

Comment Letter No. 09

Courtney, Betty@Wildlife

From: Aruna Prabhala <aprabhala@biologicaldiversity.org>
Sent: Monday, February 13, 2017 4:39 PM
To: Wildlife Newhall Ranch
Subject: RE: Comments on Newhall Ranch Draft AEA from the Center for Biological Diversity

I apologize, my inclusion of San Bernardino Valley Audubon Society in previous letter was in error. This letter is submitted on behalf of Center for Biological Diversity, Friends of Santa Clara River, SCOPE and Wishtoyo/Ventura Coastkeeper only.

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From: Aruna Prabhala [mailto:aprabhala@biologicaldiversity.org]
Sent: Monday, February 13, 2017 4:35 PM
To: 'newhallranch@wildlife.ca.gov'
Cc: Colyn Kilmer
Subject: Comments on Newhall Ranch Draft AEA from the Center for Biological Diversity

Please see attached comments from the Center for Biological Diversity, Friends of Santa Clara River, SCOPE and Wishtoyo Foundation and San Bernardino Valley Audubon Society's regarding the Additional Environmental Analysis for the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Environmental Impact Report.

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The Exhibits included in the letter are too large to send via email and have been mailed to your office today. Please confirm receipt of this email and the CD when it arrives.

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If you have questions or concerns regarding the letter or its exhibits, please feel free to contact me.

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Sincerely,
 Aruna

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February 13, 2017

Via Electronic and Certified Mail (w/attachments)

Betty Courtney
California Department of Fish and Wildlife
3883 Ruffin Road
San Diego, CA 92123

Re: Newhall Ranch Draft Additional Environmental Analysis for the Newhall Ranch Resource Management and Development and Spineflower Conservation Plan Environmental Impact Report (SCH No. 2000011025)

Dear Ms. Betty Courtney:

These comments are submitted on behalf of the Center for Biological Diversity (“the Center”), Friends of the Santa Clara River, SCOPE and Wishtoyo/Ventura Coastkeeper (collectively “conservation groups”) regarding the Additional Environmental Analysis (“AEA”) for the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Environmental Impact Report (“the Project”). The stated purpose of the AEA is to respond to “direction from the California Supreme Court in its decision regarding the project’s environmental impacts.” (AEA 1-1, citing *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal. 4th 204.) However, the AEA is extremely limited in scope and covers only two topics: “consideration of the project applicant’s proposed revisions to the GHG reduction measures” and “whether the modified bridge and bank stabilization design and construction methods would result in prohibited take or possession of unarmored threespine stickleback or other significant adverse impacts to the species not previously addressed in the 2010 Final EIR.” (AEA 1-1.)

As explained in further detail below, the AEA analysis of these two issues is inadequate and incomplete. Additionally, the AEA fails as a CEQA document and cannot be used to resolve the issues raised by the California Supreme Court in *Center for Biological Diversity v. California Department of Fish and Wildlife* (2015) 62 Cal. 4th 204. For these reasons, the conservation groups urge the Department of Fish and Wildlife (“Department”) to substantially revise and re-release an environmental impact report that adequately addresses the environmental impacts of the Project and complies with CEQA prior to moving forward with the Project.

The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 1.1 members and online activists throughout California and the United

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States. The Center has worked for many years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life for people in Los Angeles County.

SCOPE is a non-profit organization that works to promote, protect and preserve the environment of the Santa Clarita Valley. SCOPE monitors, reviews and takes action on proposals which would impact or affect the environment, ecology and/or quality of life in the Santa Clarita Valley.

Friends of the Santa Clara River is a non-profit environmental organization dedicated to protecting, restoring, and enhancing the natural qualities of the Santa Clara River, and preserving natural diversity within the Santa Clara River watershed.

Wishtoyo/Ventura Coastkeeper is a non-profit grassroots organization with over 700 members consisting of Ventura County's diverse residents and Chumash Native Americans. Wishtoyo's mission is to preserve and protect Chumash culture, the culture of all Ventura County's diverse communities, and the environment that our current and future generations depend upon.

I. The Revised Greenhouse Gas Analysis Fails to Satisfy CEQA's Requirements

A. The Greenhouse Gas Emissions Inventory Fails to Account for All Reasonably Foreseeable Project Emissions.

1. The Assumption of a 30-Year Project Life Is Unsupported.

The greenhouse gas inventory and mitigation measures discussed in the revised analysis¹ assume a 30-year project life from the date of construction. Indeed, the greenhouse gas emissions inventory appears to assume that all residential and commercial buildings, and all associated sources, will simply cease emitting beginning 30 years after buildings are completed. (See App. 1, App. K, Tables K-5 and K-6 [showing emissions declining to zero or near zero beginning 30 years after Project construction].)² This assumption is unsupported by either the cited guidance document or any substantial evidence.

According to the revised analysis, the 30-year project life assumption was drawn from a South Coast Air Quality Management District (SCAQMD) greenhouse gas threshold. (App. 1, App. K, Table K-5, n.1.) The cited document, however, recommends amortization of construction emissions based on a 30-year project life for *stationary and industrial sources* where SCAQMD is the lead agency, not residential and commercial developments under the

¹ References to the "revised analysis" in this document encompass the Draft Additional Environmental Analysis ("AEA") and accompanying technical documentation prepared by the California Department of Fish and Wildlife. To the extent that Los Angeles County's Draft Recirculated EIRs for the Mission Village and Landmark Village projects rely on the same or substantially similar documents, the term "revised analysis" is intended to refer to the County's documents as well.

² References to "App. 1" throughout these comments refer to the Greenhouse Gas Emissions Technical Report and Appendices attached as Appendix 1 to the Department's Draft Additional Environmental Analysis and also included as an appendix to the recirculated portions of Los Angeles County's environmental impact reports (EIRs) for Mission Village and Landmark Village.

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jurisdiction of other lead agencies.³ Indeed, SCAQMD staff expressly declined to recommend a threshold for residential and commercial facilities that included a similar 30-year project life assumption.⁴ The SCAQMD documents do not support the assumptions in the revised analysis.

There is no substantial evidence that all emissions from the Project will cease 30 years after construction is complete. The revised analysis goes further than simply amortizing construction emissions over a 30-year period; as discussed above, the analysis also assumes virtually all *operational* emissions will cease 30 years after buildout. Residential neighborhoods are not typically abandoned and completely rebuilt after 30 years, and nothing in the revised analysis or prior environmental review shows Newhall Ranch would be any different. According to the housing element of the Los Angeles County General Plan, 70 percent of the housing stock in unincorporated Los Angeles County is more than 30 years old, and half of the stock is more than 50 years old.⁵ Nothing in the revised analysis or prior environmental review contains an enforceable commitment that Newhall Ranch will be abandoned starting in 2050 and completely depopulated by 2060. To the contrary, the residential and commercial structures built from 2020 to 2030 will likely be in need of significant retrofitting when they reach 30 years of age.⁶ The efficiency of building envelopes and major building components will be determined largely by methods used in their construction; absent significant retrofits, a substantial proportion of building-related emissions will likely continue for as long as the buildings themselves remain in service. The revised analysis speculates that emissions from energy and mobile sources after 2050 may be lower than they are today, but it fails to disclose and analyze emissions that foreseeably will continue well beyond the assumed 30-year life of the Project. There is simply no evidence that the buildings themselves will cease emitting completely on the schedule assumed in Appendix K to the GHG technical report.

This faulty, unsupported assumption fatally undermines both the emissions inventory and the mitigation commitments set forth in the revised analysis. The document's conclusion that greenhouse gas emissions will be reduced to "net zero," and accordingly will be less than significant, thus lacks substantial evidentiary support. For the same reason, the document fails to commit to sufficient mitigation to reduce all of the Project's foreseeable emissions over time to zero.

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³ South Coast Air Quality Management District, Board Letter Re: Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, Agenda No. 31 at 2 (Dec. 5, 2008) (explaining that proposal submitted to SCAQMD Board "applies only to industrial (stationary source) projects where the AQMD is the lead agency") (attached as Ex. A).

⁴ South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold at 3-18, Table 3-4 (Oct. 2008) (explaining that 30-year offsite mitigation for residential/commercial projects "Not Recommended at this Time") (attached as Ex. B).

⁵ Los Angeles County Housing Element, 2014-2021 at 82 (attached as Ex. C).

⁶ *Ibid.* [Housing Element at 82] ("Typically, most homes begin to require major repairs or rehabilitation at 30 or 40 years of age. Features, such as electrical capacity, plumbing, kitchen features, and roofs usually need updating if no prior replacement has occurred.").

Comment Letter No. 09**2. Vegetation Change Emissions Estimates Lack Support.**

Estimates of vegetation change emissions in the revised analysis are also inadequately supported. Emissions are described as a simple, one-time loss of existing vegetation carbon *stock* based on acreage. (App. 1, Table 2-10b.) However, the emissions estimates fail to include any estimate of forgone future sequestration associated with continuing growth of existing vegetation. Removing vegetation not only eliminates existing carbon stock at the time of removal, but also eliminates the capacity of existing vegetation to continue growing and sequestering additional carbon into the future. The revised analysis contains no evidence that sequestration in new vegetation will be identical to, or in excess of, lost future sequestration capacity associated with removal of existing vegetation. This omission not only deprives the document's estimates of an evidentiary basis, but also results in a potential undercounting of emissions associated with vegetation change.

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Estimates of sequestration from new tree growth similarly lack support. The document does not describe the basis for the estimated number of new trees, nor does it explain the methodology by which emissions reductions from new trees were determined. (See App. 1, Tables ES-2, 2-10a, 2-10b.) The CalEEMod output files attached to the greenhouse gas technical report provide no meaningful information. (See App. 1, App. B, "ES 2030 Unmitigated" scenario, p. 2 of 40 ["Vegetation based on project information"], "NRSP 2030 Unmitigated" scenario, p. 2 of 45 [same]; "VCC 2030 Unmitigated" scenario, unpaginated [same].) The revised analysis also refers to Intergovernmental Panel on Climate Change (IPCC) recommendations in computing sequestration from new tree growth, but no specific source is identified. Nor is there any evidence that generic IPCC recommendations are applicable to the particular mix of trees and other vegetation likely to be planted, and to grow, in this particular portion of Los Angeles County. What mix of species is assumed? Will the trees be irrigated or fertilized? Were N₂O emissions from fertilizer factored into the estimates? What planting success/mortality/replanting rates are assumed? Without site-specific answers to these questions, any estimate of future sequestration from vegetation growth lacks an evidentiary basis.

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3. Grid Emissions Factors May Underestimate Energy Emissions.

Sections 2.1.3 and 2.3.2 of the AEA detail a methodology used to determine the greenhouse gas emissions associated with indirect and direct sources, expressed as GHGs embedded in energy use for the new site over the period of analysis. The document uses a unit value (GHGs/MW) based on the GHG intensity of current electricity sources for Southern California Edison (SCE) in Section 2.1.3 for indirect emissions. It also assumes that, over the course of the analysis period, the mix of electricity sources will change in line with statewide Renewable Portfolio Standards (the RPS). Renewable sources, the document assumes, will grow as a percentage of the source portfolio and reduce the GHG intensity of a MW of electricity for SCE.

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Using this procedure may underestimate the GHG intensity of the fuel mix used to generate electricity if current trends continue. For instance, the large increase in renewables

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is leading utilities to look at options for load balancing on the grid. Natural gas speaker plants, hydro pumped storage, and various energy storage technologies are among these options. To date, many small natural gas plants have been brought online to help meet peak demands. New trends in grid management frequently assume the need for power plants that can be quickly ramped up and down to meet short-term demands. Natural gas is currently viewed as an appealing option for this use based on both technological and economic considerations.

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Thus, in a future grid mix of energy sources where flexible natural gas generation increasingly supplants less flexible but lower GHG-intensity sources such as hydropower or nuclear, the GHG intensity of a unit of power may actually increase. It is not clear whether the modeling in the revised analysis considers this situation at all for grid supplied energy that makes up for the shortfalls in on-site generation. If that would occur, it could complicate meeting zero net energy (ZNE) goals as years progress.

The revised analysis also incorrectly assumes that all renewable energy in SCE's service territory is zero-carbon-emitting energy. (App 1 at 6-7; Table 2-12 nn. 2, 3.) SCE's current generation portfolio includes biomass generation. The 2006 SCE PUP Report shows 25,750 MT CO₂ from "biogenic" generation.⁷ Biomass generation is forecast to increase in the future; according to SCE's 2016 RPS Compliance Report, submitted to the Public Utilities Commission, SCE is currently a party to CPUC-approved contracts for biomass generation totaling 235,274,333 kWh in 2022 and 354,045,667 kWh in 2023.⁸ Two recent pieces of legislation, SB 1122 and SB 859, will likely result in additional bioenergy procurement. (See Pub. Util. Code §§ 399.20(f)(2) [requiring procurement of 250MW of bioenergy from small-scale generating facilities], 399.20.3 [requiring procurement of 125MW of bioenergy generation using materials sourced from "high hazard" forest areas]. SCE will be required to procure over 110MW of bioenergy under SB 1122 and 44MW of bioenergy under SB 859.⁹

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Biomass generation, although classified as "renewable" under California's Renewable Portfolio Standard, is not "zero carbon" generation. Combustion of wood for energy instantaneously releases virtually all of the carbon in the wood to the atmosphere as CO₂. Biomass and fossil CO₂ are indistinguishable in terms of their atmospheric forcing effects.¹⁰ Burning wood for energy is typically less efficient, and thus far more carbon-intensive per unit of energy produced, than burning fossil fuels. Measured at the stack, biomass

⁷ Southern California Edison, 2006 Annual Entity Emissions: Electric Power Generation/Electric Utility Sector (attached as Ex. D). This appears to be the most recent PUP Report readily available from online sources. It is not clear what version of the PUP Report was used in the revised analysis; SCE Power/Utility Protocol (PUP) Reports are not available at the website cited in Table 2-12, n. 1 (the internal website links are broken), and the analysis does not specify which year's PUP Report data were used in preparing the document.

⁸ Southern California Edison, 2016 RPS Procurement Plan (Aug. 8, 2016), Public Appendix D, Joint IOU Cost Quantification at PDF page 200-205 (Table 4) (Aug. 8, 2016) (attached as Ex. E).

⁹ Public Utilities Commission, Decision D.14-12-081 at 85 (Dec. 26, 2014) (attached as Ex. F); Public Utilities Commission Res. E-4805, Table 1 (Oct. 21, 2016) (attached as Ex. G).

¹⁰ U.S. EPA Science Advisory Board, *Science Advisory Board Review of EPA's Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources* 7 (Sept. 28, 2012) (attached as Ex. H); see also *Center for Biological Diversity, et al. v. EPA*, 722 F.3d 401, 406 (D.C. Cir. 2013) ("In layman's terms, the atmosphere makes no distinction between carbon dioxide emitted by biogenic and fossil-fuel sources").

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combustion produces significantly more CO₂ per megawatt-hour than fossil fuel combustion; a large biomass-fueled boiler may have an emissions rate far in excess of 3,000 lbs CO₂ per MWh—far higher than emissions rates from coal-fired and gas-fired power plants.¹¹ Smaller-scale facilities using gasification technology (such as the facilities likely to be constructed pursuant to SB 1122) are similarly carbon-intensive; the Cabin Creek bioenergy project approved by Placer County would have an emissions rate of more than 3,300 lbs CO₂/MWh.¹² By way of comparison, California's 2012 baseline emissions rate from the electric power sector was 954 lbs CO₂ per MWh.¹³ Replacing California grid electricity with biomass electricity likely more than *triples* smokestack CO₂ emissions; by this measure, increasing biomass generation increases rather than decreases the carbon intensity of the grid.

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The revised analysis is thus incorrect in assuming that all renewable electricity in SCE's portfolio will have zero greenhouse gas emissions. Accordingly, emissions projections based on the carbon intensity of SCE grid electricity lack substantial evidentiary support.

4. The Inventory Fails to Include Other Potential Sources of Emissions.

The revised analysis does not explicitly factor in the likelihood of future increased heat days,¹⁴ which will likely contribute to increased energy needs for cooling over time. These needs would be more intense in the hotter northern parts of L.A. County vs. infill in the coastal plain.

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Nor does the revised analysis explicitly account for the effect of traffic congestion on mobile source emissions. It is not clear whether or how emissions estimates in CALEEMOD account for site-specific congestion, particularly congestion related to vehicles on trips not associated with the development, but occurring on roads shared by traffic related to the development. With more vehicles on shared roads (most obviously including, but not limited to, SR 126 and I-5), there will be more congestion and internal combustion vehicles will be slowed down, producing more carbon and criteria pollutants. Moreover, it appears that the traffic analysis is out of date given apparent changes in trip generation and VMT estimates since certification of the prior EIR.

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¹¹ Representative emissions calculations, based on Department of Energy, Energy Information Administration, International Energy Agency, and Oak Ridge National Laboratory data are attached as Exhibit I.

¹² Ascent Environmental, Cabin Creek Biomass Facility Project Draft Environmental Impact Report, App. D (July 27, 2012) (describing 2 MW gasification plant with estimated combustion emissions of 26,526 tonnes CO₂/yr and generating 17,520 MWh/yr of electricity, resulting in an emissions rate of 3,338 lbs CO₂/MWh) (attached as Ex. J).

¹³ See Energy and Environment Daily, Clean Power Plan Hub, at http://www.eenews.net/interactive/clean_power_plan/states/california (visited May 18, 2016).

¹⁴ See, e.g., Cayan, Dan, Mary Tyree, David Pierce, Tapash Das (Scripps Institution of Oceanography), Climate Change and Sea Level Rise Scenarios for California Vulnerability and Adaptation Assessment, California Energy Commission publication no. CEC-500-2012-008 (2012), available at www.energy.ca.gov/2012publications/CEC-500-2012-008/CEC-500-2012-008.pdf (visited Feb. 12, 2017).

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Finally, estimates of GHG emissions from construction seem to include only mobile source emissions, and do not seem to address embedded emissions from materials such as concrete and asphalt for roads. For local governments, these are some of the largest sources they have control over to meet future goals. Local private development projects should consider them as well.

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B. Proposed Greenhouse Gas Mitigation Measures Contain Unsupported and Potentially Overstated Emissions Estimates and Otherwise Fail to Satisfy CEQA's Requirements

1. Zero Net Energy (GCC-1 and GCC-2)

Achieving zero net energy (ZNE) from residential and commercial buildings is a laudable goal. However, mitigation measures GCC-1 and GCC-2—outlining a ZNE approach for this Project—are vague, improperly defer mitigation, and otherwise fail to satisfy CEQA's requirements.

Both ZNE mitigation measures are impermissibly vague. Rather than commit to a particular efficient design, the applicant has to prepare a ZNE Confirmation Report. This report purportedly will demonstrate that development has been designed and will be constituted to achieve ZNE, as defined by the California Energy Commission (CEC) in its Integrated Energy Policy Report (IEPR), "or otherwise achieve an *equivalent* level of energy efficiency, renewable energy generation or greenhouse gas emission savings." (AEA 2-25; App. 1 at 20 [emphasis added].) The revised analysis contains no data, performance standard, or other information necessary to guide a determination as to what methods might "otherwise" achieve an "equivalent" level of efficiency, generation, or greenhouse gas reduction. As a result, the feasibility, potential environmental impacts, enforceability, and effectiveness of this undefined "equivalent" approach are impossible to determine.

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For similar reasons, GCC-1 and GCC-2 constitute improperly deferred mitigation. Deferred formulation of particular mitigation measures is permissible only where an agency affirmatively commits to mitigation that will meet a specified performance standard. (See CEQA Guidelines § 15126.4(a)(1)(B).) Here, the vagueness of the ZNE mitigation measures precludes any meaningful comment on or finding related to the ability of unspecified alternative approaches to achieve "equivalent" efficiency, generation, or emissions reductions. Moreover, the measures lack an adequate performance standard. The measures rely on the definition of ZNE adopted in the IEPR. The IEPR, however, acknowledges substantial unresolved questions and significant uncertainties, particularly related to plug loads and natural gas usage, that prevent its ZNE definition from functioning as an adequate performance standard.¹⁵

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The revised analysis also fails to address the potential environmental impacts associated with achieving ZNE. (See CEQA Guidelines § 15126.4(a)(1)(D). The mitigation

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¹⁵ California Energy Commission, 2015 IEPR at 41-45 (June 2016) (attached as Ex. K).

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measures do not specify what type of renewable energy generation might be considered or where it might be located (e.g., distributed solar on rooftops versus small-scale or large-scale concentrated solar or wind); indeed, the revised analysis indicates that renewable energy generation could occur offsite (App. 1 at 20), but provides no information concerning what type of site, or what type of generation, might be pursued. As a result, the document fails to provide even a general good-faith analysis of the potential environmental impacts of these mitigation measures.

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Furthermore, it is not clear that the ZNE evaluation accurately reflects greenhouse gas emissions associated with use of fossil fuel-fired electricity generation during times when renewable generation (onsite or elsewhere) is unavailable. As discussed above, natural gas-fired peaking generation facilities are increasingly being deployed to integrate variable renewables generation.¹⁶ It is not clear whether the Energy Commission's ZNE definition accurately accounts for these emissions. For example, the CEC's ZNE definition relies on Time Dependent Valuation of energy (TDV).¹⁷ TDV is primarily a method of evaluating the cost-effectiveness of energy efficiency measures.¹⁸ It is not clear, however, that TDV alone accurately reflects the amount of renewable energy generation or other energy savings necessary to fully offset emissions from grid electricity usage in the Newhall Ranch area. At least for the near future, grid electricity at times of rapidly increasing daily demand will foreseeably be provided by simple-cycle natural gas combustion turbines, and by other fossil sources when solar and wind energy is not available. The AEA does not provide information about the current or anticipated generation mix in the local area, and thus does not provide a basis for concluding that a ZNE Confirmation Report will result in zero fossil-fuel energy emissions as the AEA promises. (AEA at 2-26.)

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One potential solution would be to invest in on-site energy storage to retain over-produced renewable generation from daytime hours for use in the evening and nighttime hours. Integrating on-site storage could also position the community as a forward-thinking project while simultaneously alleviating potential future issues in maintaining ZNE status. Energy storage applications should be considered as a component of a better-defined, more specific ZNE mitigation proposal that fully satisfies CEQA's requirements.

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2. Electric Vehicle Subsidies, Charging Stations, and TDM Plan

Like ZNE for residential and commercial buildings, support for electric vehicle (EV) purchase and use is a laudable goal and an important step toward reducing mobile source emissions, provided that the carbon intensity of the electrical grid continues to decrease. The EV mitigation measures in the revised analysis (GCC-4, GCC-5, and GCC-12), however, are

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¹⁶ See, e.g., U.S. Energy Information Administration, *Half of power plant capacity additions in 2013 came from natural gas* (April 8, 2014), at <http://www.eia.gov/todayinenergy/detail.php?id=15751> (discussing natural gas capacity additions in California in order to balance intermittent renewable generation) (attached as Ex. L).

¹⁷ 2015 IEPR at 41.

¹⁸ Energy and Environmental Economics, *Time Dependent Valuation of Energy for Developing Building Efficiency Standards: 2013 Time Dependent Valuation (TDV) Data Sources and Inputs* at 3 (February 2011) (attached as Ex. M).

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predicated on highly optimistic, unrealistic assumptions and may double-count some emissions reductions. Moreover, these measures potentially conflict with, and again may double-count, certain emissions reductions anticipated from transportation demand management (TDM) mitigation (GCC-6).

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The revised analysis assumes 50% of residences in the Project will purchase an EV by 2030. This is a highly aggressive assumption, not a conservative one; the document's "best estimate" assumptions are very close to the high-end (most aggressive adoption and tech development) assumptions discussed. (See App. 1, App. H, App. A [Purchasing Forecast Model Tables].) Market share for EVs by 2030, even under aggressive adoption assumptions, is usually projected to be far lower than 50 percent.¹⁹ The projections in the revised analysis are thus extremely aggressive, rather than the type of conservative assumptions typically employed in environmental analysis.

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The emissions reductions claimed from EV adoption and use lack evidentiary support in other ways as well. After assuming that 50 percent of Project households will purchase an EV by 2030, the revised analysis takes an unsupported and largely unexplained leap of logic in further assuming that 50 percent of miles driven related to Project residential uses will be driven in EVs. (App. 1 at 35-36.) The revised analysis notes the high (85 percent) utilization rate of EVs by households with one EV and one conventional vehicle, and then goes on to claim that "numerous other factors" are "anticipated" to result in an unspecified EV use rate "higher than that estimated here"; on this scant basis, the document then assumes 50 percent of miles driven from residential uses will be in EVs. The emissions reductions claimed for this mitigation measure are calculated solely on the basis of on the assumption that 50 percent of miles driven will be EV miles. (App. 1 at 35; Table 4-3.) Yet the document provides no actual evidence supporting this chain of assumptions; in particular, the document does not state what "higher than estimated" EV usage rate supports the assumption of 50 percent vehicle mile displacement that underlies the greenhouse gas emission reduction calculations.

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Emissions reductions claimed from provision of non-residential charging stations also appear to be unsupported and overblown. The revised analysis asserts that 20 parking spaces with chargers will reduce emissions by almost 40,000 MT CO₂e/year. (AEA at 2-32.) This claim assumes full occupancy of each space for ten hours per day, charging at a rate of 25 miles per hour, for total displacement of 250 miles per parking space per day. (App. 1 at 36-37.) These assumptions are suspect at best. Charging and EV fuel economy assumptions once again are drawn from the highest end of the possible range. (App. 1 at 37.) Moreover, uninterrupted charging for 10 hours is not a realistic assumption in a commercial lot, where many vehicle users may stay for much shorter periods of time while shopping or running

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¹⁹ ICF International, *California Transportation Electrification Assessment, Phase 1: Final Report* at 18-19 (September 2014) (estimating 6,950,000 battery and plug-in hybrid EVs, combined, in 2030 under "aggressive adoption" case) (attached as Ex. N). As of December 2015, there were already nearly 26,000,000 automobiles registered in California. California Department of Motor Vehicles, Statistics for Publication January – December 2015, at <https://www.dmv.ca.gov/portal/dmv/forms/about/profile/official.pdf> (attached as Ex. O).

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errands. The document provides no evidence that every charging station will be fully occupied for 10 hours per day under any realistic scenario.

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Furthermore, it appears that the revised analysis may double-count claimed emissions reductions from residential and non-residential charging stations. In estimating mobile source *emissions*, the revised analysis incorporates tripend internalization percentages in order to eliminate double-counting of internal trips. (See App. 1 at 17-18, Tables 2-17c, 2-17d.) But the document's assessment of claimed emissions *reductions* does not seem to correct for double-counting of internal trips. Rather, the GHG technical report (App. 1 at 35, Table 4-3) simply assumes that 50 percent of all conventional vehicle residential miles will be displaced by EV miles, and calculates GHG reductions per displaced mile. At the same time, the report (App. 1 at 36-37, Table 4-4) also assumes that every mile of range charged at a non-residential charger similarly displaces a mile traveled in a conventional vehicle. Accordingly, even if claimed residential reductions use trip figures adjusted to eliminate double-counting for internal trips, claimed non-residential reductions are based solely on charged range. So, assuming residential EVs are parked at non-residential charging stations on internal trips, the non-residential charging station may not actually achieve any reductions (especially given that internal trips are likely to be short enough that range anxiety is not a concern, and a trip that would otherwise occur in a conventional vehicle is not actually displaced). Accordingly, the non-residential charging station reductions most likely reflect a significant degree of double-counting of reductions from internal trips. (See App. 1, Table 2-17c [residential internal trip production rates of 22-59%, and non-residential internal trip attraction rates of 25-49%.])

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The revised analysis also fails to account for any difference between battery EVs and plug-in hybrid EVs (PHEVs), which have on-board internal combustion engines. There is no substantial evidence all miles traveled in PHEVs will be zero-emission miles. PHEVs will likely outnumber battery and fuel-cell EVs in the future; according to a 2014 California Energy Commission demand forecast, there will be roughly ten times as many PHEVs than battery EVs on the road in 2024.²⁰ It is not credible to assume that Project residents will purchase only battery EVs, or that PHEVs used by Project residents will never use the onboard internal combustion engine. Absent disclosure and analysis of anticipated miles traveled using PHEV internal combustion engines, the revised document's conclusions lack evidentiary support.

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The EV purchase and charging station mitigation measures also appear to conflict with, or at least exist in considerable tension with, the neighborhood electric vehicle (NEV) component of the TDM plan. First, the different programs use dramatically different assumptions and methodologies. The revised analysis claims a 2.5 percent reduction in VMT from use of NEVs (App. 1, App. E at 11.) This claim is based on the assumption that a 25 percent subsidy (\$3250, based on a \$13,000 average purchase price) would lead 1 in 5 households to purchase a NEV. (App. 1, App. E at 11.) It is striking that the document assumes a much lower subsidy (\$1,000, available to only half of Project households) will

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²⁰ California Energy Commission, California Energy Demand 2014–2024 Final Forecast, Volume 1: Statewide Electricity Demand, End-User Natural Gas Demand, and Energy Efficiency at 43 (Table 11) (January 2014) (attached as Ex. P).

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result in a much higher rate of EV purchase, despite the fact that EVs are significantly more expensive than NEVs. Indeed, the revised analysis assumes that the lower EV subsidy will be 100 percent effective (i.e., that a subsidy offered to 50 percent of households will result in 50 percent of households purchasing an EV), while at the same time it assumes the higher relative NEV subsidy will be only 20 percent effective.²¹

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The EV and NEV measures also threaten double-counting of emissions reductions. The revised analysis claims 10,259 MT CO₂e/yr in reductions from the NEV program, based on the assumption that 20 percent of households will purchase a NEV. (App. 1, Table 4-5, n. 4.) This is in addition to all claimed reductions from standard EVs and charging stations, which are listed in App. 1, Tables 4-3 and 4-4. Non-residential charging stations will serve both EVs and NEVs (App. 1, App. H at Ex 4). However, as noted above, GHG reductions for non-residential charging stations are based on 10 hours of charging at rate of 25 miles driving range per hour, or a reduction of 250 miles of range per parking space per day. (App. 1, Table 4-4, n. 4.) NEVs may occupy charging station spaces, but they do not have 250-mile ranges. According to a U.S. Department of Energy report, “[w]hen the batteries are functioning properly, a fully functional [NEV] range is typically around 30 miles for each full charge in mild climates.”²² The same report states that “[o]nly 50-70% of the nominal vehicle range should be used” in order to avoid situations where the vehicle loses charge due to cold weather, worn batteries, or demanding conditions.²³ Accordingly, if a NEV is parked all day (or even for more than about an hour) at a non-residential charging station, that station likely will not achieve the reductions claimed.

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Ultimately, there is no indication that either incentive program (NEV or EV) considered the existence of the other. Again, the subsidy for NEVs is higher, both in absolute terms and relative to purchase price. The two types of vehicles have different ranges and costs and serve different needs,²⁴ but availability of a subsidy for both could affect residents’ choice of mode. Moreover, there is no evidence NEV-related emissions reductions will persist for even the unsupported assumed 30-year life of the project; typical batteries in NEVs last only a few years and are very expensive to replace,²⁵ but the TDM plan does not mention battery life or subsidies for replacement. Residents might be reluctant to invest in a NEV,

²¹ Because every Project residence will have a Level 2 charging station regardless of vehicle ownership (App. 1, App. H at 1), availability of charging logically would not factor into a household’s decision to purchase an EV, a NEV, or both.

²² Roberta Brayer et al., USDOE, *Guidelines for the Establishment of a Model Neighborhood Electric Vehicle (NEV) Fleet*, Report No. INL/EXT-06-11309 at 2 (June 2006), available at https://avt.inl.gov/pdf/nev/nev_deploy_guidelines_report.pdf (attached as Ex. Q); see also Nikki Gordon-Bloomfield, *Neighborhood Electric Vehicles: A Marginal Option* (May 15, 2013), at <http://www.plugin cars.com/neighborhood-electric-vehicle-margins-127231.html> (typical NEV range is between 25 and 30 miles per charge) (attached as Ex. R).

²³ USDOE 2006 at 21.

²⁴ See CAPCOA, *Quantifying Greenhouse Gas Mitigation Measures* at 196 (2010) (citing SMAQMD guidance showing NEVs do not replace gas-fueled vehicles as primary vehicles).

²⁵ Gordon-Bloomfield 2013 at 2 (“Unlike full-sized, highway-capable EVs—which come with battery packs capable of lasting for hundreds of thousands of miles—the cheap lead-acid battery packs found in NEVs require replacing every few years at a cost of up to several thousand dollars.”); see also USDOE 2006 at 16 (cost of typical 72V NEV battery pack ranges from \$600-\$1,000, and numerous factors affect battery life).

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knowing that they would face expensive battery replacement in the near future. Ultimately, the revised analysis simply fails to evaluate how the EV and NEV incentive programs might interact with one another, and thus fails to substantiate its implicit conclusion that emissions reductions claimed from the two programs are completely additional to one another.

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3. “GHG Reduction Plan”

The AEA relies on greenhouse gas offsets for nearly half of the reductions necessary to mitigate the Project’s emissions.²⁶ The GHG Reduction Plan governing these offsets, however, fails to meet several CEQA requirements.

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a. The GHG Reduction Plan Fails to Ensure Additionality.

The revised analysis states that all emissions reductions embodied in offsets and “direct reduction” activities must be “real, additional, quantifiable, enforceable, validated, and permanent.” (AEA at 2-33.) Neither the AEA nor the GHG Reduction Plan, however, adequately defines these terms.

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California law establishes specific standards for greenhouse gas offset credits used in the AB 32 cap-and-trade system. Health and Safety Code section 38562(d) requires, in relevant part, that:

- (1) The greenhouse gas emission reductions achieved are real, permanent, quantifiable, verifiable, and enforceable by the state board.
- (2) For regulations pursuant to Part 5 (commencing with Section 38570) [i.e., regulations implementing the market-based cap-and-trade system], the reduction is in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur.
- (3) If applicable, the greenhouse gas emission reduction occurs over the same time period and is equivalent in amount to any direct emission reduction required pursuant to this division.

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In particular, the two-part definition of “additional” under subdivision (d)(2) requires not only that credited reductions are not otherwise legally required, but also that credited reductions would not otherwise occur in the absence of the offset project.

²⁶ The GHG Reduction Plan incorrectly states that mitigation measures GCC-1 through GCC-12 “will mitigate the Project’s GHG emissions below the CEQA significance thresholds.” (App 1, App F at 6.) The significance threshold used in the AEA is zero net emissions. (AEA at 2-20.) The AEA estimates that measures GCC-1 through GCC-12 will reduce emissions by 289,043 MT CO₂e/yr. (AEA at 2-34.) This leaves 237,059 MT CO₂e/yr in additional emissions, which the AEA proposes will be offset through the GHG Reduction Plan. (AEA at 2-35.)

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This definition of “additional” also applies in the CEQA context, as the regulatory history of the relevant CEQA Guidelines makes clear. The CEQA Guidelines specify that only GHG reductions that are “not otherwise required” may be used to offset project emissions. (CEQA Guidelines, § 15126.4, subd. (c)(3).) However, as the California Resources Agency’s Final Statement of Reasons for adopting this Guideline explains, the “not otherwise required” language was intended to make clear that only “additional” emissions reductions—that is, reductions not otherwise required by law or likely to occur anyway—may be used to generate offsets for CEQA mitigation.²⁷ The Final Statement of Reasons explicitly interprets CEQA’s mitigation requirements, including requirements governing use of offsets, as “consistent with the Legislature’s directive in AB32 that reductions relied on as part of a market-based compliance mechanism must be ‘in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur.’”²⁸

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The revised analysis contains no express commitment, and no substantial evidence, that all carbon offset projects contemplated in the GHG Reduction Plan—whether directly undertaken or purchased on the credit market—will satisfy this definition of additionality. For this reason alone—in addition to the other reasons described below—the GHG Reduction Plan is insufficient to support a finding that the Project’s emissions will be reduced to “net zero,” and thus to a less-than-significant level.

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b. The GHG Reduction Plan Constitutes Vague, Improperly Deferred, Inadequately Enforceable, and Impermissibly Delayed Mitigation.

A mitigation measure requiring the purchase of offset credits operates as a kind of mitigation fee. But CEQA allows for mitigation fees only where there is evidence of a functioning, enforceable, and effective implementation program. For example, courts have found mitigation fees inadequate where the amount to be paid for traffic mitigation was unspecified and not “part of a reasonable, enforceable program” (*Anderson First Coalition v. City of Anderson* (2005) 130 Cal.App.4th 1173, 1189); where a proposed urban decay mitigation fee contained no cost estimate and no description of how it would be implemented (*California Clean Energy Committee v. City of Woodland* (2014) 225 Cal.App.4th 173, 198 (*Woodland*)); and where there was no specific traffic mitigation plan in place that would be funded by mitigation fees. (*Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1122 (*Gray*)).

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The GHG Reduction Plan falls short of these standards in two major ways. First, the GHG Reduction Plan fails to specify the sources of “direct” reductions²⁹ and offset credits.

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²⁷ California Natural Resources Agency, Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97 at 48, 87-90 (December 2009) (attached as Ex. S).

²⁸ *Id.* at 88-89 (quoting Health and Safety Code, § 38562(d)(2)).

²⁹ The “Direct Reduction” projects discussed in the GHG Reduction Plan appear to be nothing more than examples of carbon offset projects; it is not clear from the GHG Reduction Plan whether there is any substantive difference between undertaking “Direct Reduction Activities” and “Purchasing Carbon Offset Credits.”

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Although the GHG Reduction Plan gives some examples of offset credit registries from which credits might be purchased, it does not provide evidence that these or other “comparable” registries are functioning and will continue to function in a manner that will result in actual, effective mitigation. The GHG Reduction Plan’s references to unspecified “direct reduction” efforts are similarly vague; the plan offers no evidence regarding the availability of such projects, the parties who might carry them out, their effectiveness, their permanence, or the qualifications of those undertaking or monitoring the project. (AEA App F at 1-2.) Examples provided of forest conservation projects, cookstove replacement projects, and dairy methane projects all fail to provide evidence that specific, functioning projects exist. Indeed, the GHG Reduction Plan seems to go to great lengths to avoid making any specific commitment to any particular project whatsoever. This approach may be intended to preserve the maximum degree of flexibility for the Project’s developer, but it falls short of the standards imposed by CEQA. (See, e.g., *Gray, supra*, 167 Cal.App.4th at p. 1122.)

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Second, the EIR fails to provide evidence that a sufficient *quantity* of GHG offset credits is available from existing, functioning programs to mitigate the Project’s emissions. A substantial number of offset credits will be required to mitigate the Project’s GHG emissions to “net zero.” The AEA estimates that credits must be purchased in quantities sufficient to offset 237,059 MT CO₂e/yr, or 7,026,846 MT CO₂e total. (AEA 2-35.) California’s 2030 and 2050 greenhouse gas reduction goals envision increasingly steep emissions reductions statewide. (See Health & Safety Code § 38566; see also Executive Orders B-30-15, S-3-05.) Demand for offsets and offset projects is likely to increase dramatically over the decades during which this Project will be built and operating. Particularly in the context of foreseeable increasing demand, the sheer volume of uncovered emissions creates a serious doubt as to the availability of sufficient credits, and the lack of evidence that sufficient credits exist renders the mitigation measure invalid. (See *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 728.)

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Moreover, the “Compliance Options” section of the GHG Reduction Plan is vague and contradictory as to how emissions are intended to be offset and when any emissions reductions are anticipated to occur. CEQA requires mitigation measures to be in place and effective before significant impacts occur, not after. (See *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 738 [“Once the project reaches the point where activity will have a significant adverse effect on the environment, the mitigation measures must be in place.”].) Compliance Options in the GHG Reduction Plan fail to provide adequate assurance that emissions reductions embodied in offset credits actually will have occurred before Project emissions occur.

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For example, Compliance Option No. 1 seems to envision funding of unspecified “Direct Reduction Activities” and retention of a third-party evaluator to estimate emissions reductions that the activities “will achieve in the future” based on unspecified “protocols and methodologies” adopted by unspecified “registries and governmental agencies.” (App. 1, App. F at 7-8.) Contrary to the plan’s assertions, this does not ensure that “estimated GHG emissions reductions will occur before a comparable amount of estimated Project GHG emissions are emitted.” (*Id.* at 8.) Funding a forest management project, for example, does

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not result in an immediate and predictable quantity of “future” emissions reduction or sequestration. Rather, offset credits are generated annually based on a comparison between the forest project baseline and actual conditions; if the project is not performing as planned, no credits are generated.³⁰ Funding a cookstove distribution project similarly does not ensure future reductions; mere distribution of cookstoves (*ibid.*) does not ensure their use. Compliance Option No. 2 similarly states that the Project applicant may simply “guarantee” that it will retire offsets “within 10 years” of a building permit application. (*Ibid.*) Under this option, therefore, impacts could occur unlawfully for 10 years before reductions are implemented.

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Compliance Options No. 3 and 4 appear to require the retirement of offsets generated by Direct Reduction Activities or purchased on the open market before building permits are obtained. These options thus could avoid the timing problem identified in *POET, LLC*; however, both options are exceedingly vague. Moreover, it is not clear how the “Compliance Options” listed on pages 8 to 9 of the GHG Reduction Plan relate to the separately numbered “Compliance Options” listed on pages 10 to 11 of the GHG Reduction Plan. The latter “Compliance Options” cross-reference “Compliance Conditions” No. 1 and No. 2, but there do not seem to be any “Compliance Conditions” clearly identified as such in the document. Terminology used throughout the document is inconsistent, cross-references are incorrect or confusing, and the plan in general is insufficient to provide an adequate commitment to mitigation.

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In sum, the GHG Reduction Plan—which is responsible for mitigating nearly half the Project’s emissions—is vague, contradictory, and inadequate to satisfy CEQA’s mitigation requirements.

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c. The GHG Reduction Plan Contains Incorrect and Potentially Misleading Assertions Concerning “CARB-Approved” Registries, Offsets and Protocols

The GHG Reduction Plan relies very heavily on the credibility of, and procedures employed by, carbon offset project registries. Notably, however, the text of the GHG Reduction Plan itself contains no standards by which the quality of offset project or credits can be measured, and no specific commitments that can be readily enforced. Instead, the plan simply lists “example” offset credit registries, without any specific discussion of the protocols or standards governing issuance of credits by these registries. The plan also allows offset purchases from “comparable” registries, without articulating any standards by which different registries may be compared. These aspects of the GHG Reduction Plan further exacerbate the vagueness and unenforceability of the overall mitigation measure, as discussed above.

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The plan’s assertion that certain registries are “CARB-approved” to handle offsets generated under AB 32 cap-and-trade compliance protocols is at least somewhat misleading. Offset project standards—including additionality, verification, enforceability, and

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³⁰ See, e.g., California Air Resources Board, *Compliance Offset Protocol: U.S. Forest Projects* at 34-35 (Oct. 20, 2011).

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permanence—are established by offset project *protocols*, not necessarily by the identity of the registry that handles offset project transactions. AB 32 cap-and-trade compliance protocols, and the emissions reductions generated under those protocols, must meet specific statutory requirements. (Health & Safety Code § 38562(d).) Emissions reductions must be enforceable by the state, and ARB retains ultimate authority to approve, reject, or invalidate credits, as well as authority to demand replacement by the credit holder if credits are reversed or found to be invalid. (Health & Safety Code § 38562(d)(1); 17 Cal. Code Regs. § 95985.) So far, only six protocols have been certified for compliance.³¹ The “example registries” listed in the GHG Reduction Plan may handle transactions in these credits; at the same time, however, these registries may also sell credits under a number of other protocols that have not been “CARB-certified” as meeting the requirements of AB 32. CARB’s decision to allow these registries to list, trade, and track certain compliance-grade offset credits does not mean that all credits handled by these registries are compliance-grade. The GHG Reduction Plan contains no commitment to rely solely on CARB-certified offset *protocols*, and to the extent it suggests otherwise by referring to “CARB-certified” *registries*, it is misleading. As a result, the GHG Reduction Plan does not commit to using only offset credits that satisfy the requirements of state law.

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d. Claimed Reductions from Potential “Direct Reduction Activities” Are Unsupported.

The GHG Reduction Plan discusses several examples of potential “Direct Reduction” activities, without committing to any particular type of project or protocol. In addition to suffering from the vagueness and unenforceability problems identified above, this portion of the GHG Reduction Plan fails to demonstrate that any particular “Direct Reduction” project will generate CEQA-compliant mitigation.

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First, the document contains contradictory assertions concerning the extent to which the Project will rely on Clean Development Mechanism (CDM) offset projects. On one hand, the GHG Reduction Plan states that it “will only utilize CDM to the extent that cook stove projects ... are used as Direct Reduction Activities.” (App. 1, App. F at 3.) Yet CDM forest project protocols also are mentioned in the context of potential forest management “Direct Reduction Activities.” (App. 1, App. F at 4 & n.4.) The VCS carbon registry also uses CDM methodologies for some project types. Problems with additionality, enforceability, monitoring, and adverse effects of CDM projects are well-known and have been well-documented. In particular, a large portion, and possibly the large majority of CDM projects, do not represent real additional emissions reductions.³² This is in part because the CDM

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³¹ <https://www.arb.ca.gov/cc/capandtrade/offsets/offsets.htm> (visited February 9, 2017).

³² See, e.g., Gang He & Richard Morse, *Addressing carbon Offsetter’s Paradox: Lessons from Chinese wind CDM*, 63 Energy Policy 1051 (2013) (attached as Ex. T); Barbara Haya and Payal Parekh, *Hydropower in the CDM: Examining Additionality and Criteria for Sustainability*, U.C. Berkeley Energy and Resources Group Working Paper ERG-11-001 (Nov. 2011) (attached as Ex. U); Barbara Haya, *Measuring Emissions Against an Alternative Future: Fundamental Flaws in the Structure of the Kyoto Protocol’s Clean Development Mechanism*, U.C. Berkeley Energy and Resources Group Working Paper ERG09-001 (Dec.

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attempts to filter out non-additional projects on a project-by-project basis, a task that is very challenging.³³ Developers of CDM projects are required to demonstrate that their proposed offset projects are additional (i.e., that the projects would not have gone forward without the added incentive from the offset program). Most do so with a financial assessment showing that the project is not cost effective on its own. Because of the many assumptions that go into project financial assessments, project developers have been able to strategically choose financial assessment assumptions to make cost effective projects appear not cost effective.³⁴ For these reasons, CDM projects—and projects handled by registries using CDM methodologies—cannot be assumed to represent additional reductions or otherwise satisfy CEQA’s requirements.

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Even CARB-certified compliance protocols, like the US Forest Project Protocol, may not result in reliable mitigation. One recent study concluded that California’s compliance protocol for improved forest management projects is unlikely to change land management decisions already in forest landowners’ interests, and thus is likely creating non-additional offset credits.³⁵ Another recent global analysis pointed to fundamental physical limits on the ability of land-based carbon stocks, including forests, to absorb necessary quantities of fossil carbon emissions.³⁶ Among other conclusions, the study noted that fossil CO₂ emissions should be presumed to persist in the atmosphere for 10,000 years, not 100 years—meaning that terrestrial carbon storage projects must demonstrate permanence not just on century timescales, but on multi-millennial timescales.³⁷ California’s US Forest Project Protocol, like many other offset protocols, requires carbon reductions to be monitored for only 100 years.³⁸ Fossil CO₂ emissions from the Project, as a practical matter, are “irreversible.”³⁹ Even if offset credits are assumed to be rigorously additional—a conclusion the GHG Reduction Plan fails to support—they are not permanent on timescales necessary to mitigate the physical impact on climate change. The GHG Reduction Plan does not even commit to use CARB-certified compliance protocols for forest projects, and even CARB-certified projects do not fully offset Project emissions to the degree necessary to provide evidentiary support for the “net zero” claims in the revised analysis.

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2009) (attached as Ex. V); Michael Wara, *Measuring the Clean Development Mechanism’s Performance and Potential*, 55 UCLA L. Rev. 1759 (2008) (attached as Ex. W); U.S. Gov’t Accountability Office, *Lessons Learned from the European Union’s Emissions Trading Scheme and the Kyoto Protocol’s Clean Development Mechanism*, GAO-09-151(Nov. 2008) (attached as Ex. X).

³³ U.S. Gov’t Accountability Office, *Climate Change Issues: Options for Addressing Challenges to Carbon Offset Quality*, GAO-11-345 (Feb. 2011) (attached as Ex. Y).

³⁴ Barbara Haya, *Carbon Offsetting: An Efficient Way to Reduce Emissions or to Avoid Reducing Emissions? An Investigation and Analysis of Offsetting Design and Practice in India and China*, Ph.D. Dissertation (Fall 2010) (attached as Ex. Z).

³⁵ See Erin Clover Kelly and Marissa Bongiovanni Schmitz, *Forest offsets and the California compliance market: Bringing an abstract ecosystem good to market*, 75 *Geoforum* 99, 106 (2016) (attached as Ex. AA).

³⁶ Brendan Mackey et al., *Untangling the confusion around land carbon science and climate change mitigation policy*, 3 *Nature Climate Change* 552 (2013), doi:10.1038/NCLIMATE1804 (attached as Ex. BB).

³⁷ *Id.* at 556.

³⁸ California Air Resources Board, *Compliance Offset Protocol: U.S. Forest Projects at 15* (Oct. 2011) (attached as Ex. CC).

³⁹ Mackey 2013, at 553.

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Cookstove projects suffer from similar deficiencies related to the additionality, verifiability, and permanence of claimed greenhouse gas reductions. For example, the CDM cookstove project methodology calculates emissions reductions primarily based on the distribution of cookstoves and manufacturers' estimates as to the lifespan of cookstoves.⁴⁰ Distribution of cookstoves alone, however, does not necessarily translate into their use. Another recent study found that the health co-benefits of cookstoves—also stressed in the GHG Reduction Plan—may not be as extensive as expected.⁴¹ Again, the GHG Reduction Plan's discussion of cookstove projects does not represent a commitment to meaningful, enforceable, specific mitigation, and there is no evidentiary support for a finding that these projects will fully offset Project emissions.

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Finally, dairy digester projects may have some capacity to reduce methane emissions. The GHG Reduction Plan, however, does not require these projects to meet the standards set by CARB for compliance with the state's cap-and-trade program. (App. 1, App. F at 6.) These projects also potentially suffer from the types of additionality and permanence concerns discussed above in the context of forest projects. Merely mentioning dairy digester projects as an example of "Direct Reduction" activities, to be carried out in conjunction with an unspecified project developer according to unspecified protocols, does not satisfy CEQA's mitigation requirements.

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e. The Additional Analysis and GHG Reduction Plan Fail to Commit to Monitoring and Complete Mitigation

Each mitigation measure in the revised analysis claims a specific quantity of GHG reductions. The GHG Mitigation Plan is no different. The result is that nothing in the revised analysis commits to monitoring how well each proposed mitigation measure performs in practice, and nothing in the revised analysis commits to mitigating any shortfall.⁴² CEQA requires that the Department adopt a mitigation monitoring and reporting plan to ensure compliance with and enforceability of mitigation measures during project implementation. (See Pub. Res. Code § 21081.6(a), (b).) In the context of the significance threshold used in the revised analysis, any mitigation program must enforceably ensure that all Project emissions are actually reduced to zero. As drafted, the mitigation measures in the revised analysis fall short of a commitment to this outcome.

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In particular, rather than committing to provide offsets for any emissions remaining after implementation of on-site reduction measures, the GHG Reduction Plan simply proposes

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⁴⁰ See Clean Development Mechanism, *AMS II.G; Small-scale methodology: Energy efficiency measures in thermal applications of non-renewable biomass* at 7-8 (v. 8.0) (attached as Ex. DD).

⁴¹ Kevin Mortimer, et al., *A cleaner burning biomass-fuelled cookstove intervention to prevent pneumonia in children under 5 years old in rural Malawi (the Cooking and Pneumonia Study): a cluster randomised controlled trial*, 389 *The Lancet* 167 (2017), doi:10.1016/S0140-6736(16)32507-7 (attached as Ex. EE).

⁴² As discussed above, assumptions regarding the effectiveness of EV subsidies, charging stations, and EV fuel economy are extremely aggressive rather than conservative. It is entirely foreseeable that these measures will fall short of the reductions claimed. Yet nothing in the revised analysis in general, or the GHG Reduction Plan in particular, commits to monitoring or correcting any shortfall.

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a fixed, numerical commitment to a certain quantity of offsets over a 30-year period. (App 1, App F at 7.) As a result, the GHG Reduction Plan does not make any commitment to sufficient mitigation should any of the measures proposed in GCC-1 through GCC-12 fail to result in anticipated emissions reductions. Nor does the GHG Reduction Plan commit to mitigation of emissions that may continue beyond the improperly assumed 30-year life of the project. For all of these reasons, the GHG Reduction Plan falls short of CEQA’s requirements that mitigation measures must reduce or avoid impacts to the extent feasible and that measures must be fully enforceable. (See Pub. Res. Code §§ 21002, 21002.1(b), 21081(a); CEQA Guidelines § 15126.4(a)(1), (2), 15091(a)(1), 15092(b).)

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f. The GHG Reduction Plan’s Focus on Offsets Improperly Precludes Consideration of Other Feasible Alternatives/Mitigation Measures

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Given the deep uncertainties surrounding the effectiveness and adequacy of offset credits identified above, mitigation for Project emissions should seek to minimize reliance on offset projects by maximizing feasible on-site reductions. The 2030 Target Scoping Plan specifically endorses an approach that maximizes on-site reductions and local co-benefits, while relying on offsets only to the extent that complete mitigation using on-site reductions is infeasible:

To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features and direct investments in GHG reductions in the vicinity of the project, to help provide potential air quality and economic co-benefits locally. For example, direct investment in a local building retrofit program can pay for cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting, energy efficient appliances, energy efficient windows, insulation, and water conservation measures for homes within the geographic area of the project. This type of local program generates real demand side benefits and local jobs, while creating the market signals for energy efficiency materials and goods—some of which can be and are currently produced in California. Other examples of local direct investments include financing installation of regional electric vehicle (EV) charging stations, paying for electrification of public school buses, and investing in local urban forests. It is critical that any such investments in actions to reduce GHG emissions are real and quantifiable. Where further project design or regional investments are infeasible or not proven to be effective, it may be appropriate and feasible to mitigate project emissions through purchasing and retiring carbon credits issued by a recognized and reputable accredited carbon registry. Appendix B includes other examples of on-site project design features, mitigation measures, and

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direct regional investments that may be feasible to minimize GHG emissions from land use development projects.⁴³

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The revised analysis here, however, is predicated on the assumption that the basic project design will not change from that studied in the prior EIRs.⁴⁴ There is no evidence in the revised analysis that the on-site emissions reductions identified represent the maximum feasible degree of greenhouse gas mitigation. Nor does the revised analysis provide any information as to whether other alternatives are feasible. Just by way of example, there is no evidence that it would be infeasible to generate and store more renewable energy onsite than the Project's structures will use—in other words, to go beyond “zero net energy”—in order to avoid such heavy reliance on uncertain and inadequate offset projects.

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Finally, the heavy reliance on offsets in the revised analysis threatens to undermine the Legislature's purpose in adopting SB 375. SB 375 sought to align transportation and land use planning on a regional basis in order to meet greenhouse gas reduction targets. The reductions to be achieved under SB 375, moreover, were intended to be additional to reductions achieved under other state climate programs. (See *Bay Area Citizens v. Association of Bay Area Governments* (2016) 248 Cal. App. 4th 966.) Heavy reliance on offsets may facilitate development of projects that do not align with SB 375's goals. Notably, the revised analysis here contains no discussion of the Project's consistency with SB 375.

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g. The Revised Analysis Fails to Address Potential Impacts of Mitigation Measures, Including the GHG Reduction Plan

The revised analysis fails to disclose or address any potentially significant impacts of the GHG Reduction Plan. As discussed above, CEQA requires at least some discussion of the impacts caused by mitigation measures. (CEQA Guidelines § 15126.4(a)(1)(D).) Despite the GHG Reduction Plan's vagueness and lack of specific mitigation commitments, it is at least reasonably foreseeable that many of the “Direct Reduction” activities—including forest management projects and dairy digesters—could cause environmental impacts, some of them potentially significant. This omission violates CEQA.

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4. Offsets for Construction and Vegetation Change Emissions

The revised analysis claims that construction and vegetation change emissions will be mitigated using substantially the same methods outlined in the GHG Reduction Plan: “Direct

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⁴³ California Air Resources Board, *The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target* at 137 (Jan. 2017) (“Proposed 2030 Target Scoping Plan”) (attached as Ex. FF).

⁴⁴ As discussed elsewhere in this letter, the Department's decision to conduct an extremely narrow environmental review following the Supreme Court's decision on the prior EIR unlawfully constrained its disclosure and analysis of impacts, development of mitigation measures, and analysis of alternatives. The Project applicant may have an interest in not changing anything significant about the basic project design, but the Department, as an agency of the State of California, has an independent responsibility under CEQA to ensure that all feasible mitigation measures and alternatives are considered. The revised analysis is far too limited in scope to satisfy the Department's obligations here.

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Reduction” activities and purchase of offset credits. As a result, this mitigation measure suffers from the same deficiencies—including vagueness, lack of a performance standard, inadequate demonstration of additionality, and inadequate assurance functioning, valid mitigation programs exist—discussed above in the context of the GHG Reduction Plan.

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Mitigation for construction and vegetation change emissions also appears to be unlawfully delayed. According to the revised analysis, “[t]he year of full buildout (2030), the project applicant shall engage in a one-time purchase of carbon offsets that can demonstrate GHG reductions shall continue over the life of the project on a yearly basis.” (AEA at 1-15, 2-30.) Construction and vegetation change emissions, however, will occur starting in 2020, when construction begins. The revised analysis requires Los Angeles County to “confirm” that the Project proponent “shall fully mitigate” these emissions prior to issuing grading permits, but it appears that the actual purchase of offsets or funding of direct reductions may not happen until 2030; moreover, as discussed above, mere funding of an offset project does not guarantee that annual reductions actually will occur and credits will be generated. Again, CEQA requires mitigation to be in place before significant impacts occur, while formulation of mitigation measures may be deferred under certain circumstances (not met here), mitigation itself may not be. (See *POET, LLC v. State Air Resources Bd.* (2013) 218 Cal.App.4th 681, 738.) Moreover, as discussed above, mitigation of emissions for “the life of the project” (i.e., 30 years)” (AEA at 2-30) is inadequate because there is no substantial evidence that all of the Project’s emissions will cease after 30 years.

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C. The Revised Analysis Fails to Demonstrate Consistency with California’s Long-Term, Science-Based Greenhouse Gas Reduction Goals

The revised analysis incorrectly claims that because the Project is anticipated to cause “no net increase” in greenhouse gas emissions, it “would not conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.” (AEA at 2-36.) As discussed above, there is inadequate evidence to support a finding that the mitigation measures outlined in the revised analysis will actually achieve “no net increase” in emissions. Even if there were such evidence, a present-day “net zero” threshold alone would not necessarily demonstrate consistency with all applicable plans, policies, laws, and regulations.

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The revised analysis does not explicitly address the requirements of AB 32, SB 32, SB 375, or any other California climate statute, policy or regulation in any detail. AB 32 requires reductions to 1990 levels by 2020, and SB 32 requires 40% below 1990 levels by 2030; current (2014) emissions remain about 10 MMT CO₂e/yr above 1990 (2020 target) levels, and about 180 MMT CO₂e/yr above 2030 target levels.⁴⁵ As the revised analysis acknowledges, the 2030 target is “the next interim step in the state’s continuing efforts to pursue the long-term target” of 80% below 1990 levels by 2050. (AEA at 2-9.) In this context, simply maintaining current levels of emissions alone does not demonstrate compliance with mid-term and long-term state targets, all of which require substantial reductions from existing conditions. Nor does merely stating that “relevant plans . . . all establish non-zero targets” allowing positive emissions for land developments (AEA at 2-36) demonstrate consistency

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⁴⁵ Proposed 2030 Target Scoping Plan at 12-13.

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with these targets. Finally, as discussed above, the revised analysis fails to grapple with the ways in which heavy reliance on greenhouse gas offsets may defeat the purpose of SB 375 by facilitating far-flung, greenfield development. For all of these reasons, the conclusion that the Project is consistent with all applicable climate plans, policies, and regulations lacks support.

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D. The Revised Analysis Fails to Conduct an Assessment of Energy Impacts Pursuant to CEQA Guidelines Appendix F.

CEQA expressly requires an analysis of energy impacts and potential energy conservation measures. (Pub. Res. Code § 21100(b)(3); CEQA Guidelines § 15126.4(a)(1)(C); CEQA Guidelines, App. F.) An EIR must explicitly and directly address energy consumption, including by calculating the amount of energy used by mobile sources and in construction and operation of a project; merely citing compliance with energy efficiency standards or relying on greenhouse gas reduction measures is insufficient to satisfy CEQA's energy impacts analysis requirements. (See *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal. App. 4th 256, 261-65; *California Clean Energy Committee v. City of Woodland* (2014) 225 Cal.App.4th 173.)

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The prior EIRs prepared for this Project did not contain an analysis of energy impacts and conservation measures sufficient to meet the standards articulate in *Ukiah Citizens* and *California Clean Energy Committee*. The revised analysis, moreover, describes a Project with substantially different energy impacts than the Project addressed in the prior EIRs. Greenhouse gas emission estimates, building efficiency standards, mobile source assumptions, and a host of other factors affecting energy use and conservation have changed in the revised analysis. Accordingly, before the Department or the County can move ahead with the Project, an energy analysis sufficient to meet CEQA's standards must be prepared.

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II. The AEA's Proposed Modifications to Santa Clara River Bridge Crossing and Bank Stabilizations to Protect Unarmored Threespine Stickleback are Inadequate and Incomplete

The AEA recognizes that the SCR is a dynamic and ever-changing system (at 3-29). The "no water contact" construction approach has potential to reduce the impacts to the UTS during bridge construction through working exclusively outside of the wetted channel and only during the "dry season." Even with these proposed safeguards, impacts could still occur to the fish during construction. Additionally, the proposal "no water contact" only addresses the potential construction impacts, not the long-term impacts from the bridge construction. While it reduces the potential impacts and "take" of the fish, it does not eliminate it for the following reasons:

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- The "dry season" work, which is proposed to run from June 1 to September 30 (AEA at 1-20) will overlap the breeding/nesting season for the UTS which is recognized as

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occurring year round, with less breeding activity occurring from October to January⁴⁶. One issue that the AEA did not thoroughly analyze is the impacts to the UTS from the “dry season” pile driving. The best available science indicates that severe impacts, including possible mortalities, could still occur⁴⁷ even though the pile driving will not be done in the wetted channel. The dynamics of sound have been well studied and Popper and Hastings (2009) note:

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“the pulse propagating down the length of the pile may couple to the substrate at the water bottom and cause waves to propagate outward through the bottom sediment. These transient waves in the substrate can be transmitted from the bottom into the water at some distance away from the pile to create localized areas of very low and, or very high sound pressure and acoustic particle motion because of interference with the sound pulse directly from the pile that is traveling outward through the water. Thus it is possible that the received levels of sound could be higher at some locations farther from the pile than at locations closer to it. This has been observed in some monitoring data (Caltrans, 2001)”
(at pg. 457)

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These findings are of concern because 1) the pulses are know to cause fish mortality⁴⁸ and 2) even though no pile driving will occur in the wetted channel, the pile driving is likely to reach the shallow subsurface within the river channel, which would then potentially move the pulse to areas where the UTS are located, including potentially negatively affect the fish themselves, their nests and nesting and breeding activities.

In addition, the expert analysis of the CBEC Engineering, Inc. identifies additional potential impacts and necessary clarifications in their Technical Memorandum (CBEC 2017, attached as Ex. GG). Clarifications are necessary in order to evaluate the effectiveness of the “no water contact” proposal to preclude impacts to UTS and include issues associated with how the wetted channel was defined, and how the local drainage features outside the wetted channel that affect the wetted channel, construction activities outside of but very near the wetted channel (CBEC at pg 2, Ex. GG). The memorandum also identifies the failure of the AEA to assess the potential long-term impacts to UTS from bridge construction (CBEC at pg 2, Ex. GG) and identifies potential new impacts to UTS not addressed in the AEA or its appendices (CBEC at pg 2 to 3, Ex. GG). Section 3.3 of the memorandum analyzes the inadequacies in the impact analysis and proposed mitigation. Section 3.4 evaluates the analysis of Santa Clara River Low - Flow Inundation Analysis (PACE, 2016d). Section 3.5 evaluates the analysis of the Geosyntec, 2016b. Memorandum: Santa Clara River Seasonal Streamflow Analysis. Section 3.6 evaluates the analysis of the Moffatt & Nichol, 2016c.

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⁴⁶ USFWS 2009. Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*) 5-Year Review: Summary and Evaluation. available at http://ecos.fws.gov/docs/five_year_review/doc2629.pdf. Attached as Ex. JJ

⁴⁷ Popper & Hastings 2009. Review Paper: The effects of anthropogenic sources of sound on fishes. *Journal of Fish Biology* (2009) 75, 455–489. Attached as Ex. II.

⁴⁸ IBID

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Memorandum: Implementation of Proposed “No Water Contact” Construction Program. Section 4 includes a list of questions that would help to clarify the technical analysis of the appendices provided in the AEA. We incorporate these comments by reference and request written responses to CBEC’s comments and questions.

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Concerns about the state of UTS in the Santa Clara River outside of the Newhall Ranch Project is also of issue here. As the Department is well aware, in 2014, the Department attempted to translocation UTS from the Santa Clara river into the San Francisquito Creek. The population of UTS in San Francisquito Creek had been extirpated circa 2005. The reason for the translocation was due to dwindling water in the Santa Clara River due to drought. 569 fish were ultimately rescued from the Santa Clara river and moved to the San Francisquito Creek over four separate days in 2014. Subsequent surveys on San Francisquito Creek in 2015 failed to relocate any of the translocated fish.⁴⁹ The outcome of this effort underscores the importance of maintaining habitat for this highly imperiled fish in the project area.

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The final AEA needs to address the technical issues identified in the CBEC 2017 (Exhibit GG) memorandum and provide additional analysis on impacts to the UTS based on responses. Additional mitigation measures must be added to address the impacts.

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The AEA does not consider any potential effects of changed bridge pile locations for the Commerce Center Drive bridge on surface and groundwater hydrology that may affect the highly sensitive Middle Canyon Spring. The final analysis should consider any such potential effects and ensure that the natural hydrology maintaining the spring is preserved, and if feasible, enhanced.

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Based on the analysis of impacts even with the implementation of the “no water contact” proposal, there is still potential for impacts to occur to UTS and other aquatic species. Therefore, as we have recommended previously, the project needs to prepare a Natural Communities Conservation Plan (NCCP) that includes the UTS as a covered species in order to assure that any potential take is covered. Because an NCCP is a habitat based plan, other impacted sensitive species and habitats should be included as covered species so that a single comprehensive conservation plan is created instead of the current piecemeal approach of required plans.

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While we recognize that each village have or will have its own required plans identified in their respective EIRs, here, we provide a list of plans that are required either through the Newhall Ranch Specific Plan or the Landmark Village EIR as an example:

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- Spineflower Conservation Plan,

⁴⁹ <https://www.wildlife.ca.gov/Drought/Projects/Stickleback>

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- Resource Management Plan,
- Oak Resource Management Plan and an Oak Resource Replacement Plan (both at LV4.4-6),
- conceptual wetlands mitigation plan (Mitigation Measure LV 4.4-1),
- wetlands mitigation plan (Mitigation Measure LV 4.4-29 through 4.4-41),
- Slender Mariposa Lily Mitigation and Monitoring Plan (LLV 4.4-5),
- Undescribed Everlasting Mitigation and Monitoring Plan (LV 4.4-4),
- bat roost site creation plan (LV 4.4-26),
- an integrated pest management plan (LV 4.4-46),
- a revegetation plan (SP 4.6-2),
- a long-term management plan (SP 4.6-12),
- wildfire fuel modification plan (SP 4.6-52),
- Fire Management Plan (SP 4.6-72),
- Comprehensive Mitigation Implementation Plan (CMIP) (LV 4.4-1),
- a Plan to address the relocation of southwestern pond turtle (LV 4.4-9),
- the two-striped garter snake and/or south coast garter snake Relocation Plan (LV 4.4-16)
- an arroyo toad monitoring plan (LV 4.4-17), if present
- a relocation plan for coast horned lizard, silvery legless lizard, coastal western whiptail, rosy boa, San Bernardino ringneck snake, and coast patch-nosed snake (LV 4.4-20)
- Exotic Wildlife Species Control Plan (LV 4.4-27)
- a red-legged frog monitoring plan (LV 4.4-55), if present
- and other mitigation plans as required by each village development plan.

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III. The AEA Fails to Address New Scientific Data Available on Other Rare Species

While the AEA tries to impermissibly narrow the biological issues to just the UTS, the fact remains that between the time the original EIR was completed and now, new federal actions and additional scientific data have occurred that may affect rare species that likely occur within the project area and need to be included in the environmental review.

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For example, US Fish and Wildlife Services finalized revised critical habitat for the federally endangered and State species of concern arroyo toad on February 9, 2011 (attached as Ex. KK). Unit 6B of that designation lies directly upstream from the project area and Landmark village along the Santa Clara River. The arroyo toad relies upon the Santa Clara river in this area for successful breeding and reproduction, but also relies on the upland habitat most of the year for estivation/hibernation of adults, which make up the breeding population. More recent peer-reviewed data documents arroyo toads estivating/hibernating at distances up to 150 meters (492 feet) from surface flow waters in coastal southern California⁵⁰. Because these rare amphibians exhibit local migrations to non-breeding habitat,

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⁵⁰ Mitrovich et al. 2011. Attached as Exhibit HH

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they could occur within the dry season and other construction activity areas along the Santa Clara River. While preconstruction surveys are required for the arroyo toad, it is unclear how estivating/hibernating toads would be detected if they were to be performed as required - prior to construction.

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Recent scientific data have become available on the Santa Ana sucker fish, a federally threatened species, that show genetic integrity of the species in the Santa Clara River above the Piru “dry gap.” While the U.S. Fish and Wildlife Service do not currently recognize the population in the Santa Clara River as part of the listed population, the recent genetics work done by the U.S. Geological Survey on the species indicates that the basis for not listing the species in the Santa Clara River above the Piru “dry gap” is in error.⁵¹ Therefore, impacts that could affect UTS need to also be evaluated for their impacts to Santa Ana Sucker.

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IV. The AEA Fails as a CEQA Document and Must be Revised and Recirculated Before the Project Can Move Forward

The conservation groups have closely monitored and raised concerns about this Project for many years. The groups, along with others, successfully challenged the Department’s 2010 approvals for the Project in the California Supreme Court. The Court criticized the Project’s environmental review and ruled on behalf of Petitioners on two issues with far-reaching environmental consequences that affect all aspects of the Department’s approvals. Specifically, the Court found mitigation measures BIO-44 and BIO-46 adopted by the Department violate Fish and Game Code section 5515 because they result in impermissible take of the fully protected unarmored threespine stickleback. (*Center for Biological Diversity, supra*, 62 Cal.4th 204 at pp. 232-237.) The Court also found that although the Department may use a hypothetical “business as usual” scenario for evaluating the significance of greenhouse gas emissions in accordance with the Supreme Court’s opinion. (*Id.* at pp. 224-25, 228-29), no substantial evidence supports the Department’s finding that the Project’s greenhouse gas emissions will not result in a cumulatively significant environmental impact. (*Id.* at pp. 225-27.)

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The facts of the case and the relevant case law required setting aside the legally defective approvals for the Project and associated environmental review, after which the Department should have prepared a subsequent EIR. Those approvals include the Master Streambed Alteration Agreement (Notification No. 1600-2004-0016- RS) and Incidental Take Permits Nos. 2081-2008-012-05 and 2081-2008-013-05.I. Instead, the Department chose to keep those prior approvals in place and augment its prior environmental review with this AEA. (AEA 1-4 “the AEA augments the environmental information developed in the 2010 Final EIR. CDFW will take into account the combination of the 2010 Final EIR with its supporting materials and the AEA when it considered related final action in the future.”) In addition to the inadequacies in its environmental analysis that are detailed above, the AEA does not meet the statutory or regulatory requirements for an environmental review document under CEQA. Therefore, the AEA is an inadequate response to the Supreme Court’s ruling and fails as a CEQA document.

⁵¹ Richmond et al. 2015. Attached as Exhibit LL.

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A. The AEA Fails to Adequately Respond to the California Supreme Court's Ruling in *Center for Biological Diversity v. Department of Fish and Wildlife*

In 2015, the Supreme Court held that the Department violated CEQA by failing to support its conclusions regarding the project's greenhouse gas impacts with substantial evidence and by violating the Fish and Game Code's prohibition against "taking" fully protected species. (*Center for Biological Diversity, supra*, 62 Cal.4th at p. 240.) There are no parts of the Project that can be severed from the parts infected by these violations. The appropriate next step by the Department was to decertify the Project's Environmental Impact Report and setting aside the project and all project approvals that depend on the legally defective portions of the EIR.⁵² Partial decertification of an EIR is not consistent with the role of the EIR in the CEQA process and thus is in conflict with one of the core purposes of CEQA. As the court in *Landvalue 77* succinctly held, "[t]he statutes and CEQA Guidelines provide for the certification of an EIR when it is complete, and the concept of completeness is not compatible with partial certification. In short, an EIR is either complete or it is not." (*Landvalue 77, LLC v. Board of Trustees of California State University* (2011) 193 Cal.App.4th 675, 682.)

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Here, the Final EIR for the Project is clearly not complete and the limited environmental review in the AEA does not fill the remaining gaps. For example, the EIR's discussion of alternatives cannot stand based on the EIR's inadequate analysis of greenhouse gas impacts, as this error is fundamental to the comparison of various alternatives' environmental consequences. Similarly, the invalidation of mitigation measures BIO-44 and BIO-46 affects the entire suite of biological mitigation measures, and means that the project will have a significant impact that is not addressed anywhere in the existing EIR.

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The AEA used by the Department to remedy the defects identified by the Supreme Court is not consistent with controlling law and is not in accordance with the closely interconnected nature of the Department's approvals. Instead, the approach taken by the Department here has improperly tied the Department's hands by precluding consideration of all feasible means of reducing or avoiding the project's environmental impacts as evidenced by the AEA's overly narrow and limited scope. These self-created constraints have resulted in an inadequate and incomplete environmental review document as the sections above detailed.

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Instead, the appropriate response to the Supreme Court ruling is for the defective legal approval to be set aside and the Final EIR from 2010 should be de-certified. After which the Department should examine the Project, in total, and its impacts on the environment in a revised EIR. It is the conservation groups' view that any form of environmental review more narrow or limited would be inadequate and impermissible under CEQA.

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⁵² This issue was raised in detail at the Los Angeles Superior Court as part of briefing on the remedy for *Center for Biological Diversity v. Department of Fish and Wildlife* (Case No. B131347) on December 9, 2016. That briefing is attached to this letter at Ex. QQ.

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B. It Remains Unclear What Form of CEQA Document the Department Intended to Prepare

As a preliminary matter, the AEA does not appear to expressly state whether it is a supplemental EIR, a subsequent EIR, or some other type of CEQA compliance document such as a revised EIR. The term “Additional Environmental Analysis” does not appear in any statute or regulation associated with CEQA. The Department’s failure to identify the type of CEQA document and cite substantial evidence supporting its decision to prepare that document constitutes a violation of CEQA. If the original EIR is decertified, a revised draft EIR is the appropriate CEQA document. If the EIR is not decertified, a “subsequent EIR or a supplement to an EIR must be prepared if the lead agency determines, on the basis of substantial evidence in light of the whole record,” that changes have occurred to the project, as set forth in Public Resources Code section 21166. (9-303 CALIFORNIA REAL ESTATE LAW & PRACTICE § 303.24.)

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Courts have faulted agencies for failing to make these required determinations. In *City of San Jose v. Great Oaks Water Co.* (1987) 192 Cal.App.3d 1005, the lead agency substantially changed the nature of a project by modifying the project’s sources of water supply. (*Id.* at 1015.) The Court concluded: “the City violated CEQA by failing to make a determination whether a subsequent or supplemental EIR was required by the redesign of the project, or whether an addendum to the final EIR would suffice.” (*Id.* at 1017, emphasis added.) The Department committed the same procedural error in this instance by failing to make an express determination in light of the evidence as to whether a subsequent EIR, supplemental EIR, addendum to EIR, or revised EIR was required.

C. Regardless of the Title of the Environmental Review Document, CEQA Requires a Broader Analysis of the Project’s Environmental Impact than the AEA

Despite the Supreme Court ruling and the numbers of years that have passed since the Department last conducted an environmental review of the Project, the AEA includes a very narrow and limited approach to its analysis focusing only on “the consideration of the project applicant’s proposed revisions to the GHG reduction measures and to the method by which the bridges and bank stabilization would be constructed.” (AEA 1-1.) This narrow scope precludes the necessary comprehensive analysis of the Project impacts and conflicts with CEQA.

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For example, as noted above, the GHG analysis fails to analyze the potential environmental impacts associated with the proposed mitigation measures, including achieving ZNE. (See Section I(B)(1); see also CEQA Guidelines § 15126.4(a)(1)(D).) The AEA fails to provide an analysis of the potential environmental impacts of the proposed mitigation measures or even the information necessary to conduct such an analysis. The absence of such information and the failure to complete an analysis of the potential impacts from proposed mitigation measures violate CEQA. Similarly, the “no water contact” construction approach

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described by the AEA fails to address the long-term impacts of the redesigned bridges and their construction on the unarmored three-spine stickleback. Impacts such as “dry season” pile driving and potential changes to drainage features outside the wetted channel are left unanalyzed.

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Most troubling, the AEA fails to revise or update the analysis of the Project’s environmental impacts in light of changed circumstances. The most recent environmental analysis for the Project’s environmental impacts was in 2010 in the Final EIR. In addition, the Final EIR also relied upon studies that dated further back. (See CDFW FEIR at 4.8-1 [CDFW FEIR traffic analysis was based on a 2008 Austin-Foust traffic analysis].) More recent studies show that circumstances have changed in a way that could impact the Project’s environmental impacts. For example, the AEA notes that “during the 2014 and 2015 surveys, no unarmored threespine stickleback or other species native to the Santa Clara River were observed in the project area. (AEA 3-11.) Instead, “during the habitat surveys, CDFW observed unarmored threespine stickleback between the Old Road Bridge and the Valencia WRP discharge, upstream of the project area in August 2015.” (*Id.*) These surveys results differ from the surveying done in the Final EIR and require the AEA take a broader analysis of unarmored threespine stickleback populations in the Santa Clara River and how they will be impacted by the Project, rather than just analyzing how the proposed modifications to the Project will impact the species.

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Also as noted above, new federal actions and collection of additional scientific data have occurred since the 2010 Final EIR and now. These “changed circumstances” impact rare species that likely occur within the project area and should be considered in any new environmental review of the project. Examples of Project impacts to species that should have been re-analyzed include but are not limited to arroyo toad and Santa Ana sucker fish. Other issues that should be reanalyzed in light of new circumstances include water availability, air quality and traffic.

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Water availability and quality is a critical issue for California, with substantial implications for land use, the economy, and the environment. Since 2011, the state has been experiencing severe drought conditions, prompting a mandatory 25% reduction in municipal water use, cuts to senior agriculture water rights, and the 2014 Sustainable Groundwater Management Act. (Wilson 2016, attached as Ex. TT) Not only are the state’s human residents vulnerable to impacts of drought, so too are its iconic plants, animals and regions. In the face of climate change, the gap between supply and demand will continue to widen as the existing water deficit is unreconciled with increased pressures from development, population growth and agriculture. (Wilson 2016, Ex. TT) California’s water supply relies heavily on snow pack in the Sierra Nevada Mountains, which has been at record lows the past few years. (Weiser 2016, attached as Ex. SS) As the snow pack continues to diminish, California has become increasingly dependent on groundwater extraction to meet its water needs. Aquifer depletion and land subsidence have become a serious concern as an increasingly warmer climate has resulted in less snowpack, less rain and more evaporation. (Cooley 2016, attached as Ex. RR) In light of California’s severe drought, the long-term of availability of water for the Project and the impact of the Project on the region’s limited water supply should be re-examined.

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Air quality is a significant environmental and public health concern as unhealthy, polluted air contributes to, and exacerbates, many diseases and mortality rates. In the U.S., government estimates indicate that between 10-12% of total health costs can be attributed to air pollution. (VCAPCD 2003, attached as Ex. MM) Some of the nation's most polluted counties are in Southern California. (ALA 2016, attached as Ex. NN) Air pollution and its impacts are felt most heavily by young children, the elderly, pregnant women and people with existing heart and lung disease. People living in poverty are also more susceptible to air pollution as they are less able to relocate to less polluted areas, and their homes and places of work are more likely to be located near sources of pollution, such as freeways or ports, as there areas are more affordable. (BAAQMD 2016, attached as Ex. OO; ALA 2016) Pollution sources include transportation, industry and manufacturing, construction, the importation and movement of goods, and energy development. Transportation presents one of the most significant sources of pollution in urban areas, where large segments of the population are constantly exposed to roads and traffic. (BAAQMD 2016; Newman, attached as Ex. PP.) As noted above, the Project's GHG revisions have implications for its traffic analysis, which in turn can have implications for its air quality analysis. Similarly new data on traffic patterns and air quality could affect the Project's GHG impacts and mitigation. The AEA seems to have revised trip generation estimates in some instances but failed to provide a comprehensive analysis of changed background conditions for traffic in the area. Rather than examining the GHG issue in isolation, the AEA should have analyzed each of these impacts fully in light of changed circumstances since the 2010 Final EIR. Analyzing only the GHG issue provides an incomplete picture to the public and fails to fully address the Project's environmental impacts as required by CEQA.

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Lastly, the AEA should have included an updated analysis of potential alternatives to the Project since the AEA found a new significant impact from the Project: its anticipated GHG emissions were higher than previously estimated. CEQA mandates that significant environmental damage be avoided or substantially lessened where feasible. (Pub. Res. Code § 21002; Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d).) An EIR "it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation." (Guidelines § 15126.6(a).) Even though the AEA includes mitigation measures that address the Project's significant GHG emissions, it must still analyze alternatives to the Project that would address the new significant impact. (*Laurel Heights Improvement Assn v. Regents of Univ. of Cal.* (1988) 47 Cal.3d 376, 403; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 732.) Under CEQA, "the public agency bears the burden of affirmatively demonstrating that, notwithstanding a project's impact on the environment, the agency's approval of the proposed project followed meaningful consideration of alternatives and mitigation measures." (*Mountain Lion Foundation v. Fish & Game Com.* (1997), 16 Cal. 4th 105, 134.) The AEA failure to include a revised analysis of alternatives violates CEQA.

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D. If the Approvals for the Project is Kept in Place and the EIR is not Decertified, the Department should have at a Minimum Prepared a Subsequent EIR not an AEA

If a court⁵³ finds that the approvals could remain in place while the Department re-evaluated the Project environmental impact, a subsequent EIR would be the appropriate form for the environmental review. Public Resources Code section 21166 provides the general rule as to when a supplemental EIR or subsequent EIR is required:

When an environmental impact report has been prepared for a project pursuant to this division, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs: (a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report. (b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report. (c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available.

The California Supreme Court explained this section requires the agency to prepare a subsequent or supplemental EIR “in the event there are substantial changes to the project or its circumstances, or in the event of material new and previously unavailable information.” (*Friends of College of San Mateo Gardens v. San Mateo County Community College Dist.* (2016) 1 Cal.5th 937, 960 [“*Friends*”].) CEQA Guidelines section 15162 and 15163 provide further detail. A supplemental EIR – as opposed to a subsequent EIR – is required if “[o]nly minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.” (*Committee for Green Foothills v. Santa Clara County Bd. of Supervisors* (2008) 161 Cal.App.4th 1204, 1229 (depublished); CEQA Guidelines §§ 15162, 15163(a)(2).) In contrast, a subsequent EIR is required for “major” revisions to the EIR.

Subdivision (a) of section 21166 applies here. The AEA documents “substantial” changes to the project, including: “proposed modifications to the project’s GHG reduction measures, and to the design and construction methods for the proposed developments Santa Clara River bridge crossings and bank stabilization.” (AEA 1-1.) Specifically, for the anticipated GHG emissions, the AEA discusses “the implementation of 13 mitigation measures,” many of which the conservation groups have expressed concerns about as detailed above. In addition, the revised Project also includes proposals “to modify the design and construction methods for the project’s bridges and bank stabilization.” (AEA 1-1.) These substantial changes will require “major” revisions to the EIR, as illustrated by the size of the AEA and its associated appendices. These substantial changes to the Project require a subsequent EIR to be prepared.

⁵³ The conservation groups acknowledge that the Superior Court has issued an order and writ for this case that makes such a finding; however, petitioners intend to appeal the order and writ.

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Similarly, subdivision (b) of section 21666 also applies because the circumstances under which the project is being undertaken have changed. The California Supreme Court has issued a ruling clarifying CDFW's obligations regarding GHG and "take" analyses which has significantly altered the circumstances surrounding the project and its associated approvals. The Supreme Court's decision established new and different legal requirements for greenhouse gas analysis, and therefore constituted both a change in the circumstances under which the project will be undertaken and new information of substantial importance that could not have been known when the prior EIR was prepared. (Pub. Resources Code § 21166(b), (c); Guidelines § 15162(a)(2), (3).) Additionally, the AEA identifies the increase in GHG emissions as *a new significant impact*. (See AEA at 2-15 to 2-16 [adopting any increase in GHG emissions as threshold of significance].) The AEA also concludes that unmitigated emissions are roughly double emissions estimated in the prior EIR—even though the project itself supposedly has not changed. (Compare App 1 Table ES-2 [estimating 518,330 MT CO₂e/yr increase] with CDFW FEIR at 8.0-71 [estimating 269,053 MT CO₂e/yr increase].) This is an undeniably a substantial increase in emissions which requires major revisions of the EIR in the form of a subsequent EIR.

Therefore, a subsequent EIR is necessary here not a supplemental EIR. A supplement can be used only where "minor additions or changes" are necessary "to make the previous EIR adequately apply to the project in the changed situation." (15163(a)(2).) Here, changes in mitigation measures, the sharp increase in estimated emissions, the lack of reanalysis of alternatives, and changes in project context indicate that the Department should prepare a subsequent EIR not a supplemental EIR,

E. Even if a Supplemental EIR was the Appropriate Level of Environmental Review, the AEA does not meet the Requirements for a Supplemental EIR

While the conservation groups believe a supplemental EIR is inappropriate here it appears at times that the Department is attempting to treat the AEA as a supplement to the 2010 final EIR. Even if the Department intended the AEA to qualify as a supplemental EIR, the AEA fails to do so under CEQA Guidelines section 15163. Guidelines section 15163 provides that a supplemental EIR must contain "the information necessary to make the previous EIR adequate for the project as revised." This means that "[w]hen a lead agency is considering whether to prepare an [supplemental EIR], it is specifically authorized to limit its consideration of the later project to effects not considered in connection with the earlier project." (*Temecula Band of Luiseno Mission Indians v. Rancho Cal. Water Dist.* (1996) 43 Cal.App.4th 425, 437.)

The AEA does not comply with its obligations under Guidelines section 15163. The AEA fails to establish that (a) it contains the information necessary to render the previous EIR adequate or (b) that it adequately considered effects not considered in connection with the earlier project. For example, the AEA contains no analysis of alternatives to the project even though the new GHG analysis significantly changes the anticipated impacts of the project and the range of feasible alternatives. The new GHG analysis also necessarily impacts the air

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quality analysis and corresponding alternatives analysis. The AEA similarly fails to accurately describe changes to the project (e.g., by providing revised site plans or highlighting differences to original project, with specific references to original EIR). These defects render the AEA unintelligible as a whole and frustrate CEQA's goal of promoting informed decision-making and public participation.

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Conclusion

Thank you for the opportunity to submit comments on the Project and the AEA. We look forward to working with the Department to assure that the Project and its associated environmental review conforms to the requirements of state law while assuring that the significant environmental impacts of the Project are adequately analyzed and mitigated. In light of the inadequacies in the AEA raised in this comment letter, we strongly urge the Department revise the AEA and recirculate it for further public review and comment. If you have any questions, please contact the Center at the number listed below.

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Sincerely,

Aruna Prabhala
Kevin Bundy
Ileene Anderson

Center for Biological Diversity
1212 Broadway, Suite 800
Oakland, CA 94612
Ph: 510-844-7100
aprabhala@biologicaldiversity.org

Comment Letter No. 09

**EXHIBIT A
PAGE 1 OF 11**

BOARD MEETING DATE: December 5, 2008 AGENDA NO. 31

PROPOSAL: Interim CEQA GHG Significance Threshold for Stationary
Sources, Rules and Plans

SYNOPSIS: This action is to adopt a resolution approving the Interim CEQA
GHG Significance Threshold for Stationary Sources, Rules, and
Plans where AQMD is the lead agency. This interim threshold will
be used for determining significant impacts for proposed projects.
Once CARB adopts the statewide significance thresholds, staff will
report back to the Board regarding any recommended changes or
additions to the AQMD's interim threshold.

COMMITTEE: Climate Change, September 19, 2008 and October 29 2008

RECOMMENDED ACTION:

Adopt the attached resolution approving the Interim CEQA GHG Significance
Threshold for Stationary Sources, Rules, and Plans for use by the AQMD.

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Barry R. Wallerstein, D.Env.
Executive Officer

EXCERPTS

Background

The California Environmental Quality Act (CEQA) requires public agencies in California to analyze potential adverse impacts from proposed projects undertaken by a public agency, funded by a public agency, or requiring discretionary approval by a public agency. To disclose potential adverse impacts from a proposed project, pursuant to CEQA, lead agencies typically prepare a multidisciplinary environmental impact analysis and make decisions based on the analysis regarding the environmental effects of the proposed project (CEQA Guidelines §15002[a]).

In the past, air quality analyses tended to focus on potential adverse impacts from criteria pollutants and toxic air contaminants. Subsequent to the adoption of Assembly

EXHIBIT B
PAGE 1 OF 89

ATTACHMENT E

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold

October 2008

Deputy Executive Officer
Planning, Rule Development and Area Sources
Elaine Chang, DrPH

Assistant Deputy Executive Officer
Planning, Rule Development and Area Sources
Laki Tisopulos, Ph.D., P.E.

Planning and Rules Manager
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Reviewed:	Barbara Baird	Principal District Counsel

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Comment Letter No. 09

**EXHIBIT C
PAGE 1 OF 145**

**LOS ANGELES COUNTY HOUSING
ELEMENT, 2014-2021
TEXT-ONLY VERSION**

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EXHIBIT D
PAGE 1 OF 5

**California Climate Action Registry
Annual Entity Emissions: Electric Power Generation/Electric Utility Sector**

The following worksheets will aid you in reporting your emissions data under the California Climate Action Registry's Power/Utility Protocol, Version 1.0.

PUP Report worksheet

This worksheet contains cells that you fill in and cells with built-in formulas to help you report under the PUP. This worksheet is password protected - you cannot change the locked cells. This is to ensure consistency between reporters.

How to display formulas: All locked cells that have built-in formulas have a small red triangle in the upper right corner - scrolling over these locked cells will show you the formula used in that cell.

Notes: the notes in the report are locked. They are meant to help the public understand the information presented in the report.

Comments: these cells are unlocked and should be filled in or deleted by the user. In some cases, we have provided guidance about the type of information you should include. If you do not want to include comments, please delete the guidance we have included.

"Generation & Purchased Power Information" section (green section):

In this column C of this section, report the total MWh generated or purchased for delivery to retail customers. In column E of this section, report the total CO₂ emissions associated with the MWh reported in Column C. DO NOT report only the emissions associated with T&D losses in this column. Also, do not include any emissions from non-power generation sources in this column (e.g. mobile combustion, fugitive emissions, etc). Those emission sources should be disclosed in the blue section above.

HFC PFC Worksheet

This worksheet helps you calculate and disclose your HFC and PFC emissions. This worksheet is also linked to the PUP Report worksheet and will fill in information about your HFC and PFC emissions in your report. The worksheet is broken into four sections: fugitive emissions, process emissions, de minimis emissions and optional emissions. Please ensure you are entering your emissions in the appropriate section. Enter your annual use of HFCs and PFCs in pounds, and the worksheet will calculate the metric tons of HFCs, PFCs and CO₂e associated with those emissions.

Uploading your PUP Report

Once you have completed the PUP Report, you should convert it to a PDF and upload it to CARROT under the "Optional Reporting" tab. Make sure you have the PUP Report worksheet open when you convert it to PDF. Converting this spreadsheet to a PDF makes it easier for the public to download and helps to ensure consistency between reports. *If you do not convert the spreadsheet to PDF, your HFC and PFC information will be made available to the public.*

Comment Letter No. 09

EXHIBIT E
PAGE 1 OF 207

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA



FILED
8-08-16
04:59 PM

Order Instituting Rulemaking to Continue
Implementation and Administration, and
Consider Further Development, of California
Renewables Portfolio Standard Program.

Rulemaking 15-02-020
(Filed February 26, 2015)

**SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) 2016
RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLAN**

VOLUME 1

PUBLIC VERSION

115

JANET S. COMBS
CAROL A. SCHMID-FRAZEE

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SOUTHERN CALIFORNIA EDISON COMPANY

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E-mail: Carol.Schmidfrazee@sce.com

Dated: August 8, 2016

Comment Letter No. 09

**EXHIBIT F
PAGE 1 OF 111**

ALJ/AES/vm2/jt2

Date of Issuance 12/26/2014

Decision 14-12-081 December 18, 2014

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue
Implementation and Administration of
California Renewables Portfolio Standard
Program.

Rulemaking 11-05-005
(Filed May 5, 2011)

DECISION IMPLEMENTING SENATE BILL 1122

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Comment Letter No. 09

**EXHIBIT G
PAGE 1 OF 23**

Date of Issuance: October 21, 2016

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

**RESOLUTION E-4805
October 13, 2016**

RESOLUTION

Resolution E-4805. Commission Motion Authorizing Procurement from Bioenergy Facilities supplied from Forest Fuel High Hazard Zones pursuant to Senate Bill 859, the Governor's Tree Mortality Emergency Proclamation, and the Commission's other legal authority.

PROPOSED OUTCOME:

- Requires Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) to procure additional capacity from biomass facilities using specific forest fuel stocks.
- Permits the utilities to use specific processes for this procurement, directs them to track costs, and directs them to file Applications to allocate costs.

SAFETY CONSIDERATIONS:

- This Resolution implements biomass provisions of Senate Bill 859 and the Governor's Emergency Proclamation to address public safety and property from falling trees and wildfire.
- Renewable Auction Mechanism standard contracts contain Commission approved safety provisions. There are not any expected incremental safety implications associated with approval of this Resolution.

ESTIMATED COST:

- This Resolution is expected to result in additional energy procurement contracts which will lead to increased ratepayer costs. Actual costs are unknown at this time.

By Energy Division's own motion.

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EXHIBIT H
PAGE 1 OF 81

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D.C. 20460

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

September 28, 2012

EPA-SAB-12-011

The Honorable Lisa P. Jackson
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Subject: SAB Review of EPA's Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources (September 2011)

Dear Administrator Jackson:

EPA's Science Advisory Board (SAB) was asked by the EPA's Office of Air and Radiation to review and comment on the EPA's *Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources (Framework, September 2011)*. The *Framework* considers the scientific and technical issues associated with accounting for emissions of biogenic carbon dioxide (CO₂) from stationary sources and develops a method to adjust the stack emissions from stationary sources using biological material based on the induced changes in carbon stocks on land (in soils, plants and forests).

Assessing the greenhouse gas implications of using biomass to produce energy is a daunting task and the EPA is to be commended for its effort. The context for the *Framework* arose when the EPA established thresholds for greenhouse gas emissions from stationary sources for the purposes of Clean Air Act permits under the New Source Review (Prevention of Significant Deterioration program) and Title V operations program. The agency needed to consider how to include biogenic emissions in determining whether thresholds for regulation have been met. In July 2011, the EPA deferred the application of permitting requirements to biogenic carbon dioxide emissions from bioenergy and other biogenic stationary sources for three years, while conducting a detailed examination of the issues associated with biogenic CO₂.

The agency sought a method of "adjusting" biogenic carbon emissions from stationary sources to credit those emissions with carbon uptake during sequestration or, alternatively, avoided emissions from natural decay (e.g., from residues and waste materials). Without a way of adjusting those emissions, the agency's options would be either a categorical inclusion (treating biogenic feedstocks as equivalent to fossil fuels) or a categorical exclusion (excluding biogenic emissions from determining applicability thresholds for regulation). The purpose of the *Framework* was to propose a method for calculating the adjustment, or a Biogenic Accounting Factor (BAF) for biogenic feedstocks, based on their interaction with the carbon cycle. The BAF is an accounting term developed in the *Framework* to denote the offset to total emissions (mathematical adjustment) needed to reflect a biogenic feedstocks' net greenhouse gas

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Comment Letter No. 09

EXHIBIT I
PAGE 1 OF 1

CO ₂ Emission Rates From Modern Power Plants	Lb	Facility	MMBtu	Biomass v.	
	CO ₂ /MMBtu	efficiency	/MWh	Lb CO ₂ /MWh	Tech
New gas combined cycle ^a	117	51%	6.7	786	385%
New subcritical coal steam turbine ^b	210	39%	8.7	1,839	165%
U.S. coal fleet avg, 2013 ^c	210	33%	10.5	2,198	138%
New biomass steam turbine ^d	213	24%	14.2	3,028	

References:

CO₂ per MMBtu

a, b, c: from EIA at http://www.eia.gov/environment/emissions/co2_vol_mass.cfm. Value for coal is for "all types." Different types of coal emit slightly more or less.

d: Assumes HHV of 8,600 MMBtu/lb for bone dry wood (Biomass Energy Data Book v. 4; Oak Ridge National Laboratory, 2011. <http://cta.ornl.gov/bedb>.) and that wood is 50% carbon.

Efficiency

a: DOE National Energy Technology Laboratory: Natural Gas Combined Cycle Plant F-Class (http://www.netl.doe.gov/KMD/cds/dsk50/NGCC%20Plant%20Case_FClass_051607.pdf)

b: International Energy Agency. Power Generation from Coal: Measuring and Reporting Efficiency Performance and CO₂ Emissions. https://www.iea.org/ciab/papers/power_generation_from_coal.pdf

c: EIA data show the averaged efficiency for the U.S. coal fleet in 2013 was 32.6% (http://www.eia.gov/electricity/annual/html/epa_08_01.html)

d: ORNL's Biomass Energy Data Book (<http://cta.ornl.gov/bedb>; page 83) states that actual efficiencies for biomass steam turbines are "in the low 20's"; PPPI's review of a number of air permits for recently proposed biopower plants reveals a common assumption of 24% efficiency.

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**EXHIBIT J
PAGE 1 OF 50**

Appendix D

Air Quality and Greenhouse Gas Emissions Modeling and Calculations

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Comment Letter No. 09

**EXHIBIT K
PAGE 1 OF 320**

DOCKETED

Docket Number: 15-IEPR-01
Project Title: General/Scope
TN #: 212017
Document Title: 2015 Integrated Energy Policy Report- Small File Size
Description: This document supersedes TN 210527 The 2015 IEPR has been updated to correct the following issues: Figure 28- no legend was included in previous version, Figures 38, 40, and 47- figures were missing an X axis in previous version, Figure 39- incorrect figure was used in previous version
Filer: Stephanie Bailey
Organization: California Energy Commission
Submitter Role: Commission Staff
Submission Date: 6/29/2016 3:43:58 PM
Docketed Date: 6/29/2016

EXHIBIT L
PAGE 1 OF 3

Half of power plant capacity additions in 2013 came from natural gas - ...

<http://www.eia.gov/todayinenergy/detail.php?id=15751>

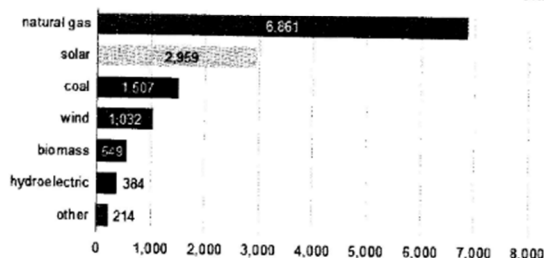


Today in Energy

April 8, 2014

Half of power plant capacity additions in 2013 came from natural gas

U.S. power plant capacity additions in 2013
megawatts (MW)



Source: U.S. Energy Information Administration, Electric Power Monthly, December 2013 edition

Note: Data include facilities with a net summer capacity of 1 MW and above only.

Note: See details by technology type.

Natural gas-fired power plants accounted for just over 50% of new utility-scale generating capacity added in 2013. Solar provided nearly 22%, a jump up from less than 6% in 2012. Coal provided 11% and wind nearly 8%. Almost half of all capacity added in 2013 was located in California. In total, a little over 13,500 megawatts (MW) of new capacity was added in 2013, less than half the capacity added in 2012.

Natural gas. Natural gas capacity additions were less than in 2012, as 6,861 MW were added in 2013, compared to 9,210 MW in 2012. The capacity additions came nearly equally from combustion turbine peaker plants, which generally run only during the highest peak-demand hours of the year, and combined-cycle plants, which provide intermediate and baseload power.

Nearly 60% of the natural gas capacity added in 2013 was located in California. The state is facing resource adequacy concerns as well as the need for more flexible generation resources to help complement more variable-output renewable resources, particularly solar, being added to the system.

Solar. Solar photovoltaic (PV) added 2,193 MW of capacity in 2013, continuing the trend of the past few years of strong growth, helped in part by falling technology costs as well as aggressive state renewable portfolio standards (RPS) and continued federal investment tax credits. Nearly 75% of the capacity added was located in California, followed by roughly 10% in Arizona. (Note: these figures do not include distributed capacity under 1 MW. Distributed solar PV capacity additions also grew in 2013, with industry reports estimating nonutility additions of 1,900 MW. Most of this capacity was also located in California.)

After many years of little activity, the solar thermal industry completed several large-scale solar thermal plants in 2013 located in Arizona and California totaling 766 MW of capacity, more than doubling the total solar thermal capacity in the United States. A few more projects are expected to be completed in 2014-16; however, several other announced projects have since been cancelled or suspended because of a number of challenges such as environmental impacts on desert wildlife and water resources, cost-competitiveness, and delays in transmission development.

Coal. Two coal plants, both delayed projects that were originally scheduled to be completed in 2011-12, accounted for all of the coal capacity added in 2013. The Sandy Creek Energy Station in Texas is a 937 MW conventional steam coal plant that was badly damaged during testing in 2011 and required major repairs before becoming operational. The Edwardsport plant in Indiana is a 571 MW integrated gasification combined-cycle (IGCC) plant, one of only two of the many proposed IGCC projects that actually advanced into construction as natural gas prices dropped (the Kemper County IGCC project in Mississippi is still under construction).

Wind. Wind capacity additions (1,032 MW) dropped sharply in 2013 to less than one-tenth of the capacity added in 2012 (12,885 MW). This was a widely expected result of the rush to complete wind projects in 2012 to qualify for the federal production tax credit. Unlike previous versions of the tax credit, the one-year extension for 2013 allowed developers to claim the tax credit for projects that began construction in 2013 even if the project

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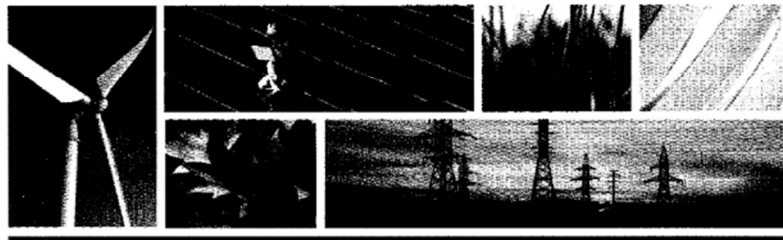
EXHIBIT M
PAGE 1 OF 77

**Time Dependent Valuation
of Energy for Developing
Building Efficiency
Standards**

**2013 Time Dependent Valuation (TDV)
Data Sources and Inputs**

February 2011

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Energy+Environmental Economics

Comment Letter No. 09

**EXHIBIT N
PAGE 1 OF 105**



**California Transportation
Electrification Assessment**

Phase 1: Final Report

August 2014; Updated September 2014

Prepared by
ICF International
620 Folsom St, Suite 200
San Francisco, CA 94107
415.677.7100

Energy+Environmental Economics
101 Montgomery Street, Suite 1600
San Francisco, CA 94104
415.391.5100

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EXHIBIT O
PAGE 1 OF 1

State of California
DEPARTMENT OF MOTOR VEHICLES
STATISTICS FOR PUBLICATION
JANUARY THROUGH DECEMBER 2015

EMPLOYEE AND OFFICE STATISTICS

Number of Field Offices	175	- 17 Auxiliary Offices that include: 3 CDL sites, 10 Industry Business Centers, 1 Scale Location, and 3 Travel Runs.
Number of Driver Safety Offices	16	- 10 are located within other DMV locations and 6 are independent. Additional 27 Resident Hearing Offices.
Number of Call Centers	3	- 3 independent facilities.
Number of Investigations Offices	12	- An additional 36 are within other DMV locations.
Number of Occupational Licensing Offices	2	- An additional 14 are within other DMV locations.
Number of Other Locations	5,000	- 175 Auto Clubs and 4,825 Business Partner sites.
Approximate Number of Employees	9,527	- Includes full-time, permanent-intermittent, and part-time employees. Approximately 6,272 (66%) are in Field, and approximately 3,255 (34%) are at Headquarters.

DRIVER LICENSE AND IDENTIFICATION CARD STATISTICS		
A. Total Driver Licenses Currently Issued:	25,914,851	(Includes 3,794,927 people that also have an ID Card)
Identification Cards		
B. ID-Only (Age 16 and over)	2,925,964	
C. Both ID Card and Driver License	3,794,927	
D. Under Age 16 ID Cards	227,121	
E. Total Identification Cards	6,948,012	(Includes 1,407,188 Senior Citizen ID Cards)
Total People with a Driver License and/or ID Card:	29,067,936	(A + B + D)
Total Driver Licenses and ID Cards Currently Issued :	32,862,863	(A + E)
REGISTERED VEHICLE STATISTICS		
Automobiles	24,487,807	
Motorcycles	884,865	
CVRA Trucks	475,193	(Commercial Vehicle Registration Act)
Non-CVRA Trucks/Coml. Vehicles *	5,092,390	
PTI Trailers	2,234,270	(Permanent Trailer Identification)
Trailer Coach/CCH	399,713	
CA Based IRP Trucks	80,604	(International Registration Plan)
Misc. Vehicles	113,725	(Miscellaneous vehicles include historical vehicles, specfarm equipment, etc.)
Fee-Paid Registered	33,768,367	
Exempt Registered	577,958	
Total Registered:	34,346,325	
Foreign Based IRP Trucks	1,549,000	(Vehicles based in other states which pay fees to operate in California.)

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AVERAGE FEE PAID BY BASIC VEHICLE TYPE (does not include IRP)

	TRUCK (CVRA)	TRUCK * (Non-CVRA)	AUTO	MOTORCYCLE	TRAILER (CCH)
Registration Fee	\$46	\$46	\$46	\$46	\$46
CHP Fee	40	24	24	24	24
Vehicle License Fee (VLF)	199	53	79	28	52
Weight Fee	0	94	0	0	0
CVRA Fee **	904	0	0	0	0
Motorcycle Safety Fee	0	0	0	2	0
Total	\$1,189	\$217	\$149	\$100	\$122
Percent of All Vehicles	1.5%	16.2%	78.1%	2.8%	1.3%

(The fee calculation does not include special fees such as air quality fees, abandoned vehicle fees, etc. that vary by county and air quality district.)

NOTE: The current average VLF is \$74 per vehicle, and the current overall Total fee paid per vehicle registration is \$174.

* Includes pickup trucks and vehicles used or maintained for hire or for transportation of persons or of property.

** The first \$122 of the CVRA fee is allocated to the Motor Vehicle Account.

EXHIBIT P
PAGE 1 OF 157

California Energy Commission
COMMISSION FINAL REPORT

**CALIFORNIA ENERGY DEMAND
2014–2024 FINAL FORECAST**

**Volume 1: Statewide Electricity
Demand, End-User Natural Gas
Demand, and Energy Efficiency**

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CALIFORNIA
ENERGY COMMISSION
Edmund G. Brown Jr., Governor

JANUARY 2014
CEC-200-2013-004-V1-CMF

Comment Letter No. 09

**EXHIBIT Q
PAGE 1 OF 63**



**U.S. Department of Energy
FreedomCAR & Vehicle Technologies Program
Guidelines for the Establishment of a Model
Neighborhood Electric Vehicle (NEV) Fleet**



**Roberta Brayer
Donald Karner
Kevin Morrow
James Francfort**

June 2006

*Idaho National Laboratory
Operated by Battelle Energy Alliance*

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EXHIBIT R
PAGE 1 OF 6

Neighborhood Electric Vehicles: A Marginal Option | PluginCars.com <http://www.plugincars.com/neighborhood-electric-vehicle-margins-1272...>

Home Cars Guides Charging Stations [Log in](#) [FAQ](#) [iOS](#)

Level 2 EV Home Charger
ChargePoint Home - Faster Charger for your electric car. Go to chargepoint.com/home



Neighborhood Electric Vehicles: A Marginal Option

Tweet 1 G+1

By [Nikki Gordon-Bloomfield](#) (user/nikki-gordon-bloomfield) · May 15, 2013



Acquired by Polaris industries in 2011, GEM is the market leader for neighborhood electric vehicles. The e2 sells for below \$8,000.

Visit certain cities around the world, and you'll see tiny electric cars quietly whizzing around the streets, taking residents and holiday makers from place to place, delivering goods, or even doing the daily commute.

Called Neighborhood Electric Vehicles—NEVs for short—these small cars don't have the range or performance of bigger, highway-capable cars like the Nissan LEAF. But they can provide some consumers the first real-world experience of electric cars without breaking the bank.

Living with Limits

In most states, NEVs are electronically restricted by law to a top speed of between 25 and 35 miles per hour. In some cases, this means they cannot be driven on roads with a posted speed limit of 25 mph or greater, severely restricting where they can be driven.

Speed isn't the only thing that's limited in NEVs. Because most are powered by heavy battery packs—

Level 2 E Home Cr
ChargePoint
Charger for y
car.

chargepoint.com

NEW TO EVs? START

1. [Seven Things To Buying a Plug-In Car](#) [buying-plus-car-127467.html](#)
A few simple tips before dealership.

2. [Incentives for Plug-In Electric Cars](#) [federal-plus-hybrid-and-electric](#)
Take advantage of credit to reduce EV costs.

3. [Buying Your First Electric Car](#) [quick-guide-buying-your-first-ev.html](#)
You'll want a home charger. Buy the right one.

[Read all our Guide articles](#)

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EXHIBIT S
PAGE 1 OF 117

CALIFORNIA NATURAL RESOURCES AGENCY



**FINAL STATEMENT OF REASONS FOR
REGULATORY ACTION**

**Amendments to the State CEQA Guidelines
Addressing Analysis and Mitigation of Greenhouse Gas
Emissions Pursuant to SB97**

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December 2009

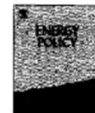
EXHIBIT T
PAGE 1 OF 5

Energy Policy 63 (2013) 1051–1055



Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Addressing carbon Offsetters' Paradox: Lessons from Chinese wind CDM

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HIGHLIGHTS

- We investigated 143 Chinese wind CDM projects by the eruption of the additionality controversy.
- We examined the application of additionality in the Chinese wind power market.
- We drew implications for the design of effective global carbon offset policy.
- The underlying structural flaws of CDM, the Offsetters' Paradox, was discussed.
- We charted a reform path that can strengthen the credibility of global carbon markets.

ARTICLE INFO

Article history:
Received 1 February 2013
Accepted 5 September 2013
Available online 24 September 2013

Keywords:
China
Wind
CDM
Offsetters' Paradox

ABSTRACT

The clean development mechanism (CDM) has been a leading international carbon market and a driving force for sustainable development. But the eruption of controversy over offsets from Chinese wind power in 2009 exposed cracks at the core of how carbon credits are verified in the developing economies. The Chinese wind controversy therefore has direct implications for the design and negotiation of any successor to the Kyoto Protocol or future market-based carbon regimes. In order for carbon markets to avoid controversy and function effectively, the lessons from the Chinese wind controversy should be used to implement key reforms in current and future carbon policy design. The paper examines the application of additionality in the Chinese wind power market and draws implications for the design of effective global carbon offset policy. It demonstrates the causes of the wind power controversy, highlights underlying structural flaws, in how additionality is applied in China, the Offsetters' Paradox, and charts a reform path that can strengthen the credibility of global carbon markets.

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1. Introduction

The clean development mechanism (CDM) set by Kyoto Protocol is the leading international carbon market which allows developed countries to meet their mitigation commitments by financing emission reductions in the developing world (UNFCCC, 1997). Project based CDM is seen as an important mechanism to achieve global sustainable development by fostering clean energy development in developing countries and cost-effective reduction of greenhouse gasses in developed countries (Olsen, 2007), and typically allows for nations with emissions commitments to invest in greenhouse gas mitigation projects in host countries without commitments.

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E-mail address: ganghe@berkeley.edu (G. He).

0301-4215/\$ - see front matter © 2013 Elsevier Ltd. All rights reserved.
<http://dx.doi.org/10.1016/j.enpol.2013.09.021>

International carbon finance has provided a significant boost to Chinese wind development. China's installed wind capacity has been growing at an unprecedented pace, the total installed capacity has reached 75.5 GW as of the end of 2012 (CWEA, 2013). CDM first provided finance for Chinese wind in 2005, and we estimate that about 32% of China's total wind capacity of 25.1 GW has benefited from CDM finance through 2009 (CREIA, 2009).

One of the central criteria used to evaluate CDM projects is "additionality", which is defined as carbon offset payments result in "real" emissions mitigation that "would not have happened otherwise" (UNFCCC, 2006). Controversy over the CDM projects is not new. There have been concerns about the additionality and the economically efficiency of industrial gas projects, for example trifluoromethane (HFC-23), which is inexpensive to cut but received payments via the CDM which may have been many times more valuable than the gas being produced, creating perverse incentives. Scholars have argued that such projects therefore

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EXHIBIT U
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**Hydropower in the CDM:
Examining Additionality and Criteria for Sustainability**

Barbara Haya* and Payal Parekh

* Energy and Resources Group
University of California, Berkeley

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Energy and Resources Group Working Paper ERG-11-001
University of California, Berkeley
http://erg.berkeley.edu/working_paper/index.shtml

November 2011

EXHIBIT V
PAGE 1 OF 37



**Measuring Emissions Against an Alternative Future:
Fundamental Flaws in the Structure of the Kyoto Protocol's
Clean Development Mechanism**

Barbara Haya
Energy and Resources Group
University of California, Berkeley
bhaya@berkeley.edu

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Energy and Resources Group Working Paper ERG09-001
University of California, Berkeley
http://erg.berkeley.edu/working_paper/index.shtml

December 2009

Comment Letter No. 09

EXHIBIT W
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Citation: 55 UCLA L. Rev. 1759 2007-2008



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GAO United States Government Accountability Office
Report to Congressional Requesters

November 2008

INTERNATIONAL CLIMATE CHANGE PROGRAMS

Lessons Learned from the European Union's Emissions Trading Scheme and the Kyoto Protocol's Clean Development Mechanism

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GAO-09-151

Comment Letter No. 09

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GAO

United States Government Accountability Office

Report to the Chairman, Committee on
Oversight and Government Reform,
House of Representatives

February 2011

CLIMATE CHANGE ISSUES

Options for Addressing Challenges to Carbon Offset Quality

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GAO-11-345

Comment Letter No. 09

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*Carbon Offsetting: An Efficient Way to Reduce Emissions or to Avoid Reducing Emissions?
An Investigation and Analysis of Offsetting Design and Practice in India and China*

by

Barbara Kresch Haya

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Energy and Resources

in the

Graduate Division

of the

University of California, Berkeley

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Committee in charge:

Professor Richard B. Norgaard, Chair
Professor Michael O'Hare
Professor Kate O'Neill

Fall 2010

Comment Letter No. 09

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Geoforum 75 (2016) 99–109



Forest offsets and the California compliance market: Bringing an abstract ecosystem good to market



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ABSTRACT

Improved Forest Management (IFM) projects under the California cap-and-trade market allow production of new, non-traditional commodities: forest carbon offsets. Earlier analyses have considered forest offsets generated through tree planting in the Global South, as vehicles for sustainable development. However, the California IFM program is testing offset production in new geographic and forest management contexts: with offsets produced and consumed within the US on working (timber producing) forests. With data drawn from California IFM project design documents and in-depth interviews with carbon project developers, this study traces the development, sale, and maintenance of forest offsets, in order to map access to benefits along the commodity chain. Results reveal that the cost and complexity of rendering biological services 'real' for market legitimacy are reducing benefits to marginal landowners, who lack needed capital, knowledge, and technology to bring offsets to market. An important insight of this study is that the state has maintained power over program participation and offset supply through control of the forest offset methodology, creating a production process largely mediated by the state, adding risk and uncertainty to market participation. Findings provide an empirical example of neoliberal nature and offer broader lessons on governance and benefit distribution for ecosystem service commodity chains.

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1. Introduction

Atmospheric greenhouse gas (GHG) reduction markets are generating production of new and unusual goods called forest carbon offsets. Previous analyses have explored their creation in small, nascent markets in the Global South, through vehicles for sustainable development like the Clean Development Mechanism (CDM) (Brown and Corbera, 2003; Corbera and Brown, 2010). However, the 2012 launch of a regulatory cap-and-trade market in California expands their production into untested geographic and forest management contexts. This is done through an improved forest management (IFM) protocol, which incentivizes offset production on forests that are generally subject to commercial timber harvest. Three years into cap-and-trade market operation, it is now possible to assess California regulatory IFM market participation. We employ both a commodity chain analytic framework and Ribot and Peluso's 'theory of access' to trace the development, sale, and maintenance of forest offsets, to test who benefits and how from

new carbon-based revenue streams (Ribot, 1998; Ribot and Peluso, 2003). With data collected through review of California regulatory IFM project design documents (PDDs) and in-depth interviews with carbon project developers, we ask: how are forest offset production and benefit flows operating in a managed forest context in the Global North?

We draw several findings from this research. First, IFM projects under California's cap-and-trade market must address the challenge of rendering intangible goods 'real' for market legitimacy, echoing production hurdles in the Global South (Brown and Corbera, 2003). In California, legitimacy is achieved through costly and technically complex forest carbon inventory and verification, limiting participation of small-scale and economically marginal landowners and creating opportunities for technical experts and project financiers, who provide needed capital, knowledge, and technology to bring offsets to market. Second, because California's IFM program was designed to accommodate working forests, market participants must often negotiate parallel commodity chains—those of forest offsets and traditional timber products—altering the actors and dynamics involved in offset production and creating a calculus between potentially competing revenue streams. Third, a significant insight from this study is that the state has maintained power over project design and offset sale through control of the

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PERSPECTIVE

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nature
climate change

Untangling the confusion around land carbon science and climate change mitigation policy

Brendan Mackey^{1*}, I. Colin Prentice^{2,3}, Will Steffen⁴, Joanna I. House⁵, David Lindenmayer⁴, Heather Keith⁴ and Sandra Berry⁴

Depletion of ecosystem carbon stocks is a significant source of atmospheric CO₂ and reducing land-based emissions and maintaining land carbon stocks contributes to climate change mitigation. We summarize current understanding about human perturbation of the global carbon cycle, examine three scientific issues and consider implications for the interpretation of international climate change policy decisions, concluding that considering carbon storage on land as a means to 'offset' CO₂ emissions from burning fossil fuels (an idea with wide currency) is scientifically flawed. The capacity of terrestrial ecosystems to store carbon is finite and the current sequestration potential primarily reflects depletion due to past land use. Avoiding emissions from land carbon stocks and refilling depleted stocks reduces atmospheric CO₂ concentration, but the maximum amount of this reduction is equivalent to only a small fraction of potential fossil fuel emissions.

Despite the current level of mitigation effort, global CO₂ emissions continue to increase¹. In addition to reducing emissions from fossil-fuel burning, the largest CO₂ source globally, mitigation efforts now include reducing what is in aggregate the second largest net source of CO₂ to the atmosphere: namely, carbon emissions from land-use change. Land carbon emissions accounted for about 36% of the anthropogenic CO₂ emitted into the atmosphere from 1850–2000², and about 12% of annual global CO₂ emissions from 2000 to 2010³. Avoiding and reducing land carbon emissions is therefore an integral part of any comprehensive approach to solving the climate change problem.

Globally, forests store around 300 Pg C (reported range 240–500 Pg C) in living biomass^{3,4}, equivalent to ~140 ppm of atmospheric CO₂ (atmCO₂; used to denote the concentration of CO₂ in the atmosphere, and although the SI unit for atmCO₂ is μmol mol⁻¹, we have adopted the more familiar unit of ppm). Forests are distributed in both developed and developing countries (Table 1). About half of the world's forests have already been cleared, with 40 million km² remaining and around 0.16 million km² of forest cleared annually⁴. Only 36% (~14.4 million km²) of the world's forest is now primary forest⁴. In addition to deforestation, forests have been degraded by land-use activities such as logging and soil disturbance that deplete their organic carbon stocks and emit CO₂. Emissions from forest degradation are poorly quantified globally, but estimates indicate that they increase regional carbon emissions by nearly 50% over deforestation alone⁴. Conserving the world's remaining primary forests would avoid substantial emissions of CO₂. Afforestation and reforestation, moreover, can directly remove CO₂ from the atmosphere — but only up to a point, as we discuss later.

Nations are engaged in negotiations to reduce emissions of CO₂ and other greenhouse gases (GHGs) under the United Nations Framework Convention on Climate Change (UNFCCC). Developed countries that are signatories to the Kyoto Protocol (ratified by 37 countries and the European Union) committed themselves to a target of reducing their emissions of GHGs from 2008–2012, relative to

1990 levels. The target reduction was based on emissions from fossil fuels and industry, but removals by the land sector could be counted towards meeting the target. The Clean Development Mechanism under the Kyoto Protocol allowed for developed countries to offset fossil fuel emissions through, among other things, planting trees in developing countries. Similar kinds of offset project are allowed through the Joint Implementation mechanisms between developed countries. The extension or successor to the Kyoto Protocol is now being negotiated. There are parallel negotiations underway on the development of policies for Reducing Emissions from Deforestation and Degradation (REDD) — a voluntary scheme to mitigate land carbon emissions from developing countries.

Negotiated policy decisions involve political compromises to accommodate national interests. So far these decisions have fallen short of what will be necessary if atmCO₂ is to be stabilized at a level that avoids major climate change⁵. Furthermore, there is the potential for perverse outcomes whereby mitigation efforts not only fail to reduce atmCO₂, but even have negative impacts — either causing atmCO₂ to increase or adversely affecting other landscape values, such as biodiversity. Perverse outcomes can result from a gap between land carbon policy decisions and scientific understanding of what is required for successful mitigation: that is, from confusion around land carbon science.

In this Perspective we clarify some well-established fundamentals of the global carbon cycle that are frequently either misunderstood, or seemingly overlooked. This information provides the scientific context for considering the potential of land-based mitigation and to what extent it can be legitimately considered an 'offset' for fossil fuel CO₂ emissions. We do not advocate any particular policy, but we do draw attention to some proposed approaches that are likely to be ineffective, or worse.

Human perturbation of the global carbon cycle

The global carbon cycle is the subject of considerable confusion among non-specialists. A clear understanding of how humans have

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October 20, 2011



California Environmental Protection Agency

AIR RESOURCES BOARD

**Compliance Offset Protocol
U.S. Forest Projects**

Adopted: October 20, 2011

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CLEAN DEVELOPMENT MECHANISM

AMS-II.G.

Small-scale methodology

Energy efficiency measures in thermal applications of non-renewable biomass

Version 08.0

Sectoral scope(s): 03

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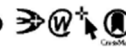
United Nations
Framework Convention on
Climate Change

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Articles

A cleaner burning biomass-fuelled cookstove intervention to prevent pneumonia in children under 5 years old in rural Malawi (the Cooking and Pneumonia Study): a cluster randomised controlled trial



Kevin Martimer, Chifundo B Ndumalo, Andrew W Naurayo, Jullita Malova, Cynthia Katundu, William Weston, Deborah Havens, Daniel Pope, Nigel G Bruce, Moffat Nyirenda, Duolao Wang, Amelia Crampin, Jonathan Grigg, John Balmes, Stephen B Gordon



Summary

Background WHO estimates exposure to air pollution from cooking with solid fuels is associated with over 4 million premature deaths worldwide every year including half a million children under the age of 5 years from pneumonia. We hypothesised that replacing open fires with cleaner burning biomass-fuelled cookstoves would reduce pneumonia incidence in young children.

Methods We did a community-level open cluster randomised controlled trial to compare the effects of a cleaner burning biomass-fuelled cookstove intervention to continuation of open fire cooking on pneumonia in children living in two rural districts, Chikhwawa and Karonga, of Malawi. Clusters were randomly allocated to intervention and control groups using a computer-generated randomisation schedule with stratification by site, distance from health centre, and size of cluster. Within clusters, households with a child under the age of 4-5 years were eligible. Intervention households received two biomass-fuelled cookstoves and a solar panel. The primary outcome was WHO Integrated Management of Childhood Illness (IMCI)-defined pneumonia episodes in children under 5 years of age. Efficacy and safety analyses were by intention to treat. The trial is registered with ISRCTN, number ISRCTN59448623.

Findings We enrolled 10 750 children from 8626 households across 150 clusters between Dec 9, 2013, and Feb 28, 2016. 10 543 children from 8470 households contributed 15 991 child-years of follow-up data to the intention-to-treat analysis. The IMCI pneumonia incidence rate in the intervention group was 15.76 (95% CI 14.89–16.63) per 100 child-years and in the control group 15.58 (95% CI 14.72–16.45) per 100 child-years, with an intervention versus control incidence rate ratio (IRR) of 1.01 (95% CI 0.91–1.13; $p=0.80$). Cooking-related serious adverse events (burns) were seen in 19 children; nine in the intervention and ten (one death) in the control group (IRR 0.91 [95% CI 0.37–2.23]; $p=0.83$).

Interpretation We found no evidence that an intervention comprising cleaner burning biomass-fuelled cookstoves reduced the risk of pneumonia in young children in rural Malawi. Effective strategies to reduce the adverse health effects of household air pollution are needed.

Funding Medical Research Council, UK Department for International Development, and Wellcome Trust.

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Introduction

Almost half of the world's population, including 700 million Africans, rely on biomass fuels for cooking (eg, animal dung, crop residues, wood, and charcoal).¹⁻³ Although a billion people in sub-Saharan Africa are projected to gain access to electricity by 2040, 530 million will remain dependent on biomass fuels.⁴ Biomass fuel is typically burned in open fires, often indoors, leading to high levels of household air pollution from smoke. Women and children experience high exposures in and around the home due to gender-based domestic roles and these exposures have been linked to a range of adverse health outcomes, including chronic obstructive pulmonary disease, lung cancer, ischaemic heart disease, asthma, and pneumonia.⁵⁻¹¹ Household air pollution from

biomass fuel smoke is a leading cause of global disability and mortality with over 4 million deaths attributed to this exposure annually by WHO.¹² This burden, including about half a million deaths due to pneumonia in young children, falls disproportionately on the poor, especially in sub-Saharan Africa. In Malawi, pneumonia is a leading cause of mortality among children younger than 5 years of age.¹³ Over 95% of households depend on biomass for fuel and household air pollution levels are high and well beyond WHO safe limits.¹⁴ A substantial burden of pneumonia in young children might be attributable to biomass smoke exposure in this setting.

Two trials to assess the effects of interventions to reduce exposure to biomass smoke on health outcomes have been published to date.^{15,16} Both trials used stoves

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See Comment page 130

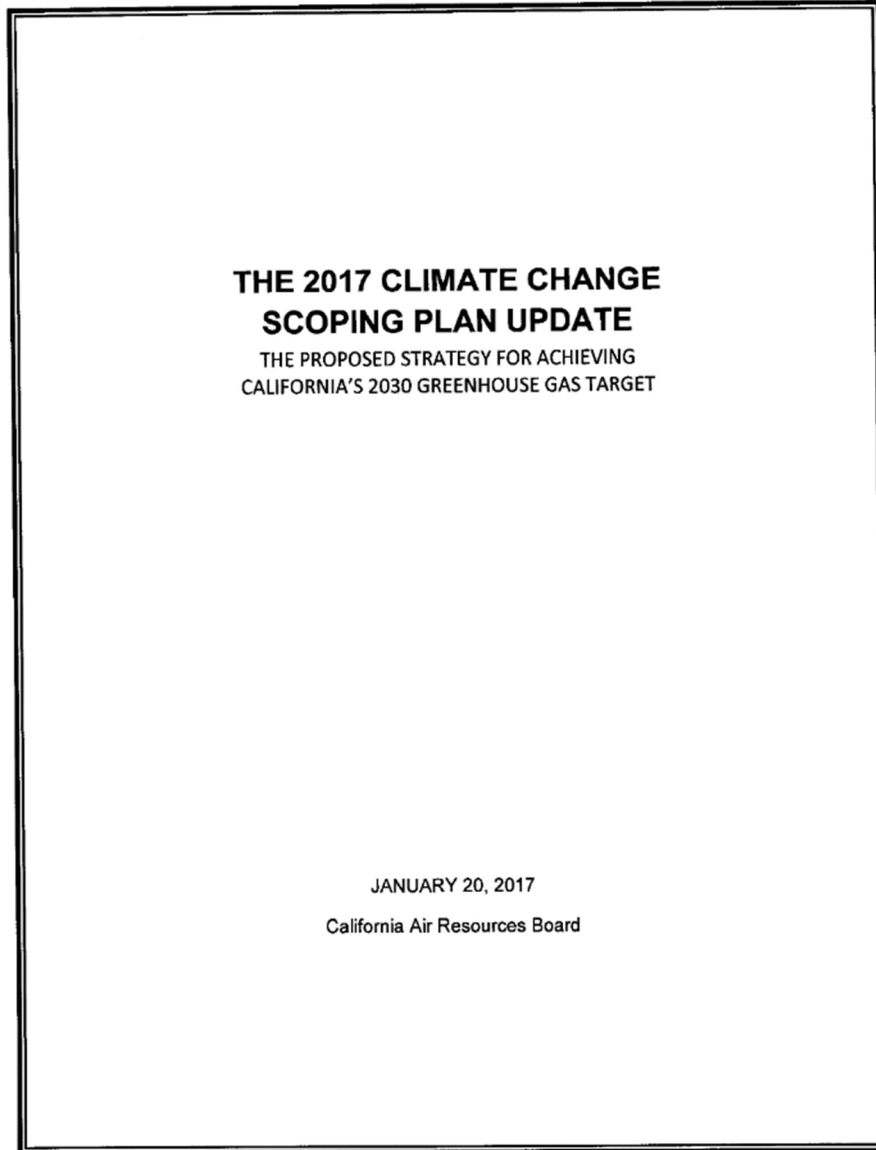
Malawi Liverpool Wellcome Trust Programme, Blantyre, Malawi (K Martimer, PhD), C B Ndumalo Dip, A W Naurayo, W Weston MBChB, Prof S B Gordon MD; Liverpool School of Tropical Medicine, Liverpool, UK (K Martimer, W Weston, D Havens DO, Prof D Wang PhD, Prof S B Gordon); Malawi Epidemiology and Intervention Research Unit, Chilumba, Malawi (J Malava MPH, C Katundu Dip, Prof M Nyirenda PhD), A Crampin MPH; University of Liverpool, Liverpool, UK (D Pope PhD, Prof N G Bruce PhD); London School of Hygiene & Tropical Medicine, London, UK (Prof J Balmes); Queen Mary University of London, London, UK (Prof J Grigg MD); University of California, Berkeley, CA, USA (Prof J Balmes MD); and University of California, San Francisco, CA, USA (Prof J Balmes)

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Hydrology | Hydraulics | Geomorphology | Design | Field Services

TECHNICAL MEMORANDUM

Date:	February 12, 2017
To:	Ileene Anderson and John Buse / The Center for Biological Diversity
From:	Kevin Coulton, P.E.,CFM
Project:	17-1002
Subject:	Newhall Ranch Project Technical Review

1 INTRODUCTION

1.1 BACKGROUND

The Center for Biological Diversity (CBD) contracted with cbec, inc. eco engineering (cbec) to perform a technical review focusing on potential impacts to unarmored three-spine stickleback (UTS) from "No Water Contact (NWC)" design and construction related to the river reach involved in the Newhall Ranch Project Technical Review as related to development and associated bridge construction at two locations on the Santa Clara River. This review is limited to comments on the adequacy of data, methods, and findings, with respect to hydrology, hydraulics, and geomorphology.

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1.2 GOAL AND OBJECTIVES

The goal of the technical review was to assess potential impacts to the UTS and its habitat from the proposed Newhall Ranch Project development and associated bridge construction. The objectives of the review were to:

1. Evaluate the effectiveness of the No Water Contact (NWC) proposal to preclude impacts to the UTS during construction and during maintenance.
2. Based on the dynamic hydrology of the Santa Clara River, assess the bridge configuration once constructed to preclude impacts to UTS over time and maintaining the hydrologic regime that supports UTS.
3. Identify any new environmental impacts that might be associated with the No Water Contact alternative.

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2 SUMMARY OF KEY FINDINGS

The following are key findings related to the objectives of this review:

1. Effectiveness of the NWC proposal to preclude UTS impacts – The applicant has made a reasonable effort to develop mitigation measures that will avoid water contact during construction; however, there are several items that could be clarified as follows:
 - Wetted channel - Although it is not explicitly stated in any of the documents reviewed, it is understood that a flow rate of 500 cfs was used to establish the “wetted channel” and is the basis of the NWC method. Independent checks on this flow rate indicate it is a conservative flow rate to use to establish the wetted channel area for the June to September construction window; however, it is not clear how accurate the associated inundation area is because modeling and mapping of the wetted channel appears to have been done using only LIDAR data without more detailed field surveys.
 - Local drainage features - It is understood that the bridge piers will be installed outside of the wetted channel during the dry season; however, it is not clear from available documentation if there are swales or other water features tributary to the wetted channel (i.e., outside of the wetted channel and that may not be evident from LIDAR data) and if these water features may be impacted during construction and long-term maintenance and lead to associated impacts within the wetted channel.

2. Assessment of the bridge configuration once constructed to preclude impacts to UTS over time – It is acknowledged that the Santa Clara River is an alluvial stream system, which is subject to both vertical and horizontal variation of the channel geometry (PACE, 2016d); however, in all of the documents that were reviewed the technical analyses were limited to the assumption of a rigid river channel boundary with fixed geometry. While this is a standard of practice for evaluating hydraulic conditions under existing conditions it does not address potential future changes to the river morphology and the associated effects the bridge piles may have on the river system once built and, in turn, how UTS may be impacted over time. While it is not known how the river may change in the future, historic changes are documented and a simple exercise was performed to evaluate the relationship of the proposed bridge piles at both bridge locations with respect to historic channel planform patterns using Google Earth historic imagery (Attachment A). This exercise demonstrates that there is a high likelihood that the river channel may change location in the future and some bridge piles may become located within the active channel inhabited by UTS. Therefore, it would seem reasonable for the applicant to address these future conditions and mitigation measures in the environmental analysis.

3. Identification of any new environmental impacts - The wetted channel is defined based on surface topographic conditions; however, it is not clear if hyporheic zone investigations have been made to understand the potential groundwater connections between the wetted channel and the dry riverbed where grading will occur. The concern is if physical impacts to the UTS may occur during their nest building or breeding season (Figure 1) via construction intrusions into the

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hyporheic zone, below the water table, where UTS may inhabit wetted interstitial spaces between riverbed sediments.

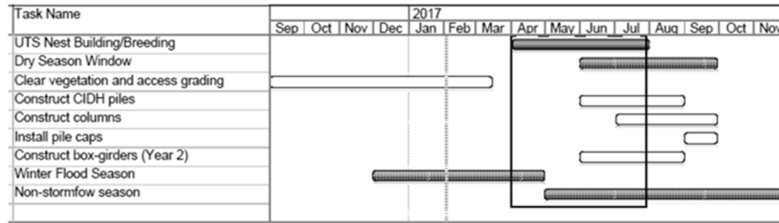


Figure 1. Seasonal Flow Conditions and Timing of Construction Activities

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3 LITERATURE REVIEW

3.1 Overview

cbec’s review was limited to public information and files that were provided by the CBD including:

1. “Pages from NewhallDraftAEA.pdf” – This was the primary file for review and included pages 1-18 to 1-24 from California Department of Fish and Wildlife (2016).
2. “AEA_Apdx_2 - no water contact construction” – This file included Geosyntec (2016a), Moffatt & Nichol (2016a), Moffatt & Nichol (2016b), and PACE (2015a).
3. “AEA_Apdx_3 - scour analysis” - This file included PACE (2016b) and PACE (2016c).
4. “AEA_Apdx_4 - Effects to UTS” - This file included State of California Department of Fish and Wildlife, 2016a and State of California Department of Fish and Wildlife (2016b).
5. “Landmark apx2_2a no water contact” - This file included Moffatt & Nichol, 2016b, Moffatt & Nichol, 2016c, PACE (2016d) and Geosyntec (2016b).
6. “Landmark apx2_2b - analysis of impacts to UTS” - This file included ICF International and R2 Resource Consultants, Inc. (2016), ICF International (2016), PACE (2016b), and PACE (2016c).
7. “Newhall-EIR-AEA-Map-Nov2016” -
8. “Pages from DFG002423” – Pages 2.0-81 to 2.0-93 from California Department of Fish and Wildlife (2010).

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The following sections provide review comments associated with key documents.

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3.2 UTS HABITAT/LIFECYCLE CHARACTERISTICS

The excerpts compiled in Attachment B were obtained from public information provided by the CBD and are focused on UTS habitat/lifecycle characteristics associated with hydrologic, hydraulic, and geomorphic processes that were used to guide this review.

3.3 California Department of Fish and Wildlife, 2016. Newhall Ranch RMDP/SCP Project, Draft Additional Environmental Analysis

Section 1.4.2 of this document addresses the UTS and potential impacts and mitigation measures related to: Bridge Construction, Maintenance, and Operation; Construction, Operation, and Demobilization of Temporary Haul Routes Bridges; and, Bank Stabilization Construction. The following questions arose during the review of this document:

- Impact 3-1 - It is understood that the bridge piers will be installed outside of the wetted channel during the dry season; however, will swales or other water features tributary to the wetted channel (i.e., outside of the wetted channel) be impacted during construction and long-term maintenance and lead to associated impacts within the wetted channel?
- Impact 3-1 – How exactly did the hydraulic modeling and analysis of expected fish behavior demonstrate that scour depressions around and behind the bridge piers that could result after medium to heavy river flows would not result in stranding of UTS? The UTS are extremely small aquatic organisms and, per Baskin and Bell (1976) the UTS tend to gather in areas of slower-moving or standing water, implying that they would become stranded in scour depressions as flood stages recede.
- Mitigation 3-1d – Mitigation measures will “ensure that no equipment, personnel or debris enter or makes contact with the wetted channel of the river”; however, Mitigation 3-2e mentions monitoring activities beyond the wetted channel that may be a “threat to adjacent natural habitats or nearby species and ensure no equipment, personnel or debris enter or makes contact with the wetted channel of the River”. This seems to imply there may be swales or other water features tributary to the wetted channel (i.e., outside of the wetted channel) and these water features could be impacted during construction and long-term maintenance and lead to associated impacts within the wetted channel? Has a detailed topographic field survey been conducted to identify potential small-scale drainage features outside of the wetted channel?
- Mitigation 3-1e – How close to the project sites is the NOAA precipitation gage(s) that will be used to forecast a “clear weather window” and are there any orographic effects on local/regional precipitation patterns between the gage(s) and project sites that may need to be accounted for to provide accurate precipitation forecasts?
- Mitigation 3-2d – “A set-back from the edge of the top of bank for a horizontal distance that is twice the bank height (2 horizontal: 1 vertical) shall be maintained to prevent collapsing the bank of the low flow channel”; has this set-back been mapped using detailed field surveyed topographic data or estimated with a computer exercise (CAD or GIS) to assess the significance of the increased spatial footprint?

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- Mitigation 3-2e – See Mitigation 3-1d comment above.
- Mitigation 3-2 Significance after Mitigation - Mitigation Measure 3-2 would “require that a qualified biologist monitor the installation and demobilization activities to ensure that construction stays outside of the wetted portion of the river and that the temporary pile locations are at least 10 feet away from the edge of the wetted portion of the river”; however, based on Mitigation 3-2d a set-back from the edge of the top of bank is also required and this boundary could be farther than 10 feet away from the edge of the wetted portion of the river. Again, has the Mitigation 3-2d setback boundary been mapped to understand the area necessary to avoid UTS impacts?
- Impact 3-3 – Bank stabilization locations are located within which floodplain, the FEMA 1-percent-annual-chance Special Flood Hazard Area (SFHA), or another designated floodplain?
- Mitigation 3-3d – Where are the bank stabilization construction locations susceptible to winter flood flows and what defines a “winter flood flow”?
- Mitigation 3-3e – Perimeter BMPs would “deflect minor flows (less than 12 inches deep, and less than 15 fps velocities) from entering bank protection construction work zones”. The characteristics of the BMPs are not known; would the BMPs be designed to accommodate both hydraulic criteria and/or the limiting criterion? While flow less than 12 inches deep would likely be capable of being deflected, flow velocities upwards of 15 fps are significant and exceed the permissible velocity for all channel lining materials except for 18 inch D₅₀ rip rap and larger, and gabions and concrete (Fischenich, 2001: Table 2).
- Mitigation 3-3f(3) – “The project applicant or its designee shall assess local stream and groundwater conditions, including flow depths, groundwater elevations, and anticipated dewatering cone of influence (radius of draw down)”. The groundwater table is mentioned with respect to the installation of CIDH piles using steel casing (Moffatt & Nichol, 2016b) and the depth to groundwater is indicated to be 0 – 15 feet (during October 2016), in drought conditions and to avoid potential impacts to the streamflow, groundwater pumping activities and streamflow would be monitored where dewatering activities are within 1000 feet of the wetted channel (State of California Department of Fish and Wildlife, 2016b); however, it is not clear if any field observations or modeling have been performed to assess the potential for drawdown of water levels from dewatering and impacts to UTS. The applicant has performed surface water hydrology investigations at this level of design to guide mitigation measures to avoid UTS impacts; have similar groundwater investigations been performed to obtain data prior to construction? Also, the wetted channel is defined based on surface topographic conditions; it is not clear if hyporheic zone investigations have been made to understand the potential groundwater connections between the wetted channel and the dry riverbed where grading will occur.
- Mitigation 3-3f(4) – If dewatering activities result in the violation of measures in the Construction Groundwater Dewatering Plan, and construction is halted by the designated monitor, what occurs next and how will construction be affected?



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3.4 Santa Clara River Low-Flow Inundation Analysis (PACE, 2016d)

The purpose of this memorandum and associated figures and appendices is to verify the proposed 165-foot pier spacing for the proposed bridges will not be subjected to flooding during the dry season, which for this Project area has been defined as the period between June 1 and September 30. The following questions arose during the review of this document:

- Inundation areas - Figures 1 and 2 in the PACE memorandum show the inundation areas for the highest estimated dry season flow (500 cfs) and the low flow channel in relation to the proposed bridge pile locations. Were historical river channel patterns assessed to understand the potential for changes in alignment of the dry season flow channel in the future and with respect to proposed bridge pier locations and scour? 163
- HEC-RAS Modeling and Manning’s Roughness Coefficients – The roughness coefficients are described but not shown on a map to understand the spatial extent of this parameter used in the hydraulic modeling. Can the HEC-RAS model input and output files be provided for review? 164
- Base Topographic Data – The only topographic data referenced is a 2014 LiDAR survey and it is characterized as fine resolution data; however, no information is provided with respect to the accuracy of the data. There is also no mention of a field topographic survey conducted to augment the LIDAR data and establish detailed cross sections along the proposed bridge pile alignments and topography under water areas. Was a field survey conducted to establish detailed cross sections along the proposed bridge pier alignments to verify and augment the 2014 LIDAR data used for the modeling? Also, are there any standing water areas captured in the 2014 LIDAR data in the vicinity of the wetted channel that might not accurately show topography in the wetted channel areas? 165
- Channel Improvements within the Hydraulic Model – The only improvement mentioned is the bank protection and a note is included stating that the proposed bridge structure was not included in the hydraulic model. Were the bridge piles included in the hydraulic model? 166

3.5 PACE September 30, 2016 memo “Pier Scour Analysis - Newhall Ranch RMDP Permanent Bridges”

The purpose of this memorandum is to provide additional context to the issue of bridge pier scour as it relates to the potential for stranding of fish in scour holes that may result from large storm events. The following questions arose during the review of this document:

- Are bridge pier scour countermeasures being considered so that a scour hole would be prevented from forming in the first place? 167
- At what locations were the sediment samples taken for the grain size (D50, D95) data? 168
- Was the potential for the accumulation of flood debris at bridge piers considered with respect to an increased obstruction area of a pier and increased dimensions of a scour hole? 169

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PAGE 7 OF 23****3.6 Geosyntec, 2016b. Memorandum: Santa Clara River Seasonal Streamflow Analysis**

The purpose of this analysis was to estimate likely and extreme streamflows that may be present during potential project construction windows. The following observations and questions arose during the review of this document:

- Based on corresponding monthly peak flows obtained from historical stream gage data, PACE (2016d) states that Geosyntec estimated the peak flow that is expected during this window to be approximately 500 cfs. Although it is not explicitly stated in any of the documents reviewed, it is understood that this flow rate is used to establish the “wetted channel” and is the basis of the NWC method.
- The wetted channel is based on flows recorded at two USGS stream gages located approximately 3 to 5 miles downstream from the proposed bridge crossings. The drainage areas for the gages are 645 square miles (11109000) and 644 square miles (11108500) while the drainage areas at the locations of the bridges are 418 square miles for the Commerce Center Bridge and 625 square miles for the Long Canyon Bridge (USGS, 2017). Flows from the gage locations do not appear to have been adjusted to the bridge locations to approximate the flows at these locations and this would imply the assumption of larger, more conservative, flows to establish the wetted channel widths at the bridge crossings. Were the resulting USGS stream gage flows adjusted upstream to the bridge crossing locations?
- It is noted that the streamflow records at the gages are fair and poor, respectively, and base (low) flow at both gages is affected by pumping from wells for irrigation (USGS, 1995; USGS, 2016). The 500 cfs peak flow rate was derived from a mean daily flow of 92 cfs¹ which is a flow exceeded about 10 percent of the time, so this is assumed to not be a base flow; however, the relatively fair to poor quality of the recorded data itself is noteworthy. Was the poor and fair quality ratings of the stream flow data evaluated at all?
- Figure 2 shows the last 2 years of recorded flow data (black line) for USGS gage 11109000, the June through September dry season construction windows (pink boxes), and the 500 cfs value (red line). The colored areas show long-term statistics of streamflow for each day of the year at that station and the top of the dark blue area represents the maximum discharge recorded during the period of record for each day of the year. The 500 cfs flow rate appears to be a reasonable flow rate for establishing the wetted channel area.

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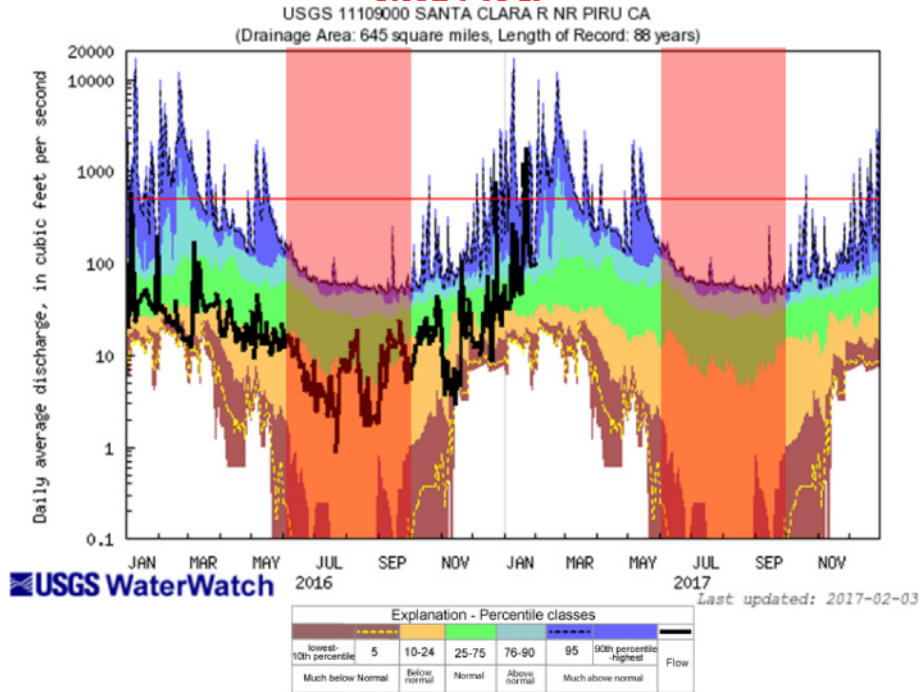
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¹ Approximate instantaneous peak flows were estimated from peak mean daily flows using a regression equation derived by matching annual peak streamflow observations to the mean daily streamflow recorded for the same day.

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Figure 2. Santa Clara River Streamflow Duration Hydrograph

3.7 Moffatt & Nichol, 2016c. Memorandum: Implementation of Proposed “No Water Contact” Construction Program

The purpose of this memorandum is to evaluate whether the permanent bridges, as well as the temporary haul route bridges, can be constructed pursuant to a “No Water Contact” construction program. The following questions arose during the review of this document:

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- It is stated that all work will be completed without any construction activity entering the wetted channel of the River or impacting the wetted channel in any way that results in take of unarmored threespine stickleback (page 2).; however, grading of the dry riverbed adjacent to the wetted channel will occur (page 7). Are there groundwater connections between the dry riverbed and the area of the wetted channel and could construction activity disturb groundwater that is eventually discharged into UTS habitat?
- How close to the wetted channel boundary will vegetation be cleared prior to construction?
- Are there areas where construction access to the riverbed is prohibited due to the proximity or presence of the wetted channel of the river known and delineated?

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- If the temporary haul routes will include a modular bridge deck section that spans the wetted channel of the river, will these modular sections be more than 114-ft long at Commerce Center Drive and 91-ft long at Long Canyon crossings (i.e., the maximum dry season flow widths) with no support piers in the wetted channel?
- What time of year will steel pile vibration occur for construction of the temporary haul route bridges?

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LIDAR/LIDAR

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ATTACHMENT A

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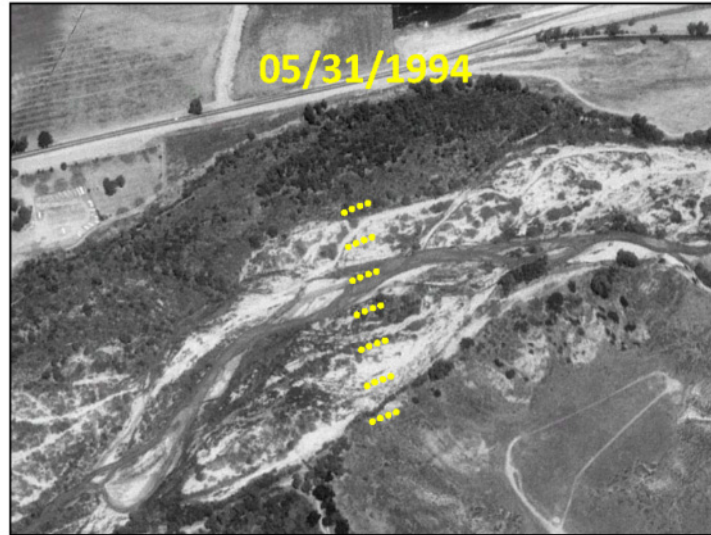
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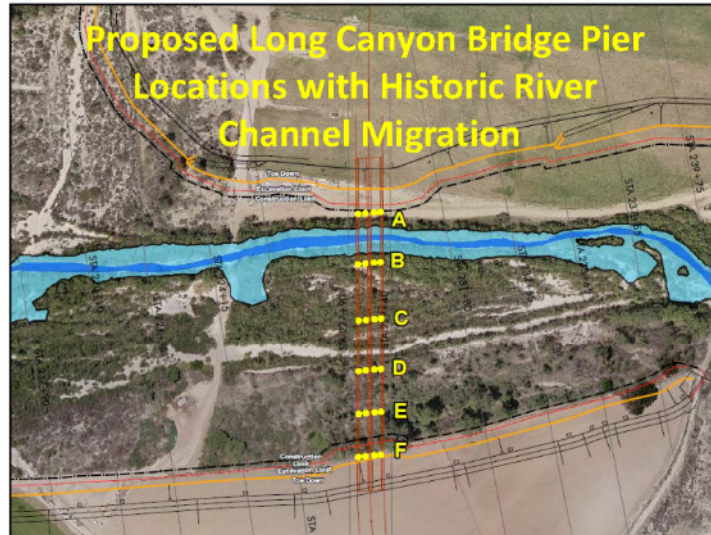
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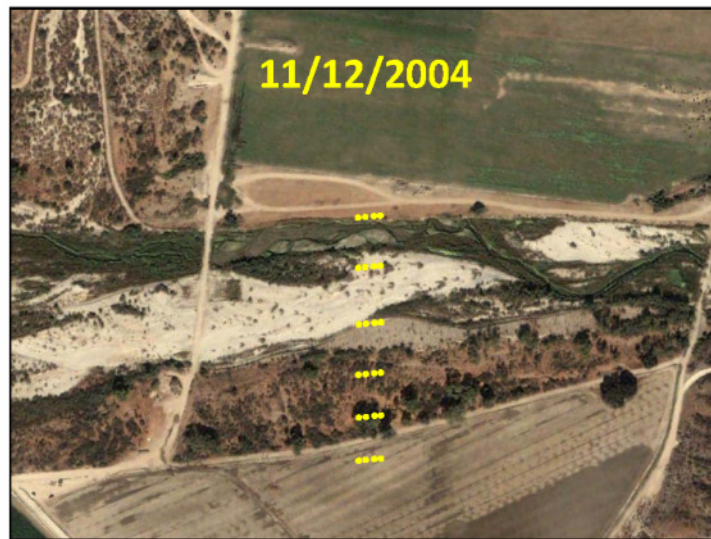
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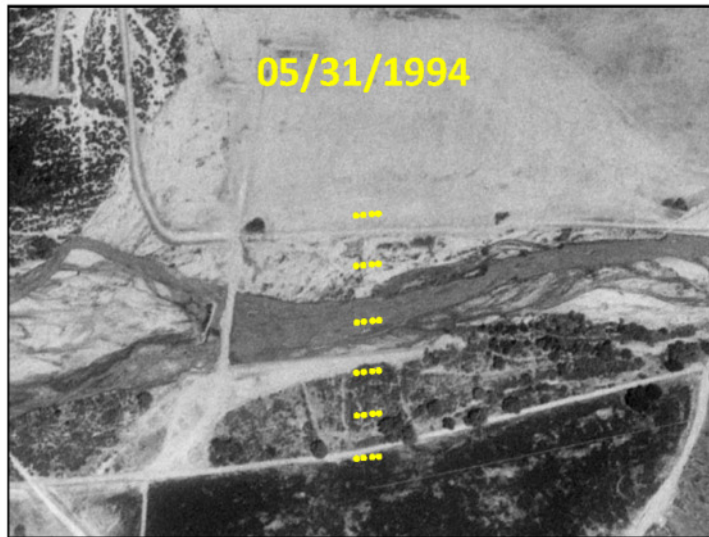
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ATTACHMENT B

The excerpts compiled in this attachment were obtained from public information provided by the CBD and are focused on UTS habitat/lifecycle characteristics associated with hydrologic, hydraulic, and geomorphic processes that were used to guide this review.

- Page 1 - "The UTS is currently restricted to three areas [including] the upper Santa Clara River and its tributaries in Los Angeles County".
- Page 7 - "This location includes a reach of the Santa Clara River below Soledad Canyon where the Los Angeles Aqueduct crosses the river and ending downstream near the Ventura-Los Angeles County line. The distribution of the UTS shifts in this portion of the Santa Clara River due to seasonal changes in water availability (portions of the river go dry during the summer months) and the availability of suitable habitat (adequate vegetation and low flow velocities). Two such areas have continuous flow provided by two different waste water treatment plants. The discharge point for one of the treatment plants is located at the Bouquet Canyon bridge and the other is located immediately downstream of the Interstate 5 freeway bridge".
- Page 16 - "Two sewage treatment plants discharge treated effluent within the UTS habitat in the Santa Clara River. When burdened with heavy flows resulting from large storm events, these treatment plants may potentially discharge raw or partially treated sewage into the UTS habitat."
- Page 7 - "Numerous individuals, including early-stage juveniles, were recorded in the marshy area north of the main channel at Castaic Junction and the confluence of San Francisquito Creek. Their presence, combined with the occurrence of relatively ideal habitat, suggests these locations may be important breeding and nursery areas". (U.S. Fish and Wildlife Service, 2009).
- Page 12 - "Young UTS are typically found at the shallow edges of streams in areas with dense vegetation. The water temperature in these areas tends to be a few degrees higher than the surrounding stream, which may help speed development through the vulnerable early juvenile stages" (U.S. Fish and Wildlife Service, 2009).
- Page 1 - The UTS inhabits "slow-moving reaches or quiet-water microhabitats in streams and rivers. Favorable habitats are usually shaded by dense and abundant vegetation. In more open reaches, algal mats or barriers (e.g., sand bars, floating vegetation, low-flow road crossings) may provide refuge for the species".
- Page 12 - "Baskin and Bell (1976) indicate that the ideal habitat for UTS is a small, clean pond in the stream with a constant flow of water through it. The UTS tend to gather in areas of slower-moving or standing water. In places where water is moving rapidly they tend to be found behind obstructions, or at the edge of the stream, especially under the edge of algal (Cladophora spp.) mats" (U.S. Fish and Wildlife Service, 2009).
- Page 1 - "The UTS reproduce throughout the year with less breeding activity occurring from October to January. Reproduction occurs in areas with adequate aquatic vegetation and slow-moving water" (U.S. Fish and Wildlife Service, 2009).
- Page 5 - "The nature of breeding habitat is dynamic and may shift in structure and specific location from year to year depending on seasonal rainfall and storm cycles" (U.S. Fish and Wildlife Service, 2009).

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- Page 5 - "The smallest specimens of the UTS captured outside of a nest are approximately 10 millimeters (mm) (0.40 in) standard length" (U.S. Fish and Wildlife Service, 2009).
- Page 2 - The UTS have been extirpated from other areas "as a result of the effects of urbanization (e.g., dewatering of streams, habitat alteration, introduction of exotic predators, and pollution)" (U.S. Fish and Wildlife Service, 2009).
- Page 14 - "As part of a residential development, the Newhall Land and Farming Company is proposing to construct approximately 9,096 m (29,843 ft) of bank stabilization along the north and south banks of the Santa Clara River. Approximately 8,928 m (29,293 ft) of buried bank stabilization (i.e., 98 percent of the project total) would be installed in upland areas adjacent to the river. By constructing the majority of the proposed buried bank stabilization in the upland areas, direct impacts to the UTS habitat should be minimized; however, the remaining 168 m (550 ft) of bank stabilization would occur in the UTS habitat."
- Page 19 - "The Metropolitan Water District (MWD) released 100s of acre feet of water into the Santa Clara River in January 2007 in order to inspect and repair its pipelines. Fishery biologists monitoring the discharge of the water observed stranded UTS in temporary pools of water on the upper terraces of the Santa Clara River banks, which were created by the high flows."

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Journal of Herpetology, Vol. 45, No. 3, pp. 319-328, 2011
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Habitat Use and Movement of the Endangered Arroyo Toad (*Anaxyrus californicus*) in Coastal Southern California

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ABSTRACT.—Information on the habitat use and movement patterns of Arroyo Toads (*Anaxyrus californicus*) is limited. The temporal and spatial characteristics of terrestrial habitat use, especially as it relates to upland use in coastal areas of the species' range, are poorly understood. We present analyses of radiotelemetry data from 40 individual adult toads tracked at a single site in coastal southern California from March through November of 2004. We quantify adult Arroyo Toad habitat use and movements and interpret results in the context of their life history. We show concentrated activity by both male and female toads along stream terraces during and after breeding, and, although our fall sample size is low, the continued presence of adult toads in the floodplain through the late fall. Adult toads used open sandy flats with sparse vegetation. Home-range size and movement frequency varied as a function of body mass. Observed spatial patterns of movement and habitat use both during and outside of the breeding period as well as available climatological data suggest that overwintering of toads in floodplain habitats of near-coastal areas of southern California may be more common than previously considered. If adult toads are not migrating out of the floodplain at the close of the breeding season but instead overwinter on stream terraces in near-coastal areas, then current management practices that assume toad absence from floodplain habitats may be leaving adult toads over-wintering on stream terraces vulnerable to human disturbance during a time of year when Arroyo Toad mortality is potentially highest.

The Arroyo Toad (*Anaxyrus californicus*) is a federally endangered amphibian species in both the United States and Mexico (USFWS, 1994; Poder Ejecutivo Federal, 2008). It inhabits cismontane rivers and streams draining to the Pacific Ocean along the west coast of North America, from Monterey County, California (Salinas River) to Northern Baja California, Mexico (Rio Santa Maria; Gergus et al., 1997), as well as transmontane rivers that drain to the Mojave Desert from the north side of the Transverse Ranges (i.e., San Bernardino and San Gabriel Mountains) of southern California (Price and Sullivan, 1988; Grismer, 2002; Mahrdt et al., 2002, 2003; Mahrdt and Lovich, 2004). The toad is associated with low-gradient, intermittent streams and rivers with extensive terrace systems, braided channels, and large areas of fine sediment deposits periodically reworked by flooding (Stebbins, 1951; Cunningham, 1961; Sweet and Sullivan, 2005). Reproduction is dependent upon the availability of shallow and slow moving water typical of flood-disturbed environments from which breeding, egg laying, and larval development occur (Sweet, 1992; Jennings and Hayes, 1994). Arroyo Toads are generally active from the first substantial rains in January to March through August or September, depending on latitude and elevation (Sweet and Sullivan, 2005; Brehme et al., 2010). Adult toads are nocturnally active, remaining underground in sandy stream-sides and stable terraces during the daytime, emerging to engage in foraging and breeding activity at night (Stebbins, 1951). The Arroyo Toad, formerly widespread, has been extirpated from much of its historical range largely because of urban and agricultural development and the channelization and impoundment of streams and rivers (USFWS, 1994). Jennings and Hayes (1994) consider the toads present in 22 river systems, representing 24% of their historical range. Subsequent discoveries of new localities and remnant populations have increased this figure to about 35% (Sweet and Sullivan, 2005).

In addition to occupying washes, arroyos, sandy riverbanks, and other riparian habitats, the use of uplands (areas of low topographical relief outside of the floodplain) is also recognized as a key component of the Arroyo Toad's life history in near-coastal areas of its range (USFWS, 1999, 2009). The

temporal and spatial characteristics of terrestrial habitat use of adult toads, especially as it relates to upland use in coastal areas, however, has not been well defined and remains poorly understood (Griffin and Case, 2001; Sweet and Sullivan, 2005). Holland and Sisk (2000, 2001) found evidence of upland dispersal by Arroyo Toads in coastal areas of San Diego County, California. During their multiyear study (1998 through 2001) at the U.S. Marine Corps Base (USMCB) Camp Pendleton, Holland and Sisk (2000, 2001) trapped adult toads (through the use of drift fences and pitfall traps) within floodplain habitats, but also several hundred meters outside of the floodplain in grassland and sage scrub habitats prior to, during, and after the breeding season. Other than the studies by Holland and Sisk (2000, 2001), however, little additional evidence exists on the use of upland habitats by Arroyo Toads. A radiotelemetry study of Arroyo Toads completed at USMCB Camp Pendleton failed to find evidence of upland dispersal at the close of breeding but, instead, described habitat-use patterns (i.e., male and female toad activity concentrated in the stream channel and terrace habitats during and after breeding) known from other areas of the species' range (Griffin, 1999; Griffin and Case, 2001). In their species ecology review, Sweet and Sullivan (2005) substantiate a pattern of observations that suggest Arroyo Toads are present in stream channel and terrace habitat year-round, with the possible exception of near-coastal areas of the species' range, where proximity to the marine environment provide for milder terrestrial conditions in the summer and fall allowing for the possibility of dispersal by Arroyo Toads into upland habitats at the close of breeding.

Uncertainty regarding the movement of adult Arroyo Toads in coastal areas can lead to conflicting conclusions regarding species dispersal patterns and ultimately affect how the species is managed. In southern California, despite a limited amount of supporting evidence, an upland-dependent life-history model has gained wide acceptance for the Arroyo Toad (Atkinson et al., 2003). The life-history model, developed to inform Arroyo Toad management and monitoring efforts throughout the region, suggests adult toads make extensive movements between riparian and upland environments at the close of breeding. This view of a seasonal migration of toads, based largely on the findings by Holland and Sisk (2000, 2001), runs counter to the stream channel and terrace hypothesis described by Sullivan and Sweet (2005), wherein toads remain in the

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Journal of Fish Biology (2009) 75, 455–489
doi:10.1111/j.1095-8649.2009.02319.x, available online at www.interscience.wiley.com

REVIEW PAPER

The effects of anthropogenic sources of sound on fishes

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There is increasing concern about the effects of pile driving and other anthropogenic (human-generated) sound on fishes. Although there is a growing body of reports examining this issue, little of the work is found in the peer-reviewed literature. This review critically examines both the peer-reviewed and 'grey' literature, with the goal of determining what is known and not known about effects on fish. A companion piece provides an analysis of the available data and applies it to estimate noise exposure criteria for pile driving and other impulsive sounds. The critical literature review concludes that very little is known about effects of pile driving and other anthropogenic sounds on fishes, and that it is not yet possible to extrapolate from one experiment to other signal parameters of the same sound, to other types of sounds, to other effects, or to other species.

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Key words: blasts; impulsive noise; noise effects; ocean noise; seismic air guns; sonar.

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INTRODUCTION

It has become increasingly apparent that anthropogenic (human-generated) sound has the potential to affect the health and wellbeing of animals as well as humans. There is also an increasing awareness of the presence of anthropogenic sounds in the aquatic environment and concern has arisen that these sounds could affect aquatic mammals, diving birds, fishes, amphibians, reptiles and perhaps even invertebrates (e.g. NRC, 1994, 2000, 2003, 2005; Richardson *et al.*, 1995; Popper, 2003; Popper *et al.*, 2004; Hastings, 2008; Popper & Hastings, 2009).

Despite the concerns raised by the increased presence of anthropogenic sound in the aquatic environment, very little is known about the effects of exposure to such sounds on marine mammals (Southall *et al.*, 2007; Hastings, 2008), and far less is known about the effects on fishes (see reviews in NRC, 1994, 2000, 2003; Popper, 2003, 2006; Popper *et al.*, 2004; Hastings, 2008; Popper & Hastings, 2009). One must always be cautious when extrapolating outside the bounds of empirical data, and because data available for the effects of sound on fishes are so few, extra caution

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**Unarmored Threespine Stickleback
(*Gasterosteus aculeatus williamsoni*)**

**5-Year Review:
Summary and Evaluation**



Photo by Chris Dellith, U.S. Fish and Wildlife Service

**U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
Ventura, California**

May 29, 2009

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Vol. 76 Wednesday,
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Part II

Department of the Interior

Fish and Wildlife Service
50 CFR Part 17
Endangered and Threatened Wildlife and Plants; Revised Critical Habitat
for the Arroyo Toad; Final Rule

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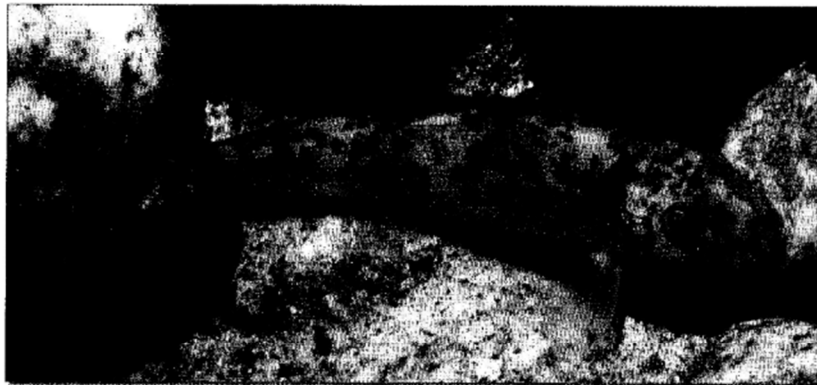
EFFECTS OF 'BOOM AND BUST' DEMOGRAPHY AND GEOGRAPHIC ISOLATION ON THE POPULATION GENETICS OF THE SANTA ANA SUCKER (*CATOSTOMUS SANTAANAE*) IN SOUTHERN CALIFORNIA

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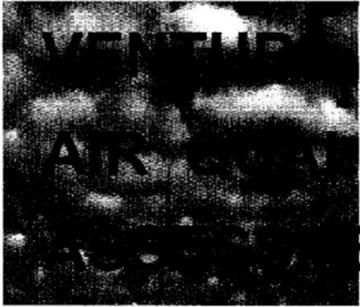
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Video by Manna Warburton

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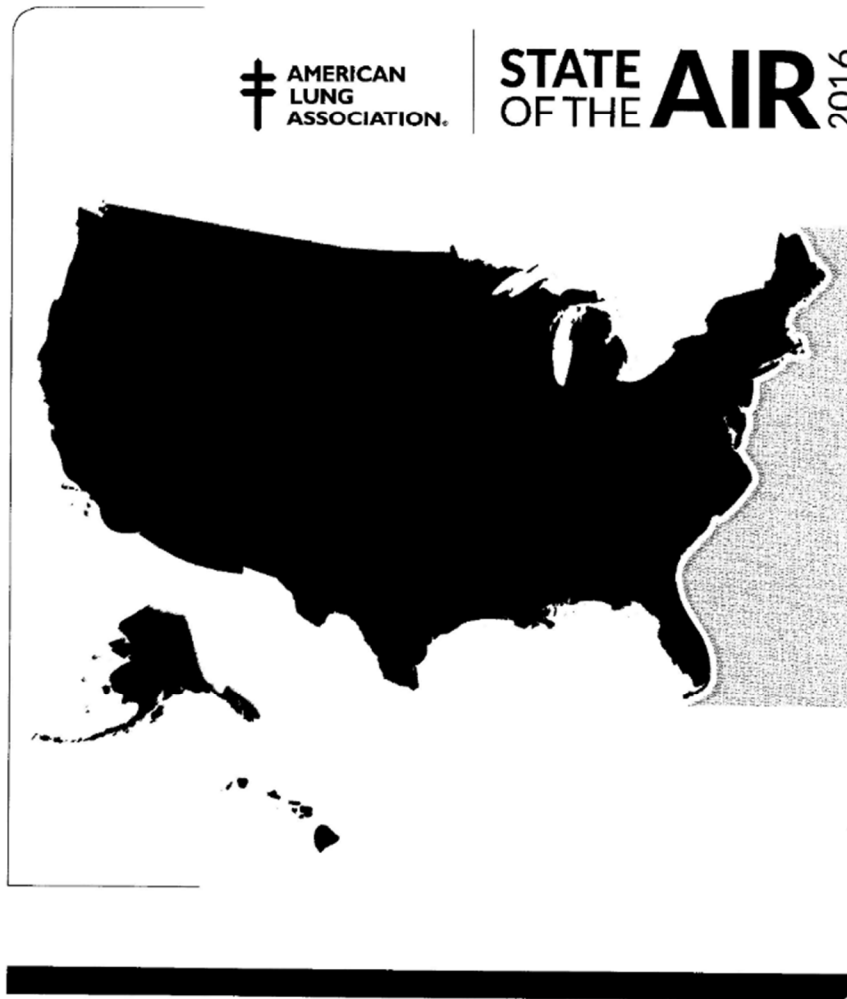
**VENTURA COUNTY
AIR QUALITY
AGREEMENT
GUIDELINES**

October 2003



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**PLANNING
HEALTHY
PLACES**

A GUIDEBOOK
FOR ADDRESSING
LOCAL SOURCES OF
AIR POLLUTANTS IN
COMMUNITY PLANNING



MAY 2016

Bay Area Air Quality Management District

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Inland Ports of Southern California –
Warehouses, Distribution Centers, Intermodal
Facilities
Impacts, Costs and Trends

Center for Community Action and Environmental Justice

www.ccaej.org
951-360-8451

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14 **SUPERIOR COURT OF THE STATE OF CALIFORNIA**
IN AND FOR THE COUNTY OF LOS ANGELES

15 CENTER FOR BIOLOGICAL DIVERSITY,) Case No. BS 131347
 16 FRIENDS OF THE SANTA CLARA RIVER,)
 SANTA CLARITA ORGANIZATION FOR) **PETITIONERS' BRIEF ON REMEDY**
 17 PLANNING THE ENVIRONMENT,)
 WISHTOYO FOUNDATION/VENTURA)
 18 COASTKEEPER, and CALIFORNIA) Dept.: SE-G
 19 NATIVE PLANT SOCIETY) Judge: Hon. John A. Torribio,
) Hearing Date: December 16, 2016
 20 Petitioners,) Hearing Time: 9:00 a.m.
) Action Filed: January 3, 2011
 21 vs.)

22 CALIFORNIA DEPARTMENT OF FISH)
 AND WILDLIFE and DOES 1-20,)
 23 Respondents,)

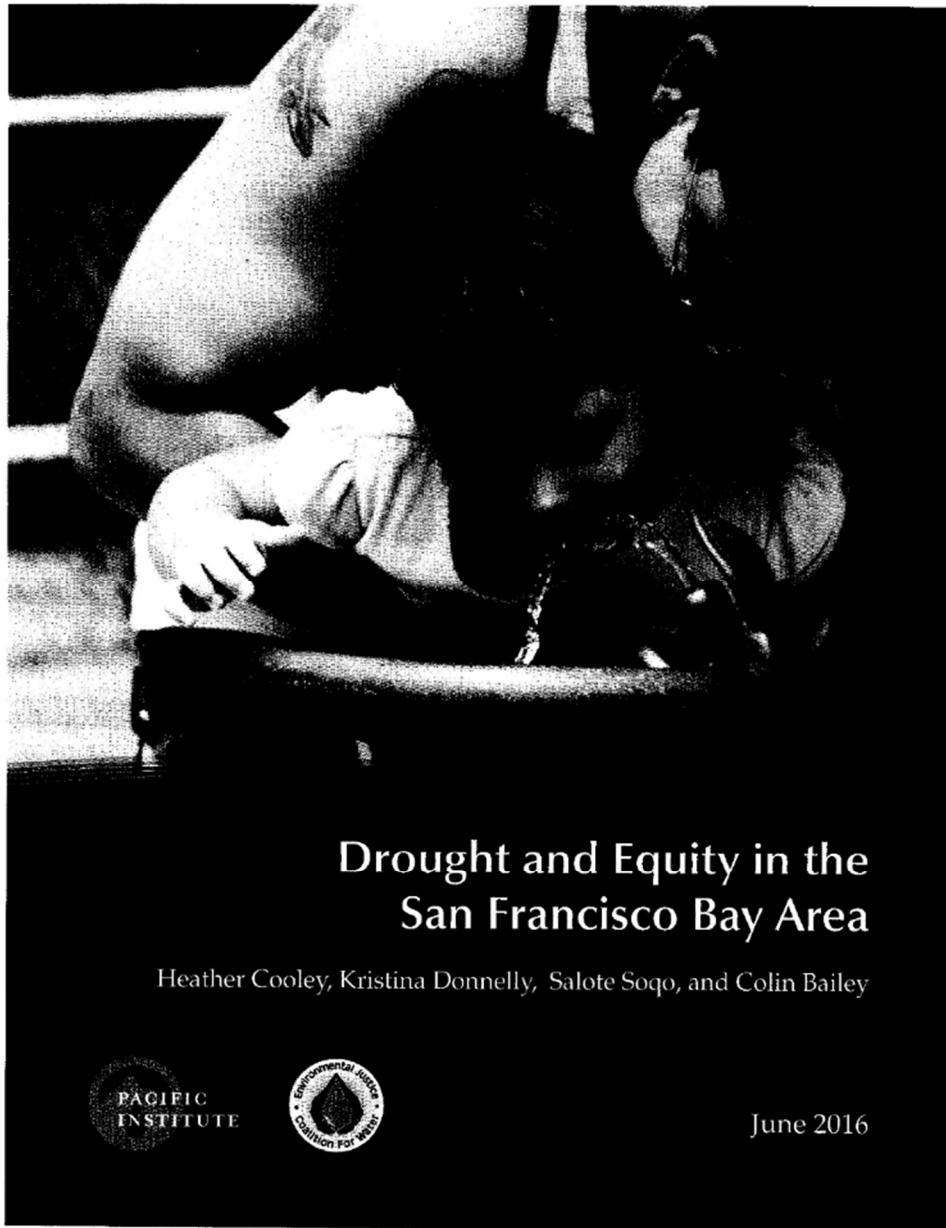
24 NEWHALL LAND AND FARMING)
 25 COMPANY and DOES 21-50,)
 26 Real Parties in Interest.)
 27

Petitioners' Brief on Remedy

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Big, Bad, Salty Drought Term

Water Deeply: www.newsdeeply.com/water

Using new snowpack data collected by satellites, we now have a better view of California's water deficit, and it is not a pretty picture. Steven Margulis of UCLA explains just how deep the problem is.

WRITTEN BY Matt Weiser

PUBLISHED ON Jul. 1, 2016

READ TIME Approx. 8 minutes

THE CALIFORNIA DROUGHT is now in its fifth year. But what if we told you it could take four more years to get out of it?

That's the alarming result of a study published June 21 in *Geophysical Research Letters*. The study analyzed California's mountain snowpack to assess the severity of the current drought and compare it to past water shortages.

The study found that the current drought is, without question, the worst ever recorded in the state as measured by the "deficit" in the snowpack and the crucial freshwater it provides to the state. And largely because of its long duration, it will also likely take several years of winter storms to make up that deficit – 4.4 years, to be exact.

That estimate was developed, first, by analyzing historical on-the-ground snowpack measurements together with a new resource: detailed satellite imagery of the mountain snowpack, gathered in recent decades by the federal government's Landsat program. This new data provides a more comprehensive picture of the snowpack because it looks at all of it, not just location-specific data gathered by sensors on the ground.

The researchers, led by Steven Margulis, a professor of civil and environmental engineering at the University of California, Los Angeles (UCLA), then ran thousands of computer models using

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EXHIBIT TT
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Future land-use related water demand in California

Article in *Environmental Research Letters* · May 2016
Impact Factor: 3.91 · DOI: 10.1088/1748-9326/11/5/054018

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