



AB 1613: Waste Heat and Carbon Emissions Reduction Act Guidelines, Forms and Response to Comments

[Docket 08-WHCE-1]

**Electricity and Natural Gas
Committee Workshop**

October 12, 2009



Announcements

Facilities and Logistics

Call-in Participation

- WebEx
- Go to <http://www.energy.ca.gov/wasteheat/>
- Notices and Documents
- October 12, 2009, Committee Workshop on the Combined Heat and Power Guidelines
- **If you have difficulty joining the meeting, please call the WebEx Technical Support number at 1-866-229-3239**



In-person Participation



Waste Heat and Carbon Emissions Reduction Act (AB 1613)

- AB 1613 (Blakeslee, Chapter 713, Statutes of 2007) established the Waste Heat and Carbon Emissions Reduction Act (Act)
- The Act establishes the intent of the legislature that state policy advance the efficiency of the state's use of natural gas by utilizing excess waste heat through the use of CHP technologies.
- Through efficient utilization of waste heat, reductions in emissions of carbon dioxide and other carbon-based greenhouse gases will result.
- Also, the Act supports and encourages the development of both customer and utility owned CHP



Responsibilities of State Agencies under the Act California Public Utilities Commission by January 1, 2010

- Establish policies and procedures for purchase of excess electricity from an eligible CHP system
- Adopt rates, charges and tariffs for excess electricity purchased from an eligible CHP system
- Adopt procedures to establish a pay-as-you-save pilot program with IOUs for eligible CHP systems

California Energy Commission by January 1, 2010

- Develop and adopt Combined Heat and Power Technical Guidelines that will establish the eligibility of CHP systems for incentive programs to be developed by the CPUC and municipal utilities

California Air Resources Board

- Report by 12/31/11 on reduction in emissions of greenhouse gases resulting from the increase in CHP/recommend policies to further these goals



Objectives of Today's Workshop

Staff and Stakeholders will discuss and resolve

- Quantitative CHP System Performance Levels
- Adequacy, Necessity and Sufficiency of
 - Data Forms and Required Attachments
 - Application and Reporting Processes
 - CHP System Certification and Decertification
- Missing elements



Presentation Outline

- Draft Guidelines – Establish the Legal and Technical Requirements to obtain Certification and to qualify for an Export Tariff
- Forms – Demonstrate that CHP System will satisfy requirements as designed and as operated
- Initial Qualification; Verifying Compliance and Correcting Non-Compliance
- Response to Comments – Prelude to “Statement of Reasons Report”



Essence of Guidelines

- High fuel to useful energy conversion efficiency requirement, which implies fuel savings, which leads to GHG emission reductions
- NO_x emission standard
- Waste heat utilization
- CHP system monitoring and reporting to assure compliance



AB 1613 Requirements on CHP System Performance

In CHP System definition:

- System that produces electricity and thermal energy from a single fuel that
 - Is grid interconnected
 - Meets onsite thermal demand
 - Complies with GHG Emissions Performance Standard in Section 2843 (f)



AB 1613 Requirements on CHP System Performance

As an Eligible customer-generator

- o Generating Capacity of not more than 20 MW
- o Two way time of use meter



AB 1613 Requirements on CHP System Performance

- CHP Systems under adopted Guidelines shall
 - Reduce waste energy
 - Be sized to thermal load
 - Operate continuously, meet thermal load, optimize the efficient use of waste heat
 - Be cost effective, technically feasible, and environmentally beneficial



AB 1613 Requirements on CHP System Performance

- No de facto wholesale generation with guaranteed purchases
- Meet NO_x emissions standard of 0.07 lb/MWh
- Meet GHG EPS
- Maintain and service CHP system to meet or exceed requirements



Revisions Made to Guidelines

- $\geq 60\%$ efficiency for both Topping and Bottoming Cycles
- Greenhouse Environmental Performance Standard left at 1,100 lb/MWh
- $\geq 15\%$ minimum thermal output requirement
- Values chosen for Double benchmarking in Fuel Savings Standard
- Application for Certification and Annual Reporting Requirements specified



The Efficiency-Related Performance Requirements

- $\geq 60\%$ Fuel Energy Conversion to Useful Energy Output (In AB 1613)
- Fuel Savings Standard based on Double Benchmark (Introduced by Staff)
 - Utility generation at 7,750 Btu/kWh delivered
 - Boiler at 80%
- Greenhouse Gas Emission Performance Standard (In AB 1613)



≥60% Fuel Energy Conversion to Useful Energy Output

- Easily converted to a GHG emission level (≤ 665 lb/MWh)
- 1,100 lb/MWh corresponds to 36% efficiency
- Specifying either the Fuel Conversion Efficiency or the GHG Emission Standard (for the same fuel) effectively specifies the other



Fuel Savings Standard Based on Double Benchmark

- Easily converted to the GHG emission reduction (in pounds) based on the fuel savings from CHP compared to separate heat and power (SHP) production
- Requires specification of
 - Avoided utility emission source(s)
 - If existing, what is the fuel and heat rate for each plant displaced?
 - If new, probably natural gas, what is the heat rate?
 - Displaced boiler efficiency



Form CEC-2843

- General Information Form and Declaration
- Schedule A. Energy Inputs, Outputs, Thermal Balance and Thermal Utilization
 - Annual Forecast of Energy Flows by Month, with Documentation
 - Data submitted in Schedule A will determine most measures of compliance by automatic calculations
- Schedule NOx.
 - Emissions over operating range indicate potential for compliance during annual operation
 - Rely on local AQMD for methods, reporting



Form CEC-2843, Schedule A Attachments

- CHP and Thermal System Descriptions, Schematics, Energy Balances
- Historical (or Forecast) Electrical and Thermal Loads by Month for one year
- CHP Engineering Feasibility Study
 - Alternative Solutions and CHP System Configurations
 - Technical Feasibility, Cost Effectiveness, and Environmental Benefits



Form CEC-2843 Annual

- General Information Form and Declaration
- Annual Schedule A. Energy Inputs, Outputs, and Thermal Energy Usage
 - Measured Energy Flows measured at 15 minute intervals but reported by Month, with Documentation
 - Data in and Calculations for Annual Schedule A will determine continuing compliance
- Annual Schedule NOx.
 - Emissions over operating range indicate potential for compliance during annual operation
 - Rely on local AQMD for methods, reporting



Form CEC-2843 Annual, Schedule A, Attachments

- Mass and Heat Balance Diagram for average hourly operation
- Instrumentation Diagram for Performance Monitoring
- Data Collection Plan
- Supporting calculations



Initial CHP System Qualification

- Applicant submits Form CEC-2843 with Schedules and Attachments, including a Signed Declaration, to the Energy Commission
- Executive Director determines adequacy of Application
- Executive Director issues Certificate of Initial Compliance or Statement of Denial
 - If denied, correction and appeal rights



Verifying Compliance and Correcting Non-Compliance

- Owner/Operator submits Form CEC-2843 Annual with Schedules and Attachments, including a signed Declaration, to the Energy Commission
- Form CEC-2843 Annual is assumed to be true, but it can be challenged
- Deficiencies must be corrected within one reporting cycle



Missing Elements, Issues or Situations not Addressed?



Guideline Adoption Schedule

- April 13. E&NG Committee Workshop
- July 22. Staff Draft Guidelines posted to Docket 08-WHCE-1
- July 23. IEPR Committee Workshop on CHP
- August and September. Stakeholder Comments submitted to Docket. Informal Discussions with Stakeholders
- October 1. Revised Staff Draft Guidelines, Application and Annual Reporting Forms, Responses to Comments posted
- October 12. E&NG Committee Workshop on CHP Guidelines, Forms, and Responses to Earlier Comments
- **October 19. Comments Due. Docket 08-WHCE-1**
- November 2. Notice of Proposed Action, Committee Guidelines, Staff's "Statement of Reasons"
- December 30. Business Meeting for possible adoption



Contact Information

Linda Kelly

California Energy Commission
Electricity Supply Analysis
Division

1516 Ninth St, MS-20
Sacramento, CA 95814

lkelly@energy.state.ca.us

(916) 654-4815

Arthur J. Soinski

California Energy Commission
Electricity Supply Analysis
Division

1516 Ninth St, MS-20
Sacramento, CA 95814

asoinski@energy.state.ca.us

(916) 654-4674