



## **Combined Heat & Power in California Questions for Stakeholders**

The following questions are a request for written comments following the July 14, 2014, California Energy Commission Combined Heat and Power (CHP) Staff Workshop. The questions cover a broad range of topics. Please answer those that are within your area of knowledge or concern and mark the others as Not Applicable (NA). Responses are due by 4:00pm August 18, 2014, and should be submitted to Docket 14-CHP-1 according to the docket instructions on pages 2 and 3 of the Workshop's public notice, available at <http://www.energy.ca.gov/chp/documents/index.html>.

### **I. Market Characterization and the Benefits and Costs of Combined Heat and Power**

1. What benefits, if any, do existing small and large on-site and exporting CHP resources provide to electric utilities and the ISO?
2. What benefits/attributes do grid operators want from new CHP resources? Under what circumstances can CHP provide those characteristics?
3. Access to useful operational and economic data from utilities and CHP system owners is often restricted.
  - a. What currently unavailable types and/or sources of data would allow for more complete and accurate analysis of the benefits and costs of CHP?
  - b. How should this data be collected, obtained, and/or distributed?
4. What CHP cost studies are needed to better understand and compare CHP resources to other resources?
5. What other categories of CHP benefit and cost are relevant, and how should each be defined and/or quantified in ways that are meaningful to the system and the State?

### **II. Economic Barriers & Regulatory Challenges to Combined Heat & Power**

1. What are the most significant economic factors that contribute to the decision by a public or private developer to invest in CHP (e.g. upfront cost, ongoing operation and maintenance, electricity rates, price of natural gas, internal business decision making processes)?
2. What impacts do departing load charges have on the viability of developing new CHP resources?
  - a. How do these impacts compare to the net impacts of CHP generation on ratepayers?
  - b. What analyses and/or studies are needed to fully quantify CHP impacts?

3. Are exit fee allocations that continue indefinitely, without transition or restriction, appropriate for CHP facilities? If not, how should exit fees be allocated over time?
4. What regulatory challenges and barriers lead to new-CHP project delays or failure (e.g. interconnection process, financial incentives, contracting issues, cap and trade)? Please provide specific examples of how these challenges were, or were not, overcome.
5. What regulatory changes, if any, are needed to better balance utility interests, CHP developer interests, thermal host needs, and State GHG reduction targets?
6. A key feature of AB 1613 is that it allows for export and payment of excess electricity.
  - a. Does the current AB 1613 feed-in tariff provide enough financial support to enable individual projects to be sized and developed with appropriate technology to meet the thermal load of the host facility?
  - b. How does the availability of the feed-in tariff affect your decision to pursue a CHP project in California?
  - c. Are there any deficiencies in the current implementation of AB 1613? Please explain.
  - d. What should be done to better inform project developers about the requirements of the ISO and utility interconnection processes for electricity export?

### **III. Meeting California's CHP Goals**

1. Is there adequate economic and technical potential for CHP resources to achieve State goals set out in the Governor's Clean Energy Jobs Plan (6,500 MW of new CHP capacity by 2030) and the Air Resource Board's Scoping Plan for AB 32 (6.7 MMTCO<sub>2</sub>E annual emissions reduction by 2020)?
2. How should the State meet these goals?
3. Should the State set CHP procurement targets to address specific CHP facilities, projects, or technology types (e.g. existing efficient CHP, bottoming-cycle CHP, renewably-fueled CHP, new highly-efficient CHP)?
4. Do the eligibility requirements of existing CHP programs align with market needs? If not, what changes are needed to stimulate market participation?

### **IV. Technology Innovation to Overcome Combined Heat & Power Barriers**

1. What are new opportunities and applications for on-site and exporting CHP resources both large and small (e.g. CHP coupled with Carbon Capture Utilization and Sequestration technologies, energy storage for excess electricity, thermal storage for excess thermal energy)? How should the state encourage these technologies (e.g. bottoming-cycle/waste heat to power, use of renewable fuels, microgrids)?
2. Which technologies, systems, components, and applications should RD&D prioritize to advance the capabilities and opportunities of both small and large CHP?

## **V. Electrical Generation Unit and Reference Boiler Efficiency**

Double Benchmark accounting is a methodology for determining fuel savings when a CHP system displaces thermal and electrical energy that would have been generated separately. This method requires energy conversion efficiencies for the displaced thermal and electrical resources, usually given in the form of a reference boiler efficiency and an effective grid heat rate. Determining these efficiencies is a complex problem, and the best method for doing so remains an open question.

1. How should CHP systems be categorized, if at all, for the purpose of comparing them to separate heat and power (e.g. size, technology type, application)?
2. What method(s) should be used to determine the effective heat rate of displaced grid electricity? What key factor(s) should be considered (e.g. operational capabilities, time of day, line losses)?
3. What method(s) should be used to determine the efficiency of displaced thermal resources? What key factor(s) should be considered (e.g. thermal load size, thermal utilization level, historical equipment purchases/performance, new technologies)?
4. How can the State measure and quantify thermal utilization for the purposes of determining the GHG emission reduction benefits of CHP? Should all CHP facilities be required to meter useful thermal output and report that information to state agencies?

## **VI. Energy Commission Staff Proposed Methodology for Estimating Fuel Displacement**

1. Is the Energy Commission staff's approach to estimating fuel displacement reasonable? If not, please explain why.
2. Is the Energy Commission staff's approach to the treatment of renewable energy appropriate? If not, please explain.
3. How could the method be applied across programs so that it creates beneficial comparison without interfering with existing program-specific displacement metrics?
4. Is the use of annual heat rate values (versus seasonal values) sufficient given the purpose and scope of the method? If not, please explain and propose an alternative.
5. Is the use of a single, state-wide heat rate projection appropriate? If not, please explain and propose an alternative.
6. Is the use of two heat rates categories (peaking and load following) adequate? If not, please explain and propose an alternative.
7. Does the approach sufficiently address the issue of imported electricity? If not, please suggest ways that it could be improved.
8. Do you agree with the line loss factor used? If not, please explain and propose an alternative.
9. Do you agree with the heat rate floor used? If not, please explain and propose an alternative.