-040, at 122 ("*These new QFs shall interconnect to the utility under Rule 21*.").

26 SCE Comments on Draft Scoping Plan, at 25.

27 SCE Comments on Draft Scoping Plan, at 24-25.

28 SCE's comments reflect concern regarding the promotion of inefficient CHP. The use of a double benchmarking standard would address this concern. Where a CHP facility meets the double-benchmark standard, it is more efficient that its alternative: a separate boiler and a CCGT.

reference emissions rate. Once the benchmark is calculated, it is compared with the plant's actual emissions for the same quantity of thermal and electric energy. To the extent the plant's actual emissions are less than the benchmark emissions, a CHP has produced "primary energy savings" (PES) equal to the difference. Primary energy savings reflects an equivalent amount of GHG reduction. Use of such a standard would ensure that emission reductions take place and that CHP is more efficient than its alternative, a boiler + CCGT.[29]

The appropriate double benchmark standard should consider the emissions of an electric and thermal reference. The electric reference can vary depending upon the vintage of the electric reference generation, the fuel used, the treatment of grid losses and other factors. It is also important to note that the manufacturer's design efficiency presents a much more optimistic value than actual performance efficiencies. The thermal reference is more straightforward, with widely accepted values ranging between 75-85% HHV.[30]

To Facilitate Full Realization of CHP Benefits, CARB Should Encourage, Rather Than Mandate, CHP.

To promote emission reductions from CHP, CARB should address existing barriers to retention and development of CHP. It should not mandate investment in CHP which could, rather than promote emission reductions, undermine the underlying industrial process.

For the industrial sector, CARB's Draft Scoping Plan proposes the use of energy audits for industrial facilities with more than 0.5 $MMTCO_2E$ per year of greenhouse gas emissions.[31] It notes that it would require applicable facilities to undertake an energy efficiency audit.[32] The audit would not only identify potential measures that could reduce the facility's emissions, it would also include information about the cost of these measures.[33] Among these measures, the CARB draft scoping plan appendices observes that the installation of new CHP may be one way to reduce a facility's emissions.[34]

In refining its Scoping Plan, CARB should be clear on its intent in this section. While energy efficiency audits always make sense for industrial facilities, particularly given the high costs of energy, a formal mandate seems an unnecessary step. If CARB nonetheless mandates efficiency audits in the Scoping Plan, it must be clear about how CHP will be addressed in that process.

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29 SCE, in its comments on the Draft Scoping Plan, recommends that CARB adopt efficiency, performance, and emission standards for CHP to ensure emission reductions take place. Use of a double benchmark standard would adequately address SCE's concerns.

30 http://www.epa.gov/chp/basic/methods.html#five.

31 CARB Draft Scoping Plan, at 36.

32 Id.

33 Id.

34 Id.

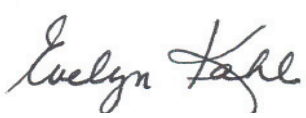
Mandating the installation of a CHP plant is unlike other efficiency measures. If a CHP plant is properly sized to meet thermal demand, the result will be excess power available for sale to the grid. Mandating CHP not only would put the industrial facility in a new line of business, electricity generation, but would place the facility at risk for the sale of the electricity products. A CHP mandate thus would go beyond the bounds of reasonableness, particularly when the clear availability of a market for the excess generation is in question. Thus, while an audit might identify CHP as a potential energy efficiency measure, the ultimate decision regarding whether to install CHP must be left to the industrial site.

As discussed above, eliminating existing barriers for CHP would significantly promote investment in these facilities. If barriers are removed, there should be no need to mandate CHP investment, and to do so could undermine the existing industrial operations.

Recommendations

EPUC/CAC applaud the informed recommendations presented by CARB in its draft scoping plan and appendices. The recommendations reflect an understanding of many of benefits of CHP and the issues faced by CHP today. EPUC/CAC request that CARB refine the Scoping Plan consistent with the foregoing recommendations and look forward to discussing these issues further.

Very truly yours,



Evelyn Kahl