DR-NOISE-262

Information Required:

Please discuss how noise impacts will change with the new configuration.

Response:

The following analysis evaluates how noise impacts will change with the RSPP reconfiguration, as compared to the noise analysis presented in Section 5.8 Noise of the Application for Certification (AFC), submitted to the California Energy Commission (CEC) on September 1, 2009. To address resource management agencies' comments, the Applicant has reconfigured the site plan to minimize the impacts to natural stormwater flows across the El Paso Wash. The reconfiguration includes the relocation of the power block north of Brown Road, closer to the few residences that are near the site. Thus, there are potential changes to Project noise levels generated during construction and operation of the Project, and to the resulting noise levels at these sensitive noise receptors.

As described below, the distance between the reconfigured noise sources and residences is substantial enough to completely avoid construction and operational noise levels above significance thresholds. In other words, although the reconfiguration will move Project noise sources closer to sensitive receptors, those changes will not result in any significant noise impacts.

Sensitive Noise Receptors

As a result of the reconfiguration of the RSPP, the residence closest to the Project boundary is now 2,500 feet east of the revised eastern boundary, instead of a residence approximately 3,200 feet west of the original northwest boundary (see Figure DR-NOISE-262 provided at the end of this section). The relocation of the power block approximately 3,300 feet north-northwest from the south side of Brown Road to the north side moves the power block closer to the few residences in proximity to the site. The residence nearest the power block remains the residence west of the site, but the power block is now 1,300 feet closer to that residence (6,300 feet with the original project versus 5,000 feet with the reconfiguration). Impacts to these sensitive noise receptors are discussed below.

The several other residences close to the site, approximately 3,250 to 3,575 feet east of the previous eastern site boundary, are also closer to the revised power block location (10,000 feet originally, 7,500 feet with the reconfiguration). However, as discussed below, this distance is sufficient to attenuate noise levels below significance at these eastern residences. In addition, vehicle traffic noise of U.S. Highway 395 in between the Project and residences to the east elevate day-night ambient noise levels at the residences in proximity to the highway. This makes the Project construction and operational noise less noticeable to these residences, as compared to the residence to the west without nearby highway traffic noise.

Project Size and Configuration

The proposed equipment of the power block has only changed in terms of the air-cooled condenser (ACC), which has a larger footprint and more fans, but is not different in height. Some of the other equipment was shifted to accommodate the increase in the ACC footprint. The previous ACC had an area of 296 feet by 245 feet with 35 cells; the revised ACC is 480 feet by 300 feet with 48 cells, a cell increase of 37 percent. In addition, the ACC configuration has changed from a single area configuration to a "split design" with the header pipe separating the ACC into two areas. Operation of the ACC produces one of the highest noise levels of the plant; however, the 37 percent increase in the number of ACC cells would generate an increase of only 1.4 decibels (dBA) at the ACC.

Potential Noise Impacts

Construction

The nearest noise sensitive human receptor to the revised Project site boundary is a residence approximately 2,500 feet east of the eastern boundary/solar field. The anticipated noise levels from construction equipment and vehicles of 85 dBA Equivalent Continuous Noise Level (Leq) at 50 feet, when the activities are occurring at the site boundary near the nearest residence, would attenuate over distance to approximately 52 dBA Leq at the eastern residence, assuming intervening topography or structures. There are topographic changes (slopes and ridges) between the site boundary and the residence for the U.S. Highway 395 right of way, including its vehicle traffic noise which would elevate ambient noise levels, further reducing the effects of the construction noise.

As shown in Table 5.8-5 of the AFC, the average ambient Leq at the residence east of the site (now the nearest from the revised site boundary) is approximately 46 dBA Leq. The difference between this ambient level and highest potential construction noise level at the residence of 52 dBA Leq (when construction is at the nearest site boundary) would be slightly greater than a 3-dBA change (which is barely perceptible to the human ear). Therefore, the potential average Project construction noise level at the residence when construction is nearest the site boundary would be barely noticeable. Moreover, construction near the site boundary from grading activities and solar collector installation would occur near the residence for a very short time and then move to another location on the site, further away from the residence.

The Kern County Noise Ordinance does not limit construction noise levels. Rather, the ordinance limits only the hours of construction activities when the noise is audible to a person within 150 feet of the construction and if the construction activity is within 1,000 feet of an inhabited residence. Typical construction noise levels of 85 dBA Leq are audible at 150 feet (76 dBA Leq). However, because the Project construction activities are 1,000 feet from an inhabited residence, they not are subject to these time limits.

The majority of site construction activities, including stationary construction noise, would be concentrated in the center of the site at the power block (approximately 5,000 feet east of the nearest residence). Construction noise from activities at the power block would attenuate over this distance to approximately 45 dBA Leq at the western residence. The average ambient Leq at the western residence nearest the power block was measured at approximately 52 dBA Leq, which is less than a 3-dBA change from ambient noise levels and therefore not perceptible at the residence. However, when construction activity occurs at and near the site boundary, increased noise levels may be occasionally noticeable at the residence during daytime hours. This activity near the site boundary would occur for a brief period while the solar arrays are constructed about the site during a portion of the overall 28-month construction schedule. For these reasons, construction activities are not expected to result in significant noise impacts on sensitive receptors.

As part of the process of readying the Project's steam turbine for startup, a process known as a "steam blow" is initiated. A series of these "steam blows", lasting two or three minutes each, are performed daily several times for two or three weeks. High-pressure steam blows can produce extremely high noise levels (up to 130 dBA at 100 feet). Even with silencing, noise levels would still be loud. There are newer, quieter steam blow techniques that use lower pressure steam over a continuous period of about 36 hours and result in peak noise levels of approximately 80 dBA at 100 feet. The Project will use a low-pressure steam blow technique with reduced noise levels. Under the site reconfiguration, the power block in the interior of the plant site would be approximately 1,300 feet closer to the nearest residence (west of the site), at approximately 5,000 feet away. The low-pressure steam blow sound level would attenuate over this distance to approximately 46 dBA at the western residence, which would be 2 dBA higher than the estimated noise level for the original distance in the AFC. The steam blows would still be a temporary (36-hour), one-time event for the start-up of the plant. For these reasons, the steam blows will yield less than significant noise impacts on the nearest (and other) sensitive receptors.

Operation

The results of the modeling are shown on Figure DR-NOISE-262 as daytime operational noise contour lines in increments of 5 dBA Leq from 90 dBA Leq at the Project's loudest daytime noise source, radiating out to 45 dBA Leq contour. The original figure (Figure 5.8-1 of AFC Section 5.8, Noise) has been revised to relocate these contours over the new power block location. With the changes in the plant's ACC, an increase of 1.4 dBA was approximated and is included in this analysis. Although the nearest residence to the power block (western residence) is still located outside of the 45-dBA Leq contour, the residence is now closer to that contour. Based on the distance of approximately 5,000 feet from the approximate center of the power block to the nearest residence, the modeled daytime operational plant noise levels would attenuate over this distance to approximately 44 dBA Leq at the residence. Adding the 1.4-dBA increase estimated for the revised Project's expanded ACC results in an estimated revised plant noise level of approximately 45 dBA Leq, which is 3 dBA higher than the plant noise at the nearest residence in the AFC, during daylight hours. This increase is not a significant impact by itself or when combined with the originally-projected 42-dBA noise level.

During the hours between sunset and sunrise, the Project would be in the shutdown mode with its noisiest components not operational. Project noise during the non-daylight hours is anticipated to be approximately 20 dBA lower than during the daytime (25 dBA Leq). Comparing this estimated non-daylight noise level with the corresponding background noise level (L90) of the lowest measured Leq of 36 dBA at the quietest time of the night (3:00 A.M.) shows that there would be no increase over the existing lowest L90 noise level as a result of the plant reconfiguration. The CEC's significance criterion provides that an increase of less than 5 dBA in the L90 at a noise-sensitive receptor during the quietest hours of the night would be considered an insignificant impact. Since the revised resulting noise level of the Project operation at the residence would represent *no* increase in dBA Leq, there would be no significant operational noise impact.

The corresponding Day/Night Average Sound (Ldn) for the modeled Project noise at the residence would be approximately 45 dBA Ldn. When combined with the measured ambient Ldn at the residence of 52 dBA Ldn, the resultant future Ldn with the Project would be 53 dBA Ldn (combining a difference of 6-9 dBA results in an increase of one dBA to the higher Ldn value). The future Ldn with the Project of 53 dBA Ldn would be less than the maximum Ldn of 65 dBA Ldn considered to be compatible with residential uses, as established by the Noise Element of the Kern County General Plan. The increase of 1 dBA Ldn above the ambient Ldn of 52 dBA would be less than a 3-dBA increase, and therefore not a perceptible increase above existing noise levels or levels projected for the original Project configuration.

Noise impacts of the revised Project would remain less than significant for the same reasons as in the AFC, as follows:

- While there may be occasional higher noise levels during construction (when construction activity occurs at/near the closest site boundary), average construction noise levels would be barely perceptible at the residence nearest the site boundary. This is because average construction noise levels would attenuate to levels slightly higher than ambient levels. In addition, the construction period itself would be temporary; use of heavy equipment and other activities with high noise emissions would be limited to daytime hours; the Project would use low noise, longer duration steam blow techniques; all practicable noise abatement measures would be implemented for noise-producing equipment; and if needed, acceptable mitigation would be arranged with the residence owner.

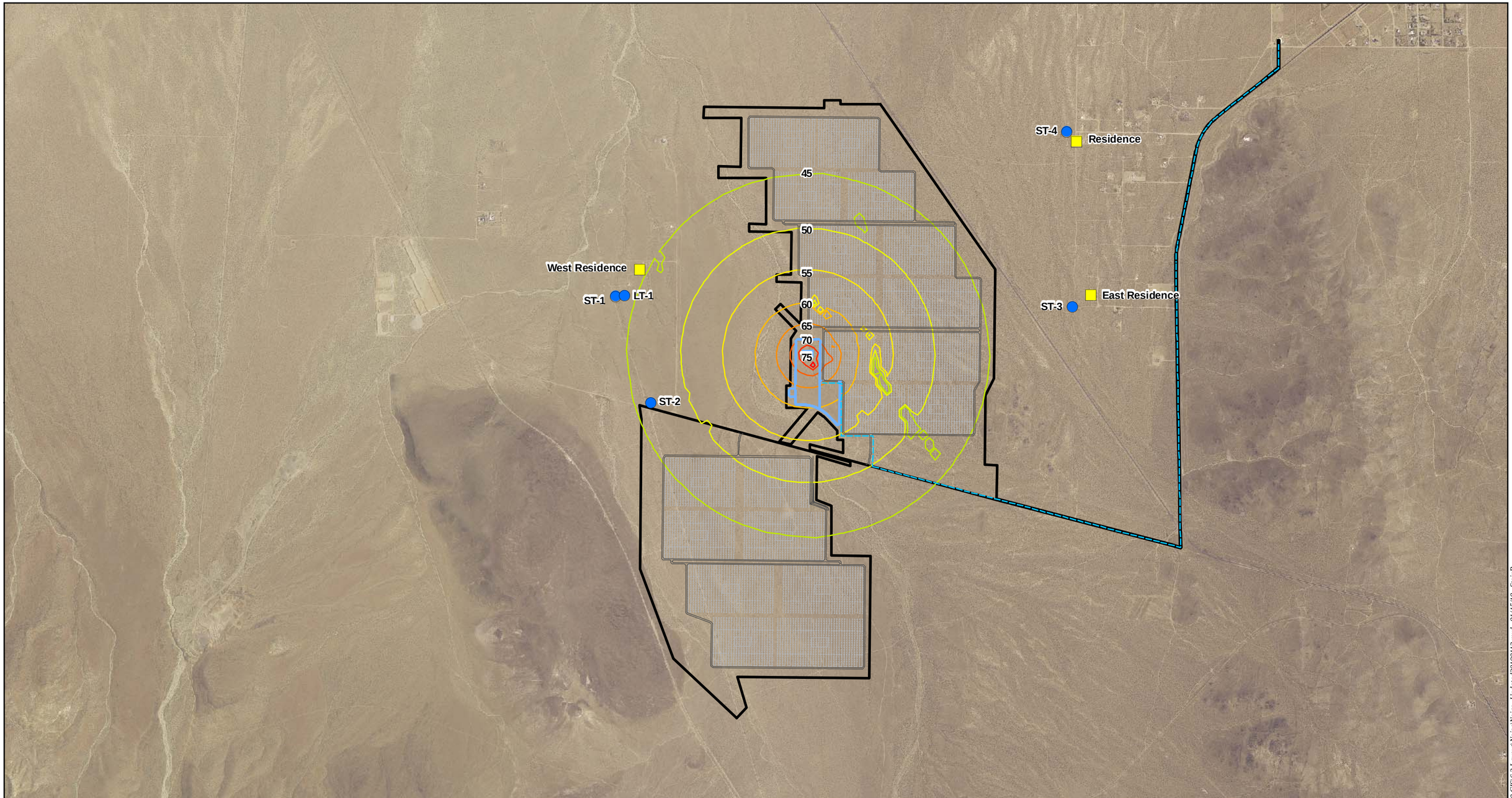
- The 65 dBA Ldn limit at the nearest residence, as identified by the Noise Element of the County General Plan, would not be exceeded during construction or operation.

- The five dBA threshold above the lowest measured L90 at any noise sensitive receptor, the key measure of whether or not a significant adverse impact would occur, would not be exceeded during plant operation; and

- The Ldn increase of one dBA with the Project would not be a substantial increase above levels existing without the Project.

Since there are no significant noise impacts, no mitigation measures are required. However, the noise reduction measures recommended in the AFC to minimize off-site noise levels would still be applicable to the reconfigured Project.

Figure DR-NOISE-249



Map Location

Legend

- Disturbance Area
- Facilities Layout
- Solar Loops
- Power Block
- Water Line Route
- Residence
- Noise Measurement Location

Noise Contours

- 45 dBA Leq
- 50 dBA Leq
- 55 dBA Leq
- 60 dBA Leq
- 65 dBA Leq
- 70 dBA Leq
- 75 dBA Leq
- 80 dBA Leq

Source: NAIP 2005; CNDDB 2009; AECOM 2009; EDAW 2009

N W E S

1 inch = 2,500 feet

0 2,500 5,000 Feet

Ridgecrest Solar Power Project
Responses to 12/22/09
Data Request

DR-NOISE-249
Noise Measurement Locations and Noise Contours

Solar Millennium

AECOM

Date: January 2010

Path: P:\2009\09080080 Sol Mil Ridgecrest\6.0 GIS\6.3 Layout\Noise\Noise_Updated20100113.mxd, 01/15/10, SteinB