

## DOCKETED

<b>Docket Number:</b>	07-AFC-06C
<b>Project Title:</b>	Carlsbad Energy Center - Compliance
<b>TN #:</b>	203512
<b>Document Title:</b>	Project Owner's Response to Committee Order & Supplemental Response to Data Request Set 3
<b>Description:</b>	N/A
<b>Filer:</b>	Dee Hutchinson
<b>Organization:</b>	Locke Lord LLP
<b>Submitter Role:</b>	Applicant Representative
<b>Submission Date:</b>	1/9/2015 5:55:22 PM
<b>Docketed Date:</b>	1/12/2015



500 Capitol Mall, Suite 1800  
Sacramento, CA 95814  
Telephone: 916-930-2500  
Fax: 916-930-2501  
www.lockelord.com

John A. McKinsey  
Direct Telephone: 916-930-2527  
Direct Fax: 916-720-0443  
jmckinsey@lockelord.com

January 9, 2015

VIA E-FILING

Carlsbad Energy Center Project (07-AFC-06C)  
Karen Douglas, Commissioner and Presiding Member  
Andrew McAllister, Commissioner and Associate Member  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512

Re: **Carlsbad Energy Center Project, 07-AFC-06C**  
**Project Owner's Response to Committee Order Denying Power of Vision's Petition**  
**to Compel Data Responses (TN 203468)**  
**Project Owner's Supplemental Response to Data Request Set 3**

Dear Committee Members:

California Energy Commission staff ("Staff") filed Data Request Set 3 (Nos. 67–85) (TN 203149) (the "Data Requests") on October 2, 2014, regarding Carlsbad Energy Center LLC's ("Project Owner") Petition to Remove Obsolete Facilities to Support Construction ("PTR") of the Carlsbad Energy Center Project (07-AFC-06C) ("CECP"), and Petition to Amend ("PTA") the CECP. On October 31, 2014, Project Owner filed responses to Data Requests Nos. 67-84 (TN 203300). Supplemental Data Request 74 was filed on November 4, 2014, and Supplemental Data Request 76 was filed on November 13, 2014.

On November 17, 2014, Power of Vision ("POV"), an intervenor in this proceeding, filed a Petition to Compel Data Responses. The petition sought an order from the California Energy Commission compelling Project Owner to file data responses to POV's Data Request Set II.<sup>1</sup> On December 18, 2014, the CECP Siting Committee ("the Committee") issued an Order denying POV's petition. However, the Committee directed Project Owner to articulate specific standards regarding the necessary pole heights for the project's generator-tie transmission lines and to articulate constraints against placing the poles in the bermed area and reducing the height of poles that cannot be so placed.

---

<sup>1</sup>POV filed their Data Request on October 7, 2014. Project Owner filed its objections to the Data Request on October 21, 2014.

January 9, 2015  
Page 2

In response to the Committee's December 18, 2014 Order, Project Owner hereby submits its supplemental response to Data Request Set 3.

Locke Lord LLP

By:   
\_\_\_\_\_  
John McKinsey  
Attorneys for Carlsbad Energy Center LLC

JAM:dh

---

# Carlsbad Energy Center Petition to Amend

(07-AFC-06C)

## Supplemental Response to CEC Data Set No.3 (Requests 67-76)

Submitted to  
California Energy Commission

Prepared by  
Carlsbad Energy Center LLC

With Assistance from

**CH2MHILL®**

6 Hutton Centre Drive Suite 700  
Santa Ana, CA 92707

January 9, 2015

# Contents

---

Section	Page
Introduction .....	1
Transmission System Engineering (67-76) .....	2

# Introduction

---

This supplemental filing provides additional information in response to the CEC's Carlsbad Energy Center Project's Siting Committee's Order docketed on December 18, 2014. This Order directed the Project Owner, Carlsbad Energy Center LLC, to provide additional information regarding Project Owner's Response to CEC Staff's Data Set 3 (Requests 67-76) that was submitted on October 31, 2014, Supplemental Data Response 74 (November 4, 2014), and Supplemental Data Response 76 (November 13, 2014).

# Transmission System Engineering (73-76)

---

In the December 18, 2014 Order, the Siting Committee assigned to the CECP directed the Project Owner, Carlsbad Energy Center LLC, to:

[A]rticulate specific standards regarding the necessary heights of poles and constraints (whether based on engineering requirements, site limitations, or otherwise) against placing the poles within the bermed area and reducing the heights of poles that cannot be placed in the bermed area.

This articulation by the Project Owner shall include an explanation of the basis for its assertion and may take the form of a drawing, text, or any other way to most effectively communicate the constraints. In addition, the Project Owner shall indicate any areas of flexibility to mitigate or overcome the identified constraints and the means and methods to do so.<sup>1</sup>

Accordingly, Project Owner herein presents the requested information as Supplemental Data Response to CEC Data Set 3 (Requests 67-76).

## **Applicable Standards**

Generally, California Public Utility Commission General Order 95, issued February 2014 (GO-95), governs the design standards applicable to the high voltage transmission lines connecting the CECP power units to the applicable switchyards. The applicable specific requirements of GO-95 are presented further below in Table-1 and discussed after.

There are two different types of transmission lines that connect generators to the switchyards. They differ by their voltage, with one at 230,000 volts (230kV) and one at 138,000 volts (138kV). Different voltages are required to match the two different voltage switchyards that CECP will connect to.

Generally, transmission line design standards govern nearly every aspect in order to ensure the safe and reliable operation of such power lines, even in the event of certain specific casualty situations such as earthquakes and fires. One set of specifications govern required empty space between and around current carrying conductors. Table-1 presents the applicable standards for this required empty space for 138kv and 230kv transmission lines. It is these specifications, combined with the geography and environment the lines are suspended over, that create constraints on the location of transmission lines and also the necessary height and design of the transmission line poles.

Table 1 - Design Considerations from GO-95 issued February, 2014

<b>Requirement</b>	<b>Vertical, Horizontal and Radial Clearance Requirements:</b>	<b>GO-95 Required Minimum clearance, ft</b>	<b>Recommended clearance (including buffer), ft</b>
1	Phase-to-phase, same circuit (230kV), same structure. (GO-95 Table 2, Case17J)	10.6	12

---

<sup>1</sup> TN 203468 , CECP Committee Order Denying Power of Vision's Petition to Compel Data Responses dated December 18, 2014

2	Phase-to-phase, same circuit (138kV), same structure. (GO-95 Table 2, Case17I)	7.4	10
3	Phase-to-phase, different circuit, (230 kV), different structure. (GO-95 Table 2, Case 7J)	11.1	14
4	Phase-to-shield wire, (230kV), (GO-95 Table 2, Case 9J)	10.3	11
5	Vertical clearance above railroad, (GO-95 Table 1, Case 1F)	34	36
6	Vertical clearance above ground, (GO-95 Table 1, Case 3F & 4F)	30	32
7	Horizontal clearance to Structure, (GO-95 Table 1, Case 9F)	6	9
8	Radial Clearance to trees, (GO-95 Table1, Case 13F)	2.6	5

Below, an explanation of the above applicable requirements is provided.

- 1) **Rule 38, Table 2 - Case No 17J; Phase to Phase clearance of the same circuit for Supply Conductors between 150,000 - 300,000 Volts:** This rule applies when the 230kV circuits are rolling from the horizontal configuration at the generating units to the vertical configuration on the poles. This rule applies because the phases will cross over one another as they roll from horizontal to vertical and thus are no longer in a true vertical configuration.
- 2) **Rule 38, Table 2 - Case No 17J; Phase to Phase clearance of the same circuit for Supply Conductors between 75,000 - 150,000 Volts:** This rule applies when the 138kV circuits are rolling from the horizontal configuration at the generating units to the vertical configuration on the poles. This rule applies because the phases are assumed to be crossing over one another as they roll from horizontal to vertical and thus are no longer in a true vertical configuration.
- 3) **Rule 38, Table 2 - Case No 2-7J, Clearance to wires not on Same Structures for Supply Conductors between 150,000 - 300,000 Volts:** This rule applies when the 230kV circuits are crossing other circuits.
- 4) **Rule 38, Table 2 - Case No 9J, Clearance to Sheildwire on Same Structures for Supply Conductors between 150,000 - 300,000 Volts:** This rule applies when the 138kV circuits are rolling from horizontal configuration at the generating units to the vertical configuration on the poles. This rule applies because the phases are assumed crossing over one another as they roll from horizontal to vertical and thus are no longer in a true vertical configuration.

- 5) **Rule 37, Table 1 - Case 1F, Vertical Clearance to Railroad for Supply Conductors between 150,000 -300,000 Volts:** This rule applies for the span which crosses over the commuter rail line that bisects the plant property.
- 6) **Rule 37, Table 1 - Case 3F, Clearance to Ground for Supply Conductors between 150,000 - 300,000Volts:** The clearance specified in this rule is assumed to be radial to ground as is referenced when considering all structures. This is the clearance that applies when considering clearance to ground at the berm.
- 7) **Rule 37, Table 1 - Case 9F, Distance of conductor from surface of pole for Supply Conductors between 150,000 - 300,000 Volts:** The clearance specified in this rule is the starting point for determining length of davit arms on the structures. This does not account for climbing or work space.
- 8) **Rule 37, Table 1 - Case 13F, Radial clearance of bare line conductors to tree branches for Supply Conductors between 150,000 - 300,000 Volts: *1/4 spacing shown in Table 2 Case 15J.*** The clearance specified in this rule applies for clearance to the trees located at the top of the berm along the edge of the property adjacent to I-5. This clearance needs to be maintained under normally expected weather variations for the area, not just every day conditions.

### **Explanation of Design and Design Constraints**

To minimize visual impacts, the design utilizes a double circuit arrangement to support both the 138kV and 230kV circuits on single structures rather than have two separate structures for the transmission lines. Therefore, the 230kV circuit clearance requirements control the design requirements of the 138kV/230kV double-circuit structures. (See Figures 22-2R1, 24-1R1, 24-2R1, 24-3R1, 74-1 from Data Response Set 3 docketed on October 31, 2014) for renderings and drawings of the generator tie-line system design and location.)

The key design consideration involves the efficient configuration of the lines to direct them to the switchyards. This occurs by necessity at the southeastern most pole, and that pole becomes the design constraint. This pole must be of sufficient height to allow the conductors to meet minimum clearance requirements to each other and their supporting structure, and also to allow the lowest conductors to meet minimum clearance from the ground and other objects such as the railroad.

There are two structures located along the top of the berm adjacent to I-5. The more southern of the two is the turning structure. From the turning structure, the next structure to the north has an additional design complexity in that it is collecting lines from the last two generating units that are transitioning from a horizontal configuration to vertical. A key problem with moving that pole down into berm is that it significantly steepens the slope and shortens the length in which the two lines coming from the adjacent generating units transition to a vertical configuration. Another significant problem with moving that pole down into the berm is that it reduces the clearance to ground for the line coming from the poles to the north. Yet another problem associated with moving that pole down into the bermed area is that creates more congestion at the bottom of the berm adjacent to the Fire Department access road.

The Project Owner, in its efforts to provide visual enhancements responsive to the desires of intervenor Power of Vision, was not able to identify a feasible solution to the above constraints that involves moving the southeast corner pole west of its planned location and down into the bermed area.

### **Potential Means of Further Reduction in Visibility**

While it is possible to find minor improvements and reduction of visibility during detailed design through added precision, the Project Owner cannot make any assurances that this will occur, and if optimizations are found they are unlikely to have a noticeable effect on the visual appearance of the generator tie lines. These lines have been presented accurately for the purposes of assessing the worst case environmental

impacts including visual resources. Project Owner has demonstrated, as a whole the Amended CECP results in substantial enhancements to the visual character of the area.