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July 13, 2011

**VIA ELECTRONIC MAIL [DOCKET@ENERGY.STATE.CA.US]**

California Energy Commission
Docket Office, MS-4
Re: Docket No. 11-IEP-1A
1516 Ninth Street
Sacramento, CA 95814-5512

Re: California Energy Commission Docket No. 11-IEP-1A – *California Clean Energy Future*

Dear Chairman Weisenmiller and Commissioner Douglas:

California Clean DG Coalition (CCDC) submits these comments regarding (1) updates to the *California Clean Energy Future Overview* to better reflect the goals of Governor Brown's energy vision and of SB x1 2 (Simitian, Chap. 1, Stats. 2011-12, First Extraordinary Session), and (2) proposed metrics for measuring progress on the initiatives essential to meeting California's goals.[1] CCDC strongly supports the Governor's proposal, set forth in the 2010 Clean Energy Jobs Plan, to install 6,500 MW of combined heat and power (CHP) facilities over the next 20 years, and encourages revisions to the *California Clean Energy Future Overview* (and *Implementation Plan*) as set forth below to ensure implementation of this proposal.

**<u>California Has Long Supported CHP, But Significant Barriers Persist.</u>**

California has long supported CHP distributed generation. For example, Public Utilities Code section 372 provides that state policy encourages and supports development of CHP "as an efficient, environmentally beneficial, competitive energy resource that will enhance the reliability of local generation supply and promote local business growth." Distributed generation, including CHP, is second in the state's loading order of preferred means of meeting growing energy needs. (*See, e.g., Energy Action Plan II.*) The California Air Resources Board's

[1] 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 CHP, renewables, gas turbines, microturbines, reciprocating engines, and storage. CCDC is currently comprised of Capstone Turbine Corporation, Caterpillar, Inc., Cummins Inc., DE Solutions, Elite Energy Systems, GE Energy, Holt of California, NRG Energy, Peterson Power Systems, SDP Energy, Solar Turbines, Inc. and Tecogen Inc.

(CARB) AB 32 Scoping Plan recognizes the potential of CHP to reduce greenhouse gas (GHG) emissions and sets a goal of 4,000 MW of installed CHP capacity by 2020, which could displace approximately 30,000 GWh of demand from other generation sources.

Unfortunately, significant barriers historically have precluded, and currently preclude, meaningful installation of CHP distributed generation, with the result that the state is missing out on the very real environmental, efficiency and reliability benefits clean CHP can provide. No agency has acted to implement CARB's 4,000 MW CHP target. The investor owned utilities (IOUs) have taken every opportunity to thwart and delay implementation of AB 1613, 2007 legislation that promotes recovery of waste heat by allowing CHP developers to size systems to meet thermal load and sell excess energy to the IOUs. Although initially eligible, fossil fuel technologies are currently ineligible for Self-Generation Incentive Program (SGIP) incentives. The CPUC is considering expanding technology eligibility pursuant to SB 412 (enacted in 2009), but it is presently unclear if natural gas-fired CHP will be reinstated as an eligible technology, even if it meets the criteria set forth in SB 412. The IOUs propose to reinstate standby reservation charges for CHP distributed generation customers, notwithstanding the Legislature's preference, all things considered, that exemptions from standby reservation charges extend over the long term. (*See* Public Utilities Code § 353.13(a).)

The state must take clear, strong action to overcome these barriers, to achieve meaningful deployment of CHP as called for by state policy.

**The *California Clean Energy Future Overview* Should Be Updated To Include Achieving the Governor's Goal Of Installing 6,500 MW Of CHP By 2020.**

CCDC is concerned that the emphasis on renewable resources and energy efficiency in recent years is causing California to miss opportunities to realize the environmental, efficiency and reliability benefits of clean, gas-fired CHP. CCDC believes available technologies and measures that are proven to reduce GHG emissions and improve efficiency should be pursued in a coordinated manner. As state policy has long recognized, clean, efficient natural gas-fired CHP technologies can play an important part in helping California meet its GHG reduction and energy goals as the state transitions to a resource mix that increasingly is comprised of renewable resources.

There is no single "perfect" approach to implementing California's clean energy goals. CCDC recommends that the *California Clean Energy Future Overview* be updated to include achieving the Governor's goals of installing 6,500 MW of CHP by 2020, in coordination with renewable and energy efficiency goals. Prudent energy policy should recognize the strengths of each of these technologies and measures. Energy efficiency reduces demand. Renewable resources provide environmental benefits, but they typically need to be firmed using baseload resources. In addition to providing environmental and efficiency benefits, natural gas-fired CHP can provide a firming resource. The "Value Proposition" table included as Attachment A hereto

shows the benefits of currently available CHP technologies, compared to solar and wind technologies.

Affirmatively including CHP as a coordinated component of the state's energy strategy will have important socioeconomic benefits, in addition to reducing GHG emissions and improving efficiency and reliability. A 2008 Oak Ridge National Laboratory (ORNL) study looked at a scenario where CHP comprised 20% of the nation's generating capacity in 2030 and found implementation of such a target would generate $234 billion in private sector investment, create nearly 1 million jobs and reduce emissions of $CO_2$ by more than 800 million metric tons per year (the equivalent of taking 154 million passenger vehicles off the road). (Combined Heat and Power: Effective Energy Solutions for a Sustainable Future, ORNL (December 1, 2008).) A summary of the ORNL study is included as Attachment B hereto.

Finally, it is important to acknowledge that current forecasts indicate that natural gas supplies will be stable over the foreseeable future, resulting in stable low cost gas prices. (*See* Attachment C hereto.) Accordingly, natural-gas fired CHP is a cost efficient complement to renewable technologies and energy efficiency measures.

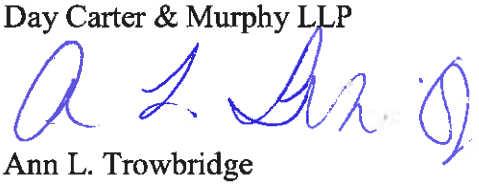
**Measuring Installations Of CHP In Furtherance Of The Governor's 6,500 MW CHP Goal Is Simple.**

A proposed metric for measuring installation of CHP pursuant to the Governor's 6,500 MW CHP goal is not entirely clear to CCDC. The Installed Capacity Metrics white paper distributed at the July 6, 2011 workshop appears to rely on MW installed to track CHP. If this is the proposed metric, CCDC agrees that this simple approach will work for CHP.

**Conclusion.**

CCDC appreciates the IEPR Committee's consideration of these comments, and requests that they be included in the planned updates to the *California Clean Energy Future Overview* (and any related updates to the *Implementation Plan*). Please contact me if you have any questions regarding these comments.

Very truly yours,
Day Carter & Murphy LLP



Ann L. Trowbridge
Attorney for CCDC

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Suzanne Korosec, via electronic mail [skorosec@energy.state.ca.us]

# ATTACHMENT A

# Value Proposition California

| Category | 1 MW CHP | 1 MW PV | 1 MW Wind |
|---|---|---|---|
| Annual Capacity Factor (%) | 85 | 18 | 36 |
| Annual Electricity (MWh) | 7,446 | 1,577 | 3,154 |
| Annual Useful Heat ($MWh_t$) | 8,273 | None | None |
| Footprint Required (sq ft) | 1,500 | 174,000 | 43,500 |
| Capital Cost ($ million) | 2.4 | 4.6 | 3.3 |
| Annual Energy Savings (MMBtu) | 31,748 | 15,074 | 30,149 |
| Annual $CO_2$ Savings (tons) | 2,640 | 1,047 | 2,094 |

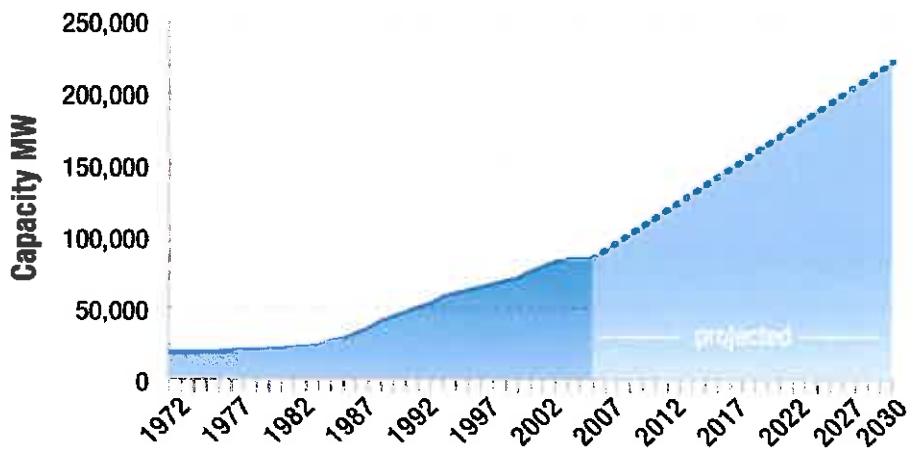
CHP: 1 MW Recip Engine CHP, 34% electric efficiency, 72% total efficiency
Displaces CAMX-WECC California All Fossil Average Generation (eGRID 2007): 9019 Btu/kWh, 1253 lbs $CO_2$/MWh, 6% T&D losses
Foot print for PV and Wind from NREL Land Area Estimator: http://www.nrel.gov/analysis/power_databook_3ed/calculators.html
PV and Wind: DOE cost data assumptions

# ATTACHMENT B

# Increased Use of CHP Could Provide Significant Benefits to the U.S.

## What If CHP Represented 20% of US Generating Capacity in 2030?

**Historical CHP Capacity and Growth Needed to Achieve 20% of Generation**




- $234 billion private sector investment
- Nearly 1 million new jobs
- Reduces fuel use and $CO_2$ emissions

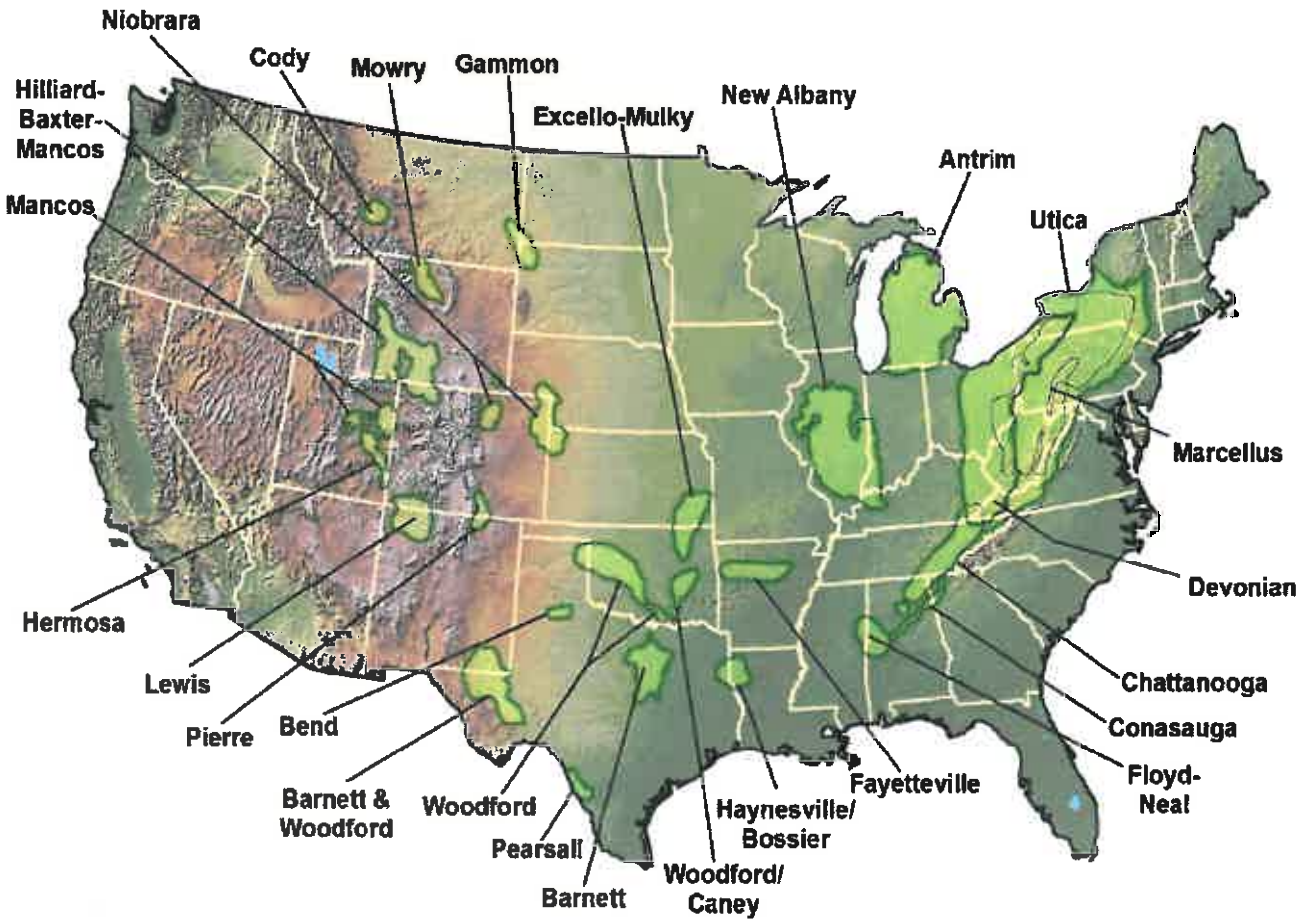
| | |
|---|---|
| 2030 CHP – Proposition: 20% of U.S. Capacity | 240,900 MW |
| Reduced Annual Energy Consumption with CHP | 5.3 Quads |
| Total Annual $CO_2$ Reduction | 848 MMT |
| Total Annual Carbon Reduction | 231 MMT |
| Number of Car Equivalents Taken Off Road | 154 million |

Source: ORNL, 2008

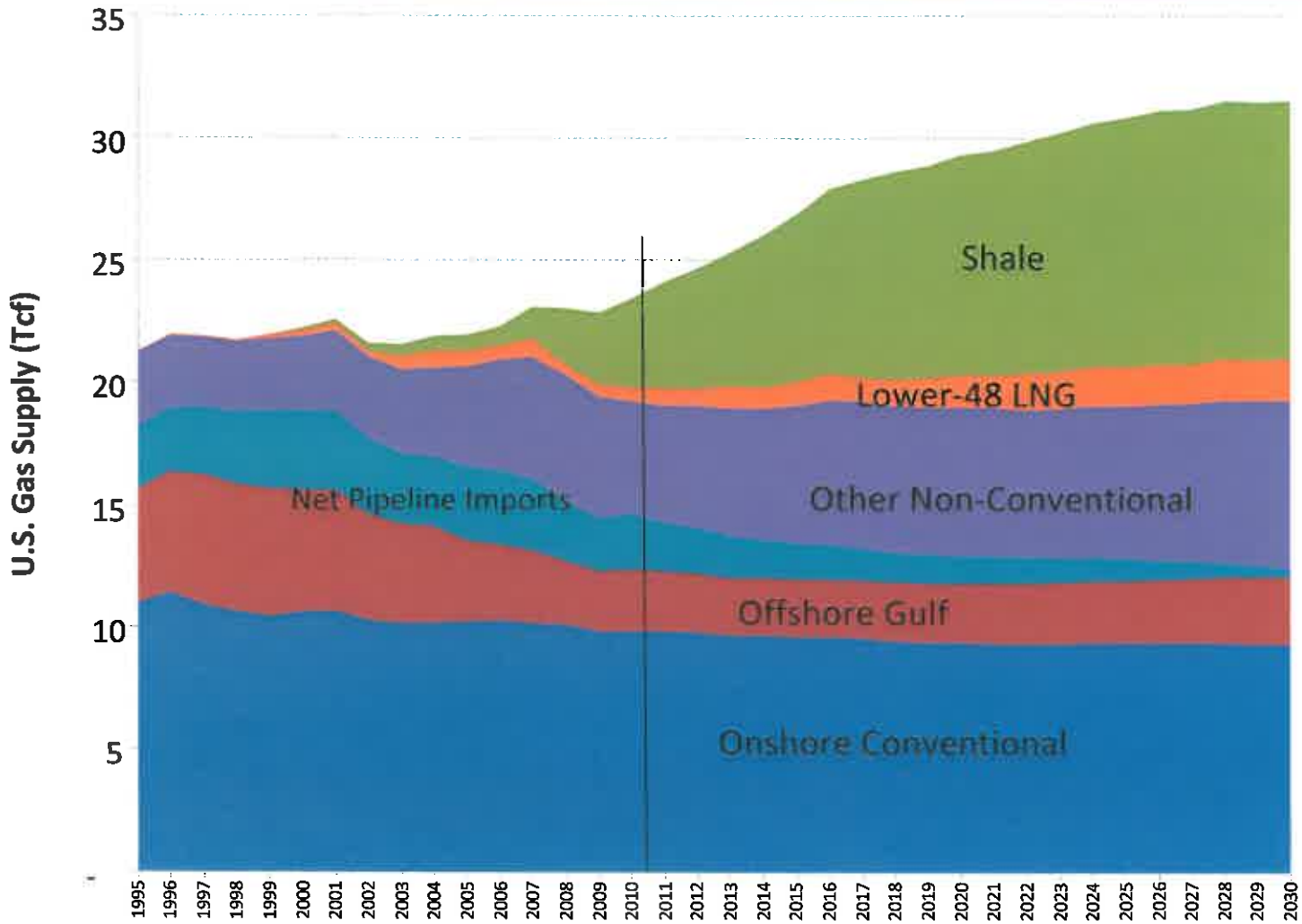
# ATTACHMENT C

# New Outlook for U.S. Natural Gas Supply

## U.S. Shale Gas Resources



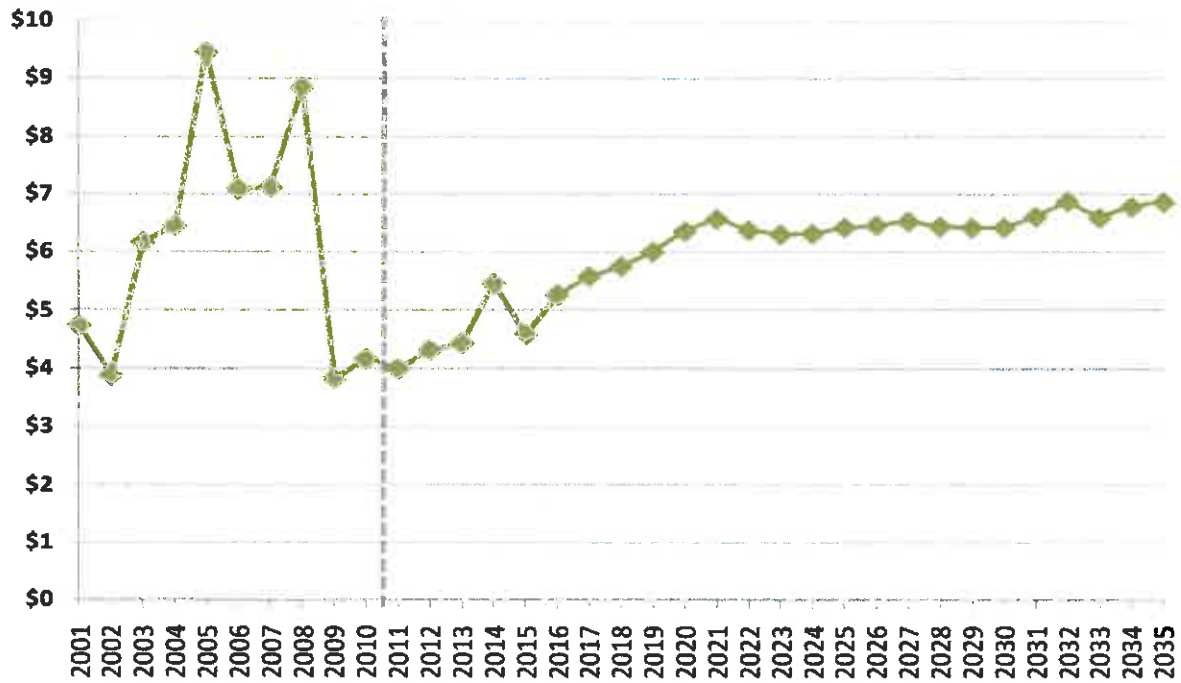
# New Outlook for U.S. Natural Gas Supply



# Henry Hub Gas Prices Will Average Between $5 and $7 per MMBtu

- Henry Hub natural gas prices are projected to average between $5.00 and $7.00 per MMBtu.
- Robust growth in gas demand applies upward pressure on gas prices over time.
- $5.00 to $7.00 gas prices are sufficient to support the levels of supply growth in the projection, but not so high as to discourage market growth.

**Average Annual Natural Gas Prices at Henry Hub (2008$/MMBtu)**

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