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February 27, 2013

Siting Committee  
Raoul Renaud, Hearing Officer  
Eric Solorio, Project Manager  
California Energy Commission  
Docket No. 11-AFC-03  
1516 9th Street  
Sacramento, CA 95814

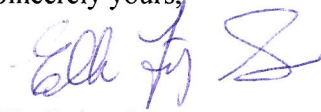
**Re: Cogentrix Quail Brush Generation Project - Docket Number 11-AFC-03,  
Revised Proposed Air Mitigation Plan**

Docket Clerk:

Pursuant to the provisions of Title 20, California Code of Regulations, and on behalf of Quail Brush Genco, LLC, a wholly owned subsidiary of Carlyle Infrastructure Partners, L.P., Bingham McCutchen LLP hereby submits a revised Proposed Air Mitigation Plan for the Quail Brush Generation Project (the "Project"). The Project is a 100 megawatt natural gas fired electric generation peaking facility to be located in the City of San Diego, California.

If you have any questions regarding this submittal, please contact Rick Neff at (704) 525-3800 or me at (415) 393-2572.

Sincerely yours,



Ella Foley Gannon

cc: Lori Ziebart, Cogentrix  
John Collins, Cogentrix  
Rick Neff, Cogentrix  
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## **INTRODUCTION**

The Quail Brush Generating Project (Project) is seeking air operating permits from the San Diego Air Pollution Control District (District) as well as overall Project approval from the California Energy Commission (CEC). As stated in AFC Table 4.7-7, the maximum Potential to Emit for Project air pollutants is:

- NO<sub>x</sub>                    42.6 tons/year (TPY)
- CO                        55.1 TPY
- VOC                      46.0 TPY
- SO<sub>x</sub>                      5.76 TPY
- PM<sub>10/2.5</sub>                33.2 TPY

The maximum potential to emit values were calculated based on multiple stationary sources with the most significant being from 11 Wartsila 20V345G natural gas fired reciprocating engine generator sets operating (per engine) at an estimated 3,800 hours/year with 400 starts each. Other stationary sources include: a fuel heater, warm start heaters, and the emergency diesel fire pump.

District Rule 20 requires air emission offsets when NO<sub>x</sub> or VOC emissions exceed 50 tons per year. The emissions from this Project would be permitted at levels below the District's offset threshold; no offset mitigation will be required to comply with District Rule 20.

The Project recognizes CEC's standard practice that emission reductions need to be provided for all nonattainment pollutants and their precursors at a minimum 1:1 ratio of annual operating emissions. The Applicant has reviewed several recent CEC decisions for peaking plants (e.g., Orange Grove, Oakley, and Mariposa) and used elements of those decisions to determine the amount of mitigation required for Quail Brush.

## **ESTIMATION OF MITIGATION AMOUNTS**

Previous CEC decisions on peaking plants have noted that the facilities under review held air permits that would allow for significantly more hours of operation than peaking plants (in general) have historically been observed to operate. The lower operating hours result in values for Expected Annual Emissions that are less than a given facility's maximum Potential to Emit. The Orange Grove Final Order (at page 135) noted that the annual capacity factor for a peaking plant built after 2000 was 8.4% (736 hours/year). The Mariposa Staff Assessment (at page 4.1-21) conducted an analysis of annual capacity factors at comparable facilities (which would include a Quail Brush type peaker) and concluded that 98% of those facilities had capacity factors of less than 16% (1,400 hours/year). Based on these previous decisions and its own independent review of publicly available operating data, Quail Brush has concluded that Expected Annual Emissions based on a 16.8% capacity factor (1,470 hours/year) for steady state operations is a reasonable, conservative assumption. Further, since the Quail Brush facility will be dispatched to support the integration of renewable energy resources, the Project concluded that 90% of the maximum permitted number of starts is a reasonable, conservative assumption (i.e., 360 starts per engine per year) when calculating the Expected Annual Emissions.

Quail Brush notes that the emission rates for the several air pollutant parameters will be permitted at higher rates than likely will be observed during operations (i.e., observed emission rates will be less than vendor guaranteed rates). Specifically, Quail Brush possesses stack test data from Wartsila engines that are similar to those proposed; those engines are operating at the Plains End II peaking facility near Golden, Colorado. These data show actual emissions for VOC's and CO that are lower than the vendor guaranteed rate (see Table 1).

Based on the foregoing, Quail Brush has calculated the Expected Annual Emissions to be:

Annual Operating Hours per Engine	3,800	1,470
Capacity Factor	43.4%	16.8%
Annual Starts per Engine	400	360
Parameter	Maximum Potential to Emit (TPY)	Expected Annual Emissions (tons)
NO <sub>x</sub>	42.59	24.2
VOC	45.96	15.9
CO	55.06	23.4
PM <sub>10/2.5</sub>	33.17	14.9
SO <sub>x</sub>	5.76	2.4
Total	182.5	80.8

Quail Brush recognizes that a dispatch profile (i.e., operating hours and starts) that is greater than the Expected Annual values shown in the above table will increase the plant's Expected Annual Emissions and thereby its mitigation commitment. Quail Brush also recognizes that actual emission rates for VOC's and CO may be closer to the guaranteed emission rates than the reduced rates shown in Table 1. If either, or both, of these circumstances becomes manifest, Quail Brush will increase its mitigation commitment by the actual increase plus a 50% buffer. For example, if actual emission rates for the facility are 6 tons greater than the Expected Annual values shown above, Quail Brush will increase its funding for mitigation by 9 tons.

#### **PROPOSED MITIGATION FOR SOX AND PM<sub>2.5/10</sub>**

The Project is pursuing emission reduction credits (ERCs) for SOx and PM currently listed SDAPCD ERC Bank in the amounts shown in the above table (i.e., 14.9 tons for PM and 2.4 tons for SOx). Quail Brush will provide all necessary documentation to show control or ownership of the required emissions offsets

within 30-days of the effective date of the facility Permit to Operate issued by the San Diego Air Pollution Control District. Quail Brush understands that its AFC Certification will be conditioned upon presentation of these banked ERCs and construction cannot begin until this condition is fulfilled.

#### **PROPOSED MITIGATION FOR NO<sub>x</sub>, VOC, AND CO**

The Project proposes a non-traditional funding program to mitigate potential impacts from its emissions of NO<sub>x</sub>, VOC, and CO. Quail Brush observes that other peaking projects have fulfilled their CEC mitigation requirements by funding emission reductions through the Carl Moyer Fund or a similar mechanism. The Project also recognizes that these approaches can provide real and measurable mitigation benefits. However, Quail Brush believes that a novel mitigation approach – the creation of a roof-top solar installation incentive fund (the Program or the Fund) – is better suited to address the Project’s impacts in a locale that is proximate to the site. Such an approach can both reduce emissions of NO<sub>x</sub>, VOC, and CO from fossil fuel generated electricity (by displacing its use) while supporting the State’s goals for renewal energy generation.

The conceptual outline for this Program includes the following elements:

1. Program Mitigation Benefits:
  - a. By promoting the use of solar energy at the individual homeowner level, deeper penetration of solar technology is achieved;
  - b. By targeting the program to residences in the immediate vicinity of the Quail Brush project site (e.g., within 2.5-miles initially), the mitigation program benefits the population with the higher potential of being affected by the Project;
  - c. Emission mitigation is real and measurable – for each kilowatt hour of solar electric generated by each rooftop solar installation, a kilowatt hour of fossil fuel generated electricity is displaced; and
  - d. Roof-top solar installations generate electricity, and displace emissions of NO<sub>x</sub> and VOC, during conditions that are most conducive for ozone formation. Reduction of ozone precursor compounds during the daylight hours reduces the potential for ozone formation.
2. Fund Size: The Program will be funded by an amount equal to the total mass of NO<sub>x</sub>, VOC, and CO emissions to be mitigated (i.e., 63.5 tons) valued at the prevailing Carl Moyer Program cost effectiveness fee (the most recently published value of \$17,080 per ton is used in this discussion). Thus, the total fund size, available to qualifying projects, is estimated at \$1,084,370. It is also assumed that an administration fee of 20% would also be applied (i.e., \$216,874). The total funding requirement is estimated at \$1,301,244.
3. Qualifying Project Definition: Under this Program, any homeowner desiring to install a rooftop solar system who has proof of qualifying for incentives under the California Solar Initiative program and lives in the SDGE service territory (for details please refer to <http://www.gosolarcalifornia.ca.gov/csi/index.php>) will also qualify to receive an additional incentive under this mitigation proposal. For the first two years of the Fund’s existence, participation would be restricted to residences with qualifying projects located within 2.5 miles of the Quail Brush project site. After that period, any uncommitted funds would be available to any qualifying project within San Diego County.
4. Individual Incentive Amount: An individual incentive of \$1,500 would allow for up to 723 houses to benefit from this Program. Methodology to determine the individual incentive is discussed

later in this proposal.

5. Fund Administration: Quail Brush nominates the San Diego Air Pollution Control District as the Fund administrator.
6. Promotion of Incentives: Quail Brush will work with organizations in the local community (e.g., CleanTECH San Diego and its member companies, solar installation trade groups, San Diego East County Chamber of Commerce and its member companies, etc.) by providing Fund promotion materials for distribution to both homeowners and installers. Quail Brush will also provide Program notice advertisements in local outlets having eligible audiences in the community (e.g., the Santee Patch).
7. Individual Incentive Amount Methodology:
  - a. Assumed sizing of an individual roof-top installation: 6,000-kWh/year (6.0 MWh/year) based on an average household electricity usage of 1,000 kWh/month and solar system sizing at 50% of monthly usage.
  - b. Assume that all displaced electricity usage is generated at emission rates equal to the Quail Brush rates.
  - c. Assume the value of mitigating the emissions for NO<sub>x</sub>, VOC, and CO is at the prevailing Carl Moyer Program cost effectiveness fee.
  - d. Assume the value for avoiding CO<sub>2</sub> emissions from generating the avoided electricity is at the 2013 GHG trading floor of \$10.71/ton. Quail Brush recognizes that inclusion of this parameter into this calculation does not relieve it of its obligations under AB32.
  - e. Based on the foregoing, the value of the mitigation per solar installation is:

Parameter	Maximum Potential to Emit for Total Plant Emissions		Emission Avoided by Using Rooftop Solar Generation	Annual Mitigation Value	Life of Project Mitigation Value
	tons/year	lbs/MW-hr	lbs/year		
NO <sub>x</sub>	42.6	0.22	1.34	\$11.49	\$229.70
VOC	46.0	0.24	1.45	\$12.39	\$247.89
CO	55.1	0.29	1.74	\$14.85	\$296.96
CO <sub>2e</sub>	200,462	1,163	6,976	\$37.36	\$747.14
Value for Avoided Fossil Fuel Emissions				\$76.08	\$1,521.69

8. It is noted that the calculation presented above is designed to create a rationale basis for having a roof-top solar incentive that is sufficiently large to induce additional penetration of the technology into the market while creating a pool of funds for a reasonable number of participants. Tying the incentive size to a single year's emissions (i.e., about \$75) was thought to be an insufficient incentive. Tying the incentive size to displaced emissions over the Quail Brush Project's PPA life (i.e., 20 years) created an individual incentive size thought to be attractive while providing for a reasonably sized pool of participants (i.e., between 500 and 1,000).

9. Quail Brush understands that this Proposal has the virtue of never having been tried before; a circumstance that has its own positive and negative attributes. On the positive side, Quail Brush believes that adaptation of rooftop solar technology is a goal widely supported by multiple Project commenters and, that this Proposal can increase that adaptation while mitigating the Project's emissions. On the negative side, having never been done before means there is no project administration procedure that is directly applicable. Quail Brush believes that having qualification for the Project dependent on a known standard/process is crucial, and we believe that an applicant to this Program who has already qualified under the California Solar Initiative Program needs no additional, rigorous scrutiny.
10. Quail Brush is determined to make a rooftop solar incentive project work as its air mitigation program under CEQA and CEC rules because we believe it provides adequate mitigation to the location, and more importantly, people, affected by the Project.

Table 1. Summary of Emissions Testing Data from Wartsila 20V34SG Engines at Plains End II

PE2 Test Data	PM (lbs/hr)	NOx (lbs/hr)	CO (lbs/hr)	VOCs (lbs/hr)
Engine 2	0.559	1.085	0.137	0.480
Engine 5	1.284	1.139	0.174	0.350
Engine 8	0.461	1.016	0.074	0.140
Engine 11	0.885	1.049	0.121	0.100
Engine 13	0.795	1.059	0.123	0.200
Average	0.797	1.070	0.126	0.254
Scaled up to 9.3 MW	0.878	1.179	0.139	0.280
Quail Brush Guarantee Values	1.379	1.317	1.564	1.584
Observed Rate Compared to Guaranteed	63.7%	89.5%	8.9%	17.7%
Expected Emissions as % of Guarantee	100.0%	100.0%	25.0%	35.0%
Expected Engine Emission Rates (lbs/hr)	1.379	1.317	0.391	0.554
Plains End II	8.439	MW per engine		
Quail Brush	9.3	MW per engine		