URS

DOCKET	
07-AFC-8	
DATE	Oct 24 2008
RECD.	OCT 24 2008

October 24, 2008

Mr. John Kessler
Project Manager
Attn: Docket No. 07-AFC-8
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

Subject: Carrizo Energy Solar Farm (07-AFC-8)
Reyes Residence Noise Impact Analysis
URS Project No. 27658060.01800

Dear Mr. Kessler:

On behalf of Ausra CA II, LLC (dba Carrizo Energy, LLC), URS Corporation Americas (URS) hereby submits the Reyes Residence Noise Impact Analysis (Carrizo Energy Solar Farm 07-AFC-8).

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the Reyes Residence Noise Impact Analysis on behalf of Carrizo Energy, LLC.

Sincerely,

URS CORPORATION

Angela Leiba
Project Manager

AL:ml

URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
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By way of email communication on September 19, 2008 (see Attachment 1), Mr. John Kessler of the California Energy Commission (CEC) requested that the Applicant predict Project construction and operational noise at a new receptor location: a mobile home residence on the parcel identified as APN072-061-030 and shown on Figure 1. Called the "Reyes Residence," this receptor is located between measurement locations ML02 and ML03 of the Project AFC.

Mr. Kessler's email also informed the Applicant that the CEC would include the Reyes Residence location as part of its own noise survey conducted the week of September 23, 2008. Combining its predicted Project noise levels with existing ambient sound level data recently made available as a result of this CEC noise survey conducted by Brown-Buntin Associates (BBA) from September 23-25, the Applicant has been able to prepare the following analysis of potential noise impacts from the proposed Project construction, operation (daytime), and maintenance (nighttime) activities at the Reyes Residence. The impact analysis results are discussed with respect to measured existing ambient noise levels, predicted Project operation and maintenance noise levels, and cumulative (i.e., existing ambient plus Project) noise levels at the Reyes Residence in terms of L_{eq}, L_{10}, L_{50}, and L_{90}.

In summary, at this concerned location, predicted L_{eq} from Project construction, operation, and maintenance would neither exceed 45 dBA or the 5dB increase over existing ambient as allowed by the CEC. Thus, the noise impact at the Reyes Residence is considered less than significant.

Construction Noise

The following table details the calculation results for predicting potential noise impacts from Project construction activities. In addition to erection of the power block, support structures, and the solar field components, these activities include:

1. Construction of the onsite manufacturing building that takes place in the first four months of the overall 35-month project construction schedule.
2. Operation of the onsite manufacturing building and processes within that building for the assembly of Project system components.
3. Demolition or dismantling of the onsite manufacturing building upon completion of Project system components; occurring during the last four months of the overall 35-month Project construction schedule.

Predicted Construction Sound Levels

Location	Direction from Center of Power Block	Distance from Center of Power Block (ft)	Distance from Center of On-Site Manufacturing Building (ft)	Calculated L_{eq} Range Over 35 months (dBA)	Calculated L_{max} Range Over 35 months (dBA)	Existing Ambient (dBA)
APN 072-061-030 Reyes Residence	Northeast	4,232	8,858	56-62	63 - 69	42

Notes:
1. The methodology described in Section 2.12.2 of the Supplemental Filing and, Section 5.12.2.1 of the Project AFC was applied.
2. The difference between calculated L_{eq} and L_{max} is attributed to construction equipment duty cycle or utilization. L_{max} presumes duty cycle = 100%.
3. The Existing Ambient noise level is an equivalent sound level (Leq) calculated from hourly Leq measured by BBA on September 24, 2008 from 7am to 9pm.

Section 22.10.120 (A.4) of the San Luis Obispo (SLO) County Code excepts construction activities and their sound generation from the noise ordinance standards, provided such activities

take place within a stated period (7:00 am to 9:00 pm on weekdays, and 8:00 am to 5:00 pm on weekends).

Furthermore, the highest expected L_{max} levels from construction as received by the Reyes Residence is below the SLO County Noise Element limit (70 dB from Table 3-2 of the SLO Noise Element) for L_{max} from stationary (i.e., non-transportation) noise sources at a receiving property line. Therefore, the construction noise impact at the Reyes Residence is considered less than significant.

Project Operation Noise

As described in Section 5.12.2.2.1 of the Project AFC, the same Cadna/A software and its ISO-9613 based prediction method was used to help estimate the Project operation potential noise impacts.

The table below indicates the Project operation noise levels at the Reyes Residence.

Location	Existing (dBA)	Future Operational Sound Levels		
		Predicted (dBA)	Existing + Predicted (dBA)	Difference from Existing (dB)
APN072-061-030 Reyes Residence	42	38	43	+1

Notes:
1. The Existing noise level is an equivalent sound level (Leq) calculated from hourly Leq measured by BBA on September 24, 2008 from 7am to 10pm
2. The Predicted sound levels are based on the latest design layout received as of October 20, 2008, which was presented in the Supplement to the Carrizo Energy Solar Farm Application for Certification.

Based on State of California and San Luis Obispo County guidelines, environmental consequences of the Project would be considered significant if:

1. Noise from Project operations exceeds 50 dBA L_{eq} hourly sound levels at a noise sensitive land use between 7:00 a.m. and 10:00 p.m.
2. Based on CEC guidelines, if noise from the Project increases the existing background noise level by 5 dBA or more an impact may result.

With respect to the limits defined by these two impact criteria, the noise impact at the Reyes Residence is considered less than significant.

Project Maintenance Noise

The anticipated nighttime Project sound generating sources involve routine solar reflector cleaning activity, occupied building HVAC, and limited system operation at the Power Block.

Cleaning Reflectors on the Solar Farm

The proposed cleaning process involves a manually operated brush or wiper, which by itself is not anticipated to generate much noise. However, getting maintenance personnel to the reflector requires a vehicle (e.g., a pick-up truck) and a portable lighting plant would be deployed at the site where cleaning work would occur. It was assumed that such a pick-up truck would be idling, or undergo frequent starts and stops having equivalent continuous sound, at a location near a line of reflectors approximately 120' distant from a position along the Project property line which is, in turn, perpendicularly distant from the closest noise-sensitive receiver. It was assumed that the lighting plant has a generator and both are mounted inside the cargo bed of the pick-up truck. According to the Applicant, the cleaning activity at this line of reflectors could last approximately

2-3 hours. The sound pressure level of the pick up truck idling at 15 feet would be 81 dBA. The sound pressure level of the portable lighting would be 100 dBA at 1 meter.

Operating HVAC and Mechanical Equipment at the Power Block

It was assumed that an air-conditioning system will be part of the design of the occupied Administration building and Control Tower. While design details and equipment selections are as yet to be determined, the size of these air-conditioning systems would, based on reasonably expected refrigeration load to maintain interior comfort, be about 5 tons and 1 ton, respectively. For the analysis it was also assumed there would be two air-conditioning systems (one for redundancy) at each building. The following table shows sample condenser sound power levels (PWL) of each air-conditioning system, based on Carrier engineering data (considered representative of similar offerings by other vendors).

Air-conditioning Condenser	PWL per Octave-Band Center Frequency (Hz) in dBA							dBA
	125	250	500	1000	2000	4000	8000	
1-ton (Carrier Model 38QRC018)	51.0	57.0	62.0	62.5	62.0	56.5	47.5	67.2
5-ton (Carrier Model 38QRC060)	62.5	67.5	71.0	68.0	67.0	63.5	54.5	73.6

Ventilation fans were assumed for the Shop/Warehouse building, Maintenance building, and Steam Turbine Generator (STG) structures. The predictive analysis assumed four (4) ventilation fans on the Shop/Warehouse and Maintenance buildings, and eight (8) for the STG structures. The following table is the PWL of each ventilation fan, based on engineering data from Cook (considered representative of similar offerings by other suppliers).

Ventilation Fan	PWL per Octave-Band Center Frequency (Hz) in dB								dBA
	63	125	250	500	1000	2000	4000	8000	
Axial Exhaust Fan (Cook Model 16A11DA)	96	101	91	85	78	72	66	62	89

The feedwater pump is also assumed to be in operation during the nighttime to keep a minimal defrosting flow in the solar field. The following values are the octave band center frequency (OBCF) PWL of the feedwater pump.

Feedwater Pump	PWL per Octave-Band Center Frequency (Hz) in dB									dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
(URS estimate)	96	98	100	100	100	100	100	97	90	105.6

As described in Section 5.12.2.2.1 of the Project AFC, the same Cadna/A software and its ISO-9613 based prediction method was used to help estimate the nighttime potential noise impacts. In order to predict L_{eq}, L_{10}, L_{50}, and L_{90}, which are statistical sound metrics that indicate a certain sound level L_X would be exceeded X% of the time during a measurement period, at each of the aforesaid noise monitoring locations, the operational duration of each previously described source was considered. It was assumed that the HVAC systems and feedwater pump at the Power Block would be in operation throughout the nighttime period. Therefore, the sound levels from these mechanical systems would be contributing to the L_{eq}, L_{10}, and L_{90} acoustical descriptors. Since the reflector cleaning activity would be limited to up to 3 hours (approximately 25% of nighttime period) at a location near the Project property line and a corresponding nearest

noise-sensitive receiver, the sound levels from this activity might be reasonably described by the L_{10} descriptor if no louder noises occurred more than 10% of the total nighttime duration of twelve hours (i.e., 7pm to 7am). It should be noted that no activities—aside from those at the Power Block—are expected to occur approximately 50% of this nighttime period; therefore, the statistical sound level descriptor L_{50} was not predicted for the analysis.

The following table details the calculation results for predicting potential noise impacts from Project nighttime activities. Note that L_{10} represents the hourly L_{eq} with both the reflector cleaning activity and mechanical equipment in operation. L_{90} represents the hourly L_{eq} with no reflector cleaning activity (or, the cleaning activity is taking place at a location within the Project boundary but far from the property line nearest to the studied location) and only the continuously-running Power Block building HVAC and feedwater pump in operation. L_{eq} or "equivalent" represents the averaged sound level throughout the 12-hour nighttime period.

Location	Existing Sound Level				Predicted Nighttime Sound Level				Cumulative Sound Level				Difference (Cumulative – Existing)			
	L_{eq}	L_{10}	L_{50}	L_{90}	L_{eq}	L_{10}	L_{50}	L_{90}	L_{eq}	L_{10}	L_{50}	L_{90}	L_{eq}	L_{10}	L_{50}	L_{90}
APN072-061-030 Reyes Residence	43	48	36	26	27	38	NA	27	43	48	NA	30	0	0	NA	+4

Notes:
1. The Existing Sound Levels include an equivalent sound level (Leq) calculated from hourly Leq measured by BBA on September 24-25, 2008 from 7pm to 7am ("nighttime"), during which the power block will not be operating.
2. Existing Sound L10, L50, L90 statistical values are based on applicable percentiles of hourly Leq reported by BBA from its September 24-25 noise survey

Note that the "Cumulative" sound level in the above table is a *logarithmic* sum of the Existing and Predicted sound levels, which one might also describe as the "future ambient" or "Existing plus Project". The "Difference" value, however, is an *algebraic* difference between the Existing and the Cumulative levels, in order to evaluate potential increase of ambient sound as compared to Existing measured levels.

Based on State of California and San Luis Obispo County guidelines, environmental consequences of the Project would be considered significant if:

1. Noise from Project operations exceeds 45 dBA L_{eq} hourly sound levels at a noise sensitive land use between 10:00 p.m. and 7:00 a.m.
2. Based on CEC guidelines, if noise from the Project increases the existing background noise level by 5 dBA or more an impact may result.

With respect to the limits defined by these two impact criteria, the noise impact at the Reyes Residence is considered less than significant.

ATTACHMENT 1

"John Kessler"
<Jkessler@energy.state.ca.us>
09/19/2008 09:31 AM

To <Perry.Fontana@ausra.com>, "Angela Leiba" <Angela_Leiba@URSCorp.com>, <kristen_walker@URSCorp.com>
cc "Steve Baker" <Sbaker@energy.state.ca.us>, "Shahab Khoshmashrab" <Skhoshma@energy.state.ca.us>
bcc
Subject Carrizo - Informal Request for Noise Modeling of Reyes Residence

History: This message has been forwarded.

Hi Angela, Kristen and Perry:

With the sensitivity to noise (and other issues) of local residents, we are trying to demonstrate and document that our analysis is very comprehensive and defensible. We received a request yesterday that we include one other residence in our noise surveys that we will be conducting next week. The description of this residence is as follows:

APN 072-061-030 Alberta & Santos Reyes 9330 Carrisa Hwy
805-674-2097

This APN number is as shown on the attached map, and the residence appears to be a mobile home.

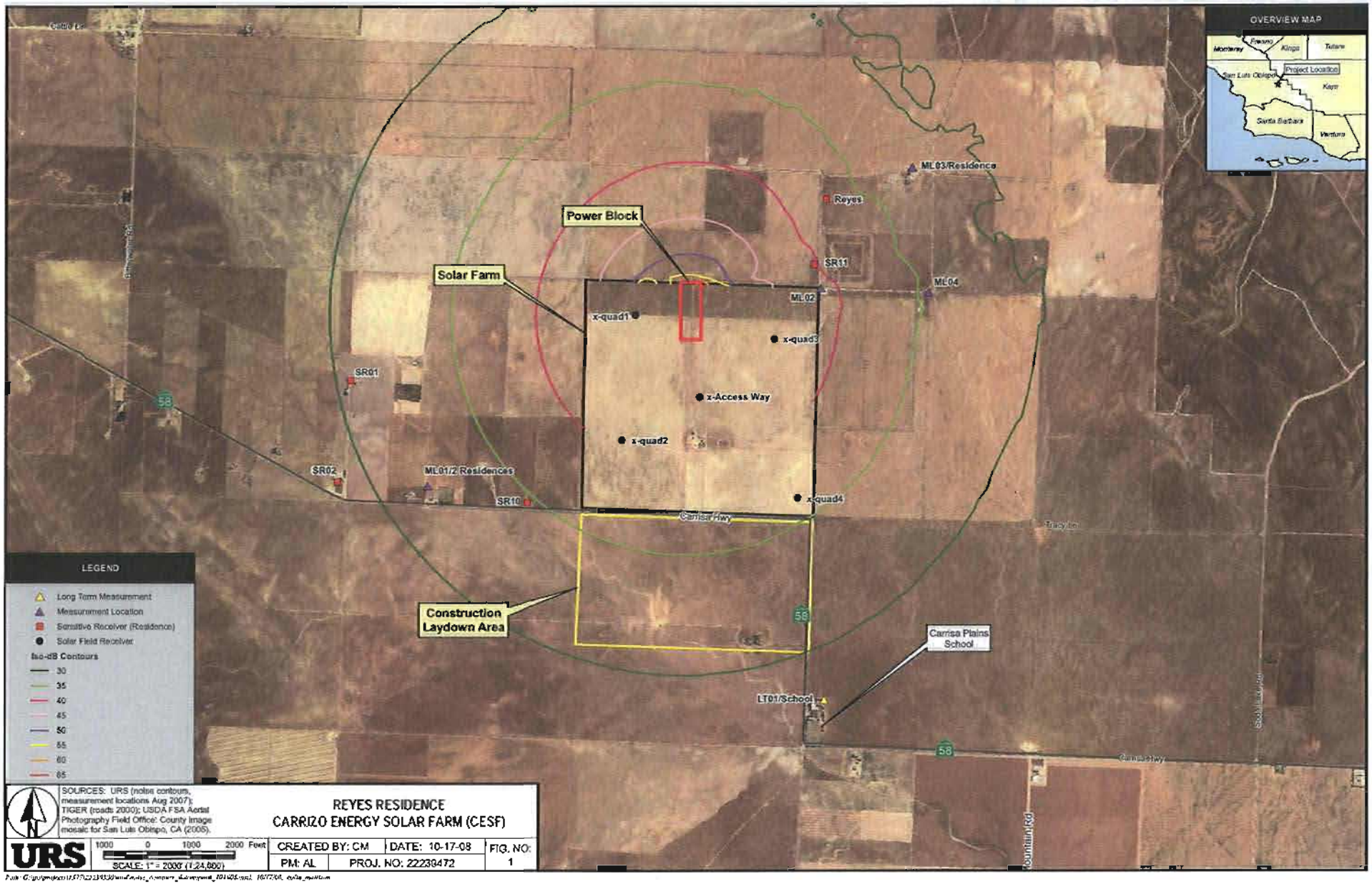
The existence of the Reyes residence seems to be a new discovery, and no information related to noise on this location is currently available. In order to evaluate this receptor, we would appreciate if your team could predict construction and operational noise at this location. The operational prediction should include the normal operations and the limited nighttime activities.

Thank you for considering this request.

John

John S. Kessler
CEC - Project Manager
Office: 916-654-4679
Cell: 530-306-5920
Fax: 916-654-4421

Carrizo residences 3 mile buffer w APN (7-15-08).pdf


OVERVIEW MAP
Monterey
Fresno
Kings
Tulare
Project Location
San Luis Obispo
Kern
Santa Barbara
Ventura
Power Block
Solar Farm
Construction Laydown Area
Carrisa Plains School
ML03/Residence
Reyes
SR11
ML04
ML02
x-quad1
x-quad3
x-Access Way
x-quad2
x-quad4
SR01
SR02
ML01/2 Residences
SR10
Carrisa Hwy
Tracy Ln
LT01/School
58
LEGEND
Long Term Measurement
Measurement Location
Sensitive Receiver (Residence)
Solar Field Receiver
Iso-dB Contours
30
35
40
45
50
55
60
65
SOURCES: URS (noise contours, measurement locations Aug 2007); TIGER (roads 2000); USDA FSA Aerial Photography Field Office: County image mosaic for San Luis Obispo, CA (2005).
REYES RESIDENCE
CARRIZO ENERGY SOLAR FARM (CESF)
URS
1000 0 1000 2000 Feet
SCALE: 1" = 2000' (1:24,000)
CREATED BY: CM
DATE: 10-17-08
FIG. NO: 1
PM: AL
PROJ. NO: 22239472

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

APPLICATION FOR CERTIFICATION *For the CARRIZO ENERGY SOLAR FARM* **PROJECT**	**Docket No. 07-AFC-8** **PROOF OF SERVICE** **(Revised 7/24/2008)**

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

***CALIFORNIA ENERGY COMMISSION**
Attn: Docket No. 07-AFC-8
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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DECLARATION OF SERVICE

I, Kristen E. Walker, declare that on October 24, 2008, I deposited copies of the attached Reyes Residence Noise Impact Analysis (Carrizo Energy Solar Farm 07-AFC-8) in the United States mail with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

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

Hello All -

Provided for docketing is the Reyes Residence Noise Impact Analysis (Carrizo Energy Solar Farm 07-AFC-8). Hardcopies will be sent to the Docket Unit via FedEx. Please let me know if you have any problems with the attachment.

Thanks,

(See attached file: CESF (07-AFC-8) Reyes Residence Noise impact Analysis.pdf)

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