DOCKETED

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Although the Project Owner objects to the two informal data requests received from CEC Staff on October 14, 2015 ("Data Requests") as set forth in more detail below, in an effort to expedite Staff's issuance of the Staff Analysis and present the Petition to Amend ("PTA") to the full Commission for approval on or before December 9, 2015, Pio Pico Energy Center, LLC ("Project Owner") provides the following information responsive to the Data Requests. The thermal plume modeling results detailed below demonstrate that there is no adverse impact from the air cooled heat exchanger.

DATA REQUEST

1. Please provide the design and operating parameters for the air cooled heat exchanger, which are listed in the following table:

Parameter	**Air Cooled Heat Exchanger Design Parameters**
Number of Cells	
Cell Height (feet)	
Cell Diameter (feet)	
Exhaust Velocity (ft/sec)	
Exhaust Temperature (°F)	

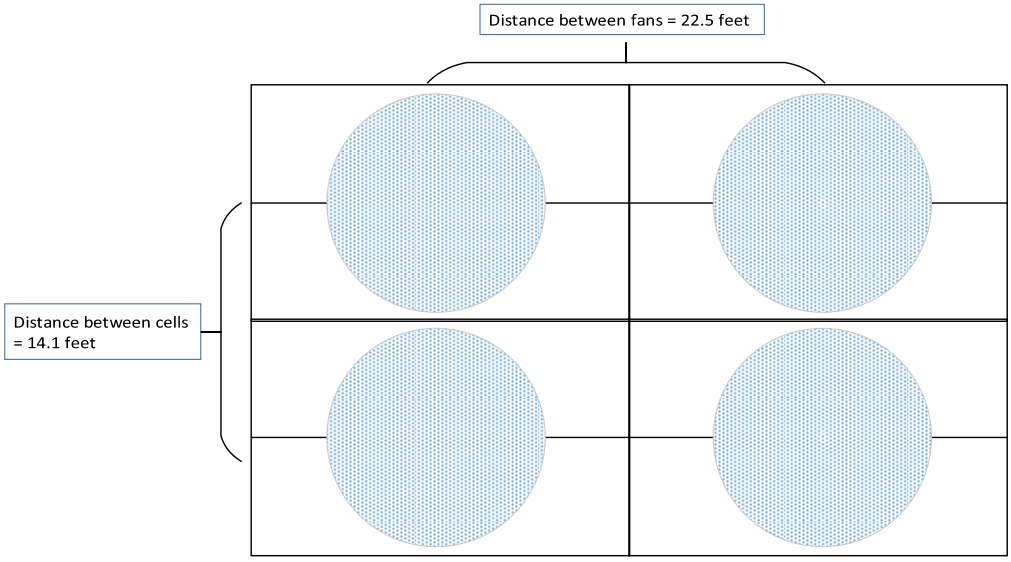
Response: The requested design and operating parameters for the air cooled heat exchanger are provided in the following table.

Parameter	**Air Cooled Heat Exchanger Design Parameters**
Number of Cells	8 Cells (2 fans per Cell)
Cell Height (feet)	18'-3"
Cell Diameter (feet)	14'-1" x 45' Cells (13' Fan Diameter)
Exhaust Velocity (ft/sec)	11 ft/s
Exhaust Temperature (°F)	150°F

2. Please provide the thermal plume analysis for the air cooled heat exchanger.

Response: The requested thermal plume analysis was performed using the Spillane methodology typically used by the CEC staff for analyzing thermal plume impacts; the results are attached. The highest individual thermal plume velocity is only about 2.40 meters per second (m/s) and the highest merged plume velocity is only about 4.04 m/s. As the staff is aware, the spreadsheet-based model that implements the Spillane methodology utilizes a single, fixed distance between the release points to evaluate the velocity profile of a source with multiple release points. As shown in Appendix A to the July 31, 2015 Petition to Amend related to the Wastewater Storage Tanks (TN 205609), the air cooled heat exchanger (ACHE) consists of 8 cells with two fans per cell. For this ACHE configuration, however, the distance between each cell is different than the distance between the fans. A two-cell section of the

ACHE is shown below to illustrate the distinction. As a result, it would not be accurate to model the ACHE based on all 16 fans.



The model results presented here use the distance between the cells, 14.1 feet, and the number of cells, 8, to calculate the velocity of the merged plumes.

Assuming that the exhaust velocity from each cell of the ACHE is constant for all ambient conditions, the highest individual thermal plume velocity is only about 2.40 meters per second (m/s) and the highest merged plume velocity is only about 4.04 m/s.

Project Owner's Objections to the Data Requests: First and foremost, the scope of PTA submitted in July 2014 does not include any changes to the air cooled heat exchanger. Pursuant to section 1769 of Title 20 of the California Code of Regulations, the scope of Staff's analysis of the PTA is limited to an evaluation of the impacts of the proposed modifications on the environment and the proposed modifications compliance with Laws, Ordinances, Regulations, and Standards ("LORS"). Since the PTA does not propose changes to the air cooled heat exchanger from what was analyzed during the AFC proceeding, there is no proposed modification that may have impacts on the environment or on the facility's ability to comply with LORS that requires additional analysis by Staff. (20 Cal. Code Regs. §1769(a)(1).)

Further, Staff's evaluation of a PTA must be consistent with the requirements of CEQA Guidelines section 15162, which governs the requirements for subsequent environmental review under CEQA after a project has been approved.[1] Section 15162 limits additional environmental review to "substantial

[1] *See generally* Committee Order Following the Preliminary Site Assessment, Carlsbad Energy Center Project, 07-AFC-06C, at pp. 1-2 (January 15, 2015).

changes" that will result in greater environmental impacts, and provides for reliance on the prior environmental review for areas that will not have substantial changes. Here, Staff acknowledges that there is no "substantial change" that will result in new significant environmental impacts or a substantial increase in the severity of previously identified significant effects.

Lastly, there are no applicable LORS requiring the information Staff seeks in the Data Requests nor is there any new evidence supporting such requests.

PPEC Air Cooled Heat Exchanger
Predicted Calm Wind Plume Velocities

Exhaust Elevation (Cell Height)	18.25	feet above AGL
No. of Exhaust Points (Cells)	8	
Distance Between Cells	14.08	feet
	4.29	meters

Inputs	Air Cooled Heat Exchanger Max Ambient Temp	Air Cooled Heat Exchanger Min Ambient Temp
Ambient Temperature (F)	110	30
Ambient Temperature (K)	316.48	272.04
Exhaust Elevation (m)	5.56	5.56
Cell Diameter (m)	3.96	3.96
Exhaust Velocity (m/s)	3.35	3.35
Exhaust Temperature (K)	338.56	338.56
Calculations		
Zv Virtual Source Height (m)	0.82	2.57
F_0 Initial Exhaust Buoyancy (m^4/s^3)	8.41	25.34
$(V^*a)_0$	6.42	5.95
Plume height at critical CASC vertical velocity of 4.3 m/s (calculated by solving cubic equation)		
Height above ground (ft)	*not applicable since vertical*	
Height above top of ACHE (ft)	*velocity never reaches 4.3 m/s*	

g= 9.8 m/s^2

Velocity Profile for Individual Thermal Plumes

Ht above AGL (ft)	Height above top of ACHE (m)	Height above top of ACHE (ft)	Air Cooled Heat Exchanger Max Ambient Temp	Air Cooled Heat Exchanger Min Ambient Temp
100	24.9	81.8	1.68	1.72
150	40.2	131.8	1.71	2.40
175	47.8	156.8	1.65	2.35
200	55.4	181.8	1.59	2.28
300	85.9	281.8	1.40	2.03
400	116.4	381.8	1.28	1.85
500	146.8	481.8	1.18	1.71
600	177.3	581.8	1.11	1.61
700	207.8	681.8	1.06	1.53
1,000	299.2	981.8	0.94	1.36
1,100	329.7	1,081.8	0.91	1.31
1,200	360.2	1,181.8	0.88	1.27
1,300	390.7	1,281.8	0.86	1.24
1,400	421.2	1,381.8	0.84	1.21
1,500	451.6	1,481.8	0.82	1.18
1,600	482.1	1,581.8	0.80	1.16
1,700	512.6	1,681.8	0.78	1.13
1,850	558.3	1,831.8	0.76	1.10
1,900	573.6	1,881.8	0.75	1.09
2,000	604.0	1,981.8	0.74	1.07

Top-Hat Radius vs Elevation for Individual Thermal Plumes

	Air Cooled Heat Exchanger			
			Plume Top-hat Radius (m)	
Ht above AGL (ft)	Height above top of ACHE (m)	Height above top of ACHE (ft)	Max Ambient Temp	Min Ambient Temp
100	24.9	81.8	3.86	3.58
150	40.2	131.8	6.29	6.01
175	47.8	156.8	7.51	7.23
200	55.4	181.8	8.73	8.45
300	85.9	281.8	13.61	13.33
400	116.4	381.8	18.49	18.21
500	146.8	481.8	23.36	23.08
600	177.3	581.8	28.24	27.96
700	207.8	681.8	33.12	32.84
1,000	299.2	981.8	47.75	47.47
1,100	329.7	1,081.8	52.62	52.34
1,200	360.2	1,181.8	57.50	57.22
1,300	390.7	1,281.8	62.38	62.10
1,400	421.2	1,381.8	67.25	66.97
1,500	451.6	1,481.8	72.13	71.85
1,600	482.1	1,581.8	77.01	76.73
1,700	512.6	1,681.8	81.88	81.61
1,850	558.3	1,831.8	89.20	88.92
1,900	573.6	1,881.8	91.64	91.36
2,000	604.0	1,981.8	96.51	96.24

Velocity Profile for Merging Plumes Using N^0.25 Approximation

	Air Cooled Heat Exchanger			
			Plume Velocity, m/s	
Ht above AGL (ft)	Height above top of ACHE (m)	Height above top of ACHE (ft)	Max Ambient Temp	Min Ambient Temp
100	24.9	81.8	Not Merge	Not Merge
150	40.2	131.8	2.88	4.04
175	47.8	156.8	2.78	3.96
200	55.4	181.8	2.68	3.84
300	85.9	281.8	2.36	3.41
400	116.4	381.8	2.15	3.11
500	146.8	481.8	1.99	2.88
600	177.3	581.8	1.87	2.71
700	207.8	681.8	1.78	2.57
1,000	299.2	981.8	1.58	2.28
1,100	329.7	1,081.8	1.53	2.21
1,200	360.2	1,181.8	1.48	2.14
1,300	390.7	1,281.8	1.44	2.09
1,400	421.2	1,381.8	1.41	2.03
1,500	451.6	1,481.8	1.37	1.99
1,600	482.1	1,581.8	1.34	1.94
1,700	512.6	1,681.8	1.32	1.90
1,850	558.3	1,831.8	1.28	1.85
1,900	573.6	1,881.8	1.27	1.83
2,000	604.0	1,981.8	1.25	1.80