Comment Set C1 – Saul Roe

Estrada, Andres

From: Salty <saulroe@yahoo.com>
Sent: Saturday, April 30, 2016 7:52 AM
To: Mesa CPUC
Subject: EIR review and defects

Dear Commissioners:

- While trying to review the Data requests and the EIR at http://www.cpuc.ca.gov/Environment/info/ene/mesa/mesa.html, I was unable access Data Requests 2, 4 and 5. I also could not access the scoping comments. C1-1
- Nothing I have read addresses my comments about security of the facility. Since power infrastructure is a target for terrorists and enemies, all facilities should have security plans and features. For the Mesa project this should include: C1-2
    - barriers to views of the facility from outside the facility to prevent targeting equipment. There have been recent cases of shooting into power facilities with the apparent intent of disrupting power supply
    - security facilities to deny entry by unauthorized persons
    - response plans for incidents which should include local law enforcement
    - training and exercises with local law enforcement for attacks on the facility
    - plans for action to be taken if attacks are successful
- the plans should include contingencies in case of a major natural disaster. As an important part of our infrastructure the Mesa facility needs to be able to operate after a disasters.

I hope the CPUC takes a general view of threats to our infrastructure.

--
Saul Roe saulroe@yahoo.com

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Response to Comment Set C1: Saul Roe

C1-1 Upon receipt of this comment, the project website was updated. Links to Data Requests 2, 4, and 5 and the scoping comments were updated.

C1-2 The comment regarding security plans and plans for major natural disasters are not related to environmental issues and are outside the scope of the Environmental Impact Report (EIR).

The commenter's concerns regarding the need for security plans and features and the examples given for Mesa Substation, as well as plans for a major natural disaster are noted and will be provided to the decision makers for their consideration prior to project approval.

Comment Set C2 – James Flournoy [1]

Estrada, Andres

From: James Flournoy <fleurdnoix@hotmail.com>
Sent: Sunday, May 01, 2016 6:57 PM
To: Mesa CPUC
Subject: Fw: Mesa DEIR input
Attachments: Mesa overview.txt; Near Field Mesa.txt; Near Field Mesa.txt; ground motion Mesa.txt; Vertical Ground Motion Mesa.txt; seismology.txt

Please attach as comments to the DEIR
we do not see these in Scoping
WE will comment on the DEIR
We do not see a technical appendix on Geotechnical, is there one? C2-1

From: James Flournoy <fleurdnoix@hotmail.com>
Sent: Wednesday, August 5, 2015 10:07 PM
To: Mesa.CPUC@ene.com
Subject: Mesa DEIR input

Why wait till the public comment period
Why was this project not part of Tehachapi project, we'd be done by now C2-2

1

[1] The commenter provided links to several websites containing supplemental information. Some of these links were broken. Refer to Attachment 2 File 2 for copies of the supplemental information provided by the links that were not broken.

Comments onMesa project Planning EIR
Save Our Community
c/o 8655 Landis View
Rosemead CA 91770

Overview - references attached

Some Items that may have been overlooked but which MUST be addressed

Locations of all important, large structures and tanks must be identified, located, and their critical periods estimated C2-3

Whittier Fault system is usually underestimated C2-4

Draft SR 710 EIR shows that Whittier fault extends NNW with Geophysical contacts (Alhambra Wash branch) to the San Marino area instead of terminating in Whittier
Fault runs under 10/ Del Mar bridge and 60 Freeway near San Gabriel Blvd & Rio Hondo River, Fault crosses San Gabriel blvd South of Garvey which may be nearest point to the project.
(whittier-elsinore may interact with/ cut/ offset Puente Hills thrust)
Earth Shaking for Whittier has not been recalculated using new longer length.
Use the method on the CGS website
Beverly Blvd Bridge over Rio Hondo used 7.5 with consulting investigation by URS
more recent Montebello Hills EIR used 7.75 (before/ without considering longer length)

Project is Near fault
Possibly overlay Landers over Whittier fault for near fault effects

Directivity/ pulse, fling, heave must be considered is alluvium at site

Therefore calculate spectrum for each important structure, towers, heavy non structural objects like transformers
All data inputs into hazard analysis must be adjusted for location and severity
liquefaction and landslide studies must be run with revised data

Whittier-Elsinore is known for
Branching (Chino, Workman Hill, Whittier Heights, Montebello, Bullard and Lettis)
and
Reactivating old normal branches as strike-slip

Whittier Branches (here East Montebello fault) may branch near highway 19 (Rosemead Blvd)x San Gabriel blvd into the "Montebello fault" running E-W through the Merced Hills- which may impact project in Montebello Project Area- hopefully to the south
this branch does not appear to be reactivated See MA Thesis at Caltech Miller Quarles and others and SO CAL GAS decomissioning report at CPUC

The nexus of Whittier and the Later Puente Hills and Upper Elysian Park thrusts must be explored
The squeezing of Whittier by the shortening of the LA basin must be explored.

The squeezing may lengthen repeat times but increase severity.
Basin Depth amplification must be studied by modeling of the sycline.

C2-4 cont.

Upper Elysian Park Fault
Evidently Terminates East against Whitter/ Alhambra Wash in the Project area
The SE corner of EPF must be identified and seismicity must be calculated given a NW to SE Break toward the Project. Directivity and Near-fault must be considered
Basin Depth amplification must be studied by modeling of the sycline.

Michelle Cooke of U Mass has co-authored at least Two papers showing a "Monterey Park Fault"
we have no Idea what this is- You must find out
Their crossection along the S side of the Repetto Hills would intersect Potrero Grande Sycline, may cross, may not
Our best guess is this might be a fault tip structure similar to that found W of Coalinga
Fault tips must be identified and any construction mitigated
We do not know how you would build a major structure of propagating fault tips

C2-5

UEP - Montebello Fault intersection must be investigated as well as Potrero Grande Sycline, which is active and project over the deeper part. Basin Depth modeling is required through Potrero Grande Valley (old river channel)Long Period Long Duration San Andreas effects must be studied.

Puente Hills thrust must be considered as a multi segment break.
Data from SCEC simulation- Robert Graves (now Pasadena USGS) must be utilized and compared and contrasted with ARS and NGA, vertical must be recalculated
Site Specific Spectrums must be provided for and matched with each Bridge/ Structure/ Tank/ Station/ Aerial

Puente Hills/ Whittier system interaction must be investigated and discussed.

San Andreas
Long Period- Long duration data from San Andreas must be utilized from Cal State San Diego's Olsen and Day (Cybershake and subsequent), USGS Lucy Jones (Shakeout etc)
Large structures and tanks are especially vulnerable and must be identified.
This is the most probable hazard scenario
Energy is channeled down the Potrero Grande corridor.
Is the alluvium in the Potrero Grande "excitable" (is there a bowl of jelo effect?)
Ground Displacement must be determined as well as permanent ground displacement.

NGA only works well on rock site and rock path events which is not the case with San Andreas and especially path from source to site.
Community Velocity model data will show different results throughout the project area (Whittier Narrows and Potrero Grande).
Have CSUSD or SDSU provide data given your co-ordinates for each structure.
Compare and Contrast with NGA GMPE data

Liquefaction and landslide areas must be calculated using site specific long period- long duration SA fault data as well as the more common short period data.

For all faults (and structures): IN ADDITION TO SAN ANDREAS
Community Velocity Model (Soils- Basin Depth amplification) MUST be studied.
Easiest would be to use the SCEC Cybershake Platform -Rob Graves at USGS Pasadena and SCEC
Identify critical points as mentioned above but I would expand to include all transmission lines across the San Gabriel river basin (Whittier Narrows) and along the river (605 freeway) all the way to rock in the San Gabriel Mountains
Data from Whittier Fault extension must be included before simulation is run
Probability may be modified from Building Code return period (and personal risk criteria) to critical structure and post event operational criteria.
Compare and Contrast with NGA GMPE results
WE CONSIDER GMPE -NGA- Magnitude- Distance results to be totally inadequate. The do not consider basin depth or basin reflections or channeling. Community Velocity Model must be utilized for each path from each seismic source to the project.
Potrero Grande may act as a wave guide

C2-5 cont.

C2-5 cont.

Near Field

McGill, S.F. 1993. Near-field investigations of the Landers earthquake sequence.
April to July 1992, Science: 171-176.
Near-Field Investigations of the Landers Earthquake Sequence, April to July 1992
Sieh, Kerry and Jones, Lucile and Hauksson, Egill and Hudnut, Kenneth and Eberhard-Phillips, Donna and Heaton, Thomas and Hough, Susan and Hutton, Kate and Kanamori, Hiroo and Lilje, Anne and Lindvall, Scott and McGill, Sally F. and Mori, James and Rubin, Charles and Spotila, James A. and Stock, Joann and Thio, Hong Kie and Treiman, Jerome and Wernicke, Brian and Zachariasen, Judith (1993)
Near-Field Investigations of the Landers Earthquake Sequence, April to July 1992.
Science, 260 (5105). pp. 171-176. ISSN 0036-8075.

Campbell, K. W., Near-source attenuation of peak horizontal acceleration, Bull. Seismol. Soc. Am., 71, 2039-2070, 1981

Characterization of forward-directivity ground motions in the near-fault region
JD Bray, A Rodriguez-Marek - Soil Dynamics and Earthquake Engineering, 2004

Ground motions close to a ruptured fault resulting from forward-directivity are significantly different than other ground motions. These pulse-type motions can place severe demands on structures in the near-fault region. To aid in the characterization of these special type of ground motions, a simplified parameterization is proposed based on a representative amplitude, pulse period, and number of significant pulses in the velocity-time history.
Empirical relationships were developed for estimating the peak ground velocity (PGV) and ...

Magnitude scaling of the near fault rupture directivity pulse
PG Somerville - Physics of the earth and planetary interiors, 2003 - Elsevier
Current ground motion models all assume monotonically increasing spectral amplitude at all periods with increasing magnitude. However, near fault recordings from recent earthquakes confirm that the near fault fault-normal forward rupture directivity velocity pulse is a narrow ...
http://manishathesis.googlecode.com/svn-history/r90/trunk/Papers/somerville.pdf
Proceedings of the International Workshop on the Quantitative Prediction of Strong-Motion and the Physics of Earthquake Sources, 23-25 October 2000, Tsukuba, Japan.Tel.: +1-626-449-7650; fax: +1-626-449-3536. E-mail address: paul somerville@urscorp.com (P.G. Somerville

The conditions required for forward directivity are also met in dip slip faulting.
The alignment of both the rupture direction and the slip direction updip on the fault plane produces rupture directivity effects at sites located

C2-5 cont.

around the surface exposure of the fault(or its updip projection if it does not break the surface).
Dip slip faulting produces directivity effects on the ground surface that are most concentrated in a limited region
updip from the hypocenter.

Norm Abrahamson, Ralph Archuleta

Characterization of forward-directivity ground motions in the near-fault region
http://manishathesis.googlecode.com/svn-history/r111/trunk/Papers/MarekBray.pdf
Quantitative classification of near-fault ground motions using wavelet analysis
http://www.stanford.edu/~bakerjw/Publications/Baker%20(2007)%20Pulse%20ID,%20BSSA.pd

Progress and trend on near-field problems in civil engineering
http://link.springer.com/article/10.1007/s11589-007-0105-0

Design spectra including effect of rupture directivity in near-fault region
A Rodriguez-Marek - Earthquake Engineering and Engineering …, 2006 - Springer

http://link.springer.com/article/10.1007/s11803-006-0636-8

Selection of near-fault pulse motions for use in design
Connor P. Hayden, Jonathan D. Bray, Norman A. Abrahamson, Selection of Near-Fault Pulse Motions,
Journal of Geotechnical and Geoenvironmental Engineering, 2014, 140, 7, 04014030
http://www.iitk.ac.in/nicee/wcee/article/WCEE2012_3752.pdf
connor.hayden@berkeley.edu, jonbray@berkeley.edu, abrahamson@berkeley.edu
http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29GT.1943-5606.0001129

Earthquake ground motions in the near-fault region frequently have intense, double-sided pulses in the velocity-time series that can be very damaging to structures.
Many of these velocity pulses are attributed to the effects of forward directivity, which occurs when a fault ruptures toward a site.
However, pulses are not always observed in the forward directivity region, and some pulses cannot be explained by forward directivity.
The relative contribution of pulse-type motions to the overall seismic hazard should be considered when selecting records in a suite of design ground motions for a site in the near-fault region.

C2-5 cont.

Read More: http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29GT.1943-5606.0001129
Design ground motions near active faults Jonathan D Bray, Adrian Rodriguez-Marek, Joanne L Gillie
http://www.nzsee.org.nz/db/Bulletin/Archive/42%281%290001.pdf
Forward-Directivity (FD) in the near-fault regioncan produce intense, pulse-type motions that differ significantly from ordinaryground motions that occur further from the ruptured fault

PGVvaries significantly with magnitude, distance, and site effects.
Tv is a function of magnitude and site conditions with most of the energy being concentrated within a narrow-period band centred on the pulse period

As the number of near-fault recordings is still limited, fully nonlinear bi-directional shaking simulations are employed to gain additional insight
. It is shown that site effects generally cause Tv to increase. Although the amplification of
PGV at soil sites depends on site properties, amplification is generally observed even for very intense rock motions
. At soft soil sites, seismic site response can be limited by the yield strength of the soil, but then seismic instability may be a concern

FORWARD-DIRECTIVITY
Near-fault ground motions are significantly influenced by the rupture mechanism and slip direction relative to the site and by the permanent ground displacement at the site resulting from tectonic movement. When the rupture and slip direction relative to a site coincide, and a significant portion of the fault ruptures towards the site, the ground motion can exhibit the effects of forward-directivity (FD) [1].

Most of the energy in FD motions is concentrated in a narrow frequency band and is expressed as one or more high intensity velocity pulses oriented in the fault-normal direction.
These intense velocity pulses can lead to severe structural damage

Ground motions close to the surface rupture may also contain a significant permanent displacement, which is called fling-step, and this may lead to a high intensity velocity pulse in the direction of the fault displacement.
Pulses from fling-step have different characteristics than FD pulses

s. Whereas FD is a dynamic phenomenon that produces no permanent ground displacement and hence two-sidd velocity pulses, fling-step is a result of a permanent ground displacement that generates one sided velocity pulses.
The development of design ground motions for a project site close to an active fault should account for these special aspects of near-fault ground motion

C2-5 cont.

Somerville, P. G. (1998). Development of an improved representation of near fault ground motions. In Seminar on Utilization of Strong-Motion Data, Oakland, CA, 1-20.

Somerville, P. G. (2003). Magnitude scaling of the near fault rupture directivity pulse.Physics of the Earth and Planetary Interiors 137 , no. 1, 1-12.

Kempton, J. J. and J. P. Stewart (2006). Prediction equations for significant duration of earthquake ground motions considering site and near-source effects.Earthquake Spectra 22, no. 4, 985-1013

Bray, J. D. and A. Rodriguez-Marek (2004). Characterization of forward-directivity ground mo-
tions in the near-fault region. Soil Dynamics and Earthquake Engineering 24, no. 11, 815-828
Directivity pulses are a double-sided velocity pulse caused by constructive interference of seismic waves as a rupture propagates along a fault.
They tend to occur at sites that are far from the epicenter, but close to the fault, and are strongest in the fault normal direction.
These pulsesamplify structural response at long periods and are thus a serious design concern for structures located close to a fault (Somerville et al., 1997; Somerville, 2003)

DESIGN GROUND MOTIONS NEAR ACTIVE FAULTS
Jonathan D. Bray, Adrian Rodriguez-Marek and Joanne L. Gillie
BULLETIN OF THE NEW ZEALAND SOCIETY FOR EARTHQUAKE ENGINEERING,
Vol. 42, No. 1, March 2009
http://www.nzsee.org.nz/db/Bulletin/Archive/42%281%290001.pdf see pg 8 for References

Forward-Directivity (FD) in the near-fault region can produce intense, pulse
-type motions that differ significantly from ordinary ground motions that occur further from the ruptured fault. Near-fault FD motions typically govern the design of structures built close to active faults so the selection of design ground motions is critical for achieving effective performance without costly over-desig

Near-fault ground motions are significantly influenced by the rupture mechanism and slip direction relative to the site and by the permanent ground displacement at the site resulting from tectonic movement. When the rupture and slip direction relative to a site coincide, and a significant portion of the fault ruptures towards the site, the ground motion can exhibit the effects of forward-directivity

There are not a sufficient number of rock and soil recordings in close proximity to each other that contain near-fault FD characteristics to allow a detailed empirical study of site effects. Instead, numerical simulations are utiliz

C2-5 cont.

Near-fault forward-directivity motions typically govern the design of structures built close to active faults. Hence, ground motions for use in evaluating designs in the near-fault region should be selected carefully to represent satisfactorily the unique nature of FD motions. Forward-directivity motions are often intense, pulse-type motions, which are significantly different from ordinary ground motions. These motions are best described by their velocity-time history, which requires estimation of its peak ground velocity (
PGV), predominant pulse period (Tv), and number of significant velocity pulses (Nc)

In this paper, near-fault forward-directivity effects are addressed Somerville, P.G., Smith, N.F., Graves, R.W., and Abrahamson, N.A. (1997) "Modification of empirical strong ground motion attenuation relations to include the amplitude and duration effects of rupture directivity". Seismological Research Letters , 68 (1), 199-222. .

Fling-step considerations are disc ussed in
Stewart, J.P., Chiou, S-J, Bray, J.D., Graves, R.W., Somerville, P.G., Abrahamson, N.A. (2001)
"Ground Motion Evaluation Procedures For Performance-Based Design, PEER-2001/09".
Pacific EQ Engrg. Research Center, Univ. of Calif., Berkeley, Sep., 229 page

Baker, J. W. (2007). Quantitative classification of near-fault ground motions using wavelet analysis
,Bull. Seismol. Soc. Am.97,no. 5, 1486-150

Bray, J. D., and A. Rodriguez-Marek (2004).
Characterization of forward- directivity ground motions in the near-fault region,
Soil Dynam.Earthq. Eng.24,no. 11, 815-828.

Howard, J. K., C. A. Tracy, and R. G. Burns (2005).
Comparing observed and predicted directivity in near-source ground motion,
Earthq. Spectra 21,no. 4, 1063-1092

Iervolino, I., and C. A. Cornell (2008). Probability of occurrence of velocity pulses in near-source ground motions, Bull.Seismol. Soc. Am.98,no. 5, 2262-2277

C2-5 cont.

Mavroeidis, G. P., and A. S. Papageorgiou (2002). Near-source strong ground motion: Characterizations and design issues, U.S. National Conference on Earthquake Engineering, Boston, Massachusetts,21-25 July 2002, 12 pp.

Somerville, P. G. (2003). Magnitude scaling of the near fault rupture directivity pulse, Phys. Earth Planet. In.137,nos. 1/4, 201-212.

Baker J.W. (2008). Identification of near-fault velocity pulses and prediction of resulting response spectra, in Geotechnical Earthquake Engineering and Soil Dynamics IV, Sacramento, California, 10 pp.

Baker J.W. (2007). Quantitative classification of near-fault ground motions using wavelet analysis, Bulletin of the Seismological Society of America, 97 (5), 1486-1501

Tothong P., Cornell C.A., and Baker J.W. (2007). Explicit directivity-pulse inclusion in probabilistic seismic hazard analysis, Earthquake Spectra, 23 (4), 867-891.
Forward directivity-induced velocity pulses, which may occur in near-fault (or near-source) motions, are known to cause relatively severe elastic and inelastic response in structures of certain periods

Green R.A., Lee J., White T.M., and Baker J.W., (2008) The significance of near-fault effects on liquefaction, 14th World Conference on Earthquake Engineering. Beijing, China. 8p.

Somerville, P. G., Smith, N. F., Graves, R. W., and Abrahamson, N. A. (1997).
"Modification of Empirical Strong Ground Motion Attenuation Relations to Include the Amplitude and Duration Effects of Rupture Directivity." Seismological Research Letters, 68(1), 199-222.

25. Sieh, K., L. Jones, E. Hauksson, K. Hudnut, D. EberhartPhillips, T. Heaton, S. Hough, K. Hutton, H. Kanamori, A. Lilje, S. Lindvall, S. McGill, J. Mori, C. Rubin, J. Spotila, J. Stock, H. K. Thio, J. Treiman, B. Wernicke, and J. Zachariasen, Near-Field Investigations of the Landers Earthquake Sequence, April-July, 1992, Science, 260, pp. 171-176, 1993.

31.? Velasco, A., C. Ammonand T. Lay, Empirical Green Function Deconvolution of Broadband Surface Waves Rupture Directivity of 1992 Landers (M=7.3) California Earthquake, Bulletin of the Seismological Society of America, 8, pp. 735-750, 1994.

C2-5 cont.

214. Gao, S.; Liu, H; Davis, P.M.; and Knopoff, L., Localized Amplification of Seismic Waves and Correlation with Damage Due to the Northridge Earthquake,
Bulletin of Seismological Society of America, January, 1996
http://www.scec.org/news/newsletter/issue12.pdf p7 abstract
http://www.bssaonline.org/content/86/1B/S209.short

262. Bonilla, L. F., Steidl, J. H., and A. G. Tumarkin, Site Amplification in the Los Angeles Basin From Weak-Motion and Strong Motion Data, in Proceedings of the 11th World Conference on Earthquake Engineering, June 23-28, 1996, Acapulco, Mexico, accepted, 1996

288. Deng, Jishu, and L. R. Sykes, "Triggering of 1812 Santa Barbara Earthquake by a Great San Andreas Shock: Implications for Future Seismic Hazards in southern California," Geophysical Research Letters, accepted, 1996.

25. Sieh, K., L. Jones, E. Hauksson, K. Hudnut, D. Eberhart-Phillips, T. Heaton, S. Hough, K. Hutton, H. Kanamori, A. Lilje, S. Lindvall, S. McGill, J. Mori, C. Rubin, J. Spotila, J. Stock, H. K. Thio, J. Treiman, B. Wernicke and J. Zachariasen, Near Field Investigations of the Landers Earthquake Sequence, April-July, 1992, Science, 260, no. 5105, pp. 171-176, 1993.

Seale, S. H., and Archuleta, R. J. (1989). Site amplification and attenuation of strong ground motion, Bull. Seism. Soc. Am., 79: 1673-1696

Bonilla, L. F., J. H. Steidl, G. T. Lindley, A. G. Tumarkin and R. J. Archuleta (1997). Site amplification in the San Fernando Valley, CA: variability of site effect estimation using the Swave, coda and H/V methods, Bull. Seism. Soc. Am, 87: 710-730.

http://www.ce.berkeley.edu/~mahin/CE227web/Bozorgni-CampbellCh BerteroBozorgnia.pdf 5.4.5 Effects of Near-Fault Directivity
Under certain conditions, ground motions recorded at stations located near faults can exhibit two special characteristics:
(a) fault rupture directivity or directivity pulse; and
(b) a fling step (see Chapter 2).

5.4.5.4 Engineering Implications of Near-Fault Ground Motion
These near-fault pulses can cause very large inelastic deformation demands on a structure

. The near-source elastic design spectra in the 1997 UBC are generally compatible with the average of the two horizontal components; however, this code does not specifically address the larger ground motion expected for the strike-normal component (Somerville, 1998, the International Building Code (IBC, 2000), does not explicitly have near-source factor

1996 USGS hazard maps, which are the basis for the seismic provisions in the 2000 IBC, as well as the 2002 USGS hazard maps do not specifically include directivity effects (Frankel et al. 2002

C2-5 cont.

s. If one wanted to take these effects into account, the only alternative was to develop a site-specific design spectru

5.6.2 Better Understanding and Modeling of Fault Rupture Directivity and Fling Currently used wide-band modifications of ground motion relation s to develop elastic response spectra need to be enhanced to include the observed narrow-band characteristics of near-fault pulses. The observed period of such pulses increases with magnitude. Such a characteristic needs to be reliably modeled and included in the engineering prediction of ground motion. Also, there is a need to reliably quantify and simplify the effects of fault rupture directivity and fling for the design of civil engineering faciliti

5.6.3 Inclusion of the Directivity Effects in Probabilistic Hazard Analysis In the United States, the 1996 and 2002 national seismic hazard maps that provide the fundamental data for seismic design, do not include fault rupture directivity effects. The hazard analysis for sites located near active faults should incorporate such effects, once the wide-band versus narrow-band issues regarding near-fault pulses are resolved. Inclusion of such effects can have important consequences on the seismic design of civil engineering systems

BSSA Special issue Loma Prieta
http://www.bssaonline.org/content/81/5/1415.full.pdf+html with bibliography
Directional site resonances observed from aftershocks of the 18 October 1989 Loma Prieta earthquake
Ornella Bonamassa and John E. Vidale UCSC
Bulletin of the Seismological Society of America October 1991 vol. 81 no. 5 1945-1957
http://earthweb.ess.washington.edu/vidale/John_Vidale/Pubs_83-99_files/1991_Bonamassa_Vidale.pdf

The anomalous seismic response of the ground at the Tarzana hill site during the Northridge 1994 southern California earthquake: A resonant, sliding block?
1. J. A. Rial U No Carolina Chapel Hill Bulletin of the Seismological Society of America December 1996 vol. 86 no. 6 1714-1723
massa@mi.ingv.it
http://www.bssaonline.org/content/86/6/1714.short
An Experimental Approach for Estimating Seismic Amplification Effects at the Top of a Ridge, and the Implication for Ground-Motion Predictions: The Case of Narni, Central Italy
1. M. Massa,
2. S. Lovati and
3. E. D'Alema
1. Istituto Nazionale di Geofisica e Vulcanologia (INGV), Sezione di Milano-Pavia, via Bassini 15, 20133 Milano, Italy massa@mi.ingv.it
1. G. Ferretti
1. Dipartimento per lo Studio del Territorio e delle sue Risorse, Università di Genova, Viale Benedetto XV, 5, 16132 Genova, Italy

C2-5 cont.

1. M. Bakavoli
Bulletin of the Seismological Society of America December 2010 vol. 100 no. 6 3020-3034
http://www.bssaonline.org/content/100/6/3020.short

From March to September 2009, a velocimetric network was installed in Narni, central Italy, a village on the top of a limestone ridge. The aim was to investigate local site effects due to the 220-m-high ridge, which is characterized by slopes ranging from 22° to 35°. To investigate amplification without and with a reference site, three stations were installed at the base of the hill and seven at the crest. The network recorded 702 earthquakes, many of them from the 2009 L'Aquila sequence. To determine the dependence of amplification on the morphological features, the spectra were computed for horizontal components rotated into a range of azimuths. Both the ratio of the horizontal-to-vertical-component spectra and the ratio of the spectra at the ridge crest with respect to a reference station at the base of the ridge showed amplification by a factor of circa 4.5 for frequencies between 4 Hz and 5 Hz. The highest amplifications were seen for the directions of the ground motion perpendicular to the main elongation of the ridge.

Interpretation of significant ground-response and structure strong motions recorded during the 1994 Northridge earthquake
1. A. F. Shakal, M. J. Huang and R. B. Darragh DMG Bulletin of the Seismological Society of America February 1996 vol. 86 no. 1B S231-S246
Some of the largest accelerations and velocities ever recorded at ground-response and structural sites occurred during the Northridge earthquake. These motions are greater than most existing attenuation models would have predicted.

Topography effect at the critical SV-wave incidence: possible explanation of damage pattern by the Whittier Narrows, California, earthquake of 1 October 1987 Bulletin of the Seismological Society of America February 1990 vol. 80 no. 1 1-22 Keiiti Aki USC
http://www.bssaonline.org/content/80/1/1.short
The results show that the amplification due to the hill relative to the flat surface is more than 1.5 for all the source models. Since this amplification is nearly independent of the source type and spectrum, we conclude that the combined effect of the topographic irregularity and critically incident SV waves might be responsible for the concentration of damage observed during the Whittier Narrows earthquake.

Mathematical Representation of Near-Fault Ground Motions Bulletin of the Seismological Society of America June 1, 2003 93:1099-1131 George P. Mavroeidis and Apostolos S. Papageorgiou
Bulletin of the Seismological Society of America June 2003 vol. 93 no. 3 1099-1131

Parameterization of fling
-
step from ground motion recordings and
simulations
,
Jack W. Baker and Lynne S. Burks Stanford

C2-5 cont.

(
Poster
046
)
We identify potential data sources for fling step and discuss their value, compile a dataset of simulated and recorded ground motions containing fling, extract fling pulses from these ground motions, and derive a predictive model for fling amplitude and period that is compared to existing empirical models. Fling is the result of permanent static offset of the ground during an earthquake, but is usually ignored because ground motion records from accelerometers contain errors that make it difficult to measure static offsets. But some data sources include fling, such as specially processed recordings, ground motion simulations, and high rate global positioning systems (GPS). From this data, we extract fling pulses using the pattern search global optimization algorithm. The resulting displacement amplitudes and periods are used to create a new predictive equation for fling parameters, and are compared to existing empirical models for pulse period, fling amplitude, and surface displacement along the fault, and match reasonably well

Ground motion selection for simulation-based seismic hazard analysis,Lynne S. Burks, Brendon A. Bradley, and Jack W. Baker(Poster047)

Somerville, P. G. (2003), Magnitude scaling of the near fault rupture directivity pulse, Phys. Earth Planet. Inter., 137, 201-212.

B.T. Aagaard and T.H. Heaton, "Near-Source Ground Motions from Simulations of Sustained Intersonic and Supersonic Fault Ruptures," Bull. Seis. Soc. Am vol. 94,no.6, 2004, pp. 2064- 2078

Spudich, P., and Chiou, B., (2008). "Directivity in NGA earthquake ground motions: Analysis using isochrone theory," Earthquake Spectra 24. 279-298.

Potrero Grande Sycline

Include but I think not controlling
 Lower Elysian Park thrust
 Carson Fault
 Compton Fault

Controlling
 San Andreas Fault- distence is irrelevant.
What is relevant is how much shaking can it generate.
Especially at long periods and for long durations
Puente Hills Thrust (also vertical)
Whittier-Elsinore
Upper Elysian Park

 Liquefaction
"The primary factors affecting the possibility of liquefaction in a soil deposit are: (1) intensity and
duration of earthquake shaking"
Study must be rerun with latest data. It must also be run with long period/ long duration seismology from the San Andreas. There is a simulation in Shakeout.
The USGS has not studied long period- long duration events

Sloughing of the sides of the chanalized rivers must be studied and reported, using also the long period- long duration San Andreas data

SCEC Tom Jordan writes in US DOE Office of Science "big iron"
The geological record suggests that huge earthquakes shook the southern part of the San Andreas Fault in 1713, 1614, 1565, 1462 and 1417. Because the intervals are between 50 and 100 years, seismologists calculate that southern California is overdue for an enormous shock. -

California, like many earthquake-prone areas of the world, has sedimentary basins filled with soft material that has eroded from mountains. Early settlers tended to establish their largest cities and towns in those flat basins - cities like Los Angeles and San Bernardino.
The soft basins "act like big bowls of jelly" during large earthquakes, Jordan says. Seismic energy in the form of large-amplitude waves is injected into them, rattling around and causing enormous motion in the very areas where people and buildings are most concentrated.

Disastrous path
"Based on our calculations, we are finding that the basin regions, including Los Angeles,
are getting larger shaking than is predicted by the standard methods," Jordan says. "By improving the predictions, making them more realistic, we can help engineers make new buildings safer."
The chance of a magnitude-8-or-greater earthquake on the southern San Andreas Fault in the next 30 years is just 2 percent, but the impact would be dramatic, especially if ground motion followed the basins toward high-population areas.

C2-5 cont.

C2-5 cont.

"You certainly wouldn't want to be in that earthquake," Jordan says. Especially in sedimentary basins, it would cause huge ground motions and last a long time.

The earthquake center has been generating large suites of earthquake simulations to estimate ground-shaking, taking into account three-dimensional effects, the directivity effect and the sedimentary basin effect.
"We model an ensemble of such earthquakes and attach probabilities to each. We start with an earthquake rupture forecast to select a large number of events that represent the possibilities for future earthquakes. We don't know which will happen next."
- See more at: http://ascr-discovery.science.doe.gov/bigiron/quake3.shtml#sthash.MPFjI0bv.dpuf

http://scec.usc.edu/research/cme/
http://scec.usc.edu/scecpedia/Community_Velocity_Model
SCEC's community velocity models (CVM's) provide detailed 3D properties for southern California.

CVM-H for use in fault systems analysis, strong ground motion prediction, and earthquake hazards assessment. The model describes seismic P- and S-wave velocities and densities, and is comprised of basin structures embedded in tomographic and teleseismic crust and upper mantle models.

Links broken Contact Harvard Andreas Plesch, John Shaw, Peter Suess
http://isites.harvard.edu/icb/icb.do?keyword=k93600&pageid=icb.page577442&pageContentId=icb.pagecontent1243182&state=maximize&view=view.do&viewParam_name=SCEC%20CVM%20Community%20Velocity%20Model/SCEC%20Community%20Velocity%20Modeul%20CVM-H

The CVM-H consists of basin structures defined using high-quality industry seismic reflection profiles and tens of thousands of direct velocity measurements from boreholes (Plesch et al., 2009; Süss and Shaw, 2003). The basin structures are also compatible with the locations and displacements of major faults represented in the SCEC Community Fault Model (CFM) (Plesch et al., 2007). These basin structures were used to develop travel time tomographic models of the crust (after Hauksson, 2000) extending to a depth of 35 km, and upper mantle teleseismic and surface wave models extending to a depth of 300 km (Prindle and Tanimoto, 2006). These various model components were integrated and used to perform a series of 3D adjoint tomographic inversions that highlight areas of the model that were responsible for mismatches between observed and synthetic waveforms (Tape et al, 2009). Sixteen tomographic iterations, requiring 6800 wavefield simulations, yielded perturbations to the starting model that have been incorporated in the latest model release.

CVM-S

http://www.data.scec.org/research-tools/3d-velocity.html

C2-5 cont.

The purpose of the Three-Dimensional Community Velocity Model for Southern California is to provide a unified reference model for the several areas of research that depend of the subsurface velocity structure in their analysis. These include strong motion modeling, seismicity location, and tomographic velocity modeling. It is also hoped that the geologic community will find the basin models useful because they are based on structures and interfaces that are largely derived from geologic structure models. The deeper sediment velocities themselves are obtained from empirical relationships that take into account age of the formation and depth of burial. The coefficients of these relationships are calibrated to sonic logs taken from boreholes in the region. Shallow sediment velocities are taken from geotechnical borehole measurements. Hardrock velocities are based on tomographic studies.
Vp-density: The new Vp-density relation is based on density measurements from oil well samples in the Los Angeles basin and the San Gabriel Valley, geotechnical boreholes throughout southern California, and 12 oil wells along the LARSE lines. (LARSE1 ran up the San Gabriel River)
The newly determined Vp-density ratio is constant, in contrast to the old relation. This is true even for low Vp, as defined by the geotechnical data. The new densities are higher, for a given Vp, than the old. This will tend to lower the Poisson ratio, which will lower Vp/Vs; that is, changing the Vp-density relation produces a new Vs model.

Reference V3: Kohler, M., H. Magistrale, and R. Clayton, 2003, Mantle heterogeneities and the SCEC three-dimensional seismic velocity model version 3, Bulletin Seismological Society of America 93, 757-774.
Reference V2: Magistrale, H., S. Day, R. Clayton, and R. Graves, 2000, The SCEC southern California reference three-dimensional seismic velocity model version 2, Bulletin Seismological Society of America, 90 (6B), S65-S76.*
Magistrale is at FM Global (Factory Mutual); Day at SDSU; Graves at USGS Pasadena
Reference V1: Magistrale, H., K. McLaughlin, and S. Day, 1996, A geology based 3-D velocity model of the Los Angeles basin sediments, Bulletin Seismological Society of America 86, 1161-1166

http://scec.usc.edu/research/cme/groups/broadband
The SCEC Broadband Platform is a software system which generates 0-10 Hz seismograms for historical and scenario earthquakes in California.

The goal of the SCEC Broadband Simulation Platform is to generate ground motions for a particular earthquake scenario using deterministic low-frequency and stochastic high-frequency simulations. It provides multiple approaches for generating the rupture description, modeling high- and low-frequency wave propagation, and incorporating site amplification effects. These codes have been validated against recorded ground motions from real events, to increase confidence in their results. With the Broadband Platform, a user can select which combination of approaches to use and simulate an earthquake, producing seismograms which include high and low frequency data. Ultimately these seismograms can be used to improve ground motion attenuation models, resulting in more accurate predictions of future ground motions for building engineers.

- Ralph Archuleta UC Santa Barbara Earth Science

C2-5 cont.

- Scott Callaghan
- Nancy Collins
- Rob Graves USGS Pasadena
- Walter Imperatori
- Thomas Jordan SCEC
- Philip Maechling SCEC
- Kim Olsen San Diego State University
- Jan Schmedes
- Paul Somerville URS Corp Pasadena

http://scec.usc.edu/research/cme/groups/cybershake
http://scec.usc.edu/scecpedia/CyberShake_Project
SCEC's CyberShake project utilizes 3D simulations and finite-fault rupture descriptions to compute deterministic (scenario-based) and probabilistic seismic hazard in Southern California.
CyberShake is a computationally intensive way to improve standard probabilistic seismic hazard analysis
The CyberShake computational approach improves on standard PSHA calculations in a number of ways including:

1. Wave propagation simulations more accurately describe the distribution of ground motions than the currently used ground motion prediction equations [GMPE].
2. Wave propagation simulations provide good estimates of both ground motion amplitude as well as ground motion duration. Ground motion duration is not available from empirical peak ground motion methods.

http://scec.usc.edu/scecpedia/CyberShake_Data_Request

- Graves, R., Jordan, T. H., Callaghan, S., Deelman, E., Field, E. H., Juve, G., Kesselman, C., Maechling, P., Mehta, G., Okaya, D., Small, P., Vahi, K. (2010), CyberShake: A Physics-Based Seismic Hazard Model for Southern California, Pure and Applied Geophysics, Accepted for Publication March, 2010
- Graves, R., S. Callaghan, E. Deelman, E. Field, N. Gupta, T. H. Jordan, G. Juve, C. Kesselman, P. Maechling, G. Mehta, D. Meyers, D. Okaya and K. Vahi (2008) Physics Based Probabilistic Seismic Hazard Calculations for Southern California,14th World Conference on Earthquake Engineering, October, 2008, Beijing China
- The SCEC CyberShake Project: A Computational Platform for Full Waveform Seismic Hazard Analysis Robert Graves (USGS), Scott Callaghan (USC), Patrick Small (USC), Gaurang Mehta (USC), Kevin Milner (USC), Gideon Juve (USC), Karan Vahi (USC), Edward Field (USGS), Ewa Deelman (USC/ISI), David Okaya (USC), Philip Maechling (USC), Thomas H. Jordan (USC) - SSA April 2011

For Scoping the above can give you the information you need on ground Motion, XYZ seismogrms etc for PHT
You also need the Shakeout, Terrashake, "Wall to Wall" and M8 simulation data from the San Andreas

You can Calculate the Seismic Source effects, Path effects using the velocity model (CVM) and site effects (bowl of jello in this case) but good news the work has already been done.

What you can't do is just use magnitued distence relationships (which might work if there was rock all the way from seismic sources to a rock site) even with a basin depth factor. Just not adequate in Project area

C2-5 cont.

C2-5 cont.

VERTICAL GROUND MOTION

New Chapter 23, Vertical Ground Motions for Seismic Design
Add the following new Chapter 23 and renumber the existing ASCE/SEI 7-05 Chapter 23 as Chapter 24: site-specific procedures MUST be used, and included "a site-specific study may be performed to obtain Sav at vertical periods less than or equal to 2.0 seconds, but the value so determined shall not be less than 80 percent of the Sav value determined from Equations 23.1-1 through 23.1-4. and
23.2 MCER VERTICAL RESPONSE SPECTRUM.
The MCER vertical response spectral acceleration shall be 150 percent of the Sav determined in Section 23.1. read at least 150% when site specific study is utilized

VERTICAL GROUND MOTIONS FOR SEISMIC DESIGN
Chapter C23.1 DESIGN VERTICAL RESPONSE SPECTRUM
General.
ASCE/SEI 7-05 and the earlier editions of the Provisions use the term 0.2 SDSD to reflect the effects of vertical ground motion.
Where a more explicit consideration of vertical ground motion effects is advised—as for certain tanks, materials storage facilities, and electric power generation facilities—BACKUP GENERATORS the requirements of this chapter may be applied. Professional practices interpret may as must

Historically, the amplitude of vertical ground motion has been inferred to be two-thirds (2/3) the amplitude of the horizontal ground motion.

However, studies of horizontal and vertical ground motions over the past 25 years have shown that such a simple approach is not valid in many situations (e.g., Bozorgnia and Campbell, 2004, and references therein) for the following main reasons:
(a) vertical ground motion has a larger proportion of short-period (high-frequency) spectral content than horizontal ground motion and this difference increases with decreasing soil stiffness and

(b) vertical ground motion attenuates at a higher rate than horizontal ground motion and this difference increases with decreasing distance from the earthquake lead to the following observations regarding the vertical/horizontal (V/H) spectral ratio (Bozorgnia and Campbell, 2004):

1. The V/H spectral ratio is relatively sensitive to: spectral period, distance from the earthquake, local site conditions, and earthquake magnitude (but only for relatively soft sites) and relatively insensitive to earthquake mechanism and sediment depth;

2. The V/H spectral ratio has a distinct peak at short periods that generally exceeds 2/3 in the near-source region of an earthquake; and

3. The V/H spectral ratio is generally less than 2/3 at mid-to-long periods. Therefore, depending on the period, the distance to the fault, and the local site conditions of interest, use of the traditional

2/3V/H spectral ratio can result in either an underestimation or an overestimation of the expected vertical ground motions.

The procedure for defining the design vertical response spectrum in the Provisions is based on the studies of horizontal and vertical ground motions conducted by Campbell and Bozorgnia (2003) and Bozorgnia and Campbell (2004).
These procedures are also generally compatible with the general observations of Abrahamson and Silva (1997) and Silva (1997) and the proposed design procedures of Elnashai (1997).

HOWEVER FOR THE SPECIAL CASE Potrero Grande Sycline AREA SIMULATION MUST BE UTILIZED
Maps are inadequate site-specific procedures MUST be used, and included "a site-specific study may be performed to obtain Sav at vertical periods less than or equal to 2.0 seconds, but the value so determined shall not be less than 80 percent of the Sav value determined from Equations 23.1-1 through 23.1-4.

REFERENCES VERTICAL GROUND MOTION p 31
http://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/bssc/appendixg_0810.pdf

Abrahamson, N. A., and W. J. Silva. 1997. "Empirical Response Spectral Attenuation Relations for Shallow Crustal Earthquakes," Seismological Research Letters, 68:94-127.

Boore, D. M., and G. M. Atkinson. 2008. "Ground-Motion Prediction Equations for the Average Horizontal Component of PGA, PGV, and 5%-Damped PSA at Spectral Periods Between 0.01 S and 10.0 s", Earthquake Spectra, 24:99-138.

Bozorgnia, Y., and K. W. Campbell. 2004. "The Vertical-to-Horizontal Response Spectral Ratio and Tentative Procedures for Developing Simplified V/H and Vertical Design Spectra," Journal of Earthquake Engineering,8:175-207.

Campbell, K. W., and Y. Bozorgnia. 2008. "NGA Ground Motion Model for the Geometric Mean Horizontal Component of PGA, PGV, PGD and 5% Damped Linear Elastic Response Spectra for Periods Ranging from 0.01 to 10 s," Earthquake Spectra, 24:139-171.

Campbell, K. W., and Y. Bozorgnia. 2003. "Updated Near-source Ground Motion (Attenuation) Relations for the Horizontal and Vertical Components of Peak Ground Acceleration and Acceleration Response Spectra," Bulletin of the Seismological Society of America, 93:314-331.

C2-5 cont.

Chiou, B. S.-J., and R. R. Youngs. 2008. "An NGA Model for the Average Horizontal Component of Peak Ground Motion and Response Spectra," Earthquake Spectra, 24:173-215.

Elnashai, A. S. 1997. "Seismic Design with Vertical Earthquake Motion," in
Seismic Design for the Next Generation of Codes, edited by P. Fajfar and H. Krawinkler. Balkema, Rotterdam, p. 91-100.

Silva, W. 1997. "Characteristics of Vertical Strong Ground Motions for Applications to Engineering Design," in
FHWA/NCEER Workshop on the National Representation of Seismic Ground Motion for New and Existing Highway Facilities,
Technical Report NCEER-97-0010. National Center for Earthquake Engineering Research, Buffalo, New York.

C2-5 cont.

Vertical Ground Motions Cal Trans after Northridge

High levels of vertical acceleration were recorded during the Northridge earthquake.
This was in a frequency range that could excite structures to ductilities of 2 or higher.

The high vertical acceleration usually was accompanied with very large horizontal shaking.

This high vertical acceleration appears to be related to the near field behavior of thrust faults.

Since blind thrust faults may be a problem for California, it may be prudent to develop some criteria to deal with them.

A vertical response spectra was used for the replacement of the 5/14 Connector overcrossing Bridge #53-27950 (Figure 2).

It is an envelope of five vertical acceleration records obtained during the Northridge earthquake. No decision has been made so far on including this type of response spectra in a future bridge code.

Caltrans recommended that engineers working on the 5/14 Interchange Replacement Project also design the super-structure for a vertical force of 1.5 g in an upward direction and 0.5 g in a downward direction.

Moments and shears for this loading were combined with moments and shears for an unfactored dead load and compared to all other loading cases.

The superstructure was designed for the critical loads.
End conditions were carefully considered so that if a bridge had a seat type abutment, the end condition would be a cantilever for the upward direction.

C2-5 cont.

However, tiedowns should probably be provided where uplift is a problem. The moment capacity of columns would also be much lower as the axial load becomes smaller.

Areas that are especially vulnerable for vertical loads would be Outriggers, C-Bents and very long spans.

The end result of all of this was the addition of a nominal amount of mild steel being placed in the soffit near the supports and the top deck at midspan for superstructure moments caused by upward vertical loads.

Other areas that should be examined are the bent cap to superstructure connection, girder stirrups, and bearing devices.

It is proposed to have an additional Group VII load case as shown below:

Proposed EQ Load Case 3 = 1.0(DL) + 1.0 C Vert. ARS) -I- 0.3(Long. ARS) + 0.3(Trans. ARS)

Bard, P.-Y., JC Gabriel, 1986 The seismic response of two-dimensional sedimentary deposits with large vertical velocity gradients
BSSA 76 343-360

Methods of Computational Physics, Bruce Bolt, ed 1987

Characteristics of Vertical Ground Accelerations, by Ta-liang Teng and Jiang Qu, University of Southern California SCEC Task H-9 1995-96

Theodulidis, N., P-Y. Bard, R. J. Archuleta and M. Bouchon (1996). Horizontal to vertical spectral ratio and geological conditions: the case of Garner Valley downhole array in southern California, Bull. Seism. Soc. Am.,86:306-319

http://www.ce.berkeley.edu/~mahin/CE227web/Bozorgni-CampbellCh_BerteroBozorgnia.pdf
5.4.6 Vertical Ground Motion
Characteristics of the vertical component of ground motion are significantly different than those of the horizontal component. This is clearly evident in the recorded ground acceleration time histories. Compare, for example, the vertical ground acceleration recorded at Rinaldi Receiving Station during the Northridge earthquake (Figure 5.33) with that of the horizontal component recorded at this same station (Figure 5.29). It is evident from this comparison that the vertical component is richer in high frequency content than the horizontal component. This results in high vertical response spectral ordinates at short periods (Figure 5.5)

Updated near-source ground motion (attenuation) relations for the horizontal and vertical components of PGA and acceleration response spectra.
Bulletin of the Seismological Society of America, 93, 314-331.

C2-5 cont.

Aagaard, B. T., and T. H. Heaton (2004), Near-source ground motions from simulations of sustained intersonic and supersonic fault ruptures, Bull. Seismol. Soc. Am., 94, 2064-2078, doi:10.1785/0120030249

Graves, R., T. H. Jordan, S. Callaghan, E. Deelman, E. Field, , G. Juve, C. Kesselman, P. Maechling, G. Mehta, K. Milner, D. Okaya, and P. Small (2011), CyberShake: A physics-based probabilistic seismic hazard calculations for Southern California, PAGEOPH, 168, 367-381, doi:10.1007/s00024-010-0161-6

Somerville, P.G., R.W. Graves, S.M. Day, and K.B. Olsen (2007), Ground Motion Environment of the Los Angeles Region', The Structural Design of Tall and Special Buildings, 15, 483-494.

226
Interseismic Strain Accumulation Across Metropolitan Los Angeles: Puente Hills Thrust
,
Donald F. Argus, NASA/JPL Zhen Liu, Michael B. Heflin, Angelyn W. Moore, Susan Owen, Paul Lundgren, Vicki G. Drake, and Ivan I. Rodriquez-Pinto

The Puente Hills Thrust and nearby thrust faults (such as the upper Elysian Park Thrust) are slipping at 9 ±2 mm/yr beneath a locking depth of 12 ±5 km (95% confidence limits).
Incorporating sedimentary basin rock either reduces the slip rate by 10 per cent or increases the locking rate by 20 per cent.
The 9 mm/yr rate for the Puente Hills Thrust and nearby faults exceeds the cumulative 3-5 mm/yr rate estimated using paleoseismology along the Puente Hills Thrust (1.2-1.6 mm/yr, Dolan et al. 2003), upper ElysianPark Thrust (0.6-2.2 mm/yr, Oskin et al. 2000), and western Compton Thrust (1.2 mm/yr, Leon et al. 2009], though all the paleoseismic estimates are minimums.
We infer that M 7 earthquakes in northern metropolitan Los Angeles may occur more frequently that previously thought

Luminescence dating inter-comparison for sediments associated with the Puente Hills Blind-Thrust System recovered from cores, Wendy A. Barrera, UCLA Edward J. Rhodes, Madhav K. Murari, Lewis A. Owen, Michael J. Lawson, Kristian J. Bergen, James F. Dolan, and John H. Shaw
(Poster 138)
Using Risk Targeted Ground Motions to Evaluate Seismic Hazard Models, Peter M. Powers USGS (Poster 050

The ambient seismic noise approach is promising because it can be used to estimate expected long -period ground motions even though strong ground motion from earthquakes that would excite that shaking have not yet been recorded instrumentally Denolle et al. (2014a&b)

C2-5 cont.

Denolle, M. A., E. M. Dunham, G. A. Prieto, and G. C. Beroza, 'Strong Ground Motion Prediction using Virtual Earthquakes', Science, 343, 6169, (2014a): 399 403.

Denolle, M. A., E. M. Dunham, G. A. Prieto, G. C. Beroza, (2014b) Strong Ground Motion Prediction Using Virtual Earthquakes, Science, vol. 343 no. 6169 pp. 399-403 DOI: 10.1126/science.1245678

Arrowsmith, R., C. Crosby, E. Kleber, E. Nissen, and P. Gold, (2013), Imaging and Analyzing Southern California's Active Faults with Lidar, November 4-6, 2013 San Diego Supercomputer Center (SDSC), UCSD, La Jolla, CA.

Liu, Z., P. Lundgren, Z. K. Shen, 2014, Improved imaging of Southern California crustal deformation using InSAR and GPS, SCEC Annual Meeting, Palm Springs, California

Herbert, Justin W., Michele L. Cooke, and Scott T. Marshall., 2014b, "Influence of Fault Connectivity on Slip Rates in Southern California: Potential Impact on Discrepancies between Geodetic Derived and Geologic Slip Rates: Slip Rate Discrepancies in Southern CA." Journal of Geophysical Research: Solid Earth 119, no. 3 (March 2014): 2342-61. doi:10.1002/2013JB010472

The Los Angeles basin region shows very strong amplification for CVM-S4 with PGV exceeding 50 cm/s throughout most of the basin, and reaching nearly 200 cm/s in the Whitter-Narrows region connecting the San Gabriel and LA basins. Robert Graves 2014
Taborda, R. and Bielak, J. (2014). Ground
-
Motion Simulation and Validation of the 2008 Chino Hills, California, Earthquake
Using Different Velocity Models. Bulletin of the Seismological Society of America. Submi
tted for publication.
Compares different velocity models, emperical relationships

Plesch, A., J. H. Shaw, T. H. Jordan, and X. Song (2014). Stochastic Descriptions of Basin Velocity Structure from Analyses of Sonic Logs and the SCEC Community Velocity Model (CVM-H), Seism. Res. Lett 85:2, 431.

The backbone of UCERF3 is the long-term, time-independent model (UCERF3-TI), which was published as a USGS Open-File Report on Nov. 5, 2013, and includes a main report, 20 appendices, and various supplements (http://pubs.usgs.gov/of/2013/1165/).

Field, E. H., R. J. Arrowsmith, G. P. Biasi, P. Bird, T. E. Dawson, K. R. Felzer, D. D. Jackson, K. M. Johnson, T. H. Jordan, C. Madden, A. J. Michael, K. R. Milner, M. T. Page, T. Parsons, P. M. Powers, B. E. Shaw, W. R. Thatcher, R. J. Weldon, and Y. Zeng (2014). Uniform California Earthquake Rupture Forecast, version 3 (UCERF3)

—The time-independent model, Bull. Seism. Soc. Am, Vol. 104, No. 3, pp. 1122-
1180, June 2014, doi: 10.1785/0120130164

Schneider, M., R. Clements, D. Rhoades, and D. Schorlemmer (2014), Likelihood -and residual-based evaluation of medium term earthquake forecast models for California, Geophys.J. Int., 198 (3): 1307-1318, 10.1093/gji/ggu178

Reducing Epistemic Uncertainty in Seismic Risk Estimation,
Norm Abrahamson(PG&E) Sunday, September
http://www.scec.org/meetings/2014am/SCEC2014Proceedings.pdf 7, 2014
(18:00)
For most critical infrastructure, seismic safety is evaluated using standards based seismic design criteria, but there is a move to also consider risk-informed regulation and risk-informed decision making as part of seismic safety. The residual risk of critical infrastructure that meet the standards-based criteria should be considered with a long-term goal of risk reduction over decades.
P111

047Ground motion selection for simulation-based seismic hazard analysis, Lynne S. Burks, Brendon A. Bradley, and Jack W. Bake

Reducing Epistemic Uncertainty in Seismic Risk Estimation, Norman A. Abrahamson

For most critical infrastructure, seismic safety is evaluated using standards-based seismic design criteria, but there is a move to also consider risk-informed regulation and risk-informed decision making as part of seismic safety. The residual risk of critical infrastructure that meet the standards-based criteria should be considered with a long term goal of risk reduction over decades.
A key impediment to risk-informed regulation is that the epistemic uncertainty in the current estimates of seismic risk is huge, making it difficult to determine if the risk is small enough or to distinguish between the risks for different facilities for prioritization of mitigation efforts.
Of the three main parts of seismic risk(seismic hazard, structure capacity, and consequences of a failure), the largest source of epistemic uncertainty in the seismic risk is due to the uncertainty in the seismic hazard, and in particular, in the ground motion model for a given site and seismic source.
The greatly expanded ground motion data sets available in the last decade have shown that the systematic site and path effects account for about 50% of the aleatory variance in typical global ground motion models that use the ergodic assumption and the region-specific source effects account for an additional 15-20%.
While we know the aleatory variability in ergodic ground motion models is too large, using the reduced aleatory variability requires estimation of the site/source-specific effects on the median ground motions.
Properly capturing these site/source-specific effects can drastically change the estimates of seismic risk for a particular structure.

C2-5
cont.

C2-5 cont.

To be able to have useful seismic risk estimates, regulators and owners of critical infrastructure need improved site-specific seismic hazard models that capture the systematic source and path effects. Path effects can be estimated using analytical modeling of wave propagation in a 3-D crustal model, such as cybershake, but before s such models are used in engineering applications, they require adequate validation against recorded data.
The current seismic instrumentation in California does not provide the density of stations required to adequately validate the analytical 3
- D models for engineering applications.
Greatly expanded seismic instrumentation in the regions around critical infrastructure will be needed in the next decade to support the move to risk-informed decision making and optimizing seismic risk reduction

Adjoint analysis of the source and path sensitivities of basin-guided Waves Steven M. Day,Daniel Rotenand Kim B. Olsen 1Geophys. J. Int.(2012)189,1103-11
http://www-rohan.sdsu.edu/~kbolsen/PUBL_dir/Day_et_al_Adjoint_2012.pdf

Response to Comment Set C2: James Flournoy

C2-1 The Draft Environmental Impact Report (EIR) does not contain a geotechnical appendix. The California Environmental Quality Act (CEQA) does not require that an EIR include a geotechnical appendix. CEQA Guidelines section 15151 states that the "evaluation of the environmental effects of a proposed project need not be exhaustive...." CEQA Guidelines section 15064(f) requires that "[t]he decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency." The analysis of geology and soils impacts is supported by substantial evidence, including analysis of potential for seismic ground shaking and characterization of soil stability. Additionally, Mitigation Measure (MM) GEO-1 requires a geotechnical investigation be conducted and a report be prepared for the proposed project. The investigation must assess the potential for liquefaction, landslides, lateral spreading, seismic ground shaking, and expansive soil in the project area.

The commenter does not provide specific assertions or evidence as to why the analysis in the document is inadequate. The conclusions in the Draft EIR are supported by substantial evidence in the record, and no changes were made to the Draft EIR in response to this comment.

C2-2 The commenter questions why the proposed project is not part of the Tehachapi Renewable Transmission Project (TRTP). The California Public Utilities Commission (CPUC) approved TRTP in 2009, and construction of that project is almost complete. The Mesa Substation project was proposed in 2015 and is a separate project, with independent utility from the TRTP.

C2-3 It is assumed the commenter is referring to the period of buildings and structures in the context of seismic ground shaking. All components of the proposed project are identified in Draft EIR Chapter 2, "Project Description." The commenter is requesting that the period of large structures and tanks be estimated. CEQA Guidelines section 15151 states that the "evaluation of the environmental effects of a proposed project need not be exhaustive...." CEQA Guidelines section 15064(f) requires that "[t]he decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency." Impact GEO-2 analyzes the potential impacts from strong seismic ground shaking, based on seismic activity and proximity to active and potentially active fault zones. The conclusions in the Draft EIR are supported by substantial evidence in the record, and would not change if the periods of specific proposed buildings and structures were identified in the Draft EIR. No changes were made to the Draft EIR in response to this comment.

C2-4 The commenter asserts that the Whittier Fault system is usually underestimated and refers to the Draft SR 710 EIR when describing the location of the Whittier Fault and cites the "Beverly Blvd Bridge over Rio Hondo" and the "Montebello Hills EIR." The commenter also asserts that the earth shaking for Whittier "has not been recalculated using [the] new longer length" and that the EIR for the proposed project should use the method on the California Geological Survey (CGS) website. However, the comment does not specify the specific website link or method. The estimate of the Whittier Fault's maximum moment magnitude earthquake is based on research conducted on behalf of CGS in 2003 and is considered credible. Refer to Master Response 1 regarding

information used to support the conclusions in the Draft EIR.

The commenter states that the "Whittier-Elsinore" is known for branching and implies this needs to be considered in the Draft EIR. Nearly all faults are composed of multiple fault planes that branch, split, and rejoin, which is why references to faults are usually to fault zones. The existing analysis in Impact GEO-2 considers impacts from the Elsinore Fault Zone including branching in this zone because it concludes that the proposed project would be in a seismically active area in close proximity to active and potentially active fault zones. Refer to Master Response 1 regarding information used to support the conclusions in the Draft EIR.

The commenter also provides numbers but does not state what the numbers represent. The CPUC believes they represent the maximum moment magnitude. An estimate of the maximum moment magnitude earthquake that may occur on the Whittier Fault and all active and potentially active faults in the immediate vicinity of the proposed project is provided in Table 4.5-3. The table also provides a description of the "approximate location" of the faults, and Figure 4.5-3 shows faults within an approximately 2.5-mile radius of project components. This information came from the Probabilistic Seismic Hazard Analysis, which is a collaborative project between the United States Geological Survey and CGS and are part of the National Seismic Hazard Maps. While different models may give different predictions of future seismological potential, the Draft EIR utilized a credible national and state standard and has discretion as the Lead Agency to determine which method to use.

The commenter also suggests that the "spectrum" for each "important" structure, tower and heavy non-structural objects of the proposed project must be calculated and that the data inputs must be "adjusted for location and severity." However, the Draft EIR already considers related impacts. Impact GEO-1 and Impact GEO-2 consider all elements of the proposed project (when appropriate) based on that element's location in relation to faults and the potential severity of groundshaking. Impact GEO-1 addresses impacts at Staging Yard 6 and a portion of Telecommunication Route 3 because those are the only proposed project component within an Alquist-Priolo Fault Zone or adjacent to other known faults. Impact GEO-2 assesses impacts from seismic groundshaking due to the project's location in a seismically active area. Similarly, Impact GEO- 3 and Impact GEO-4, which address liquefaction and landslide impacts, also examine the impacts of the entire project. The commenter also states that the Montebello fault "may impact project[s] in [the] Montebello Project Area," however it is unclear if the commenter is implying that the Draft EIR does not consider the Montebello fault. Regardless, the Draft EIR has been revised to consider this fault in Impact GEO-1.

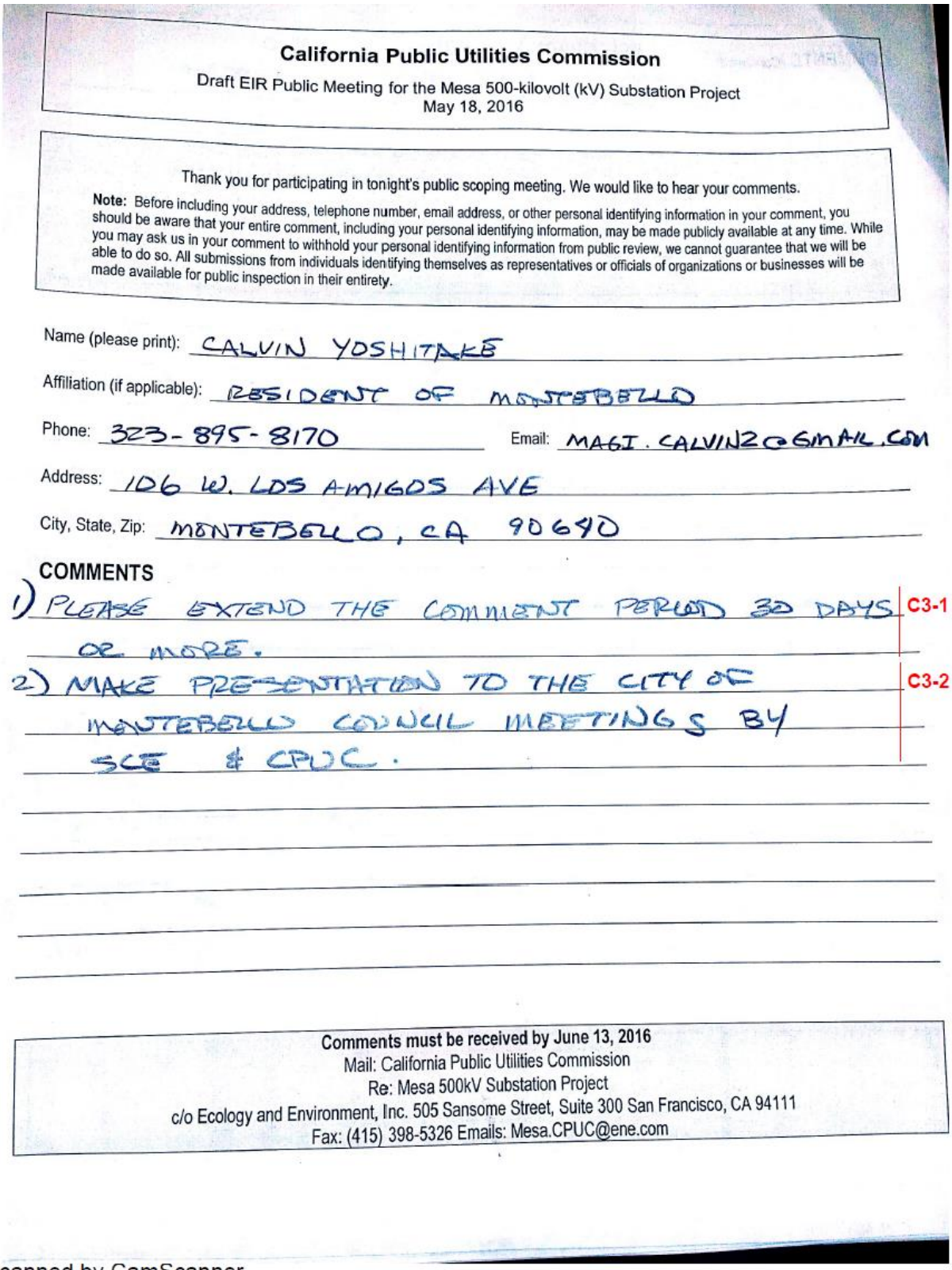
The commenter makes several statements regarding near fault effects, claims a variety of geotechnical details need to be calculated, liquefaction and landslide studies need to be completed, and research determining the geological characteristics of faults need to be done. Refer to Master Response 1 for a detailed response.

C2-5 The commenter states that scientific research shows a "Monterey Park Fault," guesses that it is a fault tip structure, and claims that the EIR needs to identify fault tips, investigate the supposed "Monterey Park Fault," and conduct detailed geological studies of fault characteristics. The commenter states the "Puente Hills thrust" must be

considered and data from SCEC (presumably, Southern California Earthquake Center) simulation must be used. The commenter states the "Puente Hills/Whittier system" interaction must be investigated and discussed. Further, the commenter describes several methods of seismic hazard investigation and claims specific effects from earthquake scenarios and fault effects is required. Refer to Master Response 1 for a response to these suggestions. Please also note, however, that "CEQA does not require a lead agency to conduct every test or perform all research, study and experimentation recommended or demanded by commenters" (CEQA Guidelines section 15204).

Additionally, the commenter provides various technical information about methods for seismic analysis, including apparent excerpts and links to other documents. However, it is difficult to determine whether the commenter is quoting language from these sources or making suggestions about how the project should be analyzed in the Geology and Soils chapter of the Draft EIR. Also, much of the information provided by the commenter does not relate to the proposed project and it is unclear what the commenter wishes CPUC to do with this information. The commenter also suggests site-specific spectrums should be provided for each bridge, structure, tank, station, and aerial, but there are no bridges or tanks included in the proposed project. It is unclear what a station or an aerial is; therefore, no additional response can be provided. Please also note that Lead Agencies are not required to respond to general reference materials or comments that are not directly relevant to the project (*Environmental Protection Information Center v. Dept. of Forestry & Fire Protection* (2008) 44 Ca.4th 459, 483, 487).

Comment Set C3 – Calvin Yoshitake



California Public Utilities Commission

Draft EIR Public Meeting for the Mesa 500-kilovolt (kV) Substation Project
May 18, 2016

Thank you for participating in tonight's public scoping meeting. We would like to hear your comments.

Note: Before including your address, telephone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Name (please print): CALVIN YOSHITAKE

Affiliation (if applicable): RESIDENT OF MONTEBELLO

Phone: 323-895-8170 Email: MAGI.CALVIN2@GMAIL.COM

Address: 106 W. LOS AMIGOS AVE

City, State, Zip: MONTEBELLO, CA 90640

COMMENTS

1) PLEASE EXTEND THE COMMENT PERIOD 30 DAYS OR MORE. C3-1

2) MAKE PRESENTATION TO THE CITY OF MONTEBELLO COUNCIL MEETINGS BY SCE & CPUC. C3-2

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
Re: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

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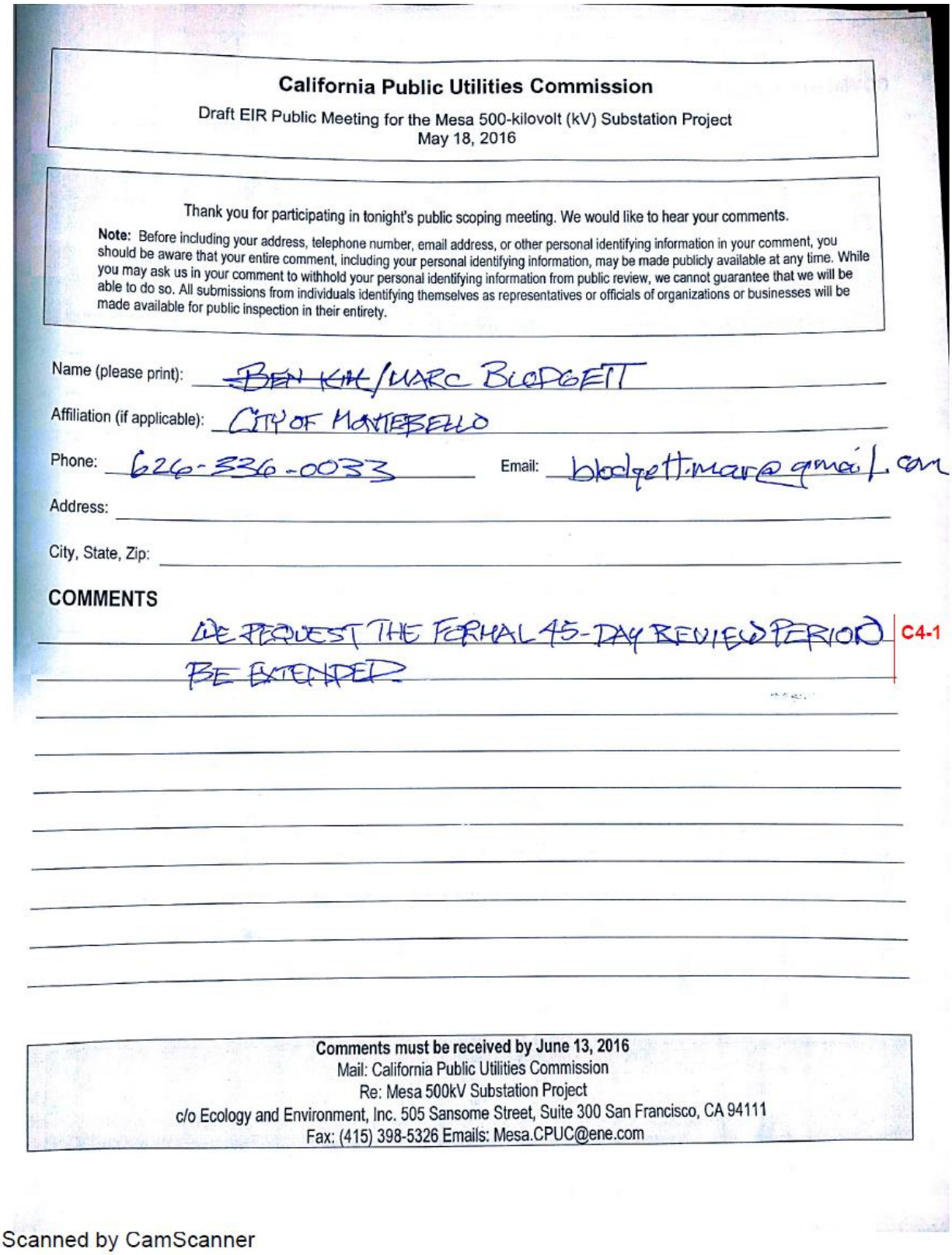
Response to Comment Set C3: Calvin Yoshitake

C3-1 California Environmental Quality Act (CEQA) Guidelines section 15105(a) requires that, in general, the minimum time for public review of a Draft EIR submitted to the State Clearinghouse for review by state agencies is 45 days. The California Public Utilities Commission (CPUC) initiated a 45-day comment period starting April 29, 2016 and extending through June 13, 2016. The CPUC extended the comment period to 60 days, and accepted written comments on the Draft Environmental Impact Report (EIR) through June 27, 2016. All written comments must have been postmarked or received by fax or email no later than 5:00 p.m. on June 27, 2016.

C3-2 See response to comment A6-2 regarding outreach to the City of Montebello.

Comment Set C4 – Marc Blodgett



California Public Utilities Commission

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May 18, 2016

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Name (please print): ~~BEN KIM~~/MARC BLODGETT

Affiliation (if applicable): CITY OF MONTEBELLO

Phone: 626-336-0033 Email: blodgett.marc@gmail.com

Address:

City, State, Zip:

COMMENTS

WE REQUEST THE FORMAL 45-DAY REVIEW PERIOD BE EXTENDED. C4-1

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
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c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

Scanned by CamScanner

Response to Comment Set C4: Marc Blodgett

C4-1 California Environmental Quality Act Guidelines section 15105(a) requires that, in general, the minimum time for public review of a Draft Environmental Impact Report (EIR) submitted to the State Clearinghouse for review by state agencies is 45 days. The California Public Utilities Commission (CPUC) initiated a 45-day comment period starting April 29, 2016 and extending through June 13, 2016. The CPUC extended the comment period to 60 days and accepted written comments on the Draft EIR through June 27, 2016. All written comments must have been postmarked or received by fax or email no later than 5:00 p.m. on June 27, 2016.

Comment Letter C5 – Samuel Villalobos

California Public Utilities Commission

Draft EIR Public Meeting for the Mesa 500-kilovolt (kV) Substation Project
May 18, 2016

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Name (please print): Samuel R Villalobos

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City, State, Zip: Montebello CA 90640

COMMENTS

Please include in Public Record that the CPUC published the incorrect address for the EIR meeting as 0350 S Mc Pherrin Ave. The correct address is 440 Mc Pherrin Monterey Park. I received to calls from Montebello residents stating their disappointment about incorrect address. C5-1

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
Re: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

Response to Comment Set C5: Samuel Villalobos

C5-1 As requested, the comment will be included in the Final EIR and the record of the project. Please note that the California Public Utilities Commission (CPUC) acted in good faith, and the noticing complied with the California Environmental Quality Act (CEQA) (See *Gilroy Citizens for Responsible Planning v. City of Gilroy* (2006) 140 Cal.App.4th 911, 924 ["In connection with section 21092, 'the legislature … affirmed the general principle that statutory requirements for public notice are fulfilled if the public agency makes a good faith effort to follow the procedures prescribed by law for giving notice.'"; citations omitted]). Specifically, CEQA requires that the Notice of Availability of a Draft Environmental Impact Report (EIR) include "[t]he date, time, and place of any scheduled public meetings or hearings to be held by the lead agency on the proposed project when known to the lead agency at the time of notice." The CPUC's confirmation for the meeting location stated that the room reserved was at Barnes Park Service Club House – Main Room, 350 S. McPherrin Ave., Monterey Park, CA 91754. Therefore, as published in the Notice of Availability (NOA), the public meeting was noticed as being held at Barnes Park – Service Club House Main Room 350 S. McPherrin Ave., Monterey Park, CA 91754. Upon CPUC staff and consultant arrival to 350 S. McPherrin Avenue, an employee directed the CPUC staff to Service Club of Barnes Park; the address of this building is 440 McPherrin Avenue. Signs were posted to direct attendees to this location, and the attendant at 350 S. McPherrin Avenue was notified of the change. This address change was out of the control of the CPUC, and CPUC was not made aware of this change until the day of the meeting. The address on the NOA was that provided by the facility. Sufficient efforts were made to redirect attendees to the meeting location. Furthermore, 19 people signed in to the public meeting.

Comment Set C6 – Samuel Villalobos

California Public Utilities Commission

Draft EIR Public Meeting for the Mesa 500-kilovolt (kV) Substation Project
May 18, 2016

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Name (please print): Samuel Villalobos

Affiliation (if applicable):

Phone: (323) 722-0475 Email:

Address: 1428 Via Poderoso

City, State, Zip: Montebello CA 90640 Public

C6-1

COMMENTS Please enter into the record

- Influence of high-frequency electromagnetic field on frequency mode of cell death and gene expression — Science International Journal of Radiation Biology
- On the Thermal effect induced in tissue samples exposed to extremely low frequencies (ELF) — Iranian Journal of Environmental Health Science and Engineering

open

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Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

COMMENTS *(Continued)*

influence of high-frequency electromagnetic fields on different modes of cell death in glioma [illegible] Journal of Radiation Biology.

See Journal of Human Reproductive Science

Original Article 2013
Volume 6 Issue 2 pages 124-128

THANK You

C6-2 cont.

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
Re: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

DOI 10.1186/s40201-015-0241-8

Journal of Environmental Health Science and Engineering

RESEARCH ARTICLE

Open Access

On the thermal effect induced in tissue samples exposed to extremely low-frequency electromagnetic field

M. Racuciu[1], S. Miclaus[2] and D. Creanga[3*]

Abstract

Background: The influence of electromagnetic exposure on mammalian tissues was approached as a public health issue aiming to reveal the putative side effect of 50 Hz industrial and domestic supply source (i) during aliments storage near such sources; (ii) in people staying couple of hours in the proximity of conducting wires.

Materials and methods: Fluorescence emission based thermal sensor was used to emphasize temperature dynamics of fresh meat samples during controlled electromagnetic exposure in Helmholtz coils adjusted to deliver 50 Hz / (4÷10) mT electromagnetic field in their inner volume. Fluoroptic temperature probe with 0.1 °C accuracy measurement and data acquisition software allowed reading temperature every second, in the tissue volume during exposure.

Results: The temperature dynamics curves of *ex-vivo* porcine tissues like liver, kidney, brain, muscle, lung, and bone, were comparatively analyzed – the choosing of the mammalian species being justified by metabolic and physiological similarities with human body. The curve slopes appear to be the same for the range of initial temperatures chosen to perform the tests (20.0 ± 0.1 °C), the temperature increase reaching around 2.0 °C for the magnetic flux density of 10 mT. Quantitative dependence was evidenced between the thermal effect and the magnetic flux density.

Conclusions: The technical interpretation is based on heating effect, on bioimpedance increasing and on water vaporization during wet sample exposure. The biomedical aspects derive from the degrading effects of food heating as well as from possible *in vivo* effects of living body exposure.

Keywords: Extremely low frequency electromagnetic field, Heating dynamics effect, Mammalian tissues

Background

During last decades there has been an increasing interest in the bioeffects of the electromagnetic fields interaction with living organisms, with focus on potential health hazard. The biological effects of industrial alternative current with 50 Hz standard frequency have been much discussed in the context of the biological response to extremely low frequency magnetic field (ELF-MF). All living organisms are continuously exposed to electromagnetic fields from industrial and domestic sources. It seems clear now that electromagnetic exposure can induce biological changes, although the precise effects are not yet well known. In recent decades, many scientific studies have confirmed that magnetic fields of extremely low frequency (ELF; frequency <300 Hz) can influence the biological systems. Data reported in the literature regarding direct effects induced by ELF-MF on cell functions are controversial and the interaction mechanisms of electromagnetic fields with biological systems are still partially understood [1].

The hypothesis that electromagnetic field may act as initiator or co-initiator of carcinogen tumours [2, 3] underlied the 1999 decision of U.S. National Institute of Environmental Health Sciences to include electromagnetic fields in the category of "possible human carcinogen". Also, in [4] it was reported the increasing of cancer rates

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in children when exposed at home at 50Hz magnetic fields greater than 0.3 μT. The bioeffects of environmental constraints of electromagnetic nature are very difficult to explain since living bodies are complex dynamic systems, with many physical and chemical parameters non-homogeneously distributed and time dependent. Therefore the assumption on non-thermal mechanisms of living organism electromagnetic exposure in the lack of any relationship with general or localized temperature increase with a consequent thermal distortion of bio-molecules still remains a scientific challenge. Actually thermal effects of electromagnetic field, especially low subtle heating effects are still considered the main cause of biological damages when the focus is the major role of thermal sensitivity of enzyme catalytic activity. That is why homeostatic processes from living cells and tissues could be perturbed by couple degrees temperature rise and such small perturbation could damage the whole organism when amplify at larger scale of space and time. Injuries of cell biochemistry triggered following human electromagnetic exposure could be an actual concern for public health, biomedicine [5, 6] and food science. In contrast with radiofrequency region of the spectrum, in the ELF region, direct thermal effect in tissues was neither definitely revealed nor sufficiently analyzed up-to-now – according to International Commission on Non-Ionizing Radiation Protection [7].

Having in mind that water is the dominant element hosting all biomolecules from living matter, an unusual phenomenon of weak ELF magnetic field impact on water should underline the reported bioeffects as long as the field energy is much lower than hydrogen bonds characterizing water molecule organization; but for now, an acknowledged mechanism of influence of weak ELF magnetic field on water does not exist. Some researchers had observed the changes of water electric conductivity parameters due to action of a weak ELF magnetic field ($f \leq 50$ Hz) [8]. In [9] the authors have shown the increasing of the water evaporation rate due to the exposure to weak static magnetic fields (15 mT). Other studies led to controversial results.

In [10] the authors reported that, using a thermocouple with a precision of 0.1 °C no changes in temperature were detected for 915 MHz or 50 Hz exposures of human lymphocytes culture. Other researchers [11] reported that heat shock protein synthesis in cells exposed to 50 Hz/(0–100 μT) at 40 °C was not increased compared to cells incubated at 40 °C without magnetic field exposure. In [12] it was studied the exposure of endothelial cells culture to domestic power supply (50 Hz/700 μT) that resulted in no detectable effects on the expression of heat shock protein60 as the dominant autoantigen in endothelial cells. Thermal effect of 50 Hz/94 mT magnetic field was only reported in inert materials such as superconductors [13].

Some other reports appear to evidence opposite results such as those regarding cell apoptosis after electromagnetic exposure. So, exposure of human lymphocytes at room temperature to either 915 MHz or 50 Hz resulted in significant condensation of chromatin, as measured through the method of anomalous viscosity time dependencies [10] but no apoptosis induced by DNA morphological changes or by its fragmentation was evidenced; while electromagnetic exposure to 50 Hz/0.097 T was found able to induce and promote apoptosis of mice murine liver cells in time-effects manner as shown in [14].

In [15] it was reported the ohmic heating rate of peaches for electric pulses with frequencies varying from 50 Hz to 1 MHz, thermal damage of tissue being evaluated from electrical admittance; it was found that samples exposed to low-frequency electric field demonstrated faster electro-thermal damage rates. Apart from experimental measurements, mathematical investigations also offered interesting approaches; the theoretical analysis of tissue heating as a potential side effect of strong electric pulses, developed in [16], revealed localized tissue heating near the electrodes which is assessed mainly to the sharp radial decrease of the electric field around the needles.

The main interaction mechanism of low frequency electromagnetic fields with absorbent matter is supposed to be the Faraday induction of electric fields and associated currents, the distribution of the induced electric field depending on the conductivity of organs and tissues [7]. The maximum electric field is induced in the body when the external fields are homogeneous and directed parallel to the body axis or perpendicular to it. According to calculations on human body models [7], the maximum local peak of electric field induced by a 50 Hz magnetic field in the brain is approximately of 23–33 mV/m per mT, depending on field orientation and body model. The corresponding electric field induced in the skin is of approximately 20–60 mV/m per mT.

While most of the experiments already mentioned were focused on the *in vivo* electromagnetic exposure there is less literature regarding the effects induced in tissue samples exposed immediately after excision from animal body (*ex vivo* exposure) – which would be of interest for food processing and technology rather than for bio-electromagnetism.

Our study was designed to evidence putative effects of electromagnetic exposure in fresh food samples with practical importance for temporal food storing near 50 Hz supplied devices. The experimental work was focused on the measurement of thermal effect dynamics in *ex vivo* biological tissues (during couple of hours following withdrawn from animal body) when exposed to 50 Hz electromagnetic field (4 mT-10 mT magnetic

flux density). The heating was recorded during about 3,000 s of continuous electromagnetic exposure.

Methods

Biological material

Mammalian tissue samples were consistent with specimens of porcine liver, kidney, lung, brain, muscle and bone, freshly excised, each of approximately 1 cm^3 – as resulted from direct volumetric estimation. Porcine tissue samples considered for the study had different masses, ranging within 3–4 g, because of their different densities. New tissue sample for every magnetic field exposure was used. Comparatively temperature dynamics was recorded for 1 ml deionized water as well as in the free air around the same point from the Helmholtz coil system centre.

Electromagnetic exposure

Electromagnetic exposure of tissue specimens was carried out within a Helmholtz coil system (Fig. 1) able to generate a vertical magnetic field of 50 Hz frequency and 4 mT, 6 mT, 8 mT and respectively 10 mT magnetic flux density for current intensity of 0.82 - 1.23 - 1.64 -2.05 A - as measured with a device type Simpson 260 Analog - VOM. Preliminary magnetic field measurements were carried out using a low-frequency field analyzer, NARDA EFA-300, before the mammal tissues magnetic exposure, based on the calibration curve of Helmholtz coil system presented in Fig. 2. The measurements of the magnetic field induction evidenced that within the centre of the Helmholtz coils system no significant variations of the field could be detected within 100 mm diameter area. The Helmholtz coil system consisted of two coils, each formed by 1,000 turns of 1 mm cooper wire, with a mean diameter of 260 mm and a thickness of 25 mm. The coils were mounted coaxially and placed at a mean distance of 130 mm from each other (Figs. 1, 2). The magnetic exposure was done by placing the mammal tissue sample on a glass dish (90 mm diameter), as dielectric support, in the centre of the coil system. The space chosen for the experiment was consistent with a small room arranged as thermostat with electric supply, with no windows - only double wall door; constant air temperature within the working space was displayed on thermocouples continuously during the tissue investigation project. No person was in that room during experimental recordings.

Temperature measurement

A Luxtron One fiber optic device was used to accomplish temperature recording. This one is provided with a thermal fluoroptic probe, of 1.5 mm diameter and working on the principle of fluorescence quenching in thermo-resistant phosphorescent sensor. The fiber optic probe was inserted inside the mammal tissue, in the centre of volume, through a tiny incision with the size of the probe, made at the time of its insertion. The accuracy

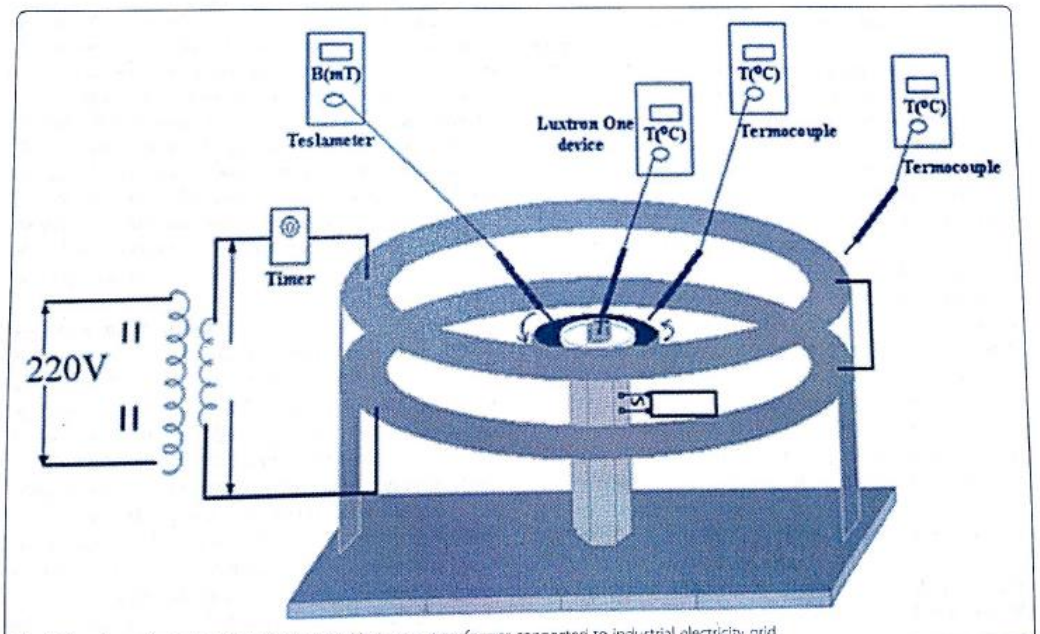

Fig. 1 Experimental set-up; coil system supplied by power transformer connected to industrial electricity grid

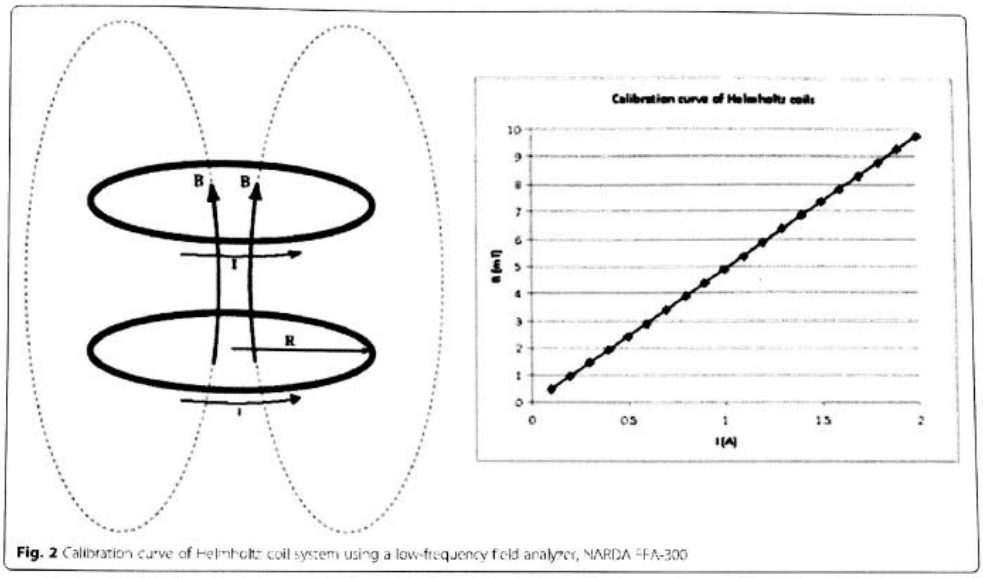

Fig. 2 Calibration curve of Helmholtz coil system using a low-frequency field analyzer, NARDA FFA-300

of temperature measurement was of ± 0.1 °C, the temperature values being recorded every second for about one hour in each tissue sample and transferred to a PC with TrueTemp3.0 program [17, 18]. Then temperature/time graphs were plotted using Origin 7.5 software.

Repeated recordings were carried out three times on similar samples extracted from each tissue – the bulk sample being kept at refrigerator (4 °C) and let to reach the environmental controlled temperature (of 20 °C) before new aliquot cutting. After thermal investigation any used tissue sample appeared less wet and structurally changed so that new incision and temperature measurement repetition seemed not reliable. Representative data series were presented and discussed below.

Results and discussions

The temperature dynamics curves were recorded for each magnetic flux density values of 4-6-8-10 mT starting from the same initial temperature (of 20.0 ± 0.1 °C). In the free air (sample missing) the temperature measured in coil system centre exhibited no variation during 3,000 s. The same occurred in tissue samples when coils system was not electrically supplied. For electromagnetically exposed liver tissue the temperature increase in Fig. 3 is presented. The curves were translated on the ordinate in order to be grouped in tissue family of curves – and this is valuable for all similar plots presented below.

For relatively low magnetic flux density, of 4 mT and 6 mT the temperature increase was of only 0.5 °C and respectively 0.7 °C but for higher magnetic flux density (8 mT, respectively 10 mT) about 1.8 °C and respectively 2.0 °C increases in liver tissue sample temperature were recorded.

Detectable variation of temperature within muscle tissue was evidenced (Fig. 4) only for 8 mT (about 0.3 °C in 3,000 s) and for 10 mT (0.5 °C), this being probably the consequence of the considerable evaporation of water (as muscle is a "wet" tissue) that partially compensated the temperature increase due to the Helmholtz coil system. As well the thermal effect of lowest magnetic flux density applied in this study could be insufficient for inducing detectable heating effect in association also with possible intrinsic peculiarities of muscle tissue. In the next graphs, for the other tissues there was also a slighter heating effect for 4 mT and 6 mT than for 8 mT and 10 mT. In lung tissue (Fig. 5) significant temperature rise was noticed for all magnetic flux densities, from 0.5 °C in the case of 4 mT to 0.7 °C in the case of 6 mT and 0.9 °C in the case of 8 mT with further increase up to 1.2 °C for 10 mT. Certain different variation trend was noticed for 6 mT graph which is probably related to the lung tissue lacunary structure – as further in the bone can be seen.

In Fig. 6 the temperature measured in kidney tissue is presented where the increase noticed for 4 mT was of about 0.6 °C, the increases for 6 mT and respectively for

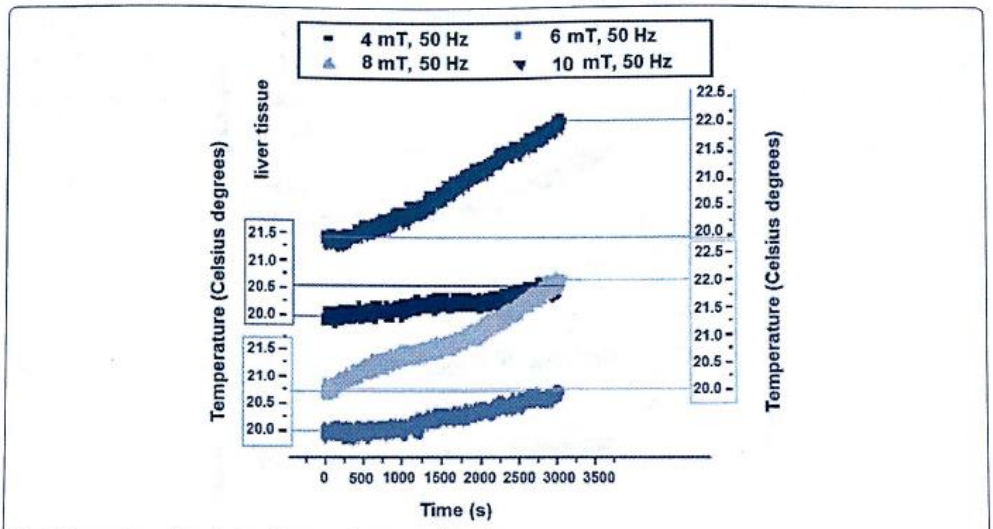

Fig. 3 Temperature variation during electromagnetic exposure of liver tissue

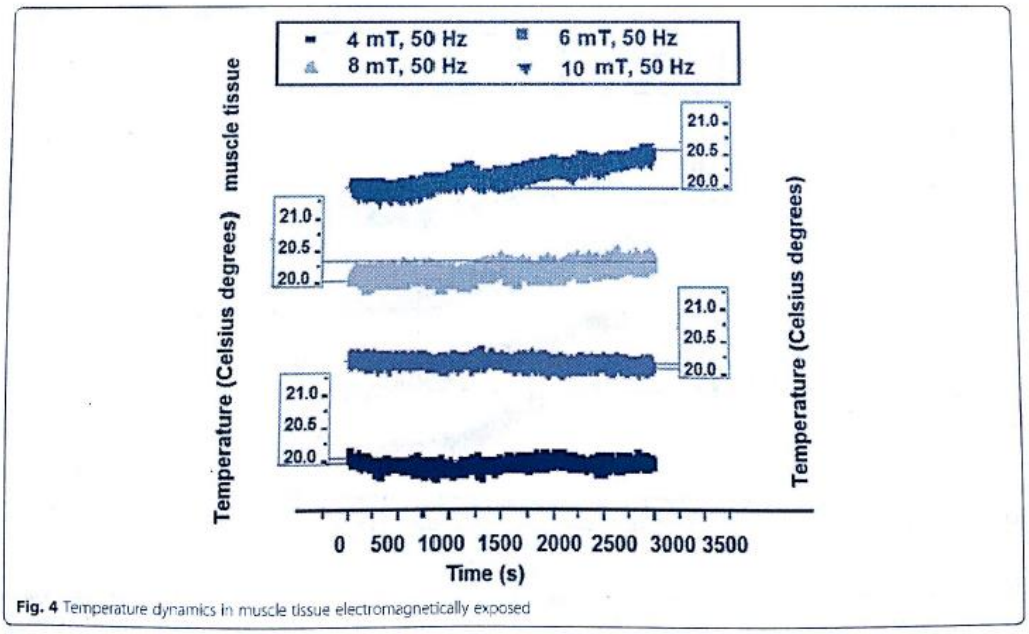

Fig. 4 Temperature dynamics in muscle tissue electromagnetically exposed

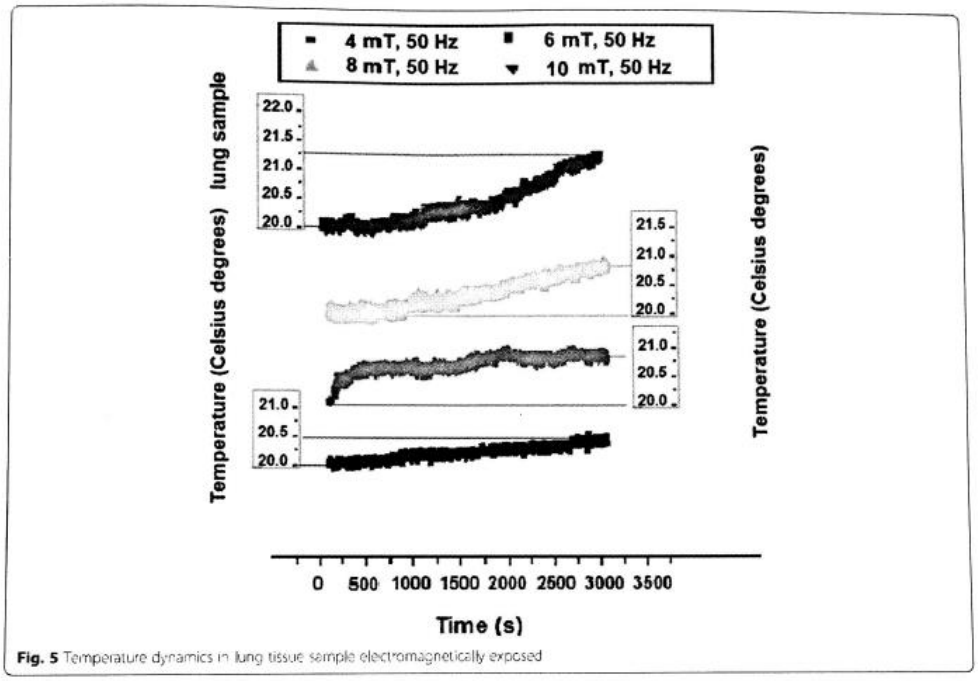

Fig. 5 Temperature dynamics in lung tissue sample electromagnetically exposed

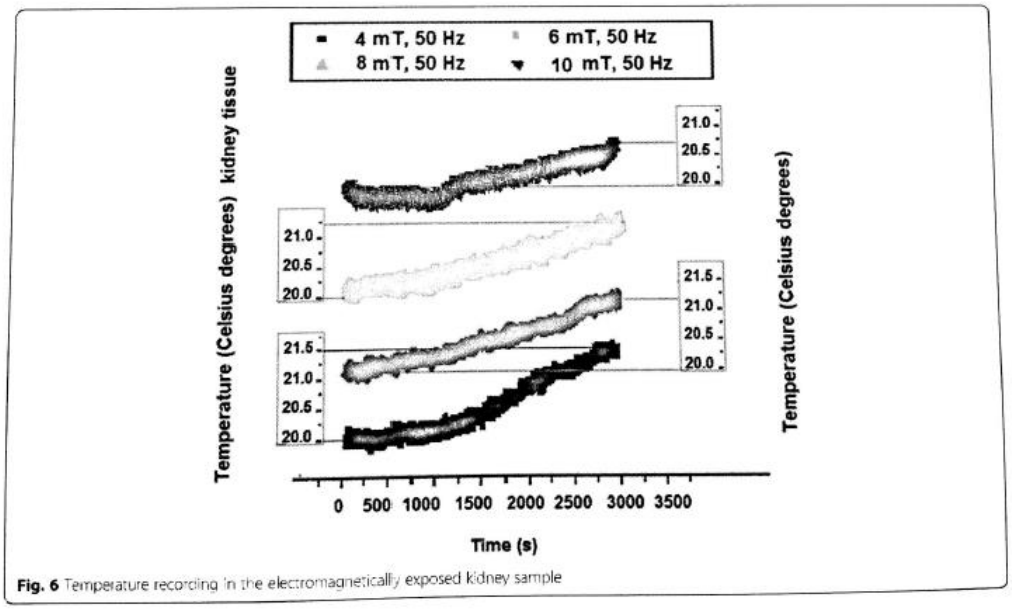

Fig. 6 Temperature recording in the electromagnetically exposed kidney sample

8 mT magnetic fields were of about 1.0 °C and 1.1 °C respectively, while finally, for 10 mT the highest 1.3 °C positive variation was recorded.

The data resulted from temperature measurement in brain tissue are given in Fig. 7.

At least 0.5 °C positive variation of temperature was recorded for 4 mT that was further progressively increased for 6 mT (at about 1.2 °C), for 8 mT (1.5 °C) as well as for 10 mT (2.2 °C). This remarkable heating amplitude could be associated with the highest fat content that seems to reduce specific heat capacity of tissues [19].

The response of bone tissue following the exposure to 50 Hz electromagnetic field in Fig. 8 is presented.

The bone tissue responded with only 0.2 °C temperature increasing for 4 mT but the positive temperature variation has increased to about 1.2 °C for 6 mT and 1.5 °C for 8 mT, reaching 1.7 °C increase for 10 mT. Specific shape of the curve first segment, corresponding to first approximately 1,000 s, could be related to the characteristic spongiest bone structure with lowest homogeneity among all tissues; early significant temperature variation during the first part of exposure was followed by saturation tendency up to about 3,000 s. The highest slope was revealed for the highest magnetic induction, i.e. 10 mT, when almost linear graph was recorded with no saturation trend. It could be presumed that 10 mT exposure induced the diminution of thermal conductivity anisotropy in the tissue so that the heat transmission from the environment resulted in the similar trend observed with the other isotropic tissue samples.

For comparison the deionized water response to the same array of magnetic flux densities is presented in Fig. 9 (the volume of 2 cm^3 was considered). From Fig. 9 it can be seen that non significant variation was recorded for 4 mT (similar with muscle tissue with highest water content) while for 6 mT the temperature increase with 0.6 °C was noticed and for 8 mT and 10 mT the increase with about 1.3 °C and 1.4 °C respectively, was reached in water.

In theory, when a sample with conductivity σ is exposed to a vertical electromagnetic field with frequency f, concentric electric current flow occurs, in a plan orthogonal to the direction of the magnetic field. If r is the radius of the sample, and B is the magnetic flux density in Tesla, then current density of the induced current J, is:

$$J = \sigma \cdot \pi \cdot f \cdot B \cdot r \quad (1)$$

The magnetically induced electric field (E) does not depend on sample conductivity and is given by:

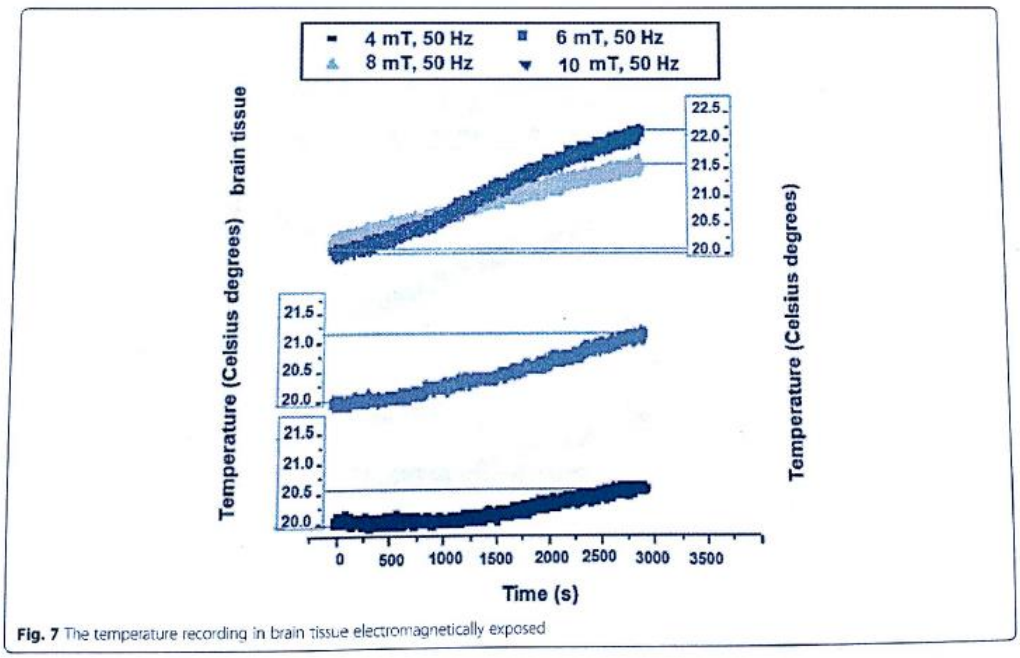

Fig. 7 The temperature recording in brain tissue electromagnetically exposed

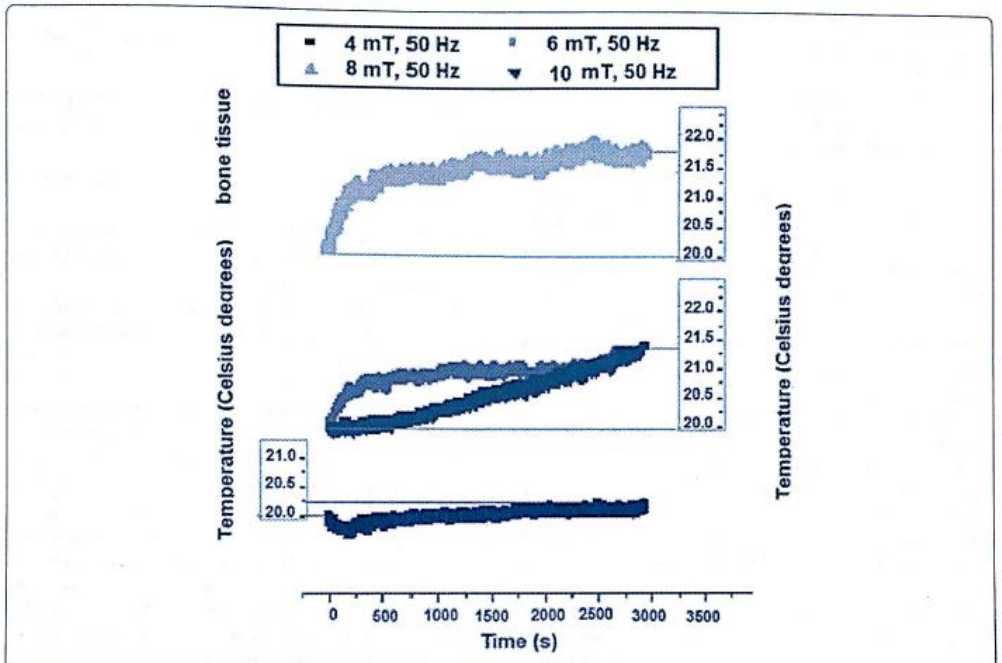

Fig. 8 The temperature recording in bone tissue electromagnetically exposed

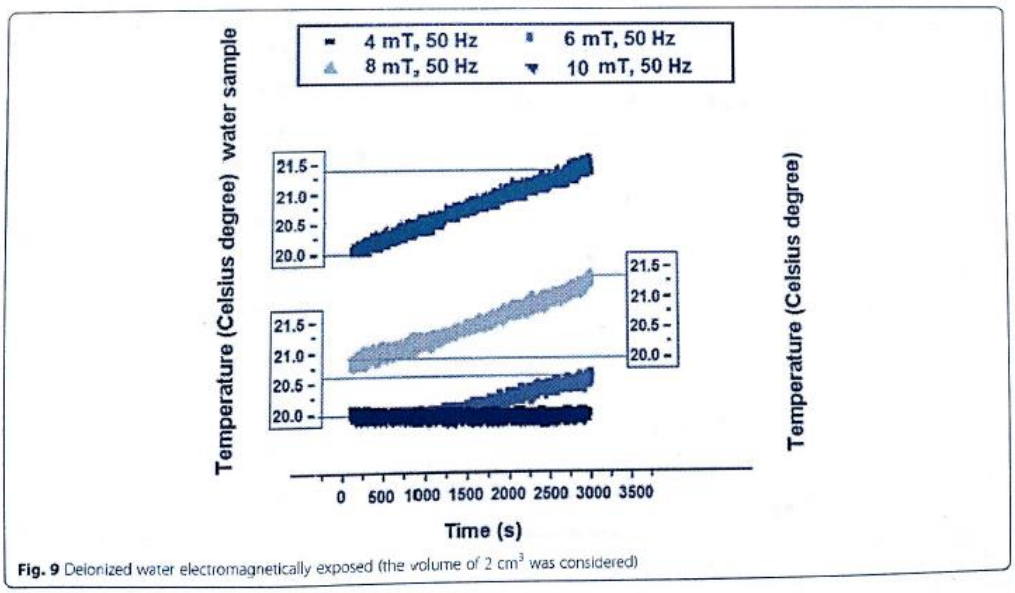

Fig. 9 Deionized water electromagnetically exposed (the volume of 2 cm^3 was considered)

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$$E = \frac{J}{\sigma} = \pi \cdot f \cdot B \cdot r \quad (2)$$

The power (averaged in time) delivered to the sample unit volume is given by:

$$w = \sigma \cdot E^2 \quad (3)$$

where σ is the sample conductivity and E is the magnetically induced electric field in the sample.

Since the investigated tissue samples had around 1 cm^3 in volume, one can take an approximated value $r = 1$ cm, in order to calculate the maximum of the induced electric field corresponding to the 10 mT magnetic induction. Therefore the maximum of the magnetically induced electric field for B = 10 mT is of about 0.0157 V/m.

Assuming the same dissipation for $r < 1$ cm, the maximum power dissipation per unit volume is: $w = 2.46 \cdot \sigma \cdot 10^{-4} \frac{W}{m^3}$. Then for 1 h exposure time the energy delivered to the tissue sample of about 2 cm^3 is $\approx 0.177 \cdot \sigma \cdot 10^{-5}$ J. The conductivity (σ) for various living tissues in the extremely low frequency magnetic fields is in the range 0.02-1.5 S/m [18].

In accord with [18, 19], the electric conductivity values of the tissues at 50 Hz have been used to obtain the energy delivered by electromagnetic field to each sample (Q) divided by the mass of tissue sample (m). The dependence between these specific energy values on temperature interval corresponding to magnetic flux densities used in this experiment is presented in Fig. 10.

The regression functions fitting of the experimental graphs from Fig. 10 were calculated; thus exponential functions were found to provide best approximation (with highest corresponding correlation coefficient) of experimental curves for kidney, lung, brain and bone tissue and respectively, logarithmic function for liver and muscle tissue (Table 1).

In case of materials with definite specific heat, linear dependences would be evidenced as specific heat is constant. As we obtained obviously non-linear graphs it seems that heating provided by electromagnetic phenomena in complicated biological materials is more complex, with effects on the intimate structure of sample. In Fig. 11 temperature increasing, corresponding to magnetic induction of applied magnetic field is represented. The highest increasing of temperature appears most evident in case of brain tissue for 10 mT magnetic induction; however, as expected, this is lower in the case of water at 4 mT magnetic field exposure (with about 97 %). Bone tissue heating production profile is similar to that of brain tissue for all magnetic field inductions, but it is with about 23 % less "productive" than the first one. In Table 2 are given the logarithmic functions fitting the experimental graphs from Fig. 11 for all tissue types.

According to above results it seems that similar mechanisms undergo all tissues interaction with electromagnetic radiation, resulting in temperature increasing to the increase of electromagnetic field induction – since the same function type approximates the experimental graphs.

We assume that the heating effect could be the result of Faraday induction, i.e. of electric fields and currents which

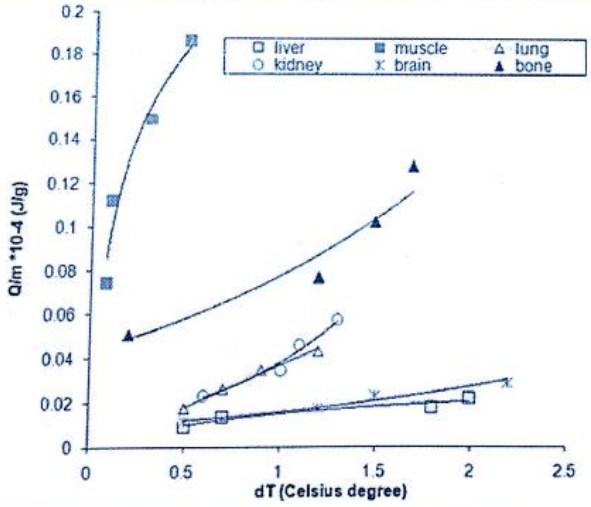

Fig. 10 Dependence of delivered electromagnetic energy divided by sample mass (Q/m) and temperature

Table 1 Regression functions fitting Fig. 10 graphs (*y* represents *Q·m*; *x* represents *dT*)

Mammalian tissue	Regression function	Correlation coefficient R^2
liver	$y = 0.008 \ln(x) + 0.015$	0.92
muscle	$y = 0.0535 \ln(x) + 0.2206$	0.94
kidney	$y = 0.0101e^{1.3305x}$	0.97
lung	$y = 0.0099e^{1.2934x}$	0.95
brain	$y = 0.0009e^{0.5538x}$	0.97
bone	$y = 0.0435e^{0.5798x}$	0.94

give raise to charge movement and heat production, that could be further related to electrical parameters of the tissues. When ohmic heating is considered then the current intensity through the coil system is most important, being related to Joule effect. If ohmic heating is the main cause of the temperature dynamics recorded by us then the impedance variation needs also to be considered. Electric measurements evidenced that in time, after tissue sample excision from animal body, the electrical bioimpedance of the organs increases from its *in vivo* level. multiplying twice in a few hours [20]. Related to the above hypothesis of structural changes induced during electromagnetic exposure and reflected in specific heat putative variation we believe that bioimpedance variation is also plausible. Other data were reported in literature discussing tissue changes under the influence of ELF-MF exposure: studies on porcine endothelial cells exposed to 50 Hz electromagnetic field showed the influence on heat shock protein levels and partial relocalization in the nucleus [21]; culture cell electroporation was demonstrated for 10 Hz-10 KHz ELF-MF exposures [22] – which is rather widely spread bioengineering technique, mainly for genetic purposes [23]. Electric conductivity changes in the electroporated cell culture [24–26] using ELF electromagnetic fields suggest that in the animal tissues investigated by us cellular modifications could occur with rather predictable negative consequences on the tissue stability.

Tissue structure and composition could be compromised during exposure to electromagnetic field with detectable thermal effect and with further consequences on the food quality.

Thus, it is possible to hypothesize that temperature increase effect is related both to the heat transfer toward the exposed sample and to the increase in time of excised sample bioimpedance. In the case of water no such variation of impedance could be assumed. But water evaporation during sample exposure could interfere with the other phenomena contributing to the smaller temperature rise recorded for the wet tissue of muscle.

The results presented above could be useful in understanding the electromagnetic sensitivity of human body tissues – much comparable with porcine ones – in the less studied circumstances of low frequency electromagnetic field exposure. Brain heating with about 2° in the vicinity of 50 Hz alternative current leads seems to represent a challenging issue versus the frequent utilization of domestic electrical devices like hair drier, electric shaver device etc. as well as of medical electric apparatus and installations - all supplied from the 50 Hz net (or 60 Hz in oversee countries). For human communities consuming frequently meat and derivatives, the health issues related to fresh food storing in spaces hosting electric lines or devices seems to require more attention

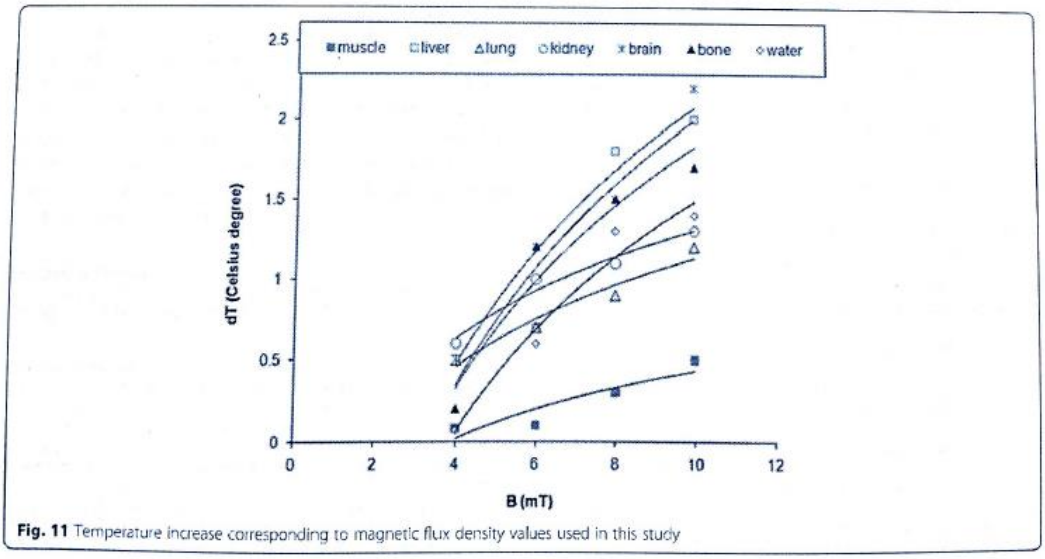

Fig. 11 Temperature increase corresponding to magnetic flux density values used in this study

Table 2 Regression functions fitting graphs from Fig. 11 (*y* represents *dT*; *x* represents *B*)

Mammalian tissue	Regression function	Correlation coefficient R^2
liver	$y = 1.80\ln(x)-2.10$	0.88
muscle	$y = 0.45\ln(x)-0.61$	0.83
kidney	$y = 0.73\ln(x)$ -0.38	0.97
lung	$y = 0.73\ln(x)-0.56$	0.95
brain	$y = 1.75\ln(x)-1.95$	0.97
bone	$y = 1.6\ln(x)-1.93$	0.94
water	$y = 1.55\ln(x)-2.09$	0.96

to support indirectly prevention of subtle degradation before consuming – especially in public restaurants, student cantinas etc.

Apart from the physical considerations regarding the interaction mechanisms between biological material and electromagnetic field, life scientists and especially nutrition specialists need to pay more attention to biochemical aspects mentioned in introductory paragraph, since enzyme activity changes could trigger energetic balance perturbation with health consequences in extreme hypothetical approach.

Conclusions

Using a non-perturbing fluoroptic probe device for measuring heating of animal tissues during ELF-MF exposure, the thermal effect was revealed and analyzed. Brain, bone and liver heating dynamics resulted in over 2.0 °C temperature rise compared to the other tissues where lower heating levels were evidenced. Faraday induction and ohmic effect were supposed to be the possible causes of the recorded temperature variation with secondary changes in structural features like cell membrane integrity or tissue bioimpedance. Increased temperature was recorded for increased magnetic flux density. Further research is needed to provide deeper insight in such subtle thermal phenomena that possible affect fresh food during storage even during one hour.

Competing interests

There are no conflicts of interest neither from scientific nor from financial/non-financial point of view.

Authors' contributions

MR and DC have the main contributions in this research conception and made the experimental design including electromagnetic exposure system. MR prepared the tissue samples and carried out the measurements during sample exposure. SM contributed to experimental data acquisition and graph interpretation from engineering point of view and was involved in manuscript revising. MR and DC selected the representative data series for graphical presentation in the article body, surveyed the literature and made data interpretation. MR wrote the draft while the co-authors revised the draft critically and all authors gave the final approval of the manuscript.

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Response to Comment Set C6: Samuel Villalobos

C6-1 The comment requests that an article related to electric and magnetic fields (EMFs) be entered into the record. As requested, the article the commenter submitted will be included in the record for consideration by the decision makers. Additionally, the Draft Environmental Impact Report (EIR) discusses EMFs in Section 2.5.2 of the Project Description, "Electric and Magnetic Fields." For the reasons explained there, the California Public Utilities Commission does not consider EMFs as an issue to be addressed under the California Environmental Quality Act (CEQA). Thus, this comment does not raise an issue regarding the environmental analysis in the Draft EIR. CEQA Guidelines section 15088 requires that a Lead Agency respond to comments on environmental issues, and no additional response is required.

Comment Set C7 – Samuel Villalobos

June 27, 2016

Samuel B. Villalobos
1428 Via Palermo
Montebello, California 90640

California Public Utilities Commission
RE: Mesa 500k-V Substation Project
c/o Ecology and Environment, Inc.
505 Sansome Street, Suite 300
San Francisco, CA 94111

SUBJECT: Comments on DRAFT EIR
Mesa 500-kV Substation Project

Dear California Public Utilities Commission Members,

Please receive and file my opposition to any approval of the application and the proposed approval and Certification of the Draft Environmental Impact Report (EIR)by the proponent for the Mesa 500k-V Substation Project to consist of the following: C7-1

- Construct a new 500/200/66/16-kV substation and increasing the substation, increasing the substation's footprint from 22 acres to 69 acres,
- Replacement (removal and installation) and modification of transmission lines, sub transmission lines, and distribution structures to accommodate the new 500/200/66/16-kV substation.
- New telecommunication lines and modifications to an existing line, mostly on existing poles and existing duct.
- Temporary modifications to 220=kV equipment at several existing substations to prevent electrical outages during construction.
- Relocation and replacement of an existing 72=inch-diameter waterline with an 84-inch-diameter waterline on the substation site.
- Electrical and/ or telecommunications equipment upgrades at 27 existing substations.
- Undergrounding of three spans of overhead streetlight conductors

The bifurcation of the proposed 500/200/66/16-kV substation insisting that the only site for the "Project" will be in placed in the City of Monterey Park at the Montebello Station site, amid and nested 20 feet of 1949 homes in the City of Monterey, 60 feet of Sale Single Housing Development recently developed in 2015-2016 and 200 feet from existing Montebello Hills development by Continental Development in the City of Montebello causes grave concern over the short and long range implication, impacts and health issues both physical and psychological to the residential communities in the City of Monterey Park and the City of Montebello. C7-2

The bifurcation of the Mesa 500-kV Substation Project warrants global and Media attention evaluation, analysis and review before anyone might permit such land use After completing a review of the Draft EIR the conclusion is that the planning tool is inadequate and that the certification of this document will not proceed unchallenged for the following reasons: C7-3

- **NEPA Review Requirement**
- **Public Notification Failures**
- **Air Quality Cummulative Impact**
- **Aesthetics Impact**
- **Noise Impact**
- **Fire Hazards Impacts**
- **Methane Gas Impacts**
- **Electric Magnetic Forces Impacts**
- **Water Resources Impact**
- **Air Fields and Heliport Impacts**

NEPA Review

Because of direct and/or indirect funding of federal dollars received by the proponent from the U.S.Department Energy, U.S. Environmental Protection Agency (EPA) and the U.S. Department of Transportation and other known or unknown federal agencies the proposed project is subject to NEPA review. C7-4

Public Notification

The Draft Environmental Impact report preparation and the review and comment period has failed to meet the minimum requires for "Public Notification" of the Proposed 500k-V Mesa Project. For example, the written outreach was limited to 200 feet from the site. The draft EIR never recognized the regional implications of the project nor reported on any notification to households adjacent to transmission lines or subtransmission lines residing and located along the proposed staging anf phases of the proposed Mesa Project development. The two (2) Scoping meeting held very little participation. At the first scoping meeting only and hand full of residents attended. At the second scoping meeting only three (3) residents signed in. The Notice of Availability Draft Environmental Impact Report For the Mesa 500k-V Substation Project Application No. 15-03-003 announcing the Draft EIR Information/ Public Review Period/ Public Meeting sent interested persons to the wrong published address as 350S. McPherrin. The meeting was held and conducted at an alternate unpolished address. The notification of extension of time was not sent to the impacted households. It was simply posted on a letter to the Library Branch attached to the volume I of the drat EIR document. C7-5

Air Quality Cummulative Impact
The true challenge is to evaluate and analyze the vast environmental impact to human health, economics to residential communities, already impacted by two (2) other environmental impacts that tbe I-69 Freeway reported over 200,000 eastbound and westbound trip per day polluting the local and regional air quality in the City pf Montebello and Monterey Park and the second project impacting the region is Operating Industry Land Fill (OII) site located directly contiguous site on the north and south parcel previously operated in the Monterey Park municipal boundary. The cummulative impact to both Cities was recently experienced when the oil tanker explotion while eastbound on I-60 underneath the Paramont Boulevard freeway overpass. The explosion and subsequent fire of the concrete and steel components of the bridge create a high toxic air and amibient qualility to the surrounding neighborhoods of both cities. This was further exhasterbated by the traffic created when the bridge destruction and the reconstruction period which intensified air pollution during and past the recovery period. Under CEQUA the California Department of Transportation delivered a reconstruction of the brigde through an emergency negative declaration expeditiously ignoring the Methane issues created by the Land Fill and bifurcated the analysis of the processed Edison Mesa Project which was well on its way evident by the storage onsite of all the component parts of the tension poles and infra-structure ready to build without EIR review.

C7-6

Methane extraction wells managed by the Environmental Protection Agency (EPA) are located on site and in numerous location surrounding the site for the proposed construct a the proposed new 500/200/66/16-kV substation and increasing the substation and the substation's footprint from 22 acres to 69 acres. Going over two dacades the EPA continues to serve its mission to perform ongoing mitigation measures and remedies charged against the owners and responsible parties of Operating Industries (OII) and other parties of records. In the initial year in the 1990s the EPA remedial work at the OII site allocated over $20K to make operational an Methane recovery and flare burn system. Methane gas is still seeping form the ground to date and EPA is still on assignment to date. The Bifurcation of the Mesa 500k-V Project, approval and certification of the draft EIR document when having direct knowledge that the "Project" site is heavily impacted the methane located subterranean on site and on the adjacent and contiguous OII landfill site will place heavy consequences of public review and scrutiny of the actions of CPUC and may expose charges of criminal negligence should the Mesa 500k-V Project be allowed to move forward. The EIR document did not address the mitigation of the existing methane exposure of the site.

C7-7

Aesthetics Impact
The ongoing operations of the existing 22acre 200-kV electric utility substation and the condition of the site is self evident the industrial blight the such landuses knowingly create. The existing conditions of the property is self evident of the lack of the lack of maintenance and blight which the residential communities have suffered and endures for decades. The current operation and condition of the site

C7-8

shows negative impact to the environment of 22 acres. Increasing the substation's footprint from 22 acres to 69 acres will increase the industrial blight. The current and proposed expansion of electrical utility station land use shows negligence and disregard for the residents and homeowners of the City of Monterey Park and Motebello alike. The EIR draft document fails to introduce mitigations nor to introduce any conversation of a landscaping and planting plans for the site. A plausible alternative is for the proponent to terminate the operation of the 200k-V Substation and relocate it industrial land uses to an other location, which would offer residential communities a buffer distance of ½ mile to a one mile range. The proponent might consider donating the existing 22 acre toxic site to the City of Monterey Park after abating and serving as responsible party to clear the site through remedial measure under the supervision and management of the U.S. Environment Protection Agency. Currently neither the proponent nor the Draft EIR offers any conversation about whether or not the proponent acknowledges that must have a property management plan and abide to care and good neighbor policies. The Draft EIR document does not include any evidence that the proponent has now nor in the past opened a dialogue with the California Department of Transportation (CalTrans) to propose a regional nor site specific landscape planning and implementation of planting and irrigation along the sites known north boundary line along the east-west rout of the I-60 Pomona Freeway.

C7-8 cont.
C7-9.
C7-10
C7-11
C7-12
C7-13

Noise Impact

The draft EIR does not discuss the cumulative noise impact of the I-60 traffic flow with motor vehicles and the long term industrial noise levels that would emit from the proposed Construct of a new 500/200/66/16-kV substation beyond the construction phase. At this time, for the record, please recognize that the noise to be emitted by the proposed Construct a new 500/200/66/16-kV substation will exceed the noise levels permitted by the City of Montebello Specific Plan. The Draft EIR document did not included any testimonials from residential homeowner, tenants or residents about the ambient high noise level that the suffer as a results of the current operations of the 200k-V substation, transmission lines, sub transmission lines, distribution structures and generator. As a testimonial, I constantly hear 24/7 year round, year after year the constant humm of the noise coming from the substation. Additionally, the proponent does not inspect nor maintain the transmission lines, subtransmission lines, distribution structures nor the transformer amounted on posts. For example, all the towers and transmission lines along the proponents easement and right-of-way behind Schurr High School in the City of Montebello have not been replaced since the 1960s. The transformer on the wood posts on I-60 located adjacent ti the proposed Mesa Project site are constantly humming out of control and they are seldom if ever replaced or repaired. The Draft EIR document fails to address noise pollution remediation measures for the temporary construction and the long range operational phases for each and every identified staging area of the proposed "Project". The draft EIR also fails to address any mitigation for the noise levels that are measured to be higher the code allowed by the General Plan for both the City of Monterey Park and the City of Montebello.

C7-14
C7-15
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C7-18

Fire Hazards Impacts

C7-19

The draft EIR document fails to identify the proposed site for the Construction of a new 500/200/66/16-kV substation and that the increasing of the substation's footprint from 22 acres to 69 acres would endanger the entire urban sprawl located in the City of Monterey Park and the City of Montebello as well as the entire Whittier Narrows Preservation area currently managed the U.S. Corps. of Engineers and will greatly expand and increase exposure Monterey Park and Montebello residents to threats by fire. The recently southern California May 2016 in the Calabasas/ Valencia area reported by the Media to have been started by a downed electrical power transmission lines following a Motor Vehicle Accident collision when a car hit a power pole setting the hillsides on fire and spreading rapidly cause economic loss and environmental impact to wildlife and vegetation. The June 2016 Duarte Fire in the San Gabriel Mountains has consumed vast acreage lost to fire damage and the loss of two lives, smoke inhalation to firefighter, many homes lost by the fire and devastated the lives thousands of home owner and residents of those communities. The draft EIR has failed to recognize and comment of the ¼ mile close distance of the proposed Mesa Project site to the Whittier Narrows. The draft EIR document fails to certain that the Whittier Narrows Preservation has forest like environmental conditions to be protected to any thing that the create a forest fire. Thirdly, the EIR document has failed to report on the Fire that consume a portion of the Whittier Narrows area in the Summer of 2015 when as initially reported by the Media that a spark from a power pole had ignited the Fire (much later the Media reported that an unknown transient was involved)

Methane Gas

C7-20

Methane extraction wells managed by the Environmental Protection Agency (EPA) are located on site and in numerous location surrounding the site for the proposed construct a the proposed new 500/200/66/16-kV substation and increasing the substation and the substation's footprint from 22 acres to 69 acres. Going over two dacades the EPA continues to serve its mission to perform ongoing mitigation measures and remedies charged against the owners and responsible parties of Operating Industries (OII) and other parties of records. In the initial year in the 1990s the EPA remedial work at the OII site allocated over $20K to make operational an Methane recovery and flare burn system. Methane gas is still seeping form the ground to date and EPA is still on assignment to date. The Bifurcation of the Mesa 500k-V Project, approval and certification of the draft EIR document when having direct knowledge that the "Project" site is heavily impacted the methane located subterranean on site and on the adjacent and contiguous OII landfill site will place heavy consequences of public review and scrutiny of the actions of CPUC and may expose charges of criminal negligence should the Mesa 500k-V Project be allowed to move forward. The EIR document did not address the mitigation of the existing methane exposure of the site.

Electric Magnetic Forces

The Draft Environmental Impact report has failed to review and to analyse the Electric Magnetic Forces (EMF) effects on Human Health, Commercial Food Storage and Temperature Regulation codes and standards, or effects to telecommunications to Hospital Facilities, Clinics and such. The draft EIR study hinds behind an allegation that there are no federal nor state standards to provide criteria for review of the "Devastation to Communities" living and working beneath the peak impacts and influences of the proposed Mesa 500k-V EMF dome's thermal radiation. The draft EIR also ignored the vast amount of scientific national and international literature and journals on the subject of the effects of EMF on human health. It disregarded the findings of the published U.S. National Institute of Environment and Health Sciences and ongoing studies on every major teaching hospital on the effects and impact on human tissue and inflammation theories and studies on chronic respiratory, vascular, heart, and lung illnesses and disorders, stem cell research and pathologies that study human cell development and cancers. Under the cover of lack of federal and state criteria the draft EIR concluded no impact on human health. The information review and comment period failed to recognize or discuss that the "Mesa" project is situated approximately 100 feet on the north side of the CA SR 60 Pomona freeway directly in front of Costco Montebello where thousands of families rely on cold storage refrigeration food storage and supplies for a members only chain store. The draft EIR ignorance by design, intent to conceal or error of omission, bifurcating the study and analysis of the Mesa 500kV project might result in a membership class action law suit for breaching the public trust and social contract that government agencies accept their obligation for the consideration of the impacts to human health under these urban and residential land use conditions. The draft EIR document fails to analyse the impact of EMF on the Kaiser Permanente Montebello Medical Center on the human health impact of patients, professional and paraprofessional staff assigned to this medical center situated approximately 500 yards to the south east of the proposed "Mesa Project". Because the draft EIR miserably fails to study the effects and impacts on human health, it should not be considered a reliable nor adequate Planning instrument. As such, we pray that the certification of the draft EIR document should not be supported in any fashion nor approved. We strongly petition that the approval of the draft EIR be declined for its failure to study, review and comment on the proprosed Mesa Project EMF. The draft document does not provide any measurements of distances of the peak EMF currents of thermal energy, electric field, magnetic field or exposure (occupational or general public) the draft document completely ignored EMF findings of other state Transmission Line Standards and Guidelines and the findings of the global scientific community to analyse EMF exposure of the proposed 500kV Mesa substation.

C7-21

Protection of Protected Species – Gnat Catcher Species of Bird

The proposed 500kV Mesa substation project threatens the survival of the California **Gnat Catcher Species of Bird** on the endangered list. This bird relies on the open area Mesa Project site the obtain its needed water consumption due to a historical creek water current that can be traced to the Rio Hondo River and underground

C7-22

water springs. It is not alone to assign a bird nest counting during the construction phase of the proposed 500kV Mesa Project. It is very important the area continues to be preserved where the Montebello California Gnat Catcher bird species can continue to obtain its water supplies and to fill its life-cycle needs in order to live, reproduce, and survive in the arid San Gabriel Valley climate. Otherwise, the Mesa Project will cause the demise and the survival of the Montebello California Gnat Catcher bird species. C7-22 cont.

Adverse Economic Impact

In consultation with real estate agents located in Southern California and a member of the Real Estate Council California Association of Realtors the proposed construction of a new 500kV substation will result in a diminished valuation of home in the Montebello Hills and surrounding communities in the Montebello and Monterey Park. Current home comp values range upward then $675,000 to over 1 million dollars. The draft EIR document fails to provide a relocation plan for residents and property owners that are adversely impacted should the Mesa Project be implemented. C7-23

The proposed Mesa Development Project will threaten the drying out of the Potrero Grande Water Creek a San Gabriel Valley Historical preserve and water artery of the Rio Hondo River, this alone will warrant the denial of draft EIR approval. C7-24

Air Fields and Heliports

National and State Guidelines on Airways and regulatory law mandate that no electric utiliy substation be placed located within two miles of airfields. The draft EIR failed to study impact to the heliports of the East Los Angeles Sheriffs Station located half a miles distance at Third Street and Eastern Avenue station heliports. C7-25

Should you need more information please contact me at 323-722-0475.

Sincerely,

Samuel B. Villalobos

Response to Comment Set C7: Samuel Villalobos

C7-1 The commenter's opposition to the proposed project is noted and is included in the record for the decision makers. California Environmental Quality Act (CEQA) Guidelines section 15088 requires that a Lead Agency respond to comments on environmental issues. The commenter is providing an opinion on the merit of the project and does not raise an issue with the adequacy of the environmental analysis in the Draft Environmental Impact Report (EIR); therefore, no additional response is required.

C7-2 The commenter asserts that the California Public Utilities Commission (CPUC) "insists" the only site for the proposed project is an existing substation site in Monterey Park, which is near residents of Montebello, Monterey Park, and Montebello Hills. However, the CPUC considered other sites for the proposed project in Chapter 3, "Description of Alternatives," including, (1) 500-kilovolt Substation adjacent to the existing Mesa Substation; (2) installation of additional reactive support at Barre Substation; (3) load shedding and reconductoring; and (4) connection to the Los Angeles Department of Water and Power System at Alamitos Substation.

As explained in more detail in Chapter 3, all of these alternatives were rejected from further analysis because they are infeasible and/or do not meet most of the basic project objectives. Public agencies are not required to consider infeasible alternatives or alternatives that do not meet most of their basic project objectives (CEQA Guidelines section 15126.6(a)). Additionally, the commenter does not suggest an alternative site that would eliminate or substantially reduce significant adverse impacts (*Id.* at subd. (f)(2)(B) ["Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR."]).

The commenter also expresses concern over physical and psychological health impacts on the residents of Monterey Park and Montebello from the proposed project. However, the Draft EIR already discusses the proposed project's impact on human health in Section 4.2, "Air Quality" and Section 4.7, "Hazards and Hazardous Materials." Impacts to human health are discussed under Impact AQ-4 (exposure of sensitive receptors to substantial pollutant concentration) and insofar as hazardous materials affect human health, are discussed under Impact HZ-2 (hazards due to foreseeable upset and accident conditions). Impact AQ-4 found that impacts from construction of the Mesa Substation would be significant and unavoidable, even after mitigation, because oxides of nitrogen emissions would exceed the localized significance threshold. Impact HZ-2 would be less than significant with mitigation for the construction phase of the proposed project. The commenter does not raise a specific issue with the adequacy of the environmental analysis in the Draft EIR as it pertains to human health; therefore, no additional response can be provided.

The commenter also states that the proposed project would cause psychological health issues to nearby residents, but does not provide any evidence or support for this statement. Additionally, CEQA Guidelines section 15126.2 requires that "[a]n EIR . . . identify and focus on the significant environmental effects of the proposed project." CEQA Guidelines section 15358 requires that effects analyzed under CEQA be related to a physical change. Impacts to psychological health of residents are not considered a

physical change in the environment and therefore are not considered in the Draft EIR.

No changes were made to the Draft EIR as a result of this comment.

C7-3 The comment provides an overview of the points raised in the letter. Thus, see responses to the remainder of comment letter C7.

C7-4 The CPUC is the Lead Agency conducting environmental review under CEQA. The CPUC prepared the Draft EIR to comply with CEQA. As stated in Table 2-11, several federal permits may be required, and this project would be subject to National Environmental Policy Act (NEPA) review by federal agencies issuing certain federal permits. As a California state agency, NEPA review is not the responsibility of the CPUC.

C7-5 CEQA section 15087 outlines notification requirements to the public for publication of a Draft EIR. As described in section 15087(a), the Lead Agency must provide public notice of availability of a Draft EIR at the same time a notice of completion is sent to the Office of Planning and Research (OPR). Notice must be mailed to persons requesting such notice in writing and shall also be provided in at least one of the following ways:

- Publication at least one time in a newspaper of general circulation in the area affected by the proposed project. If more than one area is affected, the notice shall be published in the newspaper of largest circulation from among the newspapers of general circulation in those areas.
- Posting of notice by the public agency on and off the site in an area where the project is to be located.
- Direct mailing to the owners and occupants of property contiguous to the parcel or parcels on which the project is located.

The CPUC submitted the Notice of Completion to the OPR and the OPR received it on April 28, 2016. The CPUC also posted a notice in the *Los Angeles Times* on April 29, 2016, as the newspaper of largest circulation from among newspapers of general circulation in the affected areas. The Notice of Availability (NOA) was distributed to 63 State, regional, and local agencies and to more 4,770 members of the public, including property owners within 500 feet (not 200 feet) of the existing and proposed right-of-way and substations and within 1,500 feet of the proposed disturbance areas associated with work at the Mesa Substation. Eight tribal representatives were also sent a copy of the NOA. Recipients on the project email list were emailed a copy of the NOA. The noticing conducted for the Draft EIR complied with and went beyond the noticing requirements outlined in CEQA.

The CPUC held one scoping meeting for the proposed project on June 23, 2015 in Monterey Park. Four attendees signed into the scoping meeting. The level of attendance at the scoping meeting is not evidence that the analysis contained within the Draft EIR or the noticing for the Draft EIR is inadequate or that the CPUC inadequately noticed the meeting.

Refer to response to comment C5-1 regarding the location of the public meeting held after release of the Draft EIR.

CEQA does not contain a requirement for noticing for an extension of the public review period of a Draft EIR. For the extension of the Draft EIR review period for the proposed project, the CPUC:

- Sent a notice of extension to the OPR
- Sent memos to the Monterey Park Library and Montebello Library requesting they keep hard copies of the Draft EIR available through the close of the extended public review period
- Posted the extended review period to the project website

The CPUC went beyond the noticing requirements under CEQA for the extension of the public review period.

The commenter states that the Draft EIR "never recognized the regional implications of the project." However, Chapter 4, "Environmental Analysis," provides "a comprehensive analysis and assessment of environmental impacts and mitigation measures for the proposed project," Chapter 6 "[i]dentifies and evaluates past, present, and reasonably foreseeable future projects within the cumulative study area that may be constructed or commence operation during the timeframe of activity associated with the proposed project." Growth-inducing impacts of the proposed project are also identified and evaluated in Chapter 6.

C7-6 Cumulative impacts to air quality are discussed in Section 6.1.2.3, "Air Quality," and the scenarios used to analyze cumulative air quality impacts are set forth on page 6-12 of the Draft EIR. As stated there, the cumulative scenario for criteria pollutant emissions includes all emissions sources in the South Coast Air Basin, while the cumulative scenario for toxic air contaminants (TAC) exposure includes projects within 280 meters of the project site.

An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable" (CEQA Guidelines section 15130(a)). A project's incremental contribution is cumulatively considerable if the incremental impacts of the project are significant "when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines section 15065(a)(3)). When the effects of past projects are reflected in existing environmental conditions, and are necessarily included in the cumulative impact analysis as a result, a separate analysis of the effects of past projects is not required (*City of Long Beach v. Los Angeles Unified Sch. Dist.* (2009) 176 Cal.App.4th 889)."

Please note that existing emissions from vehicle travel on State Route (SR)-60 were considered in the cumulative air quality analysis because the analysis of criteria pollutants was based on the project's contribution to the basin-wide impact, which includes existing air pollution. In addition, because air pollution from the roadway is part of existing conditions, it was incorporated into the environmental setting/baseline for analysis of all of the project's air quality impacts, including TACs.

The Operating Industries, Inc. (OII) Landfill Superfund Site is accounted for, as appropriate, in the air quality cumulative scenarios. As noted in the Draft EIR, the

geographic extent for TAC impact analysis is the area where sensitive receptors are within 280 meters of the cumulative project and the substation site and where sensitive receptors are within 30 meters of the cumulative project and transmission and subtransmission lines. The Operating Industries, Inc. Landfill Superfund Site is not within the geographic scope for TAC cumulative analysis and was therefore not included in the cumulative scenario for TAC exposure.

C7-7 Pages 4.7-10 and 4.7-11 describe existing hazardous conditions at the proposed project site. Landfill gases were historically released from the OII Landfill, but current mitigation at the landfill controls subsurface gas migration. Even though the commenter suggests that the site is "heavily impacted" by methane, existing methane exposure is not a known hazard at the proposed project site.

As described under Impact HZ-2, the excavation activities during construction of the proposed project do have the potential to uncover landfill gas, which would result in a significant impact. Methane exposure impacts would be reduced to less than significant with Worker Environmental Awareness Training required by Mitigation Measure (MM) HZ-2.

Note that CEQA requires that an EIR describe feasible measures that could minimize significant adverse impacts caused by the proposed project (see CEQA Guidelines sections 15126.4(a)(1) and 15358). Therefore, any existing conditions at the site are considered part of the environmental baseline and not an impact of the proposed project. Mitigation would not be required for an existing condition.

C7-8 The commenter mentions the existing conditions of the site and states that it is characterized by industrial blight. The CPUC recognizes the commenter's opinion, but responds that the Draft EIR considers the environmental impacts from the proposed project rather than the existing conditions of the site.

Additionally, the Draft EIR analyzes the potential for the proposed project to substantially degrade the existing visual character or quality of the site and its surroundings under Impact AE-1. Construction activities would result in a less than signification impact. Operation and maintenance activities of the Mesa Substation portion of the project, however, would result in significant impacts with mitigation. Specifically, the view east from Potrero Grande Drive at Atlas Avenue (KOP 1), the view southwest from Potrero Grande Drive at Saturn Street (KOP 3), and the view northeast from North Vail Avenue near Appian Way (KOP 7) would be substantially degraded, even with implementation of MM AES-2, MM AES-3, MM AES-4, and MM AES-5. The commenter asserts that the proposed project will "increase industrial blight" but does not provide any evidence to indicate that the analysis in the Draft EIR is flawed. Therefore, no additional response is required.

C7-9 CEQA Guidelines section 15088 requires that a Lead Agency respond to comments on environmental issues. The commenter is offering an opinion that the proposed project demonstrates negligence and disregard for residents. The comment does not raise an environmental issue or an issue with the adequacy of the Draft EIR. Therefore, no additional response is required.

C7-10 Impact AE-1 analyzes whether the project would "substantially degrade the existing visual character of the site and its surroundings." In order to reduce aesthetic impacts, several mitigation measures were included under the discussion and analysis of Impact AE-1. MM AES-3, "Landscape and Aesthetic Treatment along Potrero Grande Drive," requires the applicant to "prepare a Landscape and Aesthetic Treatment Plan that will, at a minimum, provide vegetative screening and other aesthetic treatments along Potrero Grande Drive and in the vicinity of the new entry drive at the substation, and provide aesthetic treatment of the operations and test and maintenance buildings and their immediate surroundings." MM AES-4, "Graffiti Deterrence," also includes measures for the installation of vegetative screening, with the use of California native and/or drought tolerant vegetation to mitigate aesthetic impacts.

C7-11 CEQA Guidelines section 15126.6(a) requires identification of a reasonable range of alternatives to the proposed project that meet most of the basic project objectives, are potentially feasible, and avoid or substantially reduce a significant impact of the proposed project. The commenter's suggestion of terminating operation of the existing Mesa Substation, relocating it to an industrial area in another location 0.5 to 1 mile away from residential uses, and Southern California Edison's (SCE's) potential donation of the existing substation site to the City of Monterey Park is noted and included for consideration by the decision makers. However, the commenter does not provide sufficient detail about the alternative (e.g., location, capacity, and interconnection to the grid) to evaluate whether the alternative would meet most of the basic project objectives, avoid or substantially reduce a significant impact of the proposed project, or be potentially feasible. Therefore, no additional response can be provided regarding the commenter's suggestion of relocating the substation to an alternate location.

C7-12 The CPUC has identified potential permitting and consultation requirements in Table 2-11 of the EIR. The CPUC is unable to verify the commenter's assertion that SCE must have a "property management plan and abide to care and good neighbor policies." The CPUC is not aware of any property management plan nor care and good neighbor policies that apply to the proposed project area. Therefore, no additional response can be provided.

C7-13 This comment does not raise any significant environmental issues regarding the Draft EIR or its analyses and conclusions. CEQA does not require an EIR to contain evidence or otherwise demonstrate that the project proponent has consulted with Caltrans about landscaping on a project site adjacent to state highways.

Note that the Draft EIR describes aesthetic impacts to viewers on SR-60 during operation of the proposed project under Impact AE-1. KOP 6 represents a view from SR-60, traveling westbound. The Draft EIR concludes on page 4.1-42 that the proposed project would only slightly reduce the visual quality of the area, meaning that impacts related to the substation and transmission infrastructure would result in a less than significant impact and would not require mitigation. However, the Draft EIR also concludes that introduction of the 12-foot-high perimeter wall visible to those traveling on SR-60 would provide an attractive surface for people to spray graffiti. Graffiti on the SR-60-facing perimeter wall would result in a significant visual impact. MM AES-4 would require measures to screen views of the wall from SR-60, such as

installation of vegetative screening along the southeast side of the perimeter wall.

C7-14 Cumulative impacts to noise are discussed in Section 6.1.2.10, "Noise and Vibration." Projects considered in the cumulative noise analysis are set forth on page 6-26 of the Draft EIR. The traffic noise on SR-60 referenced by the commenter is part of existing conditions, and therefore was incorporated into the environmental setting/baseline for analysis of noise impacts.

An EIR must discuss cumulative impacts when they are significant and the project's incremental contribution is "cumulatively considerable" (CEQA Guidelines 15130(a)). A project's incremental contribution is cumulatively considerable if the incremental impacts of the project are significant "when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines section 15065(a)(3)). When the effects of past projects are reflected in existing environmental conditions, and are necessarily included in the cumulative impact analysis as a result, a separate analysis of the effects of past projects is not required (*City of Long Beach v. Los Angeles Unified Sch. Dist.* (2009) 176 Cal.App.4th 889).

C7-15 The comment alleges that the proposed project would exceed the noise levels permitted by the "City of Montebello Specific Plan." The CPUC is not aware of such a plan containing noise levels applicable to the proposed project. The City's general plan and noise ordinance are discussed below.

Draft EIR Impact NV-1, starting on page 4.10-18, evaluates whether noise from construction and operation of the proposed project would exceed levels established in local general plans or noise ordinances. As described on page 4.10-10 of the Draft EIR, the City of Montebello General Plan does not have numeric thresholds, but instead puts forth qualitative noise-related goals. The City of Montebello noise ordinance is discussed on pages 4.10-19 and 4.10-20. The Draft EIR concludes that construction noise associated with the proposed project would conflict with the City's ordinance if construction occurs outside of allowed construction hours. Impacts would be significant and unavoidable.

The CPUC also reviewed the Montebello Hills Specific Plan for quantitative noise thresholds. However, the plan does not contain quantitative noise standards.

C7-16 The commenter's assertion about existing noise levels and existing noise sources is noted. The Draft EIR's characterization of existing noise levels in the project area is based on a technical noise report (see Appendix J) prepared for the proposed project, including ambient noise measurements taken in the project area. As described on pages 4.10-3 and 4.10-4 of the Draft EIR, noise measurements were taken in the vicinity of the Mesa Substation, with two locations in Monterey Park, two locations in Montebello, and one location in the vicinity of the Goodrich Substation in Pasadena to determine existing background noise levels. The Draft EIR notes that the main sources of noise in the project area are highways and roadways as well as commercial and industrial activities and existing operation activities at the Mesa Substation site.

The commenter's contentions about the maintenance of existing infrastructure are noted but do not raise any significant environmental issues regarding the Draft EIR or

its analyses and conclusions. Therefore, no further response is required.

C7-17 CEQA Guidelines section 15126.6(a)(1) requires that an EIR outline mitigation for significant adverse impacts. The EIR explains under Impact NV-4 that construction noise impacts at Staging Yards 1, 2, and 3 would be significant due to helicopter landing and takeoff activities. MM NV-4 would require locating landing and takeoff areas as far away as feasible from sensitive receptors; however, this measure would not reduce impacts to less than significant. The EIR therefore concludes that temporary noise impacts would be significant and unavoidable. The commenter has not identified additional measures that should be considered at these staging yards. Staging Yards 4, 5, 6, and 7 would not involve helicopter landing and take-off activities; however, intermittent heavy duty truck use and transportation of heavy duty on-road equipment in and out of these yards would cause temporary increases in ambient noise at the nearest sensitive receptors. The EIR has been revised to include an analysis of noise from use of staging yards 4, 5, 6, and 7, as shown below. The analysis concludes that impacts would not be significant, and that no mitigation would be required.

Page 4.10-28:

> Staging yards 4, 5, 6 and 7 would not involve helicopter landing and take-off activities; however, intermittent heavy duty truck use and transportation of heavy duty on-road equipment in and out of these yards would cause temporary increases in ambient noise at the nearest sensitive receptors. Heavy duty trucks can emit maximum levels of 84 dBA maximum noise level at 50 feet per manufacturers specifications, and heavy duty trucks are commonly used about 40 percent of the time during one hour (FHWA 2006). The nearest sensitive receptors to Staging Yards 4, 5, 6, and 7 are located 170 and 1,000 feet away, as shown in Table 4.10-20. Assuming the closest sensitive receptor (residences 170 feet from Staging Yard 4) as the worst case for analysis, the increase in the estimated hourly equivalent sound level would be less than the threshold of significance of a 10 dBA increase over existing noise levels. Therefore, temporary noise impacts at Staging Yards 4, 5, 6, and 7 would be less than significant, and no mitigation would be required.

C7-18 Neither the City of Montebello General Plan nor the Monterey Park General Plan referenced by the commenter contain specific noise levels or numeric thresholds against which noise from project construction or operation can be measured. The City of Monterey Park Municipal Code exempts activities in locations where regulation has been preempted by state law from the City of Monterey Park Municipal Code noise regulations in Chapter 9.53 (Draft EIR page 4.10-19.) See response to comment C7-15 for a discussion of Montebello's noise ordinance.

C7-19 CEQA Guidelines section 15064(f) requires that "[t]he decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency." The commenter states that the Draft EIR fails to identify potential impacts from fires to Monterey Park, Montebello, and Whittier Narrows Preservation caused by the increase in the substation footprint from 22 acres to 69 acres.

However, impacts from fires are discussed in Impact HZ-6 in the Draft EIR. The Draft EIR utilizes the California Department of Forestry and Fire Protection's (CAL FIRE's) Fire Hazard Severity Zone geographical information system data to determine the risk of fire in and around the project area, as shown on Figure 4.7-3. As described in Section 4.7.1.5, "Fire Hazards," CAL FIRE uses the data to estimate the likelihood and physical behavior of a fire, and the data is based on a fire hazard model that considers the amount and types of natural vegetation that will burn during a wildfire, the topography, and typical weather conditions. Based on the data, the Main Project Area, which includes the Mesa Substation, is located in an urbanized area and not within an area designated as a Moderate, High, or Very High Fire Hazard Severity Zone. The conclusion of the Draft EIR that fire impacts in the Main Project area would be less than significant during construction is supported by the project's location outside of a CAL FIRE Very High Wildland Fire Hazard Severity Zone, by the fact that the proposed project would be consistent with Public Resources Code (PRC) Sections 4291 through 4299 regarding vegetation management, and by the project's construction in accordance with clearance specifications in General Order (G.O.) 95 and G.O. 165, which outline building and inspection requirements, respectively, for aboveground electric transmission and distribution facilities. The conclusion of the Draft EIR that fire impacts in the Main Project Area would be less than significant during operation is supported by the fact that the applicant would continue to comply with PRC Sections 4291 through 4299 vegetation management requirements and G.O. 95 and G.O. 165 clearance requirements. The commenter has not provided evidence that the analysis in the Draft EIR is inadequate; therefore, no revisions have been made to the Draft EIR.

Furthermore, the effects of the fire mentioned by the commenter are not related to the proposed project or part of the environmental baseline for the impacts analysis. CEQA Guidelines section 15125(a) states that "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published. . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." The Notice of Preparation for the proposed project was issued on June 5, 2015. The fire referenced by the commenter began on August 16, 2015, and is thus not part of the environmental baseline.

C7-20 See response to comment C7-7.

C7-21 The commenter's concerns regarding EMF are noted and included in the record for consideration by the decision makers. The CPUC's policy regarding EMF is explained on pages 2-80 and 2-81 of the Draft EIR.

The commenter also states that the Draft EIR failed to recognize or discuss that the proposed project will be situated near SR-60. However, this is not correct. Please see

Figure 2-1, which shows the proximity of the proposed project to SR-60.

The commenter also states that the Draft EIR fails to adequately address health impacts caused by the proposed project. Please see response to comment C7-2.

C7-22 CEQA Guidelines section 15064(f) requires that "[t]he decision as to whether a project may have one or more significant effects shall be based on substantial evidence in the record of the lead agency." Habitat needs for coastal California gnatcatcher are discussed in Table 4.3-2. Coastal California gnatcatchers are present within the open area south of Mesa Substation. Although underwater springs are not known to occur within the proposed project area, potentially jurisdictional waters are known to cross through the area utilized by coastal California gnatcatchers, as mentioned by the commenter. As discussed on pages 4.8-19 and 4.8-20, the Draft EIR determined that the proposed project would not result in a significant impact from depletion of groundwater supplies or substantial interference with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Biological impacts on the coastal California gnatcatchers, and mitigation for significant impacts, are discussed on pages 4.3-39 and 4.3-40. The proposed project could directly impact this species by causing mortality from vehicular collision and nest failure or abandonment. Indirect impacts to this bird could occur from habitat modification and reduction. These impacts would be significant. The EIR requires implementation of several mitigation measures to reduce these impacts. MM BR-1 would require that pre-construction surveys be conducted; MM BR-2 would require delineating work areas and establishing buffers to protect special-status species; MM BR-3 would require that all impacts to gnatcatcher habitat be restored or mitigated; MM BR-5 would require that workers be trained regarding sensitive biological resources; MM BR-9 would require monitoring by a qualified biologist; MM BR-11 would require that SCE prepare a Nesting Bird Management Plan prior to the start of construction; and MM AES-6 would require that night lighting be oriented to reduce glare and interference with avian species' nighttime behavior. With the implementation of mitigation measures the proposed project would not threaten the survival of the coastal California gnatcatcher.

The commenter states the proposed project will cause the "demise and the survival of the Montebello California gnatcatcher." The comment contains conflicting claims and a confusing reference to Montebello. There are three recognized subspecies of California gnatcatcher*: P.c. californica; P.c. pontilis;* and *P.c margaritae*. Only the *californica* subspecies (coastal California gnatcatcher) occurs in California; all three recognized subspecies occur in Baja California. The comment is assumed to mean that the commenter is concerned that the proposed project will threaten the survival of the coastal California gnatcatcher populations near Montebello. The Draft EIR concludes that with the implementation of these mitigation measures, impacts on the species would be less than significant; this conclusion is supported by substantial evidence and expert analysis, including input from the United States Fish and Wildlife Service (USFWS) (see page 4.3-4). Mitigation measures would restore habitat for coastal California gnatcatcher on site, or offsite within 1 mile, or if those options are not feasible, would require SCE to purchase credits and/or mitigation lands at a minimum ratio of 2.5:1 from an entity approved by CDFW and USFWS (these revisions to Option

3 appear on page 4.3-59).

Please also see response to comment A1-3.

C7-23 CEQA Guidelines section 15131 states that "[e]conomic or social information may be included in an EIR or may be presented in whatever form the agency desires." Furthermore, sections 15131(a) and (b) explain that economic and social effects of a project are not to be treated as significant effects of a project but *may* be used to determine significance of a physical change caused by the project. The Draft EIR therefore does not need to discuss impacts on property values as there is no physical change associated with a change in property values.

C7-24 The commenter submitted a similar comment during scoping for the Draft EIR, where he stated that there would be a potential to dry the Potrero Grande Arroyo. No record of the waterway could be found, so it was presumed the commenter was referring to the Rio Hondo, which traverses an area that was once the Rancho Potrero Grande. Similarly, the CPUC could find no record of a Potrero Grande Creek, and it is presumed the commenter is referring to the Rio Hondo. Surface water would not be utilized as part of the proposed project; there would be no drying of the Rio Hondo.

C7-25 The CPUC is not aware of any federal law or regulation prohibiting the location of a substation within two miles of an airfield or heliport, as suggested by the commenter. At the state level, it is unclear what statute or regulation to which the commenter is referring . It is possible the commenter is referring to California Public Utilities Code (PUC) section 21655 or 21658. California Public Utilities Code section 21665 regulates the location of proposed state buildings or other enclosures within two miles of an airport runway or runway proposed by an airport master plan. This statute would not apply to the proposed project because the proposed facilities would be owned by SCE. Furthermore, the Draft EIR states that the project would not be located within 2 miles of a public or private airport.

Note that California Public Utilities Code section 21658 would apply to the proposed project because it regulates structures constructed by public utilities. Section 21658 reads:

> No public utility shall construct any pole, pole line, distribution or transmission tower, or tower line, or substation structure in the vicinity of the exterior boundary of an aircraft landing area of any airport open to public use, in a location with respect to the airport and at a height so as to constitute an obstruction to air navigation, as an obstruction is defined in accordance with Part 77 of the Federal Aviation Regulations, Federal Aviation Administration, or any corresponding rules or regulations of the Federal Aviation Administration, unless the Federal Aviation Administration has determined that the pole, line, tower, or structure does not constitute a hazard to air navigation. This section shall not apply to existing poles, lines, towers, or structures or to the repair, replacement, or reconstruction thereof if the original height is not materially exceeded and this section shall not apply unless just compensation shall have first been paid to the public utility by the owner of any airport for any property or property rights which would be taken or damaged hereby.

Note that this section of the Public Utilities Code does not contain a prohibition of utility infrastructure within a certain distance of an airport or aircraft landing area, but instead outlines consultation requirements with the Federal Aviation Administration (FAA) when certain structures trigger notification under Part 77 of the FAA Regulations. The Draft EIR discusses Part 77 of the FAA Regulations, which are referenced in Public Utilities Code section 21658, on page 4.14-11. As discussed under Impact TT-3, the applicant would notify and consult with the FAA if any structure would exceed 200 feet in height or exceed the imaginary surface extending from runways as described in 14 Code of Federal Regulations Part 77. However, only the Mesa Substation structures may exceed the 200-foot height that would trigger notification; no structures would exceed the imaginary surface of any airport. Structures over 200 feet tall could pose a significant air traffic hazard. MM TT-5 would require that SCE obtain a determination of no hazard from the FAA, which would reduce impacts to less than significant. Compliance with MM TT-5 would also satisfy the requirements of PUC section 21658.

Additionally, there is no sheriff's station at Third Street and Eastern Avenue in East Los Angeles; it is assumed the commenter is referring to the East Los Angeles Sheriff's Station at 5019 East Third Street in East Los Angeles, adjacent to Belvedere Park Lake. The CPUC could not identify a heliport at this location through review of the Sheriff Station locations and aerial imagery. Thus, no revisions to the Draft EIR are required.

Impacts to air traffic patterns that could result in substantial safety risks are discussed under Impact TT-3. The Draft EIR concludes that helicopter use could have significant safety impacts if there are flights in close proximity to residences or congested areas. MM TT-2 (which in the Draft EIR was MM TT-4), requires that SCE obtain necessary FAA approvals for helicopter operation, which would include a Helicopter Lift Plan for operations within 1,500 feet of a congested area or residences. Impacts would be less than significant with mitigation.

Comment Set C8 – Henry Jew

Estrada, Andres

From: Mesa CPUC
To: Henry Jew
Subject: RE: MESA 500-kv Substation Project

Andrés Estrada, *Environmental Planner*
505 Sansome St. Suite 300, San Francisco, CA 94111
Phone: 415-398-5326 ext. 4718
aestrada@ene.com • www.ene.com

From: Henry Jew [mailto:henrysjew@gmail.com]
Sent: Monday, June 27, 2016 6:11 PM
To: Mesa CPUC <Mesa.CPUC@ene.com>
Subject: MESA 500-kv Substation Project

I am writing to oppose the above project. I am concerned the increase to 500kv would pose a health hazard to myself and my family. I am also concerned about the health of the thousands of students at Schurr High School. I live directly behind the transmission lines at 1121 N Vail Ave. Montebello, CA C8-1

Henry Jew

1

Response to Comment Set C8: Henry Jew

C8-1 The commenter's opposition to the proposed project is noted and will be considered by the decision makers prior to their final action on the project.

The commenter's concern about the health of people near the proposed project is also noted. Impacts to human health are discussed under Impact AQ-4 (exposure of sensitive receptors to substantial pollutant concentrations) and insofar as hazardous materials affect human health, are discussed under Impact HZ-2 (hazard due to foreseeable upset and accident conditions), in the Draft EIR Section 4.2, "Air Quality" and 4.7, "Hazards and Hazardous Materials," respectively. Impact AQ-4 is significant and unavoidable, even after mitigation. Impact HZ-2 would be less than significant with mitigation.

The commenter also mentions a concern about the health of students at Schurr High School. Chapters 4.2 and 4.7 of the Draft EIR specifically address impacts to Schurr High School. Impact HZ-3 discusses impacts related to the handling of hazardous materials and wastes within 0.25 mile of an existing or proposed school. This analysis included Schurr High School and found impacts would be less than significant (see Table 4.7-2).

Additionally, Section 4.2 considered Schurr High School to be a sensitive receptor (see Table 4.2-4). Impact AQ-4, which discusses impacts to sensitive receptors, found impacts related to oxides of nitrogen would be significant and unavoidable after implementing the only feasible mitigation measures available.

Comment Set C9 – Yvonne Watson

Yvonne Watson
201 W. Madison Avenue
Montebello, CA 90640

California Public Utilities Commission
RE: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc.
505 Sansome Street, Suite 300
San Francisco, CA 94111

June 27, 2016

Re: Mesa 500-kV Substation Project Draft Environmental Impact Report
State of California Public Utilities Commission

To Whom It May Concern:

Below are my comments on the Mesa 500-kV Substation Project DEIR.

VOLUME 1

C9-1

Geology and Soils

The DEIR needs to include an evaluation of the Montebello Fault. This fault is described in the CPUC decommissioning documents for the Montebello Gas Storage Facility Southern California Gas Company Application No. 00-04-031.

> The Montebello Fault (Figure 4.6-3) trends east-northeast from Whittier Narrows Recreation Area and south of Montebello Town Center, across Montebello Blvd. south of Liberty Ave. Because this fault offsets Pleistocene San Pedro Formation (Qsp), the Montebello Fault is considered potentially active (ARCS/WEST, 1994). The fault apparently terminates its surface expression near the Bunker Hill Ave. and Iguala St. intersection and a few 100 ft northeast of the Monterey Park Lots (with projection between the Main Facility and East Site).
> SCG MGSF Decommissioning and Sale
> Application No. 00-04-031
> Geology and Soils, page 4.6-7
> http://www.cpuc.ca.gov/Environment/info/mha/montebello/pdf_files/Section%204.06.pdf

A map of this fault can be found at the following link:
Figure 4.6-3 Surface Geology for Project Area
http://www.cpuc.ca.gov/Environment/info/mha/montebello/pdf_files/560D%20Fig%204.6-3.pdf

The Montebello Fault was described as "potentially active" in the CPUC documents. This status was confirmed in a June 12, 2015 email sent to me from Jerry Treiman, Senior Engineering Geologist, California Geological Survey. According to Mr. Treiman, *The State Geological Survey (under direction of the State Geologist) has not made any specific investigation of the Montebello thrust fault and has not declared it to be inactive. The "potentially active" description is probably appropriate. (Email from Jerry Treiman to Yvonne Watson, June 12, 2015)*

VOLUME 2 - Cumulative Effects

Please add the following considerations to the cumulative effects:

Montebello Hills Specific Plan

C9-2

The Montebello Hills Specific Plan includes storm drain improvements along Lincoln Ave. in the vicinity of the Mesa 500kV Substation Telecommunications Route 3 (Overhead) from San Gabriel Blvd. south to Avenida de la Merced near the Whittier Narrows Dam - Rio Hondo conservation pool. See Montebello Hills Specific Plan EIR - Final Drainage Report
Appendix O Drainage Report for Montebello Hills Development

Monterey Park Market Place and Montebello Hills Specific Plan

C9-3

The FEIR must retain and address the potential cumulative effects of the Monterey Park Market Place, Montebello Hills Specific Plan and Mesa 500kV Substation project all happening at the same time. Please be aware that potential cumulative effects of the Mesa 500kV Substation project were **not included** in the Montebello Hills Specific Plan FEIR even though the EA for the Mesa Substation states that a personal communication was held with Mr. Lovell Williams, City of Montebello, Planning and Community Development Department, Planning Division and D. Althaus, Insignia Environmental on January 6, 2015.

Central Basin Municipal Water District Proposed Recycled Water Pipeline

C9-4

Central Basin Municipal Water District (CBMWD) is currently working on a cost sharing agreement with Cook Hill Properties LLC, the developer of the Montebello Hills housing project, to construct a recycled water pipeline expansion project and temporary pumping station along Montebello Blvd. The pipeline would connect to the existing CBMWD recycled water pipeline at Lincoln Ave. and extend north on Montebello Blvd to Paramount Blvd near the Montebello Hills Mall. This route coincides with the Mesa 500kV Substation Telecommunications Route 3 (Underground) along Montebello Blvd.

The pipeline is in the development stage and will be discussed at the June 27, 2016 CBMWD Board Meeting. See link to agenda below:
https://www.centralbasin.org/meetings/monthly-board-directors-meeting-15

Lincoln Fire, August 16, 2015

C9-5

The Mesa 500kV Substation DEIR noted the presence of 7 California Black Walnut Trees observed on Lincoln Boulevard along Telecommunications Route 3. The precise location of these trees is not given in the DEIR. Due to the Lincoln Fire, the health of these trees must be evaluated prior to trimming.

Thank you for the opportunity to comment on this DEIR.

Yvonne Watson

Response to Comment Set C9: Yvonne Watson

C9-1 The commenter requests that the Montebello Fault be included in the Environmental Impact Report (EIR). The following addition was made to Draft EIR Table 4.5-3:

Page 4.5-9:

Elsinore Fault Zone (Whittier Section)	4 miles southeast of the proposed Mesa Substation site area and 2 miles south of Telecommunications Route 3.	6.8
East Montebello Fault	950 feet north northeast of the east end of Telecommunications Route 1 and crossing Staging Yard 6.	Not available
Montebello Fault	Approximately 2.5 miles below the surface next to a portion of Telecommunications Route 3.	Not available
Newport-Inglewood-Rose Canyon Fault Zone (North Los Angeles Basin Section)	7.9 miles southwest of the distribution street light source line conversion on Loveland Street project component in the South Area.	7.1
Raymond Fault	1.3 miles south southeast of the Goodrich Substation in the North Area.	6.5

Page 4.5-29:

Activities proposed in Staging Yard 6 may include minor ground disturbance for site preparation (e.g., vegetation removal) but would not include trenching or grading at depth. No permanent structures (e.g., buildings or transmission poles) are proposed in staging yard areas and the staging yard would only be used during the construction phase for equipment storage and staging. Therefore, although this Staging Yard would be located within an A-P fault zone on the East Montebello Fault, there would be a less than significant impact associated with the risk of loss, injury or death from the potential rupture of the East Montebello fault. Additionally, construction of the portion of Telecommunications Route 3 near the Montebello Fault (a potentially active, but not an Alquist-Priolo Fault) would not include grading or trenching activities or new structures. Stringing would occur on existing poles and would result in a less than significant impact under this criterion. The Puente Hills Blind Thrust Fault plane (a fault without surface rupture characteristics) is presumed to be active in one study and located underneath all of the proposed project area and extend for 40 km across the northern LA Basin (Shaw et al 2002). Because this fault is a blind thrust fault, it does not have surficial characteristics and would not be expected to result in surface ruptures. Furthermore, activities at Staging Yard 6 or Telecommunications Route 3 would not exacerbate existing fault rupture conditions.

The Montebello Fault has not been mapped by the Unites States Geological Survey, and the California Geological Survey (CGS) has not undertaken specific investigation of this fault, nor is this fault located on the 2010 Fault Activity Map of California prepared by the CGS. The California Public Utilities Commission (CPUC) notes the reference to the Montebello Gas Storage facility CPUC documentation, as well as the quote from the email from Jerry Treiman of the CGS regarding the "potentially active" status of the Montebello Fault. However, identification of the Montebello Fault does not change the impact analysis conclusions in the Draft EIR. Impacts associated with geological hazards, including fault ruptures and seismic ground shaking, are discussed under Impact GEO-1 and Impact GEO-2. The analysis for Impact GEO-1 determined that, although Staging Yard 6 lies within an Alquist-Priolo Fault Zone, the absence of trenching, grading at depth, and permanent structures would result in a less than significant impact associated with the risk of loss, injury, or death from a fault rupture. Construction of the portion of Telecommunications Route 3 near the Montebello Fault would not include grading or trenching activities or new structures. Stringing would occur on existing poles and would result in a less than significant impact under this criterion. The impact conclusion for Impact GEO-1 would remain the same after inclusion of the Montebello Fault. Impact GEO-2's analysis relies on the conclusion that the proposed project would be located in a seismically active area, in close proximity to active and potentially active fault zones, meaning it could experience moderate to high levels of seismic ground shaking. Identification of the Montebello Fault does not change this characterization of the area. The EIR analysis determined that, despite the proposed project being located within a seismically active area, impacts would be less than significant because structures would be designed according to California Building Code, CPUC General Order (G.O.) 95, and G.O. 128 standards, and recommendations from a site-specific geotechnical study required by Mitigation Measure (MM) GEO-1. The proposed project also would not exacerbate existing fault rupture conditions or other seismic conditions in the area. The identification of the Montebello Fault does not change the Draft EIR's analysis or conclusions regarding faults or seismic ground shaking.

C9-2 The Draft EIR's cumulative analysis included the Montebello Hills Specific Plan in the list of projects producing related or cumulative impacts (see Draft EIR Table 6-1). It was conservatively assumed that construction of the proposed project would take place concurrently with the construction of the Specific Plan; therefore, the cumulative effect of these two projects was considered in the Draft EIR.

A review of the Montebello Hills Specific Plan Recirculated Draft EIR as well as Exhibit D of the Montebello Draft EIR's Appendix O ("Drainage Report for Montebello Hills Development") shows that a storm drain pipe would extend from the Montebello Hills Specific Plan area, perpendicular under Lincoln Avenue, toward Whittier Narrows Dam. The storm drain pipe would cross under the proposed project's Telecommunications Route 3. The Montebello Draft EIR states that storm water drain construction would be implemented in phases corresponding with phased development of the project and that housing units would be built generally from west to east, coinciding with extension of water conveyance infrastructure. Home builders would build homes according to sales. The Montebello Draft EIR does not indicate when the storm drain pipe would be constructed, and the CPUC is not aware of any prospective construction schedule for the storm drain pipe.

An EIR's discussion of cumulative impacts must provide a summary of the cumulative environmental effects that are expected and a reasonable analysis of the cumulative impacts of the relevant projects (CEQA Guidelines section 15130(b)(4)-(5)). The discussion need not provide detail as extensive as that required for effects attributable solely to the project (CEQA Guidelines § 15130(b)). When specific information on the impacts of potential future cumulative development is not available, an EIR is not required to speculate about the cumulative impacts that might occur (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 277).

As indicated above, there is currently no information available regarding when the storm drain improvements referenced by the commenter would be constructed. However, in this area, construction of Telecommunications Route 3 would be limited to stringing line on existing poles and would occur for an extremely short period of time. Therefore, it is unclear at what point in the six-year construction period the drain pipe would be constructed perpendicular to Telecommunications Route 3 and whether that time would coincide with construction of Telecommunications Route 3. Furthermore, it is highly improbable that these two projects would coincide in this location. Thus, determining the cumulative impacts would require speculating that the construction schedule of the Montebello Hills Specific Plan storm drain pipe would occur at the same time as Telecommunications Route 3 at the same place along Lincoln Avenue. The Draft EIR is not required to speculate regarding potential impacts of those improvements in combination with impacts resulting from the proposed project (CEQA Guidelines § 15145). No additional response is required.

C9-3 The Monterey Park Market Place and the Montebello Hills Specific Plan were both included in the Draft EIR's list of cumulative projects (see Table 6-1) and considered, as appropriate, in the cumulative impact analysis, i.e., where they would contribute to a cumulative effect in a particular resource area consistent with the requirements set forth in CEQA Guidelines section 15130.

The commenter's statements regarding the cumulative analysis in the Montebello Specific Plan Final EIR are noted, but require no further response in this document because they relate to analysis in a different EIR under the control of a different Lead Agency.

C9-4 According to information from the Central Basin Municipal Water District (CBMWD), the recycled water pipeline identified by the commenter would be built on Montebello Boulevard from an existing pipeline at the intersection of Montebello Boulevard with West Lincoln Avenue (CBMWD 2016). A portion of the proposed pipeline would run contiguous with about 500 feet of the proposed project's Telecommunication Route 2's underground segment along Montebello Boulevard north of its intersection with West Lincoln Avenue. In either case, the Draft EIR assumed that construction of the proposed project would occur concurrently with construction of the Montebello Hills Specific Plan, which is expected to begin in 2016 or 2017 and to last through 2022. Therefore, the construction impacts of the proposed project in combination with those of the Specific Plan were analyzed consistent with the requirements of CEQA Guidelines section 15130 (Discussion of Cumulative Impacts).

However, an EIR's discussion of cumulative impacts need not provide the same level of detail as is provided for project-specific effects (CEQA Guidelines section 15130(b)).

When specific information on the impacts of potential future cumulative development is not available, an EIR is not required to speculate about the cumulative impacts that might occur (*Preserve Wild Santee v. City of Santee* (2012) 210 Cal.App.4th 260, 277).

Neither the Montebello Hills Specific Plan EIR nor the examined CBMWD documents indicate when the recycled water pipeline would be constructed, and the CPUC is not aware of any information regarding prospective construction schedule. Additionally, given the short amount of overlap of the two projects—approximately 500 linear feet—the chance of construction overlap would be very small. Thus, determining the cumulative impacts would require speculating that the construction schedule of the Montebello Hills Specific Plan recycled water pipeline would occur at the same time as Telecommunications Route 2 along Montebello Boulevard. The Draft EIR is not required to speculate regarding the potential impacts of this specific improvement in combination with impacts resulting from the proposed project (CEQA Guidelines section 15145). No additional response is required.

C9-5 The Draft EIR identifies the locations of black walnut trees in Table 4.3-2 and in Figure 5 of Appendix D. Impacts to black walnut are discussed on page 4.3-32. The Draft EIR concludes that impacts would be less than significant after implementation of Applicant Proposed Measure (APM)-BIO-01, APM-BIO-02, MM BR-1, MM BR-2, MM BR-5, and MM BR-7.

The fire referenced by the commenter took place in August 2015, and therefore its effects were not considered in the environmental baseline for the analysis of the proposed project's impacts to biological resources. CEQA Guidelines section 15125(a) states that "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published. . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." The Notice of Preparation for the proposed project was issued on June 5, 2015, prior to the fire.

Nevertheless, the biological resources mitigation measures set forth above would ensure that impacts to California black walnut trees would be less than significant. Specifically, MM BR-1 (Pre-construction surveys) requires the applicant to retain a qualified biologist approved by the CPUC to conduct pre-construction surveys for sensitive biological resources, including the California Black Walnut. Under this measure, the information gathered from these surveys shall be used to develop actions to minimize impacts on sensitive resources from project-related activities, including any necessary tree trimming. MM BR-2 requires the applicant to delineate work boundaries to avoid impact to the black walnut. MM BR-5 requires workers to undergo training to understand how to identify species of concern, including black walnut, and what the project commitments are to avoid impact to the trees. MM BR-7 requires an arborist approved by the CPUC to conduct tree evaluation surveys and requires the applicant to plant replacement trees for those that cannot be avoided.

Comment Set C10 – Jordan Pinjuv, CAISO

California ISO

California Independent System Operator Corporation

June 27, 2016

California Public Utilities Commission
RE: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc.
505 Sansome Street, Suite 300
San Francisco, CA 94111
Mesa.CPUC@ene.com

Via Email

RE: Mesa 500-kV Substation Project (Mesa Loop-In Project)

I. Introduction

The California Independent System Operator Corporation (CAISO) appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) prepared for the Mesa 500-kV Substation Project (Mesa Loop-In Project or Project) pursuant to the California Environmental Quality Act (CEQA). The Mesa Loop-In Project is a critical component of the CAISO's efforts to meet long-term local reliability needs in the Los Angeles Basin (LA Basin) area in the wake of the retirement of the San Onofre Nuclear Generating Station and scheduled retirements of generation units in compliance with the state's once-through-cooling (OTC) regulations. Alternatives 1 & 2 do not meet the reliability concerns identified by the CAISO or the project objectives outlined in the DEIR. As a result, these the Commission should reject these alternatives for failing to meet the basic project objectives. Alternative 3 meets all identified reliability concerns and the DEIR project objectives, but it may not be feasible to accomplish in the timeframe necessary to facilitate the retirement of existing OTC generation. If the Commission determines that Alternative 3 will delay the in-service date of the project until after the scheduled retirement of the existing LA Basin OTC generation, then the Commission should reject it as infeasible because it cannot be accomplished in a successful manner within a reasonable period of time, as required by CEQA regulations.

C10-1

C10-2

C10-3

II. Mesa Loop-In Project Background

As configured by Southern California Edison Company (SCE) and the CAISO, the Mesa Loop-In Project maintains reliability in the LA Basin while allowing for significant integration and delivery of new renewable resources in the Tehachapi and Eastern LA Basin areas into the LA Basin load centers. As described in the CAISO's 2013-2014 transmission plan, the Mesa Loop-In Project expands SCE's existing Mesa 230/66/16 kV Substation to bring a new 500 kV electric source to the LA Basin metropolitan load center, delivering power from Tehachapi wind resources or resources located in PG&E service territory or the Northwest via the 500kV bulk transmission network system. The Mesa Loop-In Project includes three 500/230 kV and three 230/66 kV transformer banks providing significant capacity to deliver power from the 500 kV transmission system to load in the LA Basin area. The Vincent-Mira Loma 500 kV,

C10-4

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California Independent System Operator Corporation

Laguna Bell-Rio Hondo 230 kV & Goodrich-Laguna Bell 230 kV lines will be looped into an expanded substation to provide new source lines and to distribute power toward coastal cities to the south.

C10-4 cont.

As identified in the DEIR, the basic project objectives for the Mesa Loop-In Project are to:

1. Address anticipated violations of North American Electric Reliability Corporation (NERC) Standard TPL-001-04, Western Electricity Coordinating Council (WECC) Regional Business Practice TPL-001-WECC-RBP-2, and California Independent System Operator (CAISO) Planning Standards that would occur upon retirement by December 31, 2020, of generators that use Once-Through Cooling (OTC).

2. Avoid introduction of new violations of NERC, WECC, and CAISO standards.

3. Maintain electrical service by minimizing service interruptions during project implementation.[1]

C10-5

The CAISO agrees with these key project objectives as identified in the DEIR.

III. Discussion

The DEIR identifies three alternatives to the Mesa Loop-In Project that it finds are capable of meeting project objectives, as well as being feasible and environmentally superior to the Mesa Loop-In Project. Alternatives 1 and 2 present electrical variations to the proposed Project that would potentially reduce the physical footprint of the Mesa Substation and the associated environmental impacts.

A. Alternative 1 – Single 1600 MVA Transformer

Alternative 1 replaces the three 500/230 kV 1120 MVA transformers specified in the proposed Project with a single, larger 500/230 kV 1600 MVA transformer. The DEIR states that Alternative 1 will meet all project objectives if a remedial action scheme (RAS) is implemented to address thermal overload of the Chino–Mira Loma 220-kV No. 3 Transmission Line.[2] The DEIR states that this alternative would not create any new violations of reliability criteria, thus meeting Objective 2, and would meet Objective 3 because the alternative would minimize outages during project construction.

C10-6

To test the effectiveness of Alternative 1, the CAISO conducted power flow studies based on the most recent long-term local capacity requirement studies for the LA Basin.[3] Based on these studies, the CAISO identified thermal overloads under both normal system conditions (NERC category P0) and N-1-1 conditions (NERC category P6). The CAISO-identified overloads are indicated in Table 1 below:

C10-7

[1] DEIR, Section 3.2.1, p. 3-2.
[2] DEIR, Section 3.4.1.2, p. 3-9.
[3] 2015-2016 CAISO Transmission Plan, p. 153-170.

California Independent System Operator Corporation

Table 1

Summary of CAISO Power Flow Analysis of Alternative 1

Contingency Type	Specific Contingency	Affected Facilities	Percent Loading of Applicable Rating
P0	None, normal conditions	Mesa-Laguna Bell 230 kV line	161%
P0	None, normal conditions	Mesa 500/230kV transformer bank	• 111% (if transformer impedance is at 10%) or • 94% (if transformer impedance is 14.66%)[4].
P6	Vincent-Mesa 230kV No.1, followed by No. 2 outage	Mesa 500/230kV transformer	104%
P6	Mira Loma-Serrano 500kV line, followed by Mira Loma 500/230kV Bank No. 2 outage	Mira Loma 500/230kV transformer No. 1	103%
P6	Mesa-Laguna Bell 230kV line, followed by Mesa-Lighthipe 230kV line outage	Mesa-Redondo 230kV line	138%
P6	Serrano-Villa Park 230kV No. 2, followed by Serrano-Lewis 230kV No. 1 line	Serrano-Villa Park No. 1 230kV loading is near its emergency rating	95% - this has only 5% of margin left on emergency rating; this is not as robust as Alternative 3 or the original alternative as those have 13% margin on their emergency ratings.

C10-7 cont.

[4] The ISO uses 14.66% for impedance value assumption for the proposed 500/230kV 1600 MVA transformer for the rest of the contingency analyses for Alternative 1.

C10-7 cont.

As indicated in Table 1, two of the CAISO-identified thermal overloads occur during normal system conditions (P0). Because these overloads occur during normal system conditions, the CAISO cannot rely on a RAS to mitigate the overloads.[5]

Based on the CAISO's review of the DEIR's power flow analysis, it appears that the thermal overloads identified by the CAISO were not identified in the DEIR because the DEIR used an outdated study case. The CAISO's analysis incorporates the study cases used in the 2015-2016 transmission planning process, which include the modeling of renewable resources to meet the state's 33% renewable portfolio standard at their Net Qualifying Capacity (NQC) values for local reliability assessments. Many of these renewable resources are located north of the Mesa Loop-In Project and east of the LA Basin. The CAISO modeled the outputs of the renewables at the NQC values or based on peak impact value for corresponding technology (*i.e.*, solar and wind) as indicated in the Assigned Commissioner Ruling on assumptions and scenarios promulgated by the Commission for use in the ISO transmission planning process.[6] The CAISO described the impact of higher renewable output on LA Basin local capacity requirements in the 2015-2016 transmission plan:

> The increase in the Western LA Basin sub-area LCR need for the 2025 time frame is due to a higher dispatch of renewable resources. Renewable resource dispatch was based on the CPUC provided technology factors (for Net Qualifying Capacity), for renewable generation north and east of the LA Basin LCR area. This higher level of renewable generation dispatch (about 2,000 MW higher) reflects updated modeling for centralized photovoltaic solar farms located outside north and east of the LA Basin LCR area. In addition, the updated modeling also includes wind generation resources located north of the LA Basin LCR area. The increase in renewable generation dispatch level to reflect net qualifying capacity (NQC)-level outputs contributes to further thermal loading concerns for the 230kV lines south of newly upgraded Mesa Substation under contingency conditions. This reflects the benefit of the upgraded Mesa Substation to facilitate delivering more renewable generation into the LA Basin load centers when it's upgraded to 500 kV voltage level and having additional 230 kV lines in the Western LA Basin looped into it.[7]

Alternative 1 does not meet NERC transmission planning standards when taking into account expected increases in renewable resources' outputs outside the LA Basin. As a result, Alternative 1 does not meet the basic project objectives of addressing NERC reliability criteria violations and avoiding the creation of new NERC reliability violations. Accordingly, the Commission should reject it.

[5] Under normal system conditions NERC TPL-001-4 disallows any interruption of firm transmission service or non-consequential load loss.
[6] *See* Commission Rulemaking 13-12-010, Assigned Commissioner's Ruling on Updates to the Planning Assumptions and Scenarios for Use in the 2014 Long-Term Procurement Plan and the California Independent System Operator's 2015-2016 Transmission Planning Process issued October 28, 2015, Attachment 1, p. 18.
[7] 2015-2016 CAISO Transmission Plan, p. 156-157.

B. Alternative 2 – Two 1120 MVA Transformers

Alternative 2 removes one of the three 500/230 kV 1120 MVA transformers specified in the Proposed Project for installation at the Mesa Substation. The DEIR claims that Alternative 2 will meet all project objectives if a RAS is implemented to address thermal overload of the Chino–Mira Loma 220-kV No. 3 Transmission Line. The DEIR states that this alternative would not create any new reliability criteria concerns, thus meeting Objective 2, and it would meet Objective 3 because it minimizes outages during project construction.

C10-8

To test the effectiveness of Alternative 2, the CAISO conducted the same power flow analysis as that conducted for Alternative 1. Based on these studies, the CAISO identified thermal overloads under both normal system conditions (NERC category P0) and N-1-1 conditions (NERC category P6). The CAISO-identified overloads are indicated in Table 2 below:

C10-9

Table 2

Summary of CAISO Power Flow Analysis of Alternative 1

Contingency Type	Specific Contingency	Affected Facilities	Percent Loading of Applicable Rating
P0	None, normal conditions	Mesa 500/230kV transformer No. 2 (connecting to Mesa South 220kV bus)	Mesa 500/230kV Bank No. 2 (107%) based on typical impedance value of 14.66%
P0	None, normal conditions	Mesa-Laguna Bell 230kV line	Mesa-Laguna Bell 230kV line (108%)
P6	Mesa-Laguna Bell 230kV line, followed by Mesa-Lighthipe 230kV line outage	Mesa-Redondo 230kV line	106%

As indicated in Table 2, two of the CAISO-identified thermal overloads occur during normal system conditions (P0). Because these overloads occur during normal system conditions, the CAISO cannot rely on a RAS to mitigate the overloads.[8]

[8] See footnote 3, above.

As with Alternative 1 above, it appears that the DEIR's power flow analysis does not incorporate the updated modeling of renewable resources north of the Mesa Loop-In Project and east of the LA Basin with their outputs modeled at NQC values. The overloads occurring during normal system conditions result from the increase in renewable capacity in the CAISO's updated analysis. Alternative 2 does not meet NERC transmission planning standards when taking into account expected increases in renewable resources outside the LA Basin. As a result, The Commission should reject Alternative 2 because it fails to meet the basic project objectives: it does not address NERC reliability criteria concerns or and avoid creating new NERC reliability violations. , C10-9 cont.

C. Alternative 3 – Gas Insulated Substation

Alternative 3 is electrically similar to the proposed project, but proposes a gas-insulated substation (GIS) instead of an air-insulated substation at Mesa Substation, thereby reducing the overall footprint of the project. Alternative 3 meets all NERC, WECC and ISO transmission planning criteria by mitigating all known reliability concerns and avoiding the creation of any new reliability concerns. As a result, the CAISO agrees that Alternative 3 meets the basic project objectives outlined in the DEIR. C10-10

Although Alternative 3 meets the basic project objectives, the CAISO has concerns regarding whether GIS substation design, construction, and electrification can be completed prior to the retirement of LA Basin OTC generation in December 2020. The CAISO believes that SCE is in the best position to comment on potential scheduling impacts that Alternative 3 may cause. If Alternative 3 cannot be completed and placed in-service to facilitate timely retirement of the LA Basin OTC generation, the Commission should reject it as infeasible because it is not "capable of being accomplished in a successful manner within a reasonable period of time" as required by CEQA Guidelines.[9] C10-11

In addition to the potential delay in the in-service date, the CAISO is also concerned about the potential higher costs incurred to install and maintain GIS equipment. These costs are material, and should be carefully considered in weighing any potential benefits. C10-12

IV. Conclusion

The CAISO appreciates this opportunity to provide comments on the DEIR. The CAISO recommends that the Commission reject Alternatives 1 & 2 for failing to meet project objectives. The Commission should carefully review whether Alternative 3 can be accomplished in time to facilitate the retirement of existing LA Basin generators in compliance with OTC regulations. C10-13 C10-14

Sincerely

/s/ Jordan Pinjuv

Jordan Pinjuv
Counsel

[9] CEQA Guidelines § 15364.

Response to Comment Set C10: Jordan Pinjuv, CAISO

C10-1 The California Independent System Operator's (CAISO)'s statement that the proposed project is critical in the wake of the retirement of the San Onofre Nuclear Generating Station (SONGS) and generators that use Once-Through Cooling (OTC) is noted and included in the record for consideration by decision makers.

Refer to Section 1.2.4, "Detailed Description of CPUC Project Objectives" for a discussion of the development of the CPUC's objectives for the proposed project.

C10-2 Refer to responses to comments C10-7 and C10-9.

C10-3 Refer to responses to comments C10-11.

C10-4 This comment provides a summary of the proposed project. The comment does not raise an issue with the analysis in the Draft Environmental Impact Report (EIR); therefore, no further response is required.

C10-5 The commenter's agreement with the California Public Utilities Commission's (CPUC's) California Environmental Quality Act (CEQA) project objectives identified in Section 1.2.2.1, "CEQA Project Objectives" of the Draft EIR is noted and included in the record for consideration by the decision makers.

C10-6 The comment summarizes the One-Transformer-Bank Substation Alternative and EIR conclusions regarding the One-Transformer-Bank Substation Alternative and the Two-Transformer-Bank Substation Alternative. The comment does not raise an issue with the analysis in the Draft EIR; therefore, no further response is required.

C10-7 Section 15124(b) of the CEQA Guidelines requires an EIR to state the objectives sought by the proposed project. The statement of objectives should include the underlying purpose of the project, and it should be clearly written to guide the selection of alternatives to be evaluated in the EIR (*Id*.).

As described in Draft EIR Section 1.2.4.1, "Project Objective 1," the proposed project is intended to address reliability concerns that would occur after the retirement of approximately 4,250 megawatts of electric generation in the Western Los Angeles Basin, from generators that use OTC. Although Southern California Edison (SCE) indicated in its Proponent's Environmental Analysis that the proposed project would also address reliability concerns from SONGS retirement, it has since stated that the Mesa Substation Project would likely not be necessary to maintain reliability unless OTC units are also retired by the end of 2020.[2] Based on these identified reliability concerns, the CPUC developed the following project objectives (CPUC CEQA Project Objectives 1 and 2):

1. Address anticipated violations of the North American Electric Reliability Corporation (NERC) Standard TPL-001-04 (NERC 2015), Western Electricity Coordinating Council (WECC) Regional Business Practice TPL-001-WECC-RBP-2 (WECC 2011), and CAISO Planning Standards that would occur upon

[2] See SCE's Response to Data request 5, Question 07.a.

retirement by December 31, 2020, of generators that use OTC.

2. Avoid introduction of new violations of NERC, WECC, and CAISO standards.

These objectives are based on data provided by SCE because SCE is the project applicant. SCE initially provided the CPUC with power flow base cases used in its 2014 annual reliability assessment to identify the thermal overloads intended to be addressed by the proposed project. The specific set of reliability standard violations identified by SCE (which the proposed project would address) were provided by SCE in response to CPUC Data Request # 7 and are set forth in EIR Appendix B and referenced in EIR Section 1.2.4.1, "Project Objective 1." Both Project Objectives 1 and 2 are intended to address specific violations of reliability criteria identified by SCE that arise when evaluating existing grid reliability. These are the violations that would be addressed by the proposed project.

As described on page 1-4 of the EIR, CAISO recommended implementing the Mesa Substation Project in its 2013–2014 Transmission Plan[3] as part of a group of projects to address loading concerns.

The text of the Draft EIR has been revised as follows to clarify the data that were used to evaluate alternatives to the proposed project against Project Objective 1 and Project Objective 2:

Page 1-7:

Violation of Planning Criteria

After OTC retirement, under peak load conditions, several violations of the previously described planning criteria would occur. SCE identified all contingencies resulting in violations that the Mesa Substation Project would address. The list of violations is provided in Appendix B; this list was generated based on SCE's response to CPUC Data Request #7, as well as the CPUC's analysis of power flow data provided by SCE. The power flow data are the data used for SCE's 2014 annual reliability assessment.

Page 1-7:

Therefore, one of the CPUC-defined objectives of the proposed project is to avoid introduction of new violations of NERC, WECC, and CAISO reliability when using SCE's 2014 annual reliability assessment power flow data.

[3] The CAISO planning process occurs every year over a period of approximately one year. CAISO's 2016–2017 transmission planning process has already begun and is currently in Phase 2, "Conduct Technical Studies and Develop Comprehensive Plan" (CAISO 2016b). The reliability assessment Study Results for the 2015–2016 transmission planning process using that planning year's data (which were used by CAISO to prepare its comment letter) were not finalized until November 2015, while the Draft EIR was under preparation. The Final CAISO 2015–2016 Transmission Plan became available in March 2016, when the EIR was being produced for release on April 29, 2016 (CAISO 2016a).

Page 3-2:

> A transmission system model created in the PowerWorld Simulator was used to identify potential alternatives. The model was also used to test potential alternatives to determine if they would meet Objectives 1 and 2 (i.e., address all potential violations of reliability standards and whether they would avoid introduction of new violations of reliability standards). The transmission system model was created in the PowerWorld Simulator modelling program using the WECC transmission system database and data provided by Southern California Edison (SCE). Data provided by SCE are the power flow data used for SCE's 2014 annual reliability assessment. The model was set up to mimic how the transmission system would function following retirement of OTC units.

While CAISO's letter states its agreement with the project objectives identified in the Draft EIR, it asserts that the proposed project and alternatives should address all of the reliability concerns identified its 2015–2016 Transmission Study. However, the proposed project was designed to address the specific violations set forth in Appendix B as described in detail above, and CEQA does not require that the project of alternatives be redesigned to address new or different concerns such as those identified by CAISO.

CAISO further asserts that the One-Transformer-Bank Substation Alternative does not meet CPUC CEQA Project Objectives 1 and 2, but CAISO's assertion is based on its use of a model that uses a different configuration of the One-Transformer-Bank Substation Alternative than does the CPUC model. The CPUC's configuration of the One-Transformer-Bank Substation Alternative assumed that the transformer was connected to the right-hand bus, while the CAISO data show the new transformer connected to the left-hand bus. Notably, each violation that occurs under the contingencies noted in CAISO's Table 1 would be eliminated if the transformer is connected to the right-hand bus, as was done in the CPUC model, consistent with how SCE modeled the proposed project in power flow data provided to the CPUC. The contingency that results in thermal loading to near the Serrano–Villa Park No. 1 Transmission Line emergency rating also results in a reduced thermal loading when the transformer is connected to the right-hand bus. The transformer's connection from right to left bus, or vice versa, may be accomplished by simply opening or closing the circuit breakers between the tower and the bus by flipping a switch.

The CPUC's decision-makers will consider CAISO's comments regarding the One Transformer Substation Alternative when making their final decision on the proposed Project and the feasibility of alternatives.

C10-8 This comment provides a summary of the Two-Transformer-Bank Substation Alternative. The comment does not raise an issue with the analysis in the Draft EIR; therefore, no further response is required.

C10-9 Refer to response to comment C10-7 for clarification of the data used to develop project objectives and to screen alternatives. CAISO also asserts that the Two-Transformer-Bank Substation Alternative does not meet CPUC CEQA Project Objectives 1 and 2 but, like the One-Transformer-Bank Substation Alternative, and as described in detail in response to comment C10-7, CAISO's model uses a configuration of the Two-

Transformer-Bank Substation Alternative that shows the new transformer connected to the left-hand bus. However, each violation that occurs under the contingencies noted in CAISO's Table 2 is eliminated if the transformer is instead connected to the right-hand bus, as was done in the CPUC model.

The CPUC's decision makers will consider CAISO's comments regarding the Two Transformer Substation Alternative when making their final decision on the proposed project and the feasibility of alternatives.

C10-10 CAISO's agreement that the Gas-Insulated Substation Alternative meets the basic project objectives in the Draft EIR is noted and included in the record for the decision makers.

C10-11 CAISO's comment regarding scheduling concerns for the Gas-Insulated Substation Alternative is noted and included in the record for consideration by the decision makers. Refer to response to comment D1-43, which pertains to SCE's comments regarding schedule for implementation of the Gas-Insulated Substation Alternative.

C10-12 CAISO's comment regarding potentially higher costs to install and maintain gas-insulated switchgear equipment is noted and included in the record for consideration by the decision makers. The higher cost of a Gas Insulated Substation Alternative is noted on page 3-14 of the Draft EIR; however, as stated in the Draft EIR, there is no evidence at this time that the cost of the Gas-Insulated Substation Alternative would be so prohibitive as to render the Gas-Insulated Substation Alternative infeasible.

C10-13 Refer to responses to comments C10-7 and C10-9.

C10-14 Refer to response to comment C10-11.

Comment Set C11 – Yvonne Watson

California Public Utilities Commission

Draft EIR Public Meeting for the Mesa 500-kilovolt (kV) Substation Project
May 18, 2016

Thank you for participating in tonight's public scoping meeting. We would like to hear your comments.

Note: Before including your address, telephone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Name (please print): Yvonne Watson

Affiliation (if applicable): Sierra Club

Phone: (323) 722-0821 Email: Ywatson@dslextreme.com

Address: 201 W. Madison Ave. Montebello, CA 90640

City, State, Zip:

COMMENTS

Under cumulative effects:

1. 2015 Montebello Hills/Lincoln Fire: Consider loss of habitat for the California gnatcatcher, on-going loss of habitat due to lingering drought, proven fire hazard along telecommunications Route 3 near Whittier Narrows Dam. C11-1

2. PEA Mesa 500 kV Substation Project Volume 3 March 2015: C11-2
p. 4.18-31 This section mentions the "Montebello Hills Master Planned Community". This should be changed to "Montebello Hills Specific Plan" to reflect the actual project name used under CEQA.

3. PEA (Same reference above) identified Significant and unavoidable impacts → C11-3

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
Re: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

COMMENTS *(Continued)*

air quality from the Monterey Park Market Place and the Montebello Hills Master Planned Community. These impacts were due to "potential overlap in construction activities." The conclusions reached in the applicant's PEA should be included in the conclusions by the CPUC's DEIR. C11-3 cont.

4. Please EXTEND the public Comment period for this project. C11-4

Comments must be received by June 13, 2016
Mail: California Public Utilities Commission
Re: Mesa 500kV Substation Project
c/o Ecology and Environment, Inc. 505 Sansome Street, Suite 300 San Francisco, CA 94111
Fax: (415) 398-5326 Emails: Mesa.CPUC@ene.com

Response to Comment Set C11: Yvonne Watson

C11-1 The commenter suggests that the 2015 Montebello Hills/Lincoln fire be considered in the Draft Environmental Impact Report's (EIR's) evaluation of cumulative effects. Under the California Environmental Quality Act (CEQA), a cumulative impact is "an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (CEQA Guidelines 15130(a)). A "project" is an action that has the potential to result in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment and that is either (1) an activity undertaken by a public agency; (2) an activity undertaken by a person supported through public agency assistance; or (3) an activity involving a public agency issuance of a lease, permit, license, certificate, or other entitlement (CEQA Guidelines section 15378(a)). An accidental fire is not a project under CEQA and was therefore not included in the Draft EIR's analysis of the cumulative impacts. This approach is consistent with CEQA.

The fire was also not considered as part of the environmental baseline for the cumulative impacts analysis. Under CEQA, the baseline consists of the "physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published. . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant" (CEQA Guidelines 15125(a)). The Notice of Preparation for the proposed project was issued on June 5, 2015, and the fire referenced by the commenter began on August 16, 2015. For this reason, it was not included in the baseline. As described in response to comment A10-2, Mitigation Measure (MM) BR-3 has been clarified to require that areas impacted by the proposed project be restored to their pre-fire habitat conditions (i.e., the baseline condition considered in the Draft EIR).

C11-2 The Proponent's Environmental Assessment (PEA) referenced by the commenter was written by Southern California Edison (SCE) and submitted to the California Public Utilities Commission (CPUC) as part of its application for a Permit to Construct the proposed project. This comment does not pertain to content in the CPUC's EIR; SCE's PEA is not subject to revision by the CPUC. The Draft EIR uses the term "Montebello Hills Specific Plan" as requested by the commenter.

C11-3 As stated above, the PEA referenced by the commenter was written by SCE and submitted to the CPUC as part of SCE's application for a Permit to Construct the proposed project. While the CPUC may consider information submitted by SCE in its analysis of the proposed project, it is not required to incorporate SCE's conclusions regarding the project's potential impacts. To clarify, however, the commenter is referencing the PEA's identification of significant unavoidable impacts to air quality from projects that are the subject of other EIRs, namely, EIRs for the Monterey Park Market Place and the Montebello Hills Specific Plan.

As required by CEQA, the CPUC has prepared a Draft EIR to identify and analyze the impacts of the proposed project, including project-specific and cumulative impacts to air quality. The Draft EIR analysis represents the CPUC's independent evaluation of environmental impacts. Most relevant to this comment, the Draft EIR assessed whether the proposed project's contribution to a significant air quality impact would be

cumulatively considerable (see Draft EIR Section 6.1.2.3, "Air Quality"). The Montebello Hills Specific Plan and the Monterey Park Market Place were both considered, as appropriate, in the air quality cumulative analysis.

C11-4 Under CEQA Guidelines section 15105(a), the minimum time period for public review of a Draft EIR submitted to the State Clearinghouse for review by state agencies is 45 days. Consistent with this requirement, the CPUC initiated a 45-day comment period starting April 29, 2016, and ending June 13, 2016. The CPUC extended the comment period to 60 days and accepted written comments on the Draft EIR through June 27, 2016. All written comments must have been postmarked or received by fax or email no later than 5:00 p.m. on June 27, 2016.

Comment Set C12 – Josh Havelka

Estrada, Andres

To: Havelka, Josh
Subject: RE: Mesa Substation Project Comment

ecology and environment, inc.

Andrés Estrada, *Environmental Planner*
505 Sansome St. Suite 300, San Francisco, CA 94111
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From: Havelka, Josh [mailto:jhavelka@barnhartcrane.com]
Sent: Friday, June 10, 2016 9:14 AM
To: Mesa CPUC <Mesa.CPUC@ene.com>
Subject: Mesa Substation Project Comment

Please add me to the mailing list. C12-1

Thank you,
Josh Havelka
Project Sales
714-290-9808 Cell
jhavelka@barnhartcrane.com
www.barnhartcrane.com

BARNHART
Minds Over Matter

1

Response to Comment Set C12: Josh Havelka

C12-1 The commenter was added to the mailing list upon receipt of the request.