

SUPREME COURT COPY

No. S223603

IN THE SUPREME COURT OF THE STATE OF CALIFORNIA

CLEVELAND NATIONAL FOREST FOUNDATION; SIERRA CLUB;
CENTER FOR BIOLOGICAL DIVERSITY; CREED-21; AFFORDABLE
HOUSING COALITION OF SAN DIEGO COUNTY; PEOPLE OF THE
STATE OF CALIFORNIA,
Plaintiffs, Intervener and Respondents,

v.

SAN DIEGO ASSOCIATION OF GOVERNMENTS; SAN DIEGO
ASSOCIATION OF GOVERNMENTS BOARD OF DIRECTORS,
Defendants and Appellants.

After a Decision by the Court of Appeal of the State of California
Fourth Appellate District, Division One, Case No. D063288

Appeal from a Judgment by the San Diego County Superior Court
Honorable Timothy B. Taylor
Superior Court Case No. 37-2011-00101593-CU-TT-CTL
Consolidated with Case No. 37-2011-00101660-CU-TT-CTL

**APPLICATION FOR LEAVE TO FILE *AMICI CURIAE* BRIEF IN
SUPPORT OF PLAINTIFFS; PROPOSED BRIEF OF *AMICI
CURIAE* CLIMATE SCIENTISTS DENNIS D. BALDOCCHI, Ph.D.,
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**APPLICATION FOR LEAVE TO FILE AMICI CURIAE BRIEF
AND STATEMENT OF INTERESTS OF AMICI CURIAE**

TO THE HONORABLE CHIEF JUSTICE OF THE CALIFORNIA
SUPREME COURT:

Amici curiae Dennis D. Baldocchi, Ph.D., Robert A. Eagle, Ph.D., Marc Fischer, Ph.D., John Harte, Ph.D., Mark Z. Jacobson, Ph.D., James C. McWilliams, Ph.D., Aradhna K. Tripathi, Ph.D., and Anthony L. Westerling, Ph.D. (collectively, “*amici*”) respectfully request to file the accompanying brief pursuant to California Rules of Court, Rule 8.520, subd. (f).¹ *Amici* believe that this brief will help ensure that this Court’s deliberation is informed by sound science on the climate change impacts of the project at issue; by a fuller understanding of the long-term threats to the San Diego region and to California from climate change; and by information about how significantly the Regional Transportation Plan departs from the long-term greenhouse gas emission trajectories that might lessen these threats.

Amici are some of California’s most preeminent climate scientists. They conduct research in fields related to changes in global and California climate. They are recipients of numerous prestigious awards, receiving titles and recognition from esteemed institutions including the National Academy of Sciences, the National Science Foundation, the California

¹ The work of Jamie Friedland and Brendan Mace, undertaken as students in the UCLA Environmental Law Clinic, contributed significantly to this brief.

Academy of Sciences, the American Association for the Advancement of Science, the American Geophysical Union, and the American Meteorological Society. They lead respected research teams at the University of California at Berkeley; the University of California, Los Angeles; the University of California, Merced; the University of California, Davis; and Stanford University. They have advised national and international climate policymakers, and contributed to the work of the United Nations' Intergovernmental Panel on Climate Change (IPCC). Their research has been instrumental in shaping the scientific understanding of climate change and the interactions between climate and physical, ecological, and human environments.

Amici have seen in their research clear signs of the effects of climate change. They recognize that it will be necessary to reduce the quantity of human greenhouse gas emissions in order to slow these effects. Through their expertise, *amici* believe that they can share with the Court important insights into the science of climate change and the physical impacts which result from increased atmospheric concentrations of greenhouse gases. They also recognize that the Regional Transportation Plan at issue puts San Diego on a climate trajectory that runs counter to the clear counsel of the scientific community. Through this brief, *amici* hope to provide information to the Court to contextualize the Plan's divergence from a scientifically-supported emissions trajectory.

The following *amici* accordingly seek leave to file the accompanying brief:

Dr. Dennis D. Baldocchi is a Professor in the Department of Environmental Science, Policy, and Management at the University of California at Berkeley. He holds a B.S. in Atmospheric Sciences from the University of California, Davis, and a Ph.D. in Bioenvironmental Engineering from the University of Nebraska, Lincoln. His research on biosphere-atmosphere interactions studies the physical, biological and chemical control of trace gas exchange between vegetation, soil and the atmosphere. He has authored or coauthored over 200 peer reviewed papers, which have been cited over 19,000 times. He is a former Editor-in-Chief of the Journal of Geophysical Research: Biogeosciences, a Fellow of the American Geophysical Union and recipient of the Award for Outstanding Achievement in Biometeorology by the American Meteorological Society.

Dr. Robert A. Eagle is an Adjunct Professor and Assistant Researcher in the Department of Earth and Space Sciences at the University of California, Los Angeles, and a Visiting Researcher in the Division of Geological and Planetary Sciences at the California Institute of Technology. He holds a B.S. with first class honors in Biological Sciences from the University of Durham, and a Ph.D. in Molecular and Evolutionary Biology from the University of Cambridge. His research focuses on various aspects of evolutionary biology including utilizing new

geochemical and imaging techniques to constrain the evolution of the physiology of animals, as well as biological responses to climate change.

Dr. Marc Fischer is a Staff Scientist in the Sustainable Energy Systems Group and Environmental Energy Technology Division at the Lawrence Berkeley National Laboratory, and an Adjunct Associate Research Scientist at the Air Quality Research Center at the University of California, Davis. He holds a Ph.D. in Physics from the University of California at Berkeley. He has co-authored more than 50 refereed journal publications, most recently focusing on atmospheric studies of natural and anthropogenic processes affecting greenhouse gases and other atmospheric constituents, and development of sustainable solutions to energy and environmental problems. He is currently working to quantify the sources of California's GHG emissions, and to identify cost-effective mitigation options.

Dr. John Harte is a Professor in the Energy and Resources Group and the Ecosystem Sciences Division of the College of Natural Resources at the University of California at Berkeley. He holds a B.A. in Physics from Harvard University and a Ph.D. in Theoretical Physics from the University of Wisconsin. Dr. Harte has served on six National Academy of Sciences Committees and has authored over 200 scientific publications on topics such as biodiversity, climate change, biogeochemistry, energy, and water resources. His honors and awards include elected fellowship to the

American Physical Society and the California Academy of Sciences, a Pew Scholars Prize in Conservation and the Environment, and a Guggenheim fellowship. His research focuses on the effects of human actions on, and the linkages among, biodiversity, ecosystem structure and function, and climate.

Dr. Mark Z. Jacobson is a Professor of Civil and Environmental Engineering, a Senior Fellow of the Woods Institute for the Environment and the Precourt Institute for Energy, and Director and Cofounder of the Atmosphere/Energy Program at Stanford University. He holds a B.S. in Civil Engineering, a B.A. in Economics, and an M.S. in Environmental Engineering from Stanford University, and a Ph.D. in Atmospheric Science from UCLA. He has served on the Energy Efficiency and Renewables advisory committee to the U.S. Secretary of Energy, and has authored two textbooks and nearly 150 peer-reviewed journal articles. His research focuses on better understanding severe atmospheric problems, and developing and analyzing large-scale clean-renewable energy solutions to them.

Dr. James C. McWilliams is a Professor of Earth Sciences at the University of California, Los Angeles. He holds a B.S. with Honors from the California Institute of Technology, and a Ph.D. from Harvard University, in Applied Mathematics. He was elected to the National Academy of Sciences and is a Fellow of the American Geophysical Union,

and has served on the National Research Council's Committee on Climate Change Science that reviewed the state of climate science for President Bush. He has been involved in the study of oceanic and atmospheric circulations and climate since 1970, and has authored or co-authored hundreds of scientific papers in these fields.

Dr. Aradhna K. Tripathi is an Assistant Professor in the Atmospheric and Oceanic Sciences Department and the Earth and Space Sciences Department at the University of California, Los Angeles. She holds a B.S. in Geology from California State University, and a Ph.D. in Earth Sciences from the University of California, Santa Cruz. Her research focuses on the physical and biological processes that influence climate, and the role of the carbon cycle in changing climate and seawater chemistry.

Dr. Anthony L. Westerling is an Associate Professor of Management in the School of Engineering at the University of California, Merced. He holds a B.A. in Economics and International Area Studies from the University of California, Los Angeles, and a joint Ph.D. in Economics and International Affairs from the University of California, San Diego. He specializes in applying statistical and economic expertise to environmental problems, and his research focuses on climate change impacts connected to wildfire.

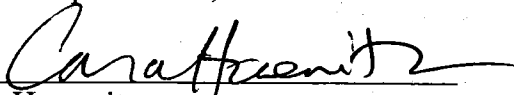
Pursuant to California Rules of Court, Rule 8.520, subd. (f)(4), *amici* declare that no party or counsel for a party in the pending appeal authored

the accompanying brief in whole or in part. Furthermore, no party, counsel for party, or other person or entity made a monetary contribution intended to fund the preparation or submission of the accompanying brief.

The decision of this Court will directly affect *amici*, and *amici* may assist the Court's decision through their unique perspectives. Accordingly, *amici* respectfully request the permission of the Justices to file this *amici curiae* brief.

Dated: September 8, 2015

By:



Cara Horowitz

Frank G. Wells Environmental Law Clinic
Counsel for *Amici* Dennis D. Baldocchi,
Ph.D., Robert A. Eagle, Ph.D., Marc
Fischer, Ph.D., John Harte, Ph.D., Mark Z.
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Ph.D., Aradhna K. Tripathi, Ph.D., and
Anthony L. Westerling, Ph.D.

AMICI CURIAE BRIEF

I. INTRODUCTION

Climate change is likely to be the most serious environmental threat that California will face in this century. Scientists across a wide field of research have identified severe threats to the state that will result from increased greenhouse gas (GHG) emissions. Heat waves will intensify. The snowpack critical to sustaining the state's already strained water supplies will shrink. Wildfires will become more frequent. Infectious disease ranges will expand. Rising sea levels will begin to flood and erode the State's cherished shorelines. These impacts and many more present a grave threat to the health and welfare of millions of Californians, and may result in hundreds of billions of dollars in economic costs and losses.

While the basic science of climate change has been understood for many years, modern advances have allowed us to model and understand the impacts of climate change with greater precision and certainty. As our understanding of climate change has improved, we in the scientific community have come to understand the dangers of climate change to be increasingly more acute and immediate than previously thought. There is now a clear consensus among scientists that the impacts of climate change are presently occurring, in California and around the world, and that these impacts will continue to become more pronounced and severe unless GHG emissions are reduced. This understanding has guided California state

policy, which calls for a continuous reduction of GHG emissions over the next decades. California's aim to reduce its statewide GHG emissions to 80 percent below 1990 levels by the year 2050 reflects, and is consistent with, this science.

The 2050 Regional Transportation Plan and Sustainable Communities Strategy ("Plan") adopted by the San Diego Association of Governments ("SANDAG") is in notable tension with the science of climate change and with the state policies reflecting this science. The actions proposed by the Plan will increase San Diego's 2050 GHG emissions over even today's levels. The Plan's long-term infrastructure investments commit the San Diego region to a climate trajectory that may lead to serious climate change impacts. However, SANDAG's Final Environmental Impact Report ("EIR") does not examine these impacts. The EIR also does not acknowledge or address the Plan's conflicts with the GHG reductions called for by climate science and state policy.

A member of the public reading the EIR would learn that GHG emissions under the Plan would be initially reduced, and then subsequently increased. However, the reader would not learn that this later increase is at odds with, and substantially undermines, state GHG emissions goals, nor that it runs counter to consensus scientific opinion regarding the need to significantly reduce GHG emissions in the long-term. As a result, the EIR

does not present a fair picture of the Plan's impacts, and will not facilitate informed decisionmaking on San Diego's transportation future.

This brief introduces some of the impacts that climate change is expected to have on California, and highlights the central role that this information should play in planning future resource commitments.

II. CLIMATE CHANGE PRESENTS A SERIOUS THREAT OF HARM TO THE ENVIRONMENT AND TO CALIFORNIA HUMAN HEALTH AND WELFARE

Climate change threatens harms on a scale greater than any other environmental issue of our time. Over the years, scientific understanding of climate change has developed substantially, such that there exists today an overwhelming consensus among scientists that the climate of our planet is changing as the result of human activity, and that the impacts of this change present serious threats to our environment.

A. There is Clear Consensus within the Scientific Community that Our Climate is Changing

The Intergovernmental Panel on Climate Change (IPCC) is widely regarded as the leading international body for the assessment of climate change. Relying on data from scientists from around the world, the IPCC has found it "unequivocal" that global climate is warming.² This warming

² IPCC, *Climate Change 2013: The Physical Science Basis, Summary for Policymakers* (2013) page 2, *available at* http://www.climatechange2013.org/images/uploads/WGI_AR5_SPM_brochure.pdf.

can be traced to increased atmospheric concentrations of GHGs, which absorb heat energy from the sun in the process popularly known as the “greenhouse effect.”

Much of the increase in GHG concentrations is attributable to human activity, primarily through GHG emissions from fossil fuel combustion and other sources.³ According to the IPCC, “[h]uman influence on the climate system is clear.”⁴ The IPCC has concluded that it is “extremely likely” that the global temperature increases observed since the mid-20th Century are due primarily to human increases in GHG concentrations.⁵

The IPCC has identified numerous likely results of human influence on climate change, including a global increase in heat waves and sea level rise.⁶ Scientists across the globe now recognize that immediate action will be needed to mitigate or minimize these impacts. According to the IPCC, even if GHG concentrations are stabilized at current levels, warming will likely continue for centuries,⁷ and limiting climate change impacts will

³ IPCC, *supra* note 2, at page 9.

⁴ *Id.* at page 13.

⁵ *Id.* at page 15.

⁶ *Id.* at page 17.

⁷ IPCC, *Climate Change 2014: Synthesis Report, Summary for Policymakers* (2014) page 16, *available at* http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf.

“require substantial and sustained reductions of greenhouse gas emissions.”⁸

B. Climate Change Poses Serious Threats to California Health, Resources, and Economy

While the impacts of climate change will be borne globally, the impact felt by any particular region will vary. California is expected to experience the effects of climate change across many dimensions, with resulting impacts to human health and welfare, ecological health, and the economy. Numerous studies and reports have documented the many ways in which California is expected to experience climate change. Of note, a 2013 report by the Office of Environmental Health Hazard Assessment (“OEHHA”) (a department of the California Environmental Protection Agency) identifies and analyzes 36 climate change “indicators” in California. This report details significant climate change threats to the state, both presently and in the near future.⁹

Below we present a number of the findings from this report and other studies, to illustrate some of the climate change threats to California not examined in the EIR.

⁸ IPCC, *supra* note 2, at page 17.

⁹Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Indicators of Climate Change in California (2013) (hereafter OEHHA), *available at* <http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeIndicatorsReport2013.pdf>.

- **Rising Temperatures and Extreme Heat**

Although climate change is manifested by a range of environmental impacts, a primary result of increased atmospheric GHG concentrations is a rise in global temperatures. The global trend to higher temperatures will be reflected in local average temperature increases for many areas, including California and the San Diego region.

Annual statewide air temperatures in California have been rising since 1895.¹⁰ In this time, California temperature has risen at a rate of about 1.5 degrees Fahrenheit (°F) per century.¹¹ Minimum temperatures have increased by 1.99°F, while maximum temperatures have risen 1.01°F, reflecting greater increases in average nighttime temperatures.¹² While the coastal regions have shown smaller increases relative to other areas of the state, the South Coast region, which includes San Diego, has experienced greater warming than coastal areas farther north.¹³ Models predict San Diego County temperatures will rise by 1.5 to 4.5°F by 2050.¹⁴

¹⁰ OEHHA, *supra* note 9, at page 38; *citing* Western Regional Climate Center, California Climate Tracker (2013), *available at* <http://www.wrcc.dri.edu/monitor/cal-mon/index.html>. This trend is consistent with the global increases noted by the IPCC. *Ibid.*

¹¹ *Ibid.*

¹² *Ibid.*

¹³ *Id.* at page 42; *citing* Western Regional Climate Center, *supra* note 10.

¹⁴ San Diego Foundation, Climate Change Related Impacts in the San Diego Region by 2050 (2008), page 3, Administrative Record (“AR”) 319:25950.

Heat waves—periods of extreme high temperature—are expected to be an increasing problem in California. Heat waves can present serious health risks: a July 2006 California heat wave killed more than 600 people.¹⁵ Certain populations are especially susceptible to extreme high temperatures, including the elderly, poor, chronically ill, and socially isolated.¹⁶ Forty-six percent of 140 people initially reported killed in the 2006 heat wave lived alone.¹⁷

The impacts of extreme heat may be greatest to those living in urban areas, where naturally high temperatures combine with additional heat sources like vehicles and air conditioners, and where airflow is limited and heat is absorbed by paved surfaces and buildings. This phenomenon, known as the “urban heat island” effect, can raise air temperatures in urban areas by 2 to 10°F over the surrounding area.¹⁸ Other localized impacts of increased GHG emissions may also disproportionately impact urban populations. For example, studies indicate that “domes” of locally higher concentrations of carbon dioxide (CO₂)—the most prevalent GHG—form

¹⁵ Kristen Guirguis et al., *The Impact of Recent Heat Waves on Human Health in California* (2014) 53 *J. Applied Meteorology & Climatology* 3, available at <http://dx.doi.org/10.1175/JAMC-D-13-0130.1>.

¹⁶ San Diego Foundation, *supra* note 14, at page 83, AR 319:26029.

¹⁷ *Id.* at 82.

¹⁸ OEHHA, *supra* note 9, at page 130; citing U.S. Climate Change Science Program, *Analyses of the Effects of Global Change on Human Health and Welfare and Human Systems: Final Report, Synthesis and Assessment Product 4.6* (2008), available at <http://cfpub.epa.gov/ncea/cfm/recorddisplay.cfm?deid=197244>.

over urban areas, and that these elevated CO₂ concentrations may increase the health impacts of ozone and particulate matter pollution, including premature mortality.¹⁹

California's south coast has recently been particularly susceptible to heat waves, showing the greatest increases in nighttime summer temperatures of any region in the state.²⁰ Approaching the year 2050, San Diego is predicted to experience heat waves of increasing frequency, magnitude, and duration.²¹

- **Drought and Diminished Water Supply**

Among the extreme weather events California is likely to experience in the coming decades is an increase in drought.²² San Diego County, an

¹⁹ Mark Z. Jacobson, *On the causal link between carbon dioxide and air pollution mortality* (2008) 35 *Geophys. Res. Lett.* L03809, available at <http://www.stanford.edu/group/efmh/jacobson/Articles/V/2007GL031101.pdf>; Mark Z. Jacobson, *Enhancement of Local Air Pollution by Urban CO₂ Domes* (2010) 44 *Envtl. Sci. & Tech.* 2497, available at <http://www.stanford.edu/group/efmh/jacobson/Articles/V/es903018m.pdf>.

²⁰ OEHHA, *supra* note 9, at page 50; citing E.P. Maurer et al., *A long-term hydrologically based dataset of land surface fluxes and states for the conterminous United States* (2002) 15 *Journal of Climate* 3237, available at [http://dx.doi.org/10.1175/1520-0442\(2002\)015<3237:ALTHBD>2.0.CO;2](http://dx.doi.org/10.1175/1520-0442(2002)015<3237:ALTHBD>2.0.CO;2); data updated to 2010 at

http://www.engr.scu.edu/~emaurer/gridded_obs/index_gridded_obs.html.

²¹ San Diego Foundation, *supra* note 14, at page 82, AR 319:26029.

²² OEHHA, *supra* note 9, at page 226; citing Michael D. Mastrandrea et al., *California Climate Change Center, Current and Future Impacts of Extreme Events in California* (2009), available at <http://www.energy.ca.gov/2009publications/CEC-500-2009-026/CEC-500-2009-026-F.PDF>.

already dry area, could face drought conditions that would strain the region's ability to meet its projected water needs.²³

Many areas of California rely on spring runoff from snowpack to meet their water supply needs during the summer dry season.²⁴ Snowmelt has historically contributed about 35 percent of the state's reservoir capacity.²⁵ Over the last century, however, warmer winter and spring weather means that water previously stored as snowpack is now falling increasingly as rain.²⁶ As a result, spring runoff is decreasing. During the twentieth century, rivers in the Sierra Nevada mountain range experienced a drop in spring runoff between five and 13 percent.²⁷

Across the southwestern United States, yearly runoff and groundwater are forecasted to decrease an average of seven inches by the year 2050 as a result of climate change.²⁸ San Diego could be hit particularly hard by these impacts, due to the relatively small capacity of its aquifers.²⁹

The current drought makes clear how damaging this trend may be. Recent measurements show 2015 snowpack water content at five percent of

²³ San Diego Foundation, *supra* note 14, at page 40, AR 319:25987.

²⁴ OEHHA, *supra* note 9, at page 29.

²⁵ *Id.* at page 77.

²⁶ *Id.* at page 72.

²⁷ *Ibid.*

²⁸ San Diego Foundation, *supra* note 14, at page 45, AR 319:25992.

²⁹ *Ibid.*

historic average levels, the lowest in 65 years of recorded history.³⁰ In April 2015, after months of prolonged severe drought, Governor Brown ordered unprecedented cuts in municipal water consumption across the state.³¹ Under the regulations implementing this order, the city of San Diego is required to cut its water use by 16 percent, while other San Diego County communities will need to cut their use by as much as 36 percent.³²

- **Wildfires**

In the past several decades, wildfires have become an increasing threat to California and surrounding states. From 1987 to 2003, wildfires in the western United States occurred nearly four times more frequently than on average, and the total area burned was more than six times the level seen between 1970 and 1986.³³ Between these same two periods, the length of the yearly fire season in the western United States extended by 78 days (a 64 percent increase), and the average duration of individual fires grew from

³⁰ Cal. Dept. of Water Res., *Sierra Nevada Snowpack Is Virtually Gone; Water Content Now Is Only 5 Percent of Historic Average, Lowest Since 1950* (Apr. 1, 2015), *available at* <http://www.water.ca.gov/news/newsreleases/2015/040115snowsurvey.pdf>.

³¹ Exec. Order B-29-15 (Apr. 1, 2015).

³² Konstantinovic, *County Mandatory Water Cutbacks Decreased to 16 Percent*, *Times of San Diego*, (April 18, 2015) *available at* <http://timesofsandiego.com/politics/2015/04/18/county-mandatory-water-cutbacks-decreased-to-16-percent>; *see* Cal. Code Regs. tit. 23, § 865.

³³ OEHHA, *supra* note 9, at page 139; *citing* A.L. Westerling et al., *Warming and earlier spring increase western U.S. Forest wildfire activity*, *Science* 313(5789): 940-943 (2006), *available at* <http://www.sciencemag.org/content/313/5789/940.abstract>.

one week to about five weeks.³⁴ In 2008, wildfires burned a record 1.4 million acres (over 2,000 square miles) of California land.³⁵ In 2013, the Yosemite Rim Fire burned over 400 square miles of Yosemite National Park and the surrounding area.³⁶

Conditions associated with climate change, such as higher spring and summer temperatures and reduced snowpack, have been identified as factors contributing to the increase in California wildfire.³⁷ Research indicates that wildfires will generally continue to increase throughout the century.³⁸ While living trees absorb CO₂, burning trees release CO₂. If wildfire trends continue, United States forests may even become a net source of CO₂.³⁹

San Diego County presently has some of the worst wildfire conditions in the state, and climate change will likely exacerbate these conditions. The area's warm, arid climate, prevalent shrubby vegetation,

³⁴ *Ibid.*

³⁵ *Id.* at page 137; citing California Department of Forestry and Fire Protection ("CalFire"), California's Forests and Rangelands: 2010 Assessment (2010), available at http://frap.fire.ca.gov/data/assessment2010/pdfs/california_forest_assessment_nov22.pdf.

³⁶ InciWeb: Incident Information System, *Rim Fire* (Oct. 25, 2013) <http://inciweb.nwcg.gov/incident/3660> (as of Nov. 18, 2013).

³⁷ OEHHA, *supra* note 9, at page 138; citing CalFire, *supra* note 35.

³⁸ *Ibid.*; citing CalFire, *supra* note 35.

³⁹ *Id.* at page 139; citing D. Schimel & B. Braswell, *Global Change and Mountain Regions: An Overview of Current Knowledge*, in 23 *Advances in Global Change Research* 449 (W. Huber et al. eds., Springer 2005).

and exposure to hot and dry “Santa Ana” winds have led to serious firestorms in recent years.⁴⁰ Major wildfires are expected to become more frequent in San Diego as a result of climate change, with estimates of a 5 percent to 20 percent increase in the number of days with ideal conditions for large-scale fires.⁴¹

- **Sea Level Rise**

In the past century, the ocean has gradually risen along California’s shores. Measurements show sea level along the San Diego coast rising at a rate of almost seven inches per century.⁴² Rising sea levels are associated with melting sea ice and thermal expansion due to higher ocean water temperatures,⁴³ both of which are consistent with increasing temperatures linked to climate change. As a result, sea level rise is expected to continue and even accelerate as warming continues. In 2012, a committee convened by the National Research Council, at the request of the California Department of Water Resources and other state agencies, forecasted sea levels along most of California’s coast to rise 1.6 to 11.8 inches by 2030, 4.7 to 24 inches by 2050, and 16.5 to 65.7 inches by 2100, relative to 2000

⁴⁰ San Diego Foundation, *supra* note 14, at page 53, AR 319:26000.

⁴¹ *Id.* at page 54, AR 319:26001.

⁴² San Diego Foundation, *supra* note 14, at page 27, AR 319:25974.

⁴³ OEHHA, *supra* note 9, at pages 89-90.

measurements.⁴⁴ Other studies are consistent with these forecasts, predicting a rise in San Diego sea levels of 12-18 inches by 2050,⁴⁵ and of 1.0 to 1.4 meters (39 to 55 inches) by 2100.⁴⁶

These predictions entail potentially serious consequences. A 1.4 meter rise would put 480,000 Californians' homes at risk of coastal flooding in the event of a 100-year flood event.⁴⁷ This is a nearly 85 percent increase over the 260,000 people whose homes are currently vulnerable to such flooding.⁴⁸ In San Diego County, a 1.4 meter rise would increase the number of vulnerable residents from 3,000 to 9,300.⁴⁹ A 1.4 meter sea level rise would also make vulnerable to 100-year flood nearly 140 schools, 34 police and fire stations, 332 regulated hazardous waste sites, about 3,500 miles of roads and 280 miles of railways, 30 coastal power plants, 28 wastewater treatment plants, and 2 international airports.⁵⁰ In total, nearly \$100 billion worth of property (measuring by replacement

⁴⁴ *Id.* at pages 90-91; *citing* Commission on Sea Level Rise in California, Oregon and Washington, National Research Council, *Sea-Level Rise for the Coasts of California, Oregon and Washington: Past, Present and Future* (The National Academies Press 2012).

⁴⁵ San Diego Foundation, *supra* note 14, at page 28, AR 319:25975.

⁴⁶ California Climate Change Center, *The Impacts of Sea-Level Rise on the California Coast* (2009), *available at* http://www.pacinst.org/reports/sea_level_rise/report.pdf.

⁴⁷ California Climate Change Center, *id.* at page 40. A 100-year flood event is a flood that has a 1% chance of occurring in any given year.

⁴⁸ *Ibid.*

⁴⁹ *Id.* at page 42, table 8.

⁵⁰ *Id.* at page 3.

cost in year 2000 dollars) would be vulnerable, including \$2 billion of San Diego County property.⁵¹ This level of rise could also produce significant erosion of dunes and cliffs, which in some coastal counties would present a greater threat than flooding.⁵² A 1.4 meter rise would present erosion risks to about 41 square miles of northern and central California coast, where some 14,000 people live, and 6,600 are employed.

- **Ocean Acidification**

As CO₂ emissions into the atmosphere increase, CO₂ levels in the ocean also begin to rise. Nearly one quarter of the CO₂ emitted by human activity is absorbed by the ocean.⁵³ This absorbed CO₂ changes the chemistry of the seawater, gradually increasing the acidity of the oceans. The acidity of ocean surface waters has already increased measurably since the industrial revolution, showing a change in pH⁵⁴ from 8.2 to 8.1.⁵⁵ By the year 2100, pH is expected to drop another 0.1 to 0.3 units.⁵⁶

⁵¹ *Id.* at page 74; *id.* at page 77, table 21.

⁵² *Id.* at page 83.

⁵³ OEHHA, *supra* note 9, at page 32; *citing* IPCC, *Couplings Between Changes in the Climate System and Biogeochemistry*, in *Climate Change 2007: The Physical Science Basis* (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4_wg1_full_report.pdf.

⁵⁴ pH is a measure of acidity; lower pH indicates higher acidity.

⁵⁵ OEHHA, *supra* note 9, at page 32; *citing* Ocean Acidification Steering Committee, National Oceanic and Atmospheric Administration (NOAA), *NOAA Ocean and Great Lakes Acidification Research Plan* (2010), *available at*

Ocean acidification decreases calcification rates in many shell-forming organisms, including plankton, mollusks, and corals, making it difficult for these species to form or maintain their shells.⁵⁷ While scientific understanding of the impacts of ocean acidification on ecosystems is still limited, there is a potential for serious impacts to a variety of species. For example, the shell of a pteropod (a shelled marine snail) placed in water approximating ocean conditions for the year 2100 will dissolve in only 45 days.⁵⁸ Pteropods are a major food source for many fish, including commercially important species of salmon.⁵⁹

- **Increased Transmission of Infectious Disease**

As California temperatures rise, transmission of mosquito-borne diseases may increase. Studies show that mosquitoes transmit viral infections at a higher rate in warmer weather, primarily because earlier transmission—expressed in terms of the number of bites from mosquito infection to transmission—makes it more likely that they would survive long enough to infect additional hosts.⁶⁰ Twelve mosquito-borne viruses

http://www.nodc.noaa.gov/media/pdf/oceanacidification/NOAA_OA_Steering2010.pdf.

⁵⁶ *Id.* at page 189; *citing* NOAA, *supra* note 55.

⁵⁷ OEHHA, *supra* note 9, at page 33; *citing, inter alia*, NOAA, *supra* note 55.

⁵⁸ *Ibid.*; *citing* NOAA, *supra* note 55.

⁵⁹ *Ibid.*; *citing* NOAA, *supra* note 55.

⁶⁰ OEHHA, *supra* note 9, at 120-121; *citing* W.K. Reisen et al., *Ecology of mosquitoes and St. Louis encephalitis virus in the Los Angeles Basin of*

have been identified in California, including western equine encephalomyelitis, St. Louis encephalitis, and West Nile viruses.⁶¹ Over the past six decades, the estimated number of bites necessary to transmit West Nile virus in San Jose, California has dropped during the months associated with mosquito disease transmission. The most significant decrease is in May, where the estimated number of bites to transmit West Nile virus has dropped from around eight in the 1950s to near five for the ten years preceding 2010.⁶² If such a trend continues, urbanized coastal areas may begin to experience the higher transmission levels seen in California's inland valleys.⁶³

Additionally, increases in temperature and changes in precipitation and runoff may expand the range of mosquito habitat and extend the length of the disease transmission season, which could further increase the risk of disease transmission by mosquito bite.⁶⁴

California, 1987-1990, 29 *Journal of Medical Entomology* 582 (1992), available at <http://www.ncbi.nlm.nih.gov/pubmed/1495066>.

⁶¹ *Id.* at page 120; citing California Department of Public Health et al., *California Mosquito-Borne Virus Surveillance and Response Plan* (2010); updated 2013 *Surveillance and Response Plan* available at http://westnile.ca.gov/downloads.php?download_id=2680&filename=2013CAResponsePlan.pdf.

⁶² *Id.* at page 121.

⁶³ *Ibid.*

⁶⁴ OEHHA, *supra* note 9, at page 120; citing Reisen et al., *supra* note 60.

- **Threats to Agriculture**

Major sectors of California's agriculture are threatened by climate change. Impacts including changes in temperature and water supply, the timing of seasons, and expanding ranges of pests, pathogens, and weeds may all impact yields for a variety of crops and products. Climate change may hit several industries especially hard.

California's fruit production industry is one example. Fruit trees generally require a dormancy period of between 200 and 1,500 hours below 45°F in order to produce fruit.⁶⁵ Further, recent studies have recognized a cancelling effect when conditions alternate between temperatures above and below 45°F, indicating the need for sustained periods of time below this temperature.⁶⁶ Measurements taken in Orland, California over the past half century show a steady average decline in the number of hours during which the temperature falls below this level.⁶⁷ Other regions of fruit tree agriculture in California also have shown significant drops in chilling periods. Models indicate that by the middle or end of the century,

⁶⁵ OEHHA, *supra* note 9, at page 56; *citing* Dennis Baldocchi & Simon Wong, California Climate Change Center, *An Assessment of the Impacts of Future CO₂ and Climate on Californian Agriculture* (2006), *available at* <http://www.energy.ca.gov/2005publications/CEC-500-2005-187/CEC-500-2005-187-SF.PDF>.

⁶⁶ *Id.* at page 54; *citing* E. Luedeling et al., *Sensitivity of winter chill models for fruit and nut trees to climatic changes expected in California's Central Valley* (2009) 133 *Agriculture, Ecosystems & Environment* 23, *available at* <http://www.sciencedirect.com/science/article/pii/S0167880909001248>.

⁶⁷ *Id.* at page 55; *citing* Baldocchi & Wong, *supra* note 65.

California's climate will be unable to support some key California fruit tree varieties.⁶⁸

Wine grapes are also highly sensitive to climate, and particularly to temperature change.⁶⁹ California is the world's fourth leading wine producer, and the state produces about 90 percent of all wine in the United States.⁷⁰ California's wine industry generates about \$3.2 billion per year.⁷¹ Although a warmer climate could produce a longer growing season and favorable conditions in the short term, continued warming may prevent some varieties of grape from growing at all.⁷² At the end of the century,

⁶⁸ *Id.* at page 54; citing E. Luedeling et al., *Climatic changes lead to declining winter chill for fruit and nut trees in California during 1950–2099* (2009) PLoS ONE 4(7): e6166, available at <http://dx.doi.org/10.1371/journal.pone.0006166>.

⁶⁹ OEHHA, *supra* note 9, at page 167; citing IPCC, *Assessment of observed changes and responses in natural and managed systems*, in *Climate Change 2007: Impacts, Adaptation and Vulnerability Change* (2007) page 79, available at http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4_wg2_full_report.pdf.

⁷⁰ *Id.* at page 169; citing Wine Institute, *California Wine Profile 2010* (2011), available at http://www.wineinstitute.org/files/CA_EIR_Flyer_2011_Apr15.pdf.

⁷¹ California Climate Change Center, *Our Changing Climate: Assessing the Risks to California* (2006) page 8, AR 319:28001.

⁷² OEHHA, *supra* note 9, at page 169; citing California Natural Resources Agency, *2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008* (2009), available at http://resources.ca.gov/climate_adaptation/docs/Statewide_Adaptation_Strategy.pdf.

wine grapes could ripen a full one or two months earlier than at present, potentially diminishing grape quality.⁷³

Climate change could also impact California's \$3 billion dairy industry, which supplies nearly one-fifth of the country's milk.⁷⁴ Cows cannot produce milk well at high temperatures, and they suffer stress which leads to reduced production at temperatures as low as 77°F, with significant declines at higher temperatures.⁷⁵ Rising temperatures toward the end of the century mean milk production in California could decrease by up to 20 percent.⁷⁶

- **Threats to Biodiversity and Species**

Plant and animal species' survival is often linked closely to their habitat, and many species are at risk of extinction from climate change. Plants and animals can be affected by many impacts of climate change, including wildfires, flooding, and ocean acidification and warming. The complicated interrelations among species in an ecosystem mean that impacts to vulnerable species may be felt by many other species in turn. According to the IPCC, if average global temperatures rise 1.5 to 2.5 degrees Celsius (°C) (2.7 to 4.5°F) over levels from around 1990, up to 30

⁷³ California Climate Change Center, *supra* note 71, at page 8, AR 319:28001.

⁷⁴ *Ibid.*

⁷⁵ *Ibid.*

⁷⁶ *Ibid.*

percent of species may face an increased risk of extinction.⁷⁷ Warming greater than 3.5°C (6.3°F) could threaten extinction of 40 to 70 percent of species.⁷⁸

In California, scientists have already observed changes to many ecosystems which may be attributed to warming. Plant species in Deep Canyon in the Santa Rosa Mountains are growing at higher elevations, with a variety of trees and small plants now distributed an average of 213 feet higher upslope than 30 years ago.⁷⁹ Small mammals in Yosemite are responding analogously, with many species abandoning historic habitats to live at higher elevation.⁸⁰ Species that are unable to migrate to new locations may go extinct, potentially leading to ecosystem collapse in the areas of their former habitats.⁸¹

San Diego County's unique biodiversity and variety of fragmented ecosystems means that the region stands to be impacted in many ways.⁸² Scientists have already observed reductions in the populations of some San

⁷⁷ IPCC, *supra* note 7, at page 13.

⁷⁸ *Ibid.*

⁷⁹ OEHHA, *supra* note 9, at page 157; citing Anne E. Kelly & Michael L. Goulden, *Rapid shifts in plant distribution with recent climate change* (2008) 105 Proceedings of the National Academy of Sciences 11823, available at <http://www.pnas.org/content/105/33/11823.abstract>.

⁸⁰ *Id.* at page 177; citing Craig Moritz et al., *Impact of a century of climate change on small-mammal communities in Yosemite National Park, USA* (2008) 322 Science 261, available at <http://www.sciencemag.org/content/322/5899/261>.

⁸¹ *Id.* at page 159.

⁸² San Diego Foundation, *supra* note 14, at page 66, AR 319:26013.

Diego species, and many more may be subject to greater harms under continued changes in climate.⁸³ These species are threatened by such conditions as rising temperatures, drought, and wildfire.⁸⁴ Recent surges in sea lion pup stranding (parental abandonment) in San Diego County and other regions of southern California may be linked to physiological stress and decreased prey availability associated with increased ocean temperatures.⁸⁵ Going forward, even gradual changes in climate conditions may produce sudden, unpredictable, and irreversible impacts to San Diego species and ecosystems, propelled by complex and as-yet poorly understood ecological interactions.⁸⁶

⁸³ OEHHA, *supra* note 9, at pages 67-75 AR 319:26014 *et seq.*

⁸⁴ *Ibid.*

⁸⁵ *Id.* at page 219; citing Sharon R. Melin et al., *Unprecedented mortality of California sea lion pups associated with anomalous oceanographic conditions along the central California coast in 2009* (2010); National Marine Fisheries Service NMFS, NOAA, 2015 Elevated California Sea Lions Strandings in California: FAQs 2 (2015), available at http://www.westcoast.fisheries.noaa.gov/mediacenter/faq_2015_ca_sea_lion_strandings.pdf. In January through May of 2015, sea lion pup strandings were over ten times the average observed for the same period in 2004 through 2012. *Id.* at 1.

⁸⁶ San Diego Foundation, *supra* note 14, at page 66, AR 319:26013.

C. There is Wide Scientific Consensus that We Must Reduce Greenhouse Gas Emissions and Continue These Reductions in the Long Term

Although some scientific uncertainty remains about how *severe* the impacts of climate change will be,⁸⁷ there is no longer legitimate doubt regarding *whether* climate change is occurring. Similarly, while scientists and policymakers set different limits for what amount of warming is acceptable,⁸⁸ there is solid consensus that we will need to decrease GHG emissions to avoid the worst consequences of climate change.⁸⁹ SANDAG does not dispute that reducing emissions to 80 percent below 1990 levels by 2050 is consistent with the scale of reductions that are being called for by scientists and the IPCC.⁹⁰ If, instead, emission levels remain the same or increase, warming will likely continue for centuries.⁹¹

⁸⁷ For example, the most recent IPCC report analyzes four potential scenarios, which predict average temperature increases of between 1.0 and 3.7 °C by 2100, with broader ranges possible under each scenario. IPCC, *supra* note 2, at page 21, table SPM.2.

⁸⁸ *See, for example*, United Nations Framework Convention on Climate Change, Rep. of the Conference of the Parties on Its Fifteenth Session (Mar. 30, 2009) U.N. Doc. FCCC/CP/2009/11/Add.1 ¶ 2, *available at* <http://unfccc.int/resource/docs/2009/cop15/eng/107.pdf> [hereinafter, “Copenhagen Accord”] (agreement between the United States and other countries to limit warming to 2°C (3.6°F)), and James Hansen et al., *Target Atmospheric CO₂: Where Should Society Aim?* (2008) 2 *Open Atmospheric Science Journal* 217, AR 320:27805 (suggesting a warming target lower than 1°C (1.8°F) is necessary to avoid some dangerous impacts).

⁸⁹ IPCC, *supra* note 2, at page 17.

⁹⁰ Consolidated Reply Brief at p.23, fn. 6.

⁹¹ IPCC, *supra* note 7, at page 17.

D. California Policy Reflects and Adopts the Consensus Views on Climate Change and the Need to Vigorously Respond to Climate Threats

California's state policy, adopted in the Executive Order calling for reductions in emissions to 80 percent below 1990 levels by 2050, reflects the need to reduce greenhouse gas emissions to avoid the worst climate change impacts.⁹²

Through AB 32, the state legislature has mandated reductions through the year 2020⁹³ and made clear that it does not consider the State's climate imperatives to be fulfilled in that year: "It is the intent of the Legislature that the statewide greenhouse gas emissions limit continue in existence and be used to *maintain and continue reductions in emissions of*

⁹² Exec. Order S-3-05 (Jun. 1, 2005), AR 319:27050; Hansen et al., *supra* note 88, at page 217, AR 320:27805. According to the South Coast Air Quality Management District (SCAQMD), which monitors and manages air quality for much of southern California, "[i]t is anticipated that achieving the Executive Order's objective would contribute to worldwide efforts to cap GHG concentrations at 450 ppm, thus, stabilizing global climate." SCAQMD, *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans*, available at <http://www.aqmd.gov/hb/2008/December/081231a.htm>. SCAQMD used Executive Order S-3-05 as the basis for deriving the primary screening level used to determine significant impacts for proposed projects where it is lead agency. *Ibid.* See also Slip Opinion ("Opn.") at 14 ("Executive Order's 2050 emissions reduction goal 'is based on the scientifically-supported level of emissions reduction needed to avoid significant disruption of the climate and is used as the long-term driver for state climate change policy development.'") (quoting SANDAG's Climate Action Strategy, AR 216:17625; italics added by the court omitted).

⁹³ Cal. Health & Safety Code § 38550.

greenhouse gases beyond 2020.”⁹⁴ According to the California Air Resources Board, charged by the legislature with overseeing AB 32 implementation, “2020 is by no means the end of California’s journey [G]etting started now will put California on course to cut statewide emissions by 80 percent in 2050 as called for by Governor Schwarzenegger.”⁹⁵ Governor Brown’s recent executive order setting a statewide emissions reduction target for the year 2030 is consistent with this pathway to 2050.⁹⁶ These commitments reflect the scientific consensus on the severity of climate change and on the need for GHG reduction.

III. SANDAG’S EIR FAILS TO DISCLOSE THE SERIOUS IMPACTS OF THE PLAN AND OF CLIMATE CHANGE

Despite scientific consensus regarding the need to reduce GHGs, the San Diego region is planning to *increase* its long-term GHG emissions. According to the EIR, San Diego County emitted 28.85 million metric tons carbon dioxide equivalency (MMTCO₂e)⁹⁷ of GHGs in 2010.⁹⁸ After a temporary reduction in 2020,⁹⁹ the EIR expects GHG emissions to rise to

⁹⁴ *Id.* § 38551(b) (emphasis added).

⁹⁵ California Air Resources Board, Climate Change Scoping Plan (2008), AR 320:27858-59 (citing Exec. Order S-3-05).

⁹⁶ Exec. Order B-30-15 (Apr. 29, 2015).

⁹⁷ Carbon dioxide equivalency is a unit used to approximate the warming potential of various GHGs in terms of the most prevalent GHG, carbon dioxide (CO₂).

⁹⁸ AR 8a:2572 [4.8-20].

⁹⁹ AR 8a:2572 [4.8-20].

30.18 MMTCO₂e in 2035,¹⁰⁰ and then again in 2050 to 33.65

MMTCO₂e.¹⁰¹ This means that by 2050, GHG emissions under the Plan will be nearly 17 percent higher than in 2010, and about 34 percent higher than in 1990.¹⁰² The EIR finds that these increased emissions constitute a “significant and unavoidable impact.”¹⁰³

The EIR also projects increases in transportation-related emissions. Like San Diego County’s total emissions, transportation-related emissions under the Plan will fall in 2020,¹⁰⁴ but then rise through both 2035¹⁰⁵ and 2050.¹⁰⁶ SANDAG estimates that transportation emissions will increase from 14.31 MMTCO₂e in 2010¹⁰⁷ to 14.69 MMTCO₂e in 2050.¹⁰⁸ This is more than 8 percent over 1990 levels.¹⁰⁹

¹⁰⁰ AR 8a:2575 [4.8-23].

¹⁰¹ AR 8a:2578 [4.8-26].

¹⁰² The EIR approximates 1990 GHG emissions as 15 percent below 2005 emissions, or 25.11 MMTCO₂e. AR 8a:2584 [4.8-32].

¹⁰³ AR 8a:2591 [4.8-39].

¹⁰⁴ AR 8a:2572 [4.8-20, table 4.8-8].

¹⁰⁵ AR 8a:2575 [4.8-23, table 4.8-10]

¹⁰⁶ AR 8a:2577 [4.8-25, table 4.8-12]. Strictly speaking, the Plan itself does not reduce transportation emissions in any year; rather, the 2020 reduction is a product of state emissions reduction measures. *See* AR 8a:2562 [4.8-10]. Considering only the elements of the Plan, transportation emissions rise to 21.14 MMTCO₂e in 2050. AR 8a:2577 [4.8-25, table 4.8-12].

¹⁰⁷ AR 8a:2557 [4.8-5, table 4.8-5].

¹⁰⁸ AR 8a:2577 [4.8-25, table 4.8-12].

¹⁰⁹ The EIR approximates 1990 transportation-related GHG emissions as 15 percent below 2005 emissions, or 13.52 MMTCO₂e. AR 8a:2584 [4.8-32, table 4.8-16]. This means that the Plan’s projected 14.69 MMTCO₂e 2050

SANDAG concludes that GHG emissions under the Plan represent a “significant” impact.¹¹⁰ But it does not discuss the fact that the Plan’s emissions trajectory to 2050 differs markedly from the trajectory called for by the scientific community (and, *inter alia*, by the Executive Order). In an EIR, we would expect to find some discussion of the consequences which *make* an impact significant—that is, here, not the increased emissions themselves, but the serious resulting effects of climate change. And where prevailing scientific understanding—already adopted by statewide policy—calls for GHG emissions *reductions* in order to prevent these impacts, we would also expect to find some discussion of the conflict between this science and the Plan’s emissions increases. The EIR does not provide either discussion.

Each of these omissions hurts the ability of a reader of the EIR to make an informed decision on whether to approve the Plan. According to CEQA, an EIR must “provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment.”¹¹¹ Further, an EIR must “provide decisionmakers with information which enables them to make a decision

transportation-related emissions are about 8.65 percent higher than the 1990 level.

¹¹⁰ AR 8a:2591 [4.8-39].

¹¹¹ Cal. Pub. Res. Code § 21061.

which intelligently takes account of environmental consequences.”¹¹² We do not believe that the EIR’s treatment of climate change is adequate to serve these purposes.

A. The EIR Fails to Disclose the Plan’s Conflict with Emissions Trajectories Compelled by Climate Change Science and California Climate Change Policy

In order to do its part under California’s climate commitments, San Diego will need to make substantial reductions to its current GHG emissions. However, under the Plan, San Diego will continue to *increase* its GHG emissions over the next half-century. This is clearly inconsistent with the science which supports these state reduction goals.

The EIR does not acknowledge or discuss the consequences of this inconsistency, however. The EIR says that it will consider GHG impacts that conflict with “applicable GHG reduction plans, policies, or regulations,”¹¹³ but argues that because the Executive Order which set the state’s first reduction targets does not constitute a “plan” for GHG reduction, SANDAG is not required to address the conflict.¹¹⁴ SANDAG’s opening brief also reflects this narrow reading of CEQA’s requirements.¹¹⁵ There, the agency argues that because the regulations contain no general

¹¹² Cal. Code Regs. tit. 14, § 15151.

¹¹³ AR 8a:2581 [4.8-29].

¹¹⁴ AR 8a:2581-2582 [4.8-29 to -30].

¹¹⁵ See AOB at 2 (“The Order states a general objective of the governor, not a “plan” for greenhouse gas emission reduction....”).

requirement to consider executive orders, it is not required to address the Plan's conflict with either the Executive Order or the scientific impact projections that underlie its call to reduce emissions.¹¹⁶

This strikes us as an unsound approach to addressing major environmental risks. An EIR should address scientifically supportable environmental impacts, regardless of existing regulatory policy. This means that the EIR should acknowledge and respond to the scientific projections that underlie the Executive Order, which indicate serious environmental and public health consequences of not reducing GHG emissions steeply by 2050. The fact that these projections are reflected in an Executive Order should not serve as a justification to omit them from the Plan's impacts analysis. We do not ask that SANDAG compare the project's emissions with "abstract statewide goals",¹¹⁷ but instead with the emissions trajectory that the scientific community overwhelmingly agrees is necessary to reduce the threat of climate change.

SANDAG argues that such a comparison is unnecessary, but also that it has already been done, "since all of the EIR's significance thresholds are based on . . . the same science as the Executive Order."¹¹⁸ But without acknowledging that the Plan's emissions trajectory to 2050 differs

¹¹⁶ See AOB at 24-25.

¹¹⁷ Consolidated Reply Brief at 34.

¹¹⁸ *Id.* at 33-34.

markedly from the trajectory called for by the scientific community (and, *inter alia*, by the Executive Order), the EIR could not have reflected “the same science as the Executive Order.”

Moreover, and contrary to SANDAG’s suggestion, the significance of the Plan’s departure from California climate policy cannot be understood “using nothing more than arithmetic.”¹¹⁹ Rather, we would hope to see information that gives the math meaning. CEQA says that an EIR “must permit the significant effects of the project to be considered in the *full environmental context*.”¹²⁰ The EIR lacks this context. The Plan puts San Diego on an unsustainable climate trajectory that runs counter to the counsel of climate science and statewide policy. As a result, all other efforts to reduce GHG emissions will be undercut. This information is highly relevant to the decision of whether to approve a multi-decadal transportation plan, but it does not appear in the EIR.

Without this information, we worry that the EIR may mislead readers on the extent of the Plan’s climate impacts. Under CEQA, an EIR “must present information in such a manner that the foreseeable impacts of pursuing the project can actually be understood and weighed.”¹²¹ A member of the public reading the EIR would learn that GHG emissions

¹¹⁹ AOB at 46.

¹²⁰ Cal. Code Regs. tit. 14, § 15125(c) (emphasis added).

¹²¹ *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal. 4th 412, 449.

under the Plan would be initially reduced, and then subsequently increased. However, the reader would not learn that this later increase substantially undermines state GHG emissions goals, and that it runs counter to consensus scientific opinion regarding the need to significantly reduce GHG emissions. The reader would also not learn about the tradeoffs of increasing emissions, including the increased burden put on other California emissions sources to meet the state's GHG reduction goals. Because the EIR omits this information, we do not believe that it provides enough information to understand or weigh the consequences of the Plan.

B. SANDAG's EIR Does Not Adequately Discuss the Climate Change Impacts of the Plan

The EIR has very little to say about the consequences of increasing GHG emissions. While the EIR acknowledges that the Plan will result in increases in GHG emissions, and that this is a "significant and unavoidable" impact, it stops short of explaining *why* these emissions are significant. While the EIR acknowledges the connection between GHG emissions and climate change,¹²² it fails either to disclose or to evaluate the impacts which accompany increased GHG emissions, instead treating the fact of increased atmospheric GHGs as a standalone impact. This treatment shortchanges the growing body of scientific knowledge surrounding climate change and the many ways it will be felt.

¹²² See, e.g., AR 8a:2553 [4.8-1].

The section of the EIR dedicated to GHGs and climate change defines climate change as “changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation, and storms,” and explains that increased concentration of GHGs “further [warm] Earth’s atmosphere.”¹²³ It does not elaborate on these impacts.¹²⁴ Where in other sections the EIR acknowledges some impacts associated with or exacerbated by climate change,¹²⁵ it does not explain that the Plan’s GHG increases will contribute to these sorts of impacts. For example, a reader of the EIR would not learn of the threat of heat waves, ocean acidification, crop loss, or the effects on California’s ecosystems from climate change.

¹²³ AR 8a:2553 [4.8-1].

¹²⁴ Although the EIR states that “[i]ncreased flooding hazards due to potential climate change are discussed in Section 4.8, Greenhouse Gas Emissions and Global Climate Change,” (AR 8a:2596 [4.1-44]) this section contains no discussion of these or other climate change impacts. *See* AR 8a:2553-2591 [4.8-1 to -39].¹²⁵ *See, e.g.,* AR 8a:2659-2666 [4.9-67 to -74], AR 8a:3097-3100 [5-41 to -44], AR 8a:2033 [ES-37] (dealing with wildfires); AR 8a:2720-2725 [4.10-52 to -57], AR 8a:3101-3104 [5-45 to -48], AR 8a:2835 [ES-39] (dealing with flooding); AR 8a:3032-3036 [4.17-10 to -14], AR 8a:3044-3048 [4.17-22 to -26], AR 8a:3129 [5-73] (dealing with water supply); AR 8a:3077 [5-21] (dealing with sensitive species). None of these passages provides serious discussion of climate change impacts.

¹²⁵ *See, e.g.,* AR 8a:2659-2666 [4.9-67 to -74], AR 8a:3097-3100 [5-41 to -44], AR 8a:2033 [ES-37] (dealing with wildfires); AR 8a:2720-2725 [4.10-52 to -57], AR 8a:3101-3104 [5-45 to -48], AR 8a:2835 [ES-39] (dealing with flooding); AR 8a:3032-3036 [4.17-10 to -14], AR 8a:3044-3048 [4.17-22 to -26], AR 8a:3129 [5-73] (dealing with water supply); AR 8a:3077 [5-21] (dealing with sensitive species). None of these passages provides serious discussion of climate change impacts.

Even those climate impacts discussed in the EIR are given short shrift. Sea level rise gets the most treatment, but the discussion omits many important considerations. The EIR states that San Diego sea levels could rise 12-18 inches by 2050, and that “[t]his could result in loss of beach and recreational areas, and inundate wetlands. Beach loss increases vulnerability to storms and increased high tide and flooding risk. In more developed areas, street flooding and erosion near infrastructure could result in additional damage.”¹²⁶ A member of the public would not know from reading this account that rising sea levels could put hundreds of thousands of Californians’ homes at risk of flooding by the end of the century.¹²⁷ Nor that schools, police and fire stations, hazardous waste sites, thousands of miles of road, coastal power plants, wastewater treatment plants, and two international airports could be flooded.¹²⁸ The reader would not know that nearly \$100 billion worth of property would be at risk.¹²⁹

Information about the environmental consequences of increased GHG emissions is necessary to make an informed decision on whether to approve the Plan. Under CEQA, an EIR must consider the consequences of a project with enough detail to allow the public “to understand and to

¹²⁶ AR 8a:2720 [4.10-52].

¹²⁷ California Climate Change Center, *supra* note 46, at page 42.

¹²⁸ *Ibid.*

¹²⁹ *Id.* at page 74.

consider meaningfully the issues raised by the proposed project.”¹³⁰ “An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences.”¹³¹ We do not believe that the EIR currently provides this level of analysis for climate impacts. Merely labeling impacts “significant and unavoidable” without disclosing the nature and severity of the impacts is insufficient under CEQA.¹³²

SANDAG defends the EIR’s treatment of climate impacts by emphasizing that “the Final EIR contains some 45-pages [sic] of text analyzing direct and cumulative greenhouse gas impacts....”¹³³ But this overstates the EIR’s analysis, confusing a lengthy discussion of emission quantities for a meaningful disclosure of the environmental impacts of increasing emissions.¹³⁴

¹³⁰ *Laurel Heights Improvement Assn. v. Regents of Univ. of California* (1988) 47 Cal. 3d 376, 405.

¹³¹ Cal. Code Regs., tit. 14, § 15151.

¹³² *See Galante Vineyards v. Monterey Peninsula Water Mgmt. Dist.*, 60 Cal. App. 4th (1997) 1109, 1123 (finding EIR’s acknowledgement of significant and unavoidable impacts of fugitive dust on agriculture was inadequate to guide decisionmaking).

¹³³ AOB at 14.

¹³⁴ To support its reference to 45 pages of discussion, SANDAG points to sections 4.8 and 5.2.8 of the EIR. *See* AR 8a:2553-2591 [4.8-1 to -39]; AR 8a:3091-3096 [5-35 to -40]. These sections address expected quantity increases of GHG emissions, but do not address the environmental impacts of increased emissions.

The Plan's GHG emissions are, admittedly, a relatively small part of a very large problem. However, this fact does not diminish the importance of getting this EIR right. San Diego is a major population center and its actions here form an important part of the broader state response to climate change. The Plan commits San Diego County to carbon-intensive infrastructure investments that will impact land use patterns in the region for decades, and which will be difficult or impossible to reverse. The net impact of the Plan will be an increase in warming and other climate impacts, when our research tells us we need to be headed in the opposition direction. The EIR should explain this and articulate what these impacts will be; otherwise, a reader cannot meaningfully consider the consequences of approving the Plan.

IV. CONCLUSION

Today, there is considerable scientific understanding of the effects of climate change and the potential harms that may result. There is a strong consensus in our professional field that we must reduce our GHG emissions if we are to avoid the most dangerous harms. We believe that responsible scientific treatment of climate change requires detailed discussion of these impacts when planning resource commitments that may bear on future climate conditions.

SANDAG's EIR acknowledges major increases in GHG emissions over the course of several decades. However, the EIR contains inadequate

discussion of the climate change impacts of the Plan's increased emissions, and it does not address the consequences of the Plan's divergence from prevailing climate science and related emissions reduction goals. To ensure well-informed decisionmaking, the EIR should include a discussion of the specific climate change impacts furthered by the Plan. It should also acknowledge and address the conflict that exists between the proposed local GHG increases and the need for statewide reductions. Without this discussion, the EIR cannot properly consider the Plan's climate consequences, and will not adequately inform the important policy decisions necessary for long-term transportation planning.

Dated: Sept. 8, 2015

Respectfully submitted,
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By: 

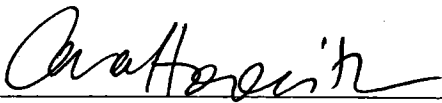
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CERTIFICATION OF WORD COUNT

(California Rules of Court 8.520(c))

I certify that the total word count of this brief, including footnotes, is 7,793 words, as determined by the word count of the Microsoft Word program on which this brief was prepared.

Dated: Sept. 8, 2015

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DECLARATION OF SERVICE

I am employed in the County of Los Angeles, State of California. I am over the age of eighteen and am not a party to the within action; my business address is 405 Hilgard Avenue, Los Angeles, California 90095.

On September 8, 2015, I served the foregoing document described as:

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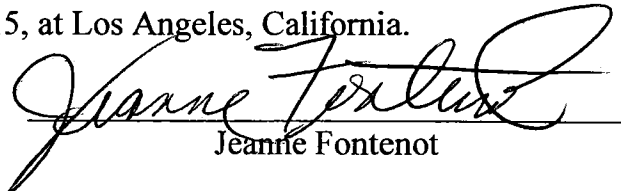
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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on September 8, 2015, at Los Angeles, California.


Jeanne Fontenot

