

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking To Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.

R.13-12-010  
(Filed Dec. 19, 2013)

**COMMENTS OF THE UNION OF CONCERNED SCIENTISTS ON ADDITIONAL CHP  
COMMENTS RELATED TO KEY TECHNICAL QUESTIONS FOR PARTIES IN  
RESPONSE TO DECEMBER 18<sup>TH</sup>, 2013 WORKSHOP ON PLANNING ASSUMPTIONS  
AND SCENARIOS FOR USE IN THE CPUC 2014 LONG TERM PROCUREMENT  
PLAN PROCEEDING AND THE CAISO 2014-2015 TRANSMISSION PLANNING  
PROCESS**

Laura Wisland  
Senior Energy Analyst  
Union of Concerned Scientists  
2397 Shattuck Avenue, Suite 203  
Berkeley, CA 94704  
(510) 809-1565  
Email: [lwisland@ucsusa.org](mailto:lwisland@ucsusa.org)

Jimmy Nelson, Ph.D  
Kendall Fellow  
Union of Concerned Scientists  
2397 Shattuck Avenue, Suite 203  
Berkeley, CA 94704  
(510) 809-1565  
Email: [jnelson@ucsusa.org](mailto:jnelson@ucsusa.org)

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Pursuant to the December 19, 2013 email ruling of Administrative Law Judge Gamson, the Union of Concerned Scientists (“UCS”) respectfully submit these timely comments on Key Technical Questions for Parties in Response to December 18th, 2013 Workshop on Planning Assumptions and Scenarios for Use in the CPUC 2014 Long Term Procurement Plan Proceeding (“LTPP”) and the CAISO 2014-2015 Transmission Planning Process.

**LTPP ASSUMPTIONS FOR COMBINED HEAT AND POWER**

In this proceeding, UCS also filed joint comments with the Sierra Club, which respond to Questions 1-9 of the key technical questions posed by staff in response to the December 18<sup>th</sup>, 2013 workshop on 2014 LTPP planning assumptions. These comments from UCS are intended to additionally address the Commission’s assumptions regarding combined heat and power (“CHP”) in the proposed 2014 LTPP scenarios.

Question #10: Is the forecast of incremental CHP on the demand side and the supply side reasonable for the scenarios that include those forecasts? If not, please provide an alternate forecast and justification from a public data source as needed.

In order to reduce greenhouse gas emissions enough to achieve the state's long-term 2050 emission reduction goals, California must consider how future energy investments will impact both near- and long-term emission reduction efforts. CHP has substantial cost, efficiency, and emissions benefits in the near-term (2020-2030 timeframe), but without a shift away from natural gas to low or zero-carbon fuel sources, greenhouse gas emissions from this technology could comprise an unacceptably large fraction of the state's 2050 emission reduction goals. One of the goals of the Expanded Preferred Resources scenario in the 2014 LTPP is to examine a 'combination of policies to work toward AB 32 2050 GHG goals'. UCS believes that the addition of large amounts of new CHP capacity is inconsistent with 2050 GHG goals and should not be included in the Expanded Preferred Resources / 2050 Climate Goals scenario. Furthermore, most CHP will not provide the operational flexibility necessary to integrate larger fractions of intermittent renewable energy, exacerbating the over-generation problem.

For these comments, UCS performed a back-of-the-envelope analysis in the table below to highlight the uneasy long-term intersection of greenhouse gas emissions and CHP targets. While UCS recognizes that different types of CHP have different characteristics, for simplicity we estimate fleet-average capacity factors and heat rates. These values are approximations made from the recent ICF report for the California Energy Commission and are for the purpose of illustration only. We assume that 10% of the CHP fleet has a carbon-neutral fuel source, and that the remaining 90% is powered by natural gas. The 'High Case' from 2012 ICF report on CHP would add almost 6,000 megawatts of CHP by in California 2024, a value that would almost double the current installed capacity of CHP. For the purpose of this state-wide analysis we do not distinguish between CHP within or outside of the CAISO region.

Quantity	Value
Percentage of CHP that uses natural gas as a fuel	90 percent
Future fleet-average gas CHP electricity heat rate	9,000 Btu/kWh
Natural gas carbon content	0.053 tCO <sub>2</sub> /MMBtu
Fleet-average CHP capacity factor	85 percent
Carbon emissions per year per MW online CHP	3,200 tCO <sub>2</sub> /Yr*MW
Current installed CHP capacity	8,518 MW
Approximate CHP Capacity in ICF High Case by 2024	6,000 MW
Total CHP online in 2050 (assuming no retirements)	14,518 MW
Carbon emissions from CHP in 2050	46 MtCO <sub>2</sub> /Yr
2050 California economy-wide GHG target	86 MtCO <sub>2</sub> -eq/Yr
Percentage of economy-wide 2050 GHG target from CHP	<b>54 percent</b>

UCS is concerned that if the state continues pursuing aggressive CHP goals through technologies that rely on natural gas, **in 2050 CHP alone could contribute more than half of the entire economy's greenhouse gas emission budget.**

While bioenergy, geothermal, and solar thermal could be zero carbon sources of heat for CHP, their limited potential and geographic specificity may restrict their use. Therefore, UCS suggests that additional gas-fired CHP should not be included in any scenario in the 2014 LTPP, and that it is especially important that the CPUC remove additional CHP from the Expanded Preferred Resources scenario.