

DOCKETED

Docket Number:	07-AFC-06C
Project Title:	Carlsbad Energy Center - Compliance
TN #:	203978
Document Title:	Francisco Galt Comments: Why Amend the Carlsbad Energy Center?
Description:	N/A
Filer:	System
Organization:	Francisco Galt
Submitter Role:	Other Interested Person
Submission Date:	3/27/2015 12:21:08 PM
Docketed Date:	3/27/2015

Comment Received From: Francisco Galt

Submitted On: 3/27/2015

Docket Number: 07-AFC-06C

Why Amend the Carlsbad Energy Center?

Additional submitted attachment is included below.

Why Amend The Carlsbad Energy Center Project?

The Carlsbad Energy Project 07-AFC-06C (CECP) was certified by the California Energy Commission (CEC) in 2013 to repower the aging Encina generation site. The Petition to Amend proposes to displace the “R2C2 fast response” combined cycle technology with the proposed LMS100 simple cycle technology.

In September 2014, our docketed comments documented that the change to simple cycle technology would increase stack emission rates and electric energy cost rates. That evidence and conclusion has not been re-futed. So why make the proposed technology change for the Encina repower project? What virtue of the proposed technology change would offset the resulting increase in air pollution and energy costs?

Why Amend?

The Petition to Amend sets forth the following “Necessity of Proposed Change”:

“The purpose of the proposed changes in this PTA is to make the CECP conform to current electrical energy needs for fast-response peaking generation and to better respond to the unanticipated and unprecedented retirement of the San Onofre Nuclear Generating Station.”

The Petitioner’s Project Description further justifies the technology change, claiming:

“The six smaller peaking units will also be much better suited to allow the continued integration of cyclical and intermittent renewable generation, as all of the net output from the Amended CECP will be fast start and readily dispatchable.”

We hope that the CEC will note that these “justifications” are *unsupported* claims. The Petitioner does not offer a shred of evidence in support of the claim of “better suited” for renewable integration or to quantify the expected incremental benefit that would result from changing CECP technology.

Further, the CEC should know that the Petitioner cannot support the claims because the benefits claimed for the simple cycle amendment are simply not true. In fact, *the proposed change from combined cycle technology to simple cycle technology will actually degrade the ability to economically integrate renewable resources.*

Contradictory Evidence

Please consider the following *new* evidence that contradicts the Petitioners unsupported justification for changing the CECP from combined cycle to simple cycle technology:

- The Walnut Creek Energy Center consists of 5 x LMS100 gas turbines deployed in simple cycle. As such, Walnut Creek technology is a very close proxy for the 6 x LMS100 generating technology proposed for the Carlsbad amendment.
- The El Segundo Energy Center consists of 2 x “R2C2 fast response” combined cycle units. The technology of El Segundo is nearly identical to the certified combined cycle technology for Carlsbad.
- Both El Segundo and Walnut Creek are operated by subsidiaries of NRG, serving the same Los Angeles Basin market by providing energy, balancing services and inertia to serve the Southern California Edison grid. These plants report publicly available operating data to federal authorities.
- The CEC and interested parties can readily confirm the foregoing statements about Walnut Creek and El Segundo from the CEC project dockets because both projects were certified by the CEC.
- Inertia, regulation, load following and spinning reserve are the capabilities that the California Independent System Operator (CAISO) uses to maintain a precise balance of energy supply and demand and to stabilize the grid during system upsets caused by abrupt shifts in the supply or demand. These services are the stuff of “renewable integration” – stabilizing the grid when it must transport a raging river of intermittent renewable energy.

- *These renewable integration capabilities are only available to the CAISO when the generators are operating and synchronized to the grid. Even fast starting gas turbines cannot start fast enough to supply these services which often must respond within a small fraction of a second.*

The table at the right compares how much these two modern plants operated last year. (This data was provided by SNL.com using federal data reported by the plant owners.)

Plant & Technology	Op. Hr. in 2014	% of 2014
El Segundo R2C2 Combined Cycle	4,061	46.4%
Walnut Creek LMS100 Simple Cycle	1,291	14.7%

To summarize, the R2C2 combined cycle technology – the technology that the CEC certified for CECP – the technology that CECP now wants to ditch – was on line three times as long as the simple cycle LMS100 technology. Or to put it another way – the simple cycle LMS100 technology was *not* on line – i.e. *not* integrating “cyclical and intermittent renewable generation” – for 85% of the 2014 calendar year.

So if turbine generation is so important to grid stability, why did the utility and the CAISO run Walnut Creek much less than the El Segundo combined cycle plant? The reason is that El Segundo is also a rapid response plant that can adequately support the grid. Further, El Segundo combined cycle technology is more fuel efficient than its Walnut Creek simple cycle competitor across town.

How do we know that El Segundo offers “rapid response” technology and superior fuel economy? Because the CEC project certification documents for El Segundo and Walnut Creek say so.

How do we know that the El Segundo combined cycle technology is competitive for grid support? Because grid reliability trumps generation economy. If El Segundo’s combined cycle technology wasn’t sufficiently flexible to support the grid, the SCE and the CAISO would dispatch El Segundo less and Walnut Creek more, despite Walnut Creek’s higher dispatch cost.

Now the superiority of the combined cycle technology is confirmed by a year long demonstration and comparison of comparable plants that are operated and dispatched in the same market by the same companies:

- the effective and economical combined cycle technology that the CEC has already certified versus
- the less effective and more expensive simple cycle technology that the CEC is now considering in response to the Petition to Amend.

This evidence, of course, completely refutes the Petitioner’s attempt to justify the Petition to Amend with an unsupported claim of superior operating flexibility.

CAISO’s Contradictory Evidence

In September 2014, our CEC docketed commentary cited a renewable integration study by the CAISO that reported on the CAISO’s dispatch simulation for the San Diego area in the calendar year 2020 (with 33% renewable energy).¹ The study compared dispatch of simple cycle LMS100 technology to a typical combined cycle plant and projected that, given a choice, the CAISO would dispatch the conventional combined cycle plant far more than the LMS100 simple cycle alternative. Here is the table from that commentary:

Simulated SDG&E Firm Replacement Resources	Firm Capacity (MW)	Simulated Energy Capacity Factor	Simulated Balancing Energy for 2020 (GWh)					
			Load Follow Down	Load Follow Up	Non-Spinning Reserve	Regulation Down	Regulation Up	Spinning Reserve
Simulated CCGT	520	66.4 %	566.6	618.1	0.1	97.0	1.8	125.0
Simulated SCGT	400	11.2 %	2.7	220.8	0.4	4.3	60.7	92.9

¹ *California ISO Renewable Integration Study in Support of the California Air Resources Board for Meeting Assembly Bill (AB) 1318, May 7, 2013*

The evidence and conclusions from the CAISO renewable integration study has not been refuted.

Increased Stack Emission Rate

According to CEC and CECP documents, the amended LMS100 technology has a projected facility wide GHG emission rate of .48 CO₂ MT/MWh or 1058 lbs. per MW. In comparison, the CEC's certified combined cycle technology has an expected GHG emission rate of .405 CO₂/MWh or 893 pounds per MW.²

The documents further indicate that the CEC certified combined cycle project is expected to emit 50% less NO_x emissions per installed MW, 70% less VOC emissions per MW, and 50% less Particulate Matter emissions per MW compared the proposed LMS100.

Increased Cost Rate

A 2014 CEC cost of generation study³ compared the total levelized cost of various generation technologies, including simple cycle LMS100 technology and combined cycle technology. The CEC calculated that an LMS100 simple cycle plant like the proposed amendment would probably burden ratepayers with a levelized life cycle cost of about 460.38 \$/MWh. The CEC's estimated total levelized cost of a combined cycle project was about 147.74 \$/MWh.

Of course, these costs are not exactly right for the proposed alternatives. But the wide disparity of cost difference clearly implies that the proposed simple cycle change for CECP would dramatically increase the cost of energy to San Diego ratepayers.

While cost of generation review is primarily the concern of the ratepayers and the California Public Utility Commission, lower cost can sometimes be used to justify higher emission rates. Therefore, we want to make it clear to the CEC that the increased stack emission rates that the Petitioner proposes to impose on Southern California cannot be truthfully justified by asserting a lower total cost of generation.

Do What's Right

We believe that the CEC is obliged to compare proposed projects to reasonable alternatives. In this case the obvious and more-than-reasonable alternative to the proposed simple cycle technology is the previously certified combined cycle technology. Such a comparison will show that the CEC and the Petitioner got it right the first time – the combined cycle technology was, and remains, the best technology choice for CECP's Encina repower.

This Petition to Amend offers the California Energy Commission the opportunity to demonstrate that the CEC is not a rubber stamp agency for utilities and independent generators. The CEC can defend the air quality for Southern California citizens, defend the energy costs that will burden San Diego Gas & Electric customers and defend California's greenhouse gas policies by denying this Petition to Amend.

² The pending *Carlsbad CEC Final Decision* and *CECP Petition to Amend*

³ *Estimated Cost of New Renewable and Fossil Generation in California, Draft Staff Report, May 2014*