BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

RESPONSES TO AIR QUALITY QUESTIONS FROM WORKSHOP

From: Stein, Kenneth
To: Eric Solorio <ESolorio@energy.state.ca.us>
Cc: Will Walters <WWalters@aspeneg.com>; Busa, Scott; Russell, Meg; 'Jared Foster; McCloud, Duane; Jane Luckhardt; Sophie Rowlands, Sara Head
Sent: Thu Jul 16 19:28:11 2009
Subject: BSEP Responses to air quality questions from the Workshop

Eric -

The following are responses to items raised at the July 1 BSEP Workshop related to Air Quality:

1. Please provide a "side-by-side" comparison of the emissions from the solar field maintenance vehicles based on the proposed requirements in PSA condition AQ- SC6 with the emissions from the vehicles proposed by Beacon.

Response: Please see attached discussion and calculation. The PSA proposed fugitive dust emissions are slightly higher than those proposed by Beacon as we have assumed the water trucks would need 4 times as many trips and the NOx emissions are negligibly less than Beacon based on use of about 5% of the maintenance vehicles used being ATVs for crew support. Beacon considers the use of light duty trucks for mirror washing and ATVs for maintenance crew support to be infeasible based on operations experience at the SEGS facilities.

2. Please confirm the capacity of the propane truck and resultant number of trips

Response: Beacon has reviewed the spreadsheet provided by Will Walters on July 1 and we agree with his calculations. There will be about 132 trips per year based on a 5,000 gallon capacity propane truck. However, this number of trips is conservative as the boiler use is expected to be less than the 1,000 hours per year each assumed.

3. Please confirm that there are sufficient supplies of propane in the local area to meet the needs of the BSEP.

Response: Suppliers in the Bakersfield and Lancaster areas were contacted. According to Suburban Propane and Paxair, sufficient supplies of propane are expected to be available to the BSEP.

4. Please confirm that additional truck trips will be needed to supply the Project.

Response: We agree with Mr. Walters that additional deliveries will be needed and we agree with his basis for the number of trucks expected related to solar assembly components. In addition to the off-site vehicle emissions Mr. Walters has identified, the BSEP will also need deliveries associated with the nitrogen required for blanketing the HTF expansion tanks. We have determined that the ullage system will require approximately 14,000 lbs of liquid nitrogen per day which equates to about (22) 3,000 gallon deliveries per month. The closest facility identified that could deliver that amount of liquid nitrogen was in Fontana ~ 100 miles away.

5. Staff expects to require that only CARB-certified soil stabilizers be used on the Project.

Response: Rather than specify only a single product, Beacon requests that the condition include wording such as "A CARB-certified and/or CalTrans-certified soil stabilizer such as Soil Cement, Envirotec, or other similar product must be used."

Kenny Stein | Environmental Manager | kenneth.stein@nexteraenergy.com
NextEra Energy Resources, 700 Universe Boulevard, Juno Beach, FL. 33408
T: 561.691.2216| M: 561.762.5875

COMPARISON OF EMISSIONS FROM SOLAR FIELD MAINTENANCE VEHICLES FOR APPLICANT'S PROPOSED OPERATING SCENARIO AND PSA PROPOSED CONDITION OF CERTIFICATION AQ-SC6

In the Preliminary Staff Assessment (PSA), Staff proposed a condition of certification AQ-SC6 that would require the use of gasoline-fueled light trucks for mirror washing and facility maintenance. The use of electrical powered all-terrain vehicles (ATVs) to support maintenance crew activities was also required. On May 1, 2009, Beacon Solar provided comments on the PSA that identified that use of the smaller trucks for mirror washing would require more trips since the truck would need to return to the central water filling area four times as often. Also, that use of electrical ATVs had been found to be infeasible at the existing SEGS facilities. Staff has requested a "side-by-side" comparison of the emissions from the vehicles proposed by Staff in the PSA with the vehicle emissions proposed by Beacon.

For this comparison, emissions that would result from implementing the requirements included in the PSA have been calculated based on the following assumptions:

- Staff's suggested 15% silt content
- Use of ½ ton pickup trucks for mirror washing activities, which would need to travel four times the distance of 4,000 gallon water trucks, because their water towing capacity would only be about 1,000 gallons
- Use of vehicles equivalent to 4,000 gallon water trucks for weed abatement and soil stabilizer application
- About 5 percent of the total daily and annual maintenance vehicle mileage would be for maintenance crew support, and electric all-terrain vehicles would be used for these trips
- About 95 percent of the total daily and annual maintenance vehicle mileage would be for maintenance activities, and ½ ton pickup trucks would be used for these trips
- Use of 2011 or later model year vehicles
- Application of a soil binder to the paths where the vehicles drive

As presented in Beacon's May 1 comments on the PSA, emissions were recalculated based on the following assumptions:

- Staff's suggested 15% silt content
- Use of ½ ton pickup trucks for the maintenance activities (for calculation purposes, emissions shown as all ½ ton trucks, however some activities such as welding rigs will require ¾ ton trucks and light duty vehicles will be used for maintenance crew support)
- Use of vehicles equivalent to 4,000 gallon water trucks for mirror washing, weed abatement and soil stabilizer application
- Use of 2011 or later model year vehicles
- Application of a soil binder to the paths where the vehicles drive

As identified in Beacon's PSA comments, it was also determined that the calculation in the AFC had incorrectly applied a heavy duty vehicle emission factor to the light duty maintenance vehicles/trucks, causing the exhaust emissions to be overestimated by more than a factor of 100. This error has been corrected in the calculations.

Emissions for the Applicant's proposed operating scenario and the operating scenario required by PSA AQ-SC6 are summarized in the following table. Detailed emission calculations are attached.

Scenario	Emissions (tpy)							
	CO	**VOC**	**NOx**	**SOx**	**Exh. PM10**	**Fug. PM10**	**Exh. PM2.5**	**Fug. PM2.5**
Applicant's Proposal	0.062	0.0028	0.012	0.0006	0.001	16.2	0.001	3.4
PSA	0.063	0.0023	0.006	0.0005	0.001	17.7	0.001	3.7
Difference (PSA-Applicant)	0.001	-0.0005	-0.006	-0.0001	0.000	1.5	0.000	0.3

As noted in Beacon's PSA comments, the hauling capacity of ½ ton trucks is not sufficient for some activities such as the welding rigs. Likewise, the use of 4,000 gallon water trucks that have been especially designed for mirror washing will be more efficient than using a smaller truck hauling a trailer. The smaller trucks could only carry about 1,000 gallons of water, and hence would need to make four times the number of trips to a central water supply area, which leads to greater fugitive emissions. The fugitive PM10 emissions from the 4,000 gallon water trucks are less than 1 tpy and would increase to 2.7 tpy with the use of the smaller trucks making 4 times as many trips. While it might be possible to install water piping throughout the solar field to deliver the deionized water to more locations and cut down on the number of trips, a piping system would be significantly more costly, would likely require some pumping, would not be as efficient and would only reduce PM10 emissions by less than 2 tpy. Likewise, past experience with using electric all terrain vehicles in the existing solar fields has shown that they need to be replaced frequently and cannot be air conditioned, which is a safety concern in this area where the temperatures get quite high in the summer. Requiring that electric vehicles be used for crew support in the solar field would reduce only a tiny fraction of the negligible 0.01 tpy of NOx estimated from the exhaust of all of the on-site vehicles expected to be used during operation. The slight differences between the PSA proposed vehicle make-up and that proposed by Beacon do not justify the additional cost and other concerns that the PSA requirements would impose.

Title : 2011 New Vehicles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/04/10 14:48:53
Scen Year: 2011 -- Model year 2011 selected
Season : Annual
Area : Statewide totals Average
I/M Stat : Enhanced Interim (2005) -- Using I/M schedule for area 59 Los Angeles (SC)
Emissions: Tons Per Day

****

	LDA-NCAT	LDA-CAT	LDA-DSL	LDA-TOT	LDT1-NCA	LDT1-CAT	LDT1-DSL	LDT1-TOT	LDT2-NCA	LDT2-CAT
Vehicles	0	881013	0	881013	0	149762	0	149762	0	314489
VMT/1000	0	48960	0	48960	0	8536	0	8536	0	17847
Trips	0	5778870	0	5778870	0	982338	0	982338	0	2062840
Reactive Organic Gas Emissions										
Run Exh	0	0.26	0	0.26	0	0.04	0	0.04	0	0.17
Idle Exh	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.14	0	0.14	0	0.02	0	0.02	0	0.11
Total Ex	0	0.39	0	0.39	0	0.07	0	0.07	0	0.27
Diurnal	0	0.01	0	0.01	0	0	0	0	0	0.01
Hot Soak	0	0.02	0	0.02	0	0	0	0	0	0.02
Running	0	0.54	0	0.54	0	0.06	0	0.06	0	0.05
Resting	0	0.01	0	0.01	0	0	0	0	0	0.01
Total	0	0.98	0	0.98	0	0.14	0	0.14	0	0.37
Carbon Monoxide Emissions										
Run Exh	0	15.71	0	15.71	0	2.68	0	2.68	0	9.15
Idle Exh	0	0	0	0	0	0	0	0	0	0
Start Ex	0	2.42	0	2.42	0	0.4	0	0.4	0	1.6
Total Ex	0	18.13	0	18.13	0	3.08	0	3.08	0	10.74
Oxides of Nitrogen Emissions										
Run Exh	0	1.22	0	1.22	0	0.21	0	0.21	0	0.76
Idle Exh	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.08	0	0.08	0	0.01	0	0.01	0	0.07
Total Ex	0	1.29	0	1.29	0	0.22	0	0.22	0	0.82
Carbon Dioxide Emissions (000)										
Run Exh	0	20.32	0	20.32	0	4.4	0	4.4	0	9.41
Idle Exh	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.45	0	0.45	0	0.1	0	0.1	0	0.2
Total Ex	0	20.77	0	20.77	0	4.49	0	4.49	0	9.61
PM10 Emissions										
Run Exh	0	0.11	0	0.11	0	0.02	0	0.02	0	0.09
Idle Exh	0	0	0	0	0	0	0	0	0	0
Start Ex	0	0.01	0	0.01	0	0	0	0	0	0.01
Total Ex	0	0.12	0	0.12	0	0.02	0	0.02	0	0.09
TireWear	0	0.43	0	0.43	0	0.08	0	0.08	0	0.16
BrakeWr	0	0.68	0	0.68	0	0.12	0	0.12	0	0.25
Total	0	1.22	0	1.22	0	0.21	0	0.21	0	0.5
Lead	0	0	0	0	0	0	0	0	0	0
SOx	0	0.2	0	0.2	0	0.04	0	0.04	0	0.09
Fuel Consumption (000 gallons)										
Gasoline	0	2129.22	0	2129.22	0	460.57	0	460.57	0	985.89
Diesel	0	0	0	0	0	0	0	0	0	0

'**********

LDT2-DSL	LDT2-TOT	MDV-NCA	MDV-CAT	MDV-DSL	MDV-TOT	LHDT1-NC	LHDT1-CA	LHDT1-DS	LHDT1-TO	LHDT2-NC
0	314489	0	127277	0	127277	0	25369	5913	31282	0
0	17847	0	7446	0	7446	0	1704	397	2101	0
0	2062840	0	834853	0	834853	0	838873	74378	913251	0
0	0.17	0	0.08	0	0.08	0	0.02	0.02	0.04	0
0	0	0	0	0	0	0	0.04	0	0.04	0
0	0.11	0	0.06	0	0.06	0	0.11	0	0.11	0
---	---	---	---	---	---	---	---	---	---	---
0	0.27	0	0.13	0	0.13	0	0.18	0.02	0.19	0
0	0.01	0	0.01	0	0.01	0	0	0	0	0
0	0.02	0	0.01	0	0.01	0	0	0	0	0
0	0.05	0	0.02	0	0.02	0	0.01	0	0.01	0
0	0.01	0	0.01	0	0.01	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0.37	0	0.17	0	0.17	0	0.18	0.02	0.2	0
0	9.15	0	4.95	0	4.95	0	0.29	0.12	0.41	0
0	0	0	0	0	0	0	0.23	0.01	0.24	0
0	1.6	0	0.91	0	0.91	0	2.47	0	2.47	0
---	---	---	---	---	---	---	---	---	---	---
0	10.74	0	5.86	0	5.86	0	3	0.12	3.13	0
0	0.76	0	0.33	0	0.33	0	0.16	0.25	0.41	0
0	0	0	0	0	0	0	0	0.02	0.02	0
0	0.07	0	0.03	0	0.03	0	1.06	0	1.06	0
---	---	---	---	---	---	---	---	---	---	---
0	0.82	0	0.36	0	0.36	0	1.22	0.27	1.49	0
0	9.41	0	5.32	0	5.32	0	1.55	0.23	1.78	0
0	0	0	0	0	0	0	0.01	0	0.01	0
0	0.2	0	0.11	0	0.11	0	0.04	0	0.04	0
---	---	---	---	---	---	---	---	---	---	---
0	9.61	0	5.43	0	5.43	0	1.6	0.23	1.83	0
0	0.09	0	0.04	0	0.04	0	0	0	0.01	0
0	0	0	0	0	0	0	0	0	0	0
0	0.01	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0.09	0	0.04	0	0.04	0	0	0	0.01	0
0	0.16	0	0.07	0	0.07	0	0.02	0.01	0.03	0
0	0.25	0	0.1	0	0.1	0	0.02	0.01	0.03	0
---	---	---	---	---	---	---	---	---	---	---
0	0.5	0	0.21	0	0.21	0	0.05	0.01	0.06	0
0	0	0	0	0	0	0	0	0	0	0
0	0.09	0	0.05	0	0.05	0	0.02	0	0.02	0
0	985.89	0	557.09	0	557.09	0	164.72	0	164.72	0
0	0	0	0	0	0	0	0	20.53	20.53	0

LHDT2-CA	LHDT2-DS	LHDT2-TO	MHDT-NC/	MHDT-CA	MHDT-DSI	MHDT-TO	HHDT-NC/	HHDT-CA1	HHDT-DSI	HHDT-TO1
5815	4215	10030	0	3051	11732	14783	0	203	12204	12406
389	282	671	0	232	986	1218	0	54	3315	3370
192298	53015	245312	0	139331	328965	468296	0	9262	61757	71018
0	0.01	0.02	0	0	0.03	0.03	0	0.01	0.55	0.56
0.01	0	0.01	0	0.01	0	0.01	0	0	0.17	0.17
0.03	0	0.03	0	0.05	0	0.05	0	0	0	0
0.04	0.01	0.05	0	0.06	0.03	0.09	0	0.01	0.73	0.74
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0.04	0.01	0.05	0	0.06	0.03	0.09	0	0.01	0.73	0.74
0.07	0.09	0.16	0	0.05	0.38	0.43	0	0.99	2.64	3.64
0.05	0	0.06	0	0.04	0.03	0.08	0	0	0.97	0.97
0.57	0	0.57	0	0.88	0	0.88	0	0.35	0	0.35
0.69	0.09	0.78	0	0.97	0.41	1.39	0	1.34	3.61	4.95
0.04	0.17	0.21	0	0.03	0.73	0.76	0	0.18	4.24	4.42
0	0.01	0.01	0	0	0.09	0.1	0	0	2.79	2.79
0.24	0	0.24	0	0.11	0	0.11	0	0.02	0	0.02
0.28	0.19	0.47	0	0.14	0.82	0.96	0	0.2	7.04	7.24
0.37	0.16	0.53	0	0.17	1.64	1.81	0	0.04	6.68	6.72
0	0	0	0	0	0.01	0.01	0	0	0.15	0.15
0.01	0	0.01	0	0.01	0	0.01	0	0	0	0
0.38	0.16	0.54	0	0.18	1.64	1.82	0	0.04	6.83	6.87
0	0	0	0	0	0.03	0.03	0	0	0.2	0.2
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0.03	0.03	0	0	0.2	0.2
0.01	0	0.01	0	0	0.01	0.02	0	0	0.13	0.13
0.01	0	0.01	0	0	0.01	0.02	0	0	0.1	0.1
0.01	0.01	0.02	0	0.01	0.06	0.07	0	0	0.44	0.44
0	0	0	0	0	0	0	0	0	0	0
0	0	0.01	0	0	0.02	0.02	0	0	0.07	0.07
38.67	0	38.67	0	18.52	0	18.52	0	4	0	4
0	14.58	14.58	0	0	147.7	147.7	0	0	614.78	614.78

OBUS-NC	OBUS-CA	OBUS-DSL	OBUS-TO	SBUS-NC	SBUS-CA	SBUS-DSL	SBUS-TO	UB-NCAT	UB-CAT	UB-DSL
0	242	932	1174	0	99	609	708	0	187	110
0	17	71	88	0	4	26	30	0	22	13
0	11068	26132	37199	0	394	2436	2830	0	746	438
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0	0	0.01	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0	0	0.01	0	0	0	0	0	0	0
0	0	0.03	0.03	0	0	0.01	0.01	0	0.01	0.01
0	0	0	0.01	0	0.01	0.01	0.02	0	0	0
0	0.07	0	0.07	0	0.01	0	0.01	0	0.01	0
---	---	---	---	---	---	---	---	---	---	---
0	0.08	0.03	0.11	0	0.02	0.02	0.03	0	0.02	0.01
0	0	0.05	0.05	0	0	0.02	0.02	0	0	0.01
0	0	0.01	0.01	0	0	0.03	0.03	0	0	0
0	0.01	0	0.01	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0.01	0.06	0.07	0	0	0.04	0.04	0	0	0.01
0	0.01	0.12	0.13	0	0	0.04	0.05	0	0.02	0.03
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0.01	0.12	0.13	0	0	0.04	0.05	0	0.02	0.03
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	1.35	0	1.35	0	0.39	0	0.39	0	1.9	0
0	0	10.65	10.65	0	0	3.99	3.99	0	0	2.82

UB-TOT	MH-NCAT	MH-CAT	MH-DSL	MH-TOT	MCY-NCA	MCY-CAT	MCY-DSL	MCY-TOT	ALL-TOT
296	0	13295	1074	14369	31486	64509	0	95995	1653580
36	0	219	18	237	385	788	0	1173	91712
1184	0	1330	107	1437	62967	129005	0	191971	11591400
0	0	0	0	0	1.72	1.77	0	3.49	4.68
0	0	0	0	0	0	0	0	0	0.24
0	0	0	0	0	0.16	0.28	0	0.44	0.96
0	0	0	0	0	1.88	2.04	0	3.92	5.88
0	0	0	0	0	0	0.12	0	0.12	0.15
0	0	0	0	0	0	0.02	0	0.02	0.07
0	0	0	0	0	0	0.22	0	0.22	0.91
0	0	0	0	0	0	0.06	0	0.06	0.08
0	0	0	0	0	1.88	2.46	0	4.34	7.1
0.02	0	0.05	0	0.05	22.74	8.04	0	30.77	68
0	0	0	0	0	0	0	0	0	1.37
0.01	0	0.01	0	0.01	0.53	1.68	0	2.21	11.91
0.03	0	0.05	0	0.06	23.27	9.71	0	32.98	81.28
0.01	0	0.03	0.01	0.05	0.59	0.86	0	1.44	9.88
0	0	0	0	0	0	0	0	0	2.95
0	0	0	0	0	0.02	0.04	0	0.06	1.69
0.01	0	0.03	0.01	0.05	0.61	0.9	0	1.51	14.53
0.05	0	0.16	0.03	0.19	0.05	0.17	0	0.22	50.92
0	0	0	0	0	0	0	0	0	0.17
0	0	0	0	0	0	0	0	0.01	0.93
0.05	0	0.16	0.03	0.19	0.05	0.18	0	0.23	52.02
0	0	0	0	0	0.02	0	0	0.03	0.52
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0.02
0	0	0	0	0	0.03	0	0	0.03	0.55
0	0	0	0	0	0	0	0	0.01	0.93
0	0	0	0	0	0	0.01	0	0.01	1.32
0	0	0.01	0	0.01	0.03	0.01	0	0.04	2.79
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0.5
1.9	0	16.56	0	16.56	9.97	20.44	0	30.41	4409.29
2.82	0	0	2.64	2.64	0	0	0	0	817.69

Emissions from Applicant's Proposed Operating Scenario

Table 19-A Motor Vehicle Combustion Criteria Pollutant Emissions (Revised July 2009)

Vehicle	Distance		Speed	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
	Miles/yr	Miles/day	Miles/hr	lb/hr								
Mirror Wash Truck	3000	24	5	0.0109	0.0022	0.0212	0.0002	0.0006	3.2295	0.0006	0.0006	0.6846
Maintenance Vehicles	96000	384	10	0.0120	0.0004	0.0009	0.0001	0.0001	3.1306	0.0000	0.0001	0.6637
Weed Abatement	340	40	5	0.0109	0.0022	0.0212	0.0002	0.0006	3.2295	0.0006	0.0006	0.6846
Soil Stabilizer Application	340	40	5	0.0109	0.0022	0.0212	0.0002	0.0006	3.2295	0.0006	0.0006	0.6846
Total				**0.0447**	**0.0070**	**0.0646**	**0.0007**	**0.0019**	**12.8190**	**0.0018**	**0.0019**	**2.7176**

Vehicle	Distance		Speed	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
	Miles/yr	Miles/day	Miles/hr	lb/day								
Mirror Wash Truck	3000	24	5	0.0523	0.0106	0.1019	0.0010	0.0029	15.5014	0.0029	0.0029	3.2863
Maintenance Vehicles	96000	384	10	0.4622	0.0159	0.0353	0.0039	0.0039	120.2140	0.0000	0.0039	25.4854
Weed Abatement	340	40	5	0.0871	0.0176	0.1699	0.0017	0.0048	25.8357	0.0048	0.0048	5.4772
Soil Stabilizer Application	340	40	5	0.0871	0.0176	0.1699	0.0017	0.0048	25.8357	0.0048	0.0048	5.4772
Total				**0.6887**	**0.0617**	**0.4770**	**0.0083**	**0.0164**	**187.3869**	**0.0125**	**0.0164**	**39.7260**

Vehicle	Distance		Speed	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
	Miles/yr	Miles/day	Miles/hr	ton/yr								
Mirror Wash Truck	3000	24	5	0.003	0.001	0.006	0.000	0.000	0.97	0.000	0.000	0.21
Maintenance Vehicles	96000	384	10	0.058	0.002	0.004	0.000	0.000	15.03	0.000	0.000	3.19
Weed Abatement	340	40	5	0.000	0.000	0.001	0.000	0.000	0.11	0.000	0.000	0.02
Soil Stabilizer Application	340	40	5	0.000	0.000	0.001	0.000	0.000	0.11	0.000	0.000	0.02
Total				**0.062**	**0.003**	**0.012**	**0.001**	**0.001**	**16.22**	**0.000**	**0.001**	**3.44**

Table 19-B 2011 Motor Vehicle Emission Factors (Revised July 2009)

Vehicle Use	Vehicle Type	Vehicle Class	Emission Factors								
			CO (lb/mi)	VOC (lb/mi)	NOx (lb/mi)	SOx (lb/mi)	Exh. PM10 (lb/mi)	Fug. PM10 (lb/mi)	Diesel PM (lb/mi)	Exh. PM2.5 (lb/mi)	Fug. PM2.5 (lb/mi)
Mirror Wash Truck	Water Trucks, Freightliner 4000 gallon	HHDT-DSL	2.18E-03	4.40E-04	4.25E-03	4.22E-05	1.21E-04	6.46E-01	1.21E-04	1.21E-04	1.37E-01
Weed Abatement	Water Trucks, Freightliner 4000 gallon	HHDT-DSL	2.18E-03	4.40E-04	4.25E-03	4.22E-05	1.21E-04	6.46E-01	1.21E-04	1.21E-04	1.37E-01
Soil Stabilizer Application	Water Trucks, Freightliner 4000 gallon	HHDT-DSL	2.18E-03	4.40E-04	4.25E-03	4.22E-05	1.21E-04	6.46E-01	1.21E-04	1.21E-04	1.37E-01
Maintenance Vehicles	On-Site 1/2 Ton Pick-Up, Ford	LDT2-CAT	1.20E-03	4.15E-05	9.19E-05	1.01E-05	1.01E-05	3.13E-01	0.00E+00	1.01E-05	6.64E-02

Note: The emission factors, except fugitive emissions from entrained road dust, were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and dividing calculated daily emissions by daily vehicle-miles-traveled.
All vehicles were assumed to be 2011 model year.
All the emission factors account for the emissions from start, running and idling exhaust. In addition, the VOC emission factors take into account diurnal, hot soak, running and resting emissions.

Table 19-C Fugitive PM10 and PM2.5 Emission Factors

Vehicle Class	Vehicle Weight (tons)	Silt Content (%)	Control Eff. (%)	PM10 Emiss. Factor (lb/mi)	PM2.5 Emiss. Factor (lb/mi)
Water Trucks, Freightliner 4000 gallon	20	15	85	6.46E-01	1.37E-01
On-Site 1/2 Ton Pick-Up, Ford	4	15	85	3.13E-01	6.64E-02

PM2.5 fraction in unpaved road dust = 0.212 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emission Factor [lb/mi] = 1.5 x (silt content [%] / 12)$^{0.9}$ x (vehicle weight [tons] / 3)$^{0.45}$ x (1 - control efficiency [%] / 100)
Reference: AP-42, Section 13.2.2, December 2003 for industrial unpaved roads

Emissions for PSA Conditions of Certification

Table 19-A Motor Vehicle Combustion Criteria Pollutant Emissions (Revised July 2009)

Vehicle	Distance		Speed	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
	Miles/yr	Miles/day	Miles/hr	lb/hr								
Mirror Wash Truck	12000	96	5	0.0060	0.0002	0.0005	0.0001	0.0001	2.2546	0.0000	0.0001	0.4780
Maintenance Vehicles	91200	365	5	0.0060	0.0002	0.0005	0.0001	0.0001	1.5653	0.0000	0.0001	0.3318
Maintenance Crew ATVs	4800	19	5	0.0000	0.0000	0.0000	0.0000	0.0000	1.0067	0.0000	0.0000	0.2134
Weed Abatement	340	40	5	0.0109	0.0022	0.0212	0.0002	0.0006	3.2295	0.0006	0.0006	0.6846
Soil Stabilizer Application	340	40	5	0.0109	0.0022	0.0212	0.0002	0.0006	3.2295	0.0006	0.0006	0.6846
Total				**0.034**	**0.005**	**0.043**	**0.001**	**0.001**	**11.286**	**0.001**	**0.001**	**2.393**
Vehicle	**Distance**		**Speed**	**CO**	**VOC**	**NOx**	**SOx**	**Exh. PM10**	**Fug. PM10**	**Diesel PM**	**Exh. PM2.5**	**Fug. PM2.5**
	Miles/yr	**Miles/day**	**Miles/hr**	**lb/day**								
Mirror Wash Truck	12000	96	5	0.1155	0.0040	0.0088	0.0010	0.0010	43.2890	0.0000	0.0010	9.1773
Maintenance Vehicles	91200	365	5	0.4391	0.0151	0.0335	0.0037	0.0037	114.2033	0.0000	0.0037	24.2111
Maintenance Crew ATVs	4800	19	5	0.0000	0.0000	0.0000	0.0000	0.0000	3.8658	0.0000	0.0000	0.8195
Weed Abatement	340	40	5	0.0871	0.0176	0.1699	0.0017	0.0048	25.8357	0.0048	0.0048	5.4772
Soil Stabilizer Application	340	40	5	0.0871	0.0176	0.1699	0.0017	0.0048	25.8357	0.0048	0.0048	5.4772
Total				**0.729**	**0.054**	**0.382**	**0.008**	**0.014**	**213.030**	**0.010**	**0.014**	**45.162**
Vehicle	**Distance**		**Speed**	**CO**	**VOC**	**NOx**	**SOx**	**Exh. PM10**	**Fug. PM10**	**Diesel PM**	**Exh. PM2.5**	**Fug. PM2.5**
	Miles/yr	**Miles/day**	**Miles/hr**	**ton/yr**								
Mirror Wash Truck	12000	96	5	0.007	0.000	0.001	0.000	0.000	2.706	0.000	0.000	0.574
Maintenance Vehicles	91200	365	5	0.055	0.002	0.004	0.000	0.000	14.275	0.000	0.000	3.026
Maintenance Crew ATVs	4800	19	5	0.000	0.000	0.000	0.000	0.000	0.483	0.000	0.000	0.102
Weed Abatement	340	40	5	0.000	0.000	0.001	0.000	0.000	0.110	0.000	0.000	0.023
Soil Stabilizer Application	340	40	5	0.000	0.000	0.001	0.000	0.000	0.110	0.000	0.000	0.023
Total				**0.063**	**0.002**	**0.006**	**0.001**	**0.001**	**17.684**	**0.000**	**0.001**	**3.749**

Table 19-B 2011 Motor Vehicle Emission Factors (Revised July 2009)

Vehicle Use	Vehicle Type	Vehicle Class	Emission Factors								
			CO (lb/mi)	VOC (lb/mi)	NOx (lb/mi)	SOx (lb/mi)	Exh. PM10 (lb/mi)	Fug. PM10 (lb/mi)	Diesel PM (lb/mi)	Exh. PM2.5 (lb/mi)	Fug. PM2.5 (lb/mi)
Mirror Wash Truck	On-Site 1/2 Ton Pick-Up, Ford, with Water Trailer	LDT2-CAT	1.20E-03	4.15E-05	9.19E-05	1.01E-05	1.01E-05	4.51E-01	0.00E+00	1.01E-05	9.56E-02
Weed Abatement	Water Trucks, Freightliner 4000 gallon	HHDT-DSL	2.18E-03	4.40E-04	4.25E-03	4.22E-05	1.21E-04	6.46E-01	1.21E-04	1.21E-04	1.37E-01
Soil Stabilizer Application	Water Trucks, Freightliner 4000 gallon	HHDT-DSL	2.18E-03	4.40E-04	4.25E-03	4.22E-05	1.21E-04	6.46E-01	1.21E-04	1.21E-04	1.37E-01
Maintenance Crew ATVs	Electric ATV	Electric	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.01E-01	0.00E+00	0.00E+00	4.27E-02
Maintenance Vehicles	On-Site 1/2 Ton Pick-Up, Ford	LDT2-CAT	1.20E-03	4.15E-05	9.19E-05	1.01E-05	1.01E-05	3.13E-01	0.00E+00	1.01E-05	6.64E-02

Note: The emission factors, except fugitive emissions from entrained road dust, were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and dividing calculated daily emissions by daily vehicle-miles-traveled.
All vehicles were assumed to be 2011 model year.
All the emission factors account for the emissions from start, running and idling exhaust. In addition, the VOC emission factors take into account diurnal, hot soak, running and resting emissions.
Daily and annual maintenance crew ATV mileage assumed to be 5% of total mileage for maintenance vehicles plus maintenance crew ATVs

Table 19-C Fugitive PM10 and PM2.5 Emission Factors

Vehicle Type	Vehicle Weight (tons)	Silt Content (%)	Control Eff. (%)	PM10 Emiss. Factor (lb/mi)	PM2.5 Emiss. Factor (lb/mi)
Water Trucks, Freightliner 4000 gallon	20	15	85	6.46E-01	1.37E-01
On-Site 1/2 Ton Pick-Up, Ford, with Water Trailer	9	15	85	4.51E-01	9.56E-02
On-Site 1/2 Ton Pick-Up, Ford	4	15	85	3.13E-01	6.64E-02
Electric ATV	1.5	15	85	2.01E-01	4.27E-02

PM2.5 fraction in unpaved road dust = 0.212 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emission Factor [lb/mi] = 1.5 x (silt content [%] / 12)$^{0.9}$ x (vehicle weight [tons] / 3)$^{0.45}$ x (1 - control efficiency [%] / 100)
Reference: AP-42, Section 13.2.2, December 2003 for industrial unpaved roads

Comparison of Emissions for Applicant's Proposed Operating Scenario and for the PSA Conditions of Certification

	CO	VOC	NOx	SOx	Exh. PM10	Fug. PM10	Diesel PM	Exh. PM2.5	Fug. PM2.5
	lb/day								
Total Vehicle Emissions, Applicant's Proposal	0.69	0.06	0.48	0.008	0.016	187	0.013	0.016	39.7
Total Vehicle Emissions, PSA	0.73	0.05	0.38	0.008	0.014	213	0.010	0.014	45.2
Emissions Difference	0.04	-0.01	-0.09	0.000	-0.002	26	-0.003	-0.002	5.4
	ton/yr								
Total Vehicle Emissions, Applicant's Proposal	0.062	0.0028	0.012	0.0006	0.001	16.2	0.000	0.001	3.4
Total Vehicle Emissions, PSA	0.063	0.0023	0.006	0.0005	0.001	17.7	0.000	0.001	3.7
Emissions Difference	0.001	-0.0005	-0.006	0.0000	0.000	1.5	0.000	0.000	0.3

Notes:
Applicant's proposal total includes the revision to 15% silt content, change to 1/2 ton trucks and other corrections.
PSA total reflects the approximation that there will need to be at least 4 times the mileage in order to use 1/2 ton trucks that have a maximum towing capacity of 1,000 gallons of water.

A positive emission difference means that the PSA total is more than Beacon's proposed vehicle emissions
and a negative difference means Beacon's proposal is higher.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2

PROOF OF SERVICE
(Revised 4/28/09)

APPLICANT	**COUNSEL FOR APPLICANT**	**ENERGY COMMISSION**
Scott Busa Kenneth Stein, J.D. Meg Russell Duane McCloud Guillermo Narvaez, P.E. NextEra Energy Resources 700 Universe Blvd. Juno Beach, FL 33408 Scott.busa@nexteraenergy.com Kenneth.stein@nexteraenergy.com Meg.Russell@nexteraenergy.com Duane.mccloud@nexteraenergy.com Guillermo.narvaez@nexteraenergy.com Diane Fellman, Director West Region NextEra Energy Resources 234 Van Ness Avenue San Francisco, CA 94102 Diane.fellman@nexteraenergy.com	Jane Luckhardt, Esq. Downey Brand, LLP 621 Capitol Mall, 18th Floor Sacramento, CA 95814 jluckhardt@downeybrand.com	Karen Douglas Commissioner and Presiding Member kldougla@energy.state.ca.us Jeffrey D. Byron Commissioner & Associate Member jbyron@energy.state.ca.us Kenneth Celli Hearing Officer kcelli@energy.state.ca.us
APPLICANT CONSULTANT Sara Head, Vice President AECOM Environment 1220 Avenida Acaso Camarillo, CA 93012 Sara.head@aecom.com	**INTERESTED AGENCIES** California ISO 151 Blue Ravine Road Folsom, CA 95630 e-recipient@caiso.com	Eric K. Solorio Project Manager esolorio@energy.state.ca.us Jared Babula Staff Counsel jbabula@energy.state.ca.us
Bill Pietrucha, Project Manager Jared Foster, P.E. Worley Parsons 2330 E. Bidwell, Suite 150 Folsom, CA 95630 Bill.Pietrucha@worleyparsons.com Jared.Foster@worleyparsons.com	**INTERVENORS** Tanya A. Gulesserian Marc D. Jacobs Adams Broadwell Joseph & Cardozo 601 Gateway Boulevard, Suite 1000 South San Francisco, CA 94080 **E-MAIL PREFERRED** tgulesserian@adamsbroadwell.com	Public Adviser's Office publicadviser@energy.state.ca.us

Declaration of Service

I, Shawn Prentiss, declare that on July 20, 2009, I served and filed copies of the following:

1. Responses to Select Cure Comments at CEC's Request
2. Responses to Air Quality Questions from Workshop
3. Response to Request Regarding BSEP Subsurface Investigations
4. Response to Request for Predictive Sensitivity Groundwater Analysis
5. Response to Rerouted Wash Information Request from Workshop.

The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: www.energy.ca.gov/sitingcases/beacon. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service List) and to the Commission's Docket Unit, in the following manner:

(check all that apply)

For Service to All Other Parties

__X__ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service List above.

For Filing with the Energy Commission

__X__ sending an original paper copy mailed, to the address below;

OR

____ depositing in the mail an original and 12 paper copies as follow:

California Energy Commission
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

/s/
Shawn Prentiss