4.2 AIR QUALITY

As described in detail below impacts of the Modified Project to air quality are expected to be less than or equal to those of the Approved Project and will remain less than significant.

4.2.1 Project Changes Related to Air Quality

The PV technology proposed to be utilized would require modifications in construction of the Modified Project from what was detailed in the Commission Decision. Details are included in Appendix B, and are summarized below.

- Reduction in Expected Truck Trips associated both with Deliveries and Construction Workers: The Modified Project construction workforce would be reduced as the need for the high quantities of assembly workers is specific to the SunCatcher. Similarly, because of their dimensions, the PV modules might be packaged more efficiently, reducing deliveries associated with the Modified Project.
- Phasing: The Modified Project would develop a Phase 1 of up to 294 MW south of the railroad. This change in phasing would require the movement of the main services complex and substation to the area south of the railroad and would postpone the construction of the bridge to Phase 2, compared to beginning in Month 7 of the Approved Project. Phase 2 would consist of up to 324 MW that will be developed north of the railroad.
- Road and Route Treatment: As with the Approved Project, the main access road would be paved and all other roads developed in the Modified Project would be treated with Soiltac or the equivalent. However, the length and quantities of roads would decrease under the Modified Project layout and many roads in the Approved Project would be replaced with unimproved module access points, which would require little to no development during construction.
- Total Mileage Decrease: As a result of moving the main services complex and on-site substation south of the railroad, the average distances traveled would be much shorter in the Modified Project than in the Approved Project. For example, the approximate distance from the Modified Project site entrance to the main services complex would be 1.26 miles, a shorter distance than that contemplated in the Approved Project.
- The Modified Project has reduced the footprint and the total amount of disturbance, which has reduced the total fugitive dust emissions for the length of the construction period.

Additionally, the emissions associated with the operation of the Modified Project would be less than the Approved Project. Details are included in Appendix B, and are summarized below.

- Reduction in Expected Modified Project Operational Workforce: The Modified Project operational workforce would be reduced as the maintenance requirements for PV technology would be less than those contemplated for the Approved Project.
- Operational Fleet: The revised operational fleet would require fewer and smaller vehicles to conduct the panel washing, inspections, and minor maintenance tasks. No significant changes would be made to the remaining maintenance fleet.
- Road and Route Treatment: As with the Approved Project, the main access road would be paved, and all other roads developed in the Modified Project would be treated with a soil stabilizer like Soiltac or the equivalent. However, the length and quantities of roads would be decreased in the Modified Project layout, and many roads in the Approved Project would be replaced with unimproved module access points. The unimproved module access points would be utilized up to four times a year for maintenance and PV module washing.
- Washing Methods: PV modules would be washed using the unimproved module access points. The vehicle operator on these paths would park at one or two places along the access lane, exit the vehicle, and manually spray multiple PV modules with a spray wand. PV modules would be manually sprayed with a spray wand, via a water tank and hose reel attached to the PV Module Washing Truck.

4.2.2 Changes in Environmental Impacts

The Commission Decision concluded that there would be no significant impacts to air quality after mitigation. The Modified Project would result in emissions that would be less than or equal to the Approved Project for every criteria pollutant.

4.2.2.1 Construction

Criteria pollutant emissions generated from construction activities were calculated using revised information described above and shown in Appendix B, including revised vehicle inventory and travel distances. Tables 4.2-1 and 4.2-2 present the maximum criteria pollutant during the highest emitting month and highest emitting 12-month span estimated during the construction phase for the Modified Project.

TABLE 4.2-1
ESTIMATED DAILY MAXIMUM CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (LBS/DAY) FOR THE MODIFIED PROJECT (MONTH 7)

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
On-Site Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment	15.39	14.17	218.26	42.65	276.10	0.28
Worker Vehicles	0.26	0.20	18.11	1.25	1.69	0.03
Security Vehicles	0.01	0.01	1.47	0.04	0.02	0.01
On-site Generators	0.65	0.64	114.10	6.19	65.20	0.22
Bridge Construction Delivery Trucks	0.00	0.00	0.00	0.00	0.00	0.00
Other Delivery Trucks	1.68	1.50	14.47	5.32	27.20	0.03
Subtotal of On-site Combustion Emissions	17.98	16.51	366.41	55.45	370.22	0.56
On-Site Fugitive Emissions						
Construction Equipment	17.19	3.97				
Storage Piles	9.53	2.12				
Worker Vehicles	55.43	8.31				
Security Vehicles	37.67	5.65				
On-site Generators	--	--				
Bridge Construction Delivery Trucks	0.00	0.00				
Other Delivery Trucks	273.23	37.52				
Subtotal of On-Site Fugitive Emissions	393.04	57.57				
Subtotal of On-Site Emissions	411.02	74.08	366.41	55.45	370.22	0.56
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	1.77	0.98	143.20	4.27	17.12	0.17
Bridge Construction Delivery Trucks	0.00	0.00	0.00	0.00	0.00	0.00
Other Delivery Trucks	4.25	3.62	23.30	5.10	115.73	0.12
Subtotal of Off-Site Combustion Emissions	6.03	4.60	166.50	9.37	132.85	0.29

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
Off-Site Paved Road Fugitive Dust Emissions						
Worker Vehicles	12.16	1.82				
Bridge Construction Delivery Trucks	0.00	0.00				
Other Delivery Trucks	17.70	2.66				
Subtotal of Off-Site Fugitive Emissions	29.87	4.48				
Subtotal of Off-Site Emissions	35.89	9.08	166.50	9.37	132.85	0.29
Total Maximum Daily Emissions	446.92	83.16	532.91	64.82	503.07	0.85

Acronyms:
CO = carbon monoxide
lbs = pounds
NO_X = oxides of nitrogen
$PM_{2.5}$ = particles less than 2.5 micrometers in diameter
PM_{10} = particles 10 micrometers or less in diameter
ROG = reactive organic gas
SO_X = oxides of sulfur
-- = not applicable

TABLE 4.2-2
ESTIMATED MAXIMUM ANNUAL CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (TONS/YEAR) FOR THE MODIFIED PROJECT (MONTH 2 TO 13)

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
On-Site Construction Emissions						
On-Site Combustion Emissions						
Construction Equipment	2.189	2.015	28.156	6.106	38.006	0.039
Worker Vehicles	0.034	0.026	2.398	0.165	0.224	0.003
Security Vehicles	0.001	0.001	0.229	0.006	0.003	0.001
On-site Generators	0.102	0.099	17.799	0.966	10.171	0.034
Bridge Construction Delivery Trucks	0.000	0.000	0.000	0.000	0.000	0.000
Other Delivery Trucks	0.293	0.262	2.488	0.941	4.761	0.006
Subtotal of On-site Combustion Emissions	2.62	2.40	51.07	8.18	53.17	0.08
On-Site Fugitive Dust Emissions						
Construction Equipment	2.38	0.57				
Storage Piles	0.87	0.19				
Worker Vehicles	7.34	1.10				
Security Vehicles	5.88	0.88				

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
On-site Generators	--	--				
Bridge Construction Delivery Trucks	0.00	0.00				
Other Delivery Trucks	48.12	6.56				
Subtotal of On-Site Fugitive Emissions	64.58	9.31				
Subtotal of On-Site Emissions	67.20	11.71	51.07	8.18	53.17	0.08
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.23	0.13	18.96	0.57	2.27	0.02
Bridge Construction Delivery Trucks	0.00	0.00	0.00	0.00	0.00	0.00
Other Delivery Trucks	0.61	0.52	3.32	0.73	16.51	0.02
Subtotal of Off-Site Combustion Emissions	0.84	0.65	22.29	1.29	18.78	0.04
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	1.61	0.24				
Bridge Construction Delivery Trucks	0.00	0.00				
Other Delivery Trucks	2.53	0.38				
Subtotal of Off-Site Fugitive Emissions	4.14	0.62				
Subtotal of Off-Site Emissions	4.98	1.27	22.29	1.29	18.78	0.04
Total Maximum Annual Emissions	72.18	12.98	73.36	9.48	71.94	0.12

Acronyms:
CO =carbon monoxide
NO_X = oxides of nitrogen
$PM_{2.5}$ = particles less than 2.5 micrometers in diameter
PM_{10} = particles 10 micrometers or less in diameter
ROG = reactive organic gas
SO_X =oxides of sulfur
-- = not applicable

The construction emissions presented in Tables 4.2-1 and Tables 4.2-2 are lower than the construction emissions calculated for the Approved Project.

4.2.2.2 Operation

Criteria pollutant emissions generated from operation of the Modified Project were estimated using the revised maintenance vehicle fleet appropriate to service the PV modules. Tables 4.2-3 and 4.2-4 present the maximum estimated operational air pollutant emissions from the Modified Project. Detailed air emission calculations are presented in Appendix B.

TABLE 4.2-3
ESTIMATED DAILY MAXIMUM OPERATIONAL EMISSIONS OF CRITERIA POLLUTANTS (LBS/DAY) FOR THE MODIFIED PROJECT

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
On-Site Operational Emissions						
On-Site Combustion Emissions						
Diesel Generator	0.01	0.01	0.10	0.04	1.14	0.03
Maintenance and Security Vehicles and Equipment	0.33	0.27	96.75	17.02	5.21	0.13
Worker Vehicles	0.09	0.06	3.67	0.22	0.34	0.01
Visitor Cars and Delivery Trucks	0.03	0.03	0.56	0.13	0.57	0.00
Subtotal of On-Site Combustion Emissions	0.46	0.38	101.08	17.42	7.25	0.17
On-Site Fugitive Emissions						
Maintenance and Security Vehicles and Equipment	236.26	28.13				
Worker Vehicles	2.34	0.57				
Visitor Cars and Delivery Trucks	0.74	0.18				
Gasoline Tank	--	--	--	5.49	--	--
Subtotal of On-Site Fugitive Emissions	239.34	28.88	0.00	5.49	0.00	0.00
Subtotal of On-Site Emissions	239.80	29.27	101.08	22.92	7.25	0.17
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.65	0.36	31.83	0.85	3.67	0.06
Visitor Cars and Delivery Trucks	0.44	0.33	7.50	0.54	8.81	0.02
Subtotal of Off-Site Combustion Emissions	1.09	0.69	39.34	1.39	12.48	0.09
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	7.98	1.96				

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
Visitor Cars and Delivery Trucks	4.84	1.19				
Subtotal of Off-Site Fugitive Emissions	12.82	3.15				
Subtotal of Off-Site Emissions	13.91	3.83	39.34	1.39	12.48	0.09
Total Maximum Emissions	253.71	33.10	140.41	24.30	19.74	0.26

Acronyms:
CO = carbon monoxide
NO_X =oxides of nitrogen
$PM_{2.5}$ = particles less than 2.5 micrometers in diameter
PM_{10} = particles 10 micrometers or less in diameter
ROG = reactive organic gas
SO_X = oxides of sulfur
-- = not applicable

TABLE 4.2-4
ESTIMATED ANNUAL MAXIMUM OPERATIONAL EMISSIONS OF CRITERIA POLLUTANTS (TONS/YEAR)

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
On-Site Operational Emissions						
On-Site Combustion Emissions						
Diesel Generator	0.0001	0.0001	0.0006	0.0002	0.0068	0.0002
Maintenance and Security Vehicles and Equipment	0.05	0.04	14.10	2.39	0.83	0.02
Worker Vehicles	0.02	0.01	0.66	0.04	0.06	0.00
Visitor Cars and Delivery Trucks	0.00	0.00	0.05	0.01	0.02	0.00
Subtotal of On-Site Combustion Emissions	0.06	0.05	14.81	2.44	0.92	0.02
On-Site Fugitive Emissions						
Maintenance and Security Vehicles and Equipment	31.95	3.90				
Worker Vehicles	0.42	0.10				
Visitor Cars and Delivery Trucks	0.04	0.01				
Gasoline Tank	--	--	--	1.00	--	--
Subtotal of On-Site Fugitive Emissions	32.41	4.01	0.00	1.00	0.00	0.00
Subtotal of On-Site Emissions	32.47	4.07	14.81	3.44	0.92	0.02
Off-Site On-Road Emissions						
Off-Site Combustion Emissions						
Worker Vehicles	0.12	0.06	5.73	0.15	0.66	0.01
Visitor Cars and Delivery Trucks	0.02	0.02	0.79	0.03	0.33	0.00

Activity	PM_{10}	$PM_{2.5}$	CO	ROG	NO_x	SO_x
Subtotal of Off-Site Combustion Emissions	0.14	0.08	6.52	0.18	0.99	0.01
Off-Site Paved Road Fugitive Emissions						
Worker Vehicles	1.44	0.35				
Visitor Cars and Delivery Trucks	0.28	0.07				
Subtotal of Off-Site Fugitive Emissions	1.71	0.42				
Subtotal of Off-Site Emissions	1.85	0.50	6.52	0.18	0.99	0.01
Total Maximum Emissions	34.33	4.57	21.33	3.62	1.91	0.03

Acronyms:
CO = carbon monoxide
NO_X = oxides of nitrogen
$PM_{2.5}$ = particles less than 2.5 micrometers in diameter
PM_{10} = particles 10 micrometers or less in diameter
ROG = reactive organic gas
SO_X = oxides of sulfur
-- = not applicable

Activity	CO_2	CH_4	N_2O	SF_6	CO_2e
On-Site Operational Emissions					
On-Site Combustion Emissions					
Diesel Generator	0.81	0.00	0.00	0.00	0.82
Maintenance & Security Vehicles and Equipment	1,140.06	0.21	0.07	0.00	1,072.72
Worker Vehicles	145.01	0.01	0.01	0.00	149.13
Visitor Cars and Delivery Trucks	10.91	0.00	0.00	0.00	11.16
Potential SF_6 leakage emissions from proposed circuit breakers and other transmissions system equipment				0.02	384.42
Subtotal of On-Site Emissions	1,296.79	0.22	0.08	0.02	1,618.24
Off-Site On-Road Emissions					
Off-Site Combustion Emissions					
Worker Vehicles	990.04	0.23	0.21	0.00	1,059.28
Visitor Cars and Delivery Trucks	160.67	0.03	0.03	0.00	169.58
Subtotal of Off-Site Emissions	1,150.71	0.26	0.23	0.00	1,228.86
Total Maximum Emissions	2,447.50	0.48	0.31	0.02	2,847.10

Acronyms:
CO_2 = carbon monoxide
CO_2e = carbon monoxide equivalent
CH_4 = methane
NO_2 = nitrous oxide
SF_6 = sulfur hexafluoride

The operational emissions presented in Tables 4.2-3 and 4.2-4 are lower than the operational emissions calculated for the Approved Project.

In the Commission Decision, the Commission concluded that there would be no significant impacts to air quality after mitigation. The Modified Project would result in emissions that are less than the Approved Project for every criteria pollutant. Thus, the air quality impacts of the Modified Project are expected to be less than the Approved Project.

4.2.3 Changes in LORS Conformance and Other Permits

In the Commission Decision, the Commission concluded that, with the implementation of the Conditions, the Approved Project would comply with all applicable LORS. As with the Approved Project, the Modified Project would comply with all applicable LORS, and no new or additional LORS have been identified.

The Approved Project received a final determination of compliance (DOC) from the Mojave Desert Air Quality Management District (MDAQMD) for the Approved Project's stationary sources. The MDAQMD has indicated that there is no need to revise or reissue a DOC because the pieces of equipment that were permitted (the backup diesel generator and fuel storage tank) would not change and the expected usage would not change.

4.2.4 Changes in Proposed Mitigation

Because the Modified Project would have fewer air quality impacts than the Approved Project, no additional mitigation measures would be required.

4.2.5 Changes in Conditions of Certification

The conforming changes to the Conditions for the Modified Project related to air quality are:

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for ~~mirror~~ PV panel washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the latest model year available when obtained.

Verification: At least 30 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.