

Appendix E

Attachments to Letter I-30



Hermosa Beach Office

Phone: (310) 798-2400

Fax: (310) 798-2402

Chatten-Brown & Carstens LLP

2200 Pacific Coast Highway, Suite 318

Hermosa Beach, CA 90254

www.cbcearthlaw.com

jrcb@cbcearthlaw.com

San Diego Office

Phone: (858) 999-0070

Phone: (619) 940-4522

September 25, 2017

By e-mail: CAP@sdcounty.ca.gov

Planning and Development Services
County of San Diego
Attn: Maggie Soffel
5510 Overland Avenue
San Diego, CA 92123

**Re: Comments on San Diego Climate Action Plan (PDS2015-POD-15-002)
and Draft Supplemental Environmental Impact Report (PDS2016-ER-
16-00-003)**

Dear Ms. Soffel:

The law firm of Chatten-Brown & Carstens represents the Sierra Club on matters relating to the County's preparation of its revised Climate Action Plan ("Revised CAP") and Supplement to the 2011 General Plan Update Program Environmental Impact Report ("Supplemental Environmental Impact Report," or "SEIR").

As described more fully below, the Revised CAP and SEIR are legally inadequate by modifying or effectively deleting Mitigation Measure CC-1.2 without additional analysis; erroneously claiming that 2014 is the first year data was available for a greenhouse gas (GHG) inventory; allowing out-of-County offsets; failing to require a reduction in vehicle miles traveled (VMT's) for housing projects; providing only a token annual reduction of VMT's for County employees; and failing to exercise its influence to encourage the San Diego Airport Authority to reduce GHG emissions reductions from airport ground operations, increasing public transit to the airport, and reducing emissions from vehicles serving the airport. Of great importance, no open lands should be annexed or rezoned for greater development until there is an adequate CAP that actually achieves the 2020 emission reduction goals the County agreed to in its 2011 General Plan Update.

In addition to this letter addressing legal issues, we also incorporate herein the September 25, 2017 Sierra Club San Diego comment letter prepared by Mike Bullock, Chair of the Sierra Club San Diego's Transportation Subcommittee. The Sierra Club San

Diego's comment letter, attached as **Exhibit A**, has detailed strategies that must be evaluated to assure a legally adequate Revised CAP and SEIR.

We request the County perform additional analysis of the issues described below and those set forth in Mr. Bullock's letter. Once additional analysis has been performed, this analysis, along with additional enforceable and effective mitigation measures, must be set forth in a Revised SEIR. The SEIR must then be recirculated so that the public and public agencies may comment on this information, as required by CEQA.

I. The Revised CAP and SEIR Eliminates the Specified Greenhouse Gas Emissions Reductions from 2006 Levels by 2020.

Mitigation Measure CC-1.2 of the County's 2011 General Plan Update required the County to:

Prepare a County Climate Change Action Plan with an update[d] baseline inventory of greenhouse gas emissions from all sources, more detailed greenhouse gas emissions reductions targets and deadlines; and a comprehensive and enforceable GHG emissions reduction measures that will achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emissions between 2006 and 2020.

(SEIR, p. 1-14.)

However, the Revised CAP and SEIR eliminate this requirement and replace it with general reductions of GHG emissions "consistent with state-legislative targets." (SEIR, p. 1-16.) This action is proposed even though Judge Taylor specifically rejected a proposed Supplemental Writ that would have allowed the County to amend or delete GHG mitigation measures adopted in 2011.

While generally mitigation conditions can be modified or deleted, the County made a firm commitment to reducing GHG emissions by 2020 when it adopted the 2011 General plan Update. Further, measures generally can only be deleted if they have become impractical or unworkable and the conclusion that they are is supported by substantial evidence. (*Lincoln Place Tenants Ass'n v. City of Los Angeles* (2007) 155 Cal. App. 4th 425, 449.) If the County continues to seek to modify or effectively delete Mitigation Measure CC-1.2, the SEIR must analyze why this measure has become impractical or unworkable. If the County does not demonstrate that Mitigation Measure CC-1.2 is impractical or unworkable, the County must show that the pro rata share of Mitigation Measure CC-1.2's GHG reductions have been achieved for County operations and community emissions.

II. The County's Claim It Does Not Have Baseline Data for Its GHG Inventory Prior to 2014 Is Belied By Its 2012 CAP, Which States the County Prepared Inventories With Baseline Years of 2005 and 2006.

In preparing its GHG inventory for the Revised CAP, the County uses baseline data from 2014. The County argues, "The County's base inventory of GHG emissions evaluated activities within the unincorporated county in the year 2014, the most recent year data is available." (SEIR, p. 1-6.) However, this conflicts with the 2012 CAP, which states the County prepared inventories with baseline years of 2005 and 2006. The 2012 CAP provides:

The County prepared baseline inventories at the community-wide and local government levels. The community-wide inventory has a baseline year of 2005, and emissions are limited to the County's unincorporated communities. The local government inventory has a baseline year of 2006 and only includes emissions related to County government operations. Each inventory is used to establish a baseline level of emissions, which then serves as the starting point for forming emissions reduction targets and as a tool to gauge the performance of emissions-reduction measures.

(2012 CAP, p. 14, emphasis added.) The SEIR must explain why the County did not use the 2005 and 2006 GHG inventories, as well as provide an analysis of how the 2014 GHG inventory compares to the previously prepared inventories.

The County's decision to use 2014 as the baseline year from which it will establish the 2020 and 2030 CAP targets and 2050 goal must demonstrate that using this baseline will result in reductions that are equal or greater to reductions using a 1990 benchmark. In the event the County argues that data prior to 2014 is inadequate, the County should address the 1990 GHG emissions inventory estimate for San Diego County that has been prepared. That estimate is discussed in the document entitled, "An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets Revised and Updated to 2010." (Available at <http://catcher.sandiego.edu/items/usdlaw/EPIC-GHG-2013.pdf>). Presumably, the County's share of the total 1990 San Diego County GHG emissions could be developed from that data.

III. The Allowance of Offsets From Outside the County of San Diego Is Inconsistent with the County General Plan's Requirement to Achieve Specified Greenhouse Gas Emissions Reductions in the County.

Mitigation Measure CC-1.2 of the County's General Plan Update requires the County to "achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emissions between 2006 and 2020."

The Revised CAP and SEIR authorize the use of offsets from outside the County of San Diego. The Draft EIR identifies the County's "priority" list for consideration of GHG reduction features as follows:

1) project design features/on-site reduction measures; 2) off-site within the unincorporated areas of the County of San Diego; 3) off-site within the County of San Diego; 4) off-site within the State of California; 5) off-site within the United States; and 6) off-site internationally.

(DEIR, 2.7-48.) These offset priorities, which allow offsets outside of the County, outside of the state, and even outside of the United States, only have to be considered "to the satisfaction of the Director of Planning Development Services." (SEIR, p. 2.7-38.) This provision would impermissibly purport to give the County wide latitude to allow essentially unrestricted use of international credits to balance out local GHG emissions created by County projects. The use of offsets is inconsistent with the County's Mitigation Measure CC-1.2 to reduce GHG emissions *within the County of San Diego* by specified reduction amounts.

IV. The CAP Lacks A Requirement to Reduce VMT's from Newly Planned Housing Projects.

The CAP identifies Strategy T-1, which is intended to "Reduce Vehicle Miles Traveled." The CAP contains three measures designed to reduce achieve Strategy T-1: Measure T-1.1 - Acquire Open Space Conservation Land; Measure T-1.2 - Acquire Agricultural Easements; and Measure T-1.3 - Update Community Plans.

The CAP's strategy is an important one. The CAP purports to focus on density in the county villages. (CAP, p. 3-9.) "Focusing new development in and around existing unincorporated communities allows the County to maximize existing infrastructure ... By not developing housing in the more remote areas, the county will avoid GHG emissions from transportation ..." (*Ibid.*) The Sierra Club fully supports this goal.

However, none of the three measures the County identifies contains any enforceable requirements to locate residential housing closer to major sources of employment and transit. Mitigation Measure CC-1.15 does not include anything about limiting VMT's from newly planned housing projects. In fact, as discussed below, by allowing developers to purchase "carbon offsets" instead – which may even be based upon GHG emission reductions outside of the United States – the CAP actually facilitates sprawl.

The County may argue that Measure T-1.3 – Update Community Plans will assist in locating residential housing closer to jobs and transit. However, updating Community Plans does not address residential housing on a countywide basis. Additionally, the

County improperly passes responsibility for something that is clearly within its control – land use planning in the County – to individual communities.

The CAP's failure to address VMT's from newly planned housing projects is inconsistent with the Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008), which supports the State's climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities. The County should use its power to establish land use planning priorities for residential housing development in order to reduce VMT's.

Pursuant to SB 375, Metropolitan Planning Organizations, including the San Diego Association of Governments (SANDAG), are required to adopt strategies that show prescribed land use allocation in their regional transportation plans. SANDAG's Regional Plan (available at http://www.sdforward.com/pdfs/RP_final/The Plan - combined.pdf; October 2015) states, "More than 80 percent of new housing in the region will be attached multifamily" (p. 34). The plan also states, "By 2050, 87 percent of the region's new housing and 79 percent of new jobs will be situated within a half-mile of public transit." (p.75) "The projected increase in new housing capacity is generally higher for areas with densities above 20 dwelling units per acre." (Appendix C, Table C.3.) The County should analyze how SANDAG's estimates are impacted by the County's land use planning.

V. The CAP's 1.5% Annual Reduction of VMT's for County Employees Is Inadequate.

The County is one of the largest employers in San Diego County, and thus, the County has a huge amount of leverage to make significant GHG emissions reductions by taking actions to reduce VMT's for its employees. For example, San Luis Obispo County found that "two-thirds of the county government's greenhouse gas emissions are caused by employees commuting to and from work." ("SLO County Supervisors Approve Flex-time, Telecommuting Policies," available at <http://www.sanluisobispo.com/news/local/article39123279.html>.)

The CAP proposes Mitigation Measure T-2.3 to "[r]educe County employee commute Vehicle Miles Traveled (VMT) by 20% by 2030." However, this amounts to an annual reduction of VMT's of merely 1.5%. Facing a huge challenge to achieve significant GHG emissions reductions, a 1.5% annual reduction of VMT's is minimal and additional reductions of VMT's are feasible and necessary. Please see additional analysis of this issue in the Sierra Club San Diego's comment letter attached as **Exhibit A**.

VI. The Revised CAP and SEIR Must Account for GHG Emissions from County Airport Ground Operations.

San Diego International Airport is owned and operated by the San Diego County Regional Airport Authority. (<http://www.san.org/Airport-Authority/About-the-Authority>.) The Board of Supervisors appoints a representative to that Board. (<http://www.sandiegocounty.gov/dpw/airports.html>.)

Cities and counties that have an airport and an adopted CAP, frequently include the GHG generation of the airports' ground operations. Examples include the County of Sacramento, the City/County of San Francisco, and the cities of Fullerton and Livermore. These emissions are often significant. Sacramento County Airport, owned and operated by the Sacramento County Airport System, provides a useful comparison to San Diego County. The County of Sacramento prepared a CAP that included GHG emissions from airport ground operations in the GHG inventory. (http://www.ca-ilg.org/sites/main/files/file-attachments/sac_030843.pdf, p. 26.) The Sacramento County CAP concluded that 31% of total government emissions in the County came from operation of the Sacramento International Airport, including ground support equipment, roadways, and parking (but excluding aircraft emissions).

San Diego County should include airport ground operations in its GHG inventory, and provide an analysis of what percentage of total government emissions in the County stem from airport ground operations and work with the Airport Authority to reduce those emissions.

VII. The County Should Show Compliance with the 2011 General Plan Update's Mitigation Measures Prior to Annexations or Rezoning of Open Lands.

Finally, until a valid, legally adequate CAP is in place that demonstrably will achieve the 2020 emission reduction goals set out in the 2011 General Plan Update, no lands that are currently "greenfields" should be annexed and no General Plan Amendment should be authorized that would allow more intense development of those lands.

CONCLUSION

The SEIR must be revised with this new information and then recirculated for public comment. (CEQA Guidelines section 15088.5.) Pursuant to Public Resources Code section 21092.2, we request all notifications regarding this Project.

Thank you for your consideration.

Soffel
September 25, 2017
Page 7

Sincerely,

A handwritten signature in black ink, appearing to read 'JCB', with a stylized flourish extending from the bottom right.

Josh Chatten-Brown
Attorney for Sierra Club

EXHIBIT A



San Diego Chapter
8304 Clairemont Mesa Blvd, Ste 101
San Diego, CA 92111
<http://www.sandiego.sierraclub.org>
858-569-6005

Sept. 25, 2017

County of San Diego
ATTN: Maggie Soffel
Climate Action Plan SEIR
Planning & Development Services
Project Processing Counter
5510 Overland Avenue, Suite 310
San Diego, CA 92123

Email: CAP@sdcounty.ca.gov

Via E-mail

Subject: COUNTY OF SAN DIEGO CLIMATE ACTION PLAN (PDS2015-POD-15-002),
GENERAL PLAN AMENDMENT (PDS2016-GPA-16-007), DRAFT SEIR (LOG NO.
PDS2016-ER-16-00-003)

Land Use/Environmental Planner Soffel,

We appreciate the opportunity to comment on this project. At the same time, we regret that the County failed in its first effort to produce an acceptable set of CAP and CEQA documentation. We also regret that our efforts to provide feasible mitigation measures are still being ignored. We are also disappointed that your current efforts seems to plan for and thus enable sprawling, vehicle-miles-travelled-inducing (VMT-inducing) development, beyond what is allowed in the current General Plan.

In your Notice of Preparation (NOP) for this project, the Appellate Court ruling is properly identified. The precedent-setting, published ruling is Reference 1 of this letter.

Your NOP properly stated that the

Fourth District Court of Appeal held that the 2012 CAP did not meet the description set forth in the adopted mitigation measure (GPU PEIR Mitigation Measure CC-1.2) and that an EIR was needed for the plan.

However, there was much more to the ruling. For example, the ruling also said:

The Sierra Club provided feasible mitigation measures. The County rejected these mitigation measures without substantial evidence for doing so.

The County must admit this error and devise a strategy to ensure that it is not repeated. To our knowledge, the County has not admitted this error and is once again ignoring the feasible mitigations we proposed, in detail, during the last effort to produce an acceptable

CAP. We have proposed these mitigations, over and over, since that failed effort. Ignoring measures that might offend the political sensitivities of the Board of Supervisors, for example, is understandable but is also a path to CEQA violation.

Chapter 1 Project Description

On Page 1-1 the Project Description says, “The fundamental purpose of the project is to reduce County GHG emissions consistent with state legislative requirements”.

This stated fundamental purpose is incongruent with CEQA and the anthropogenic climate crisis humanity must confront and solve.

CEQA requires an analysis which uncovers and clearly describes the physical-world results to expect, from doing the project, considering the well-established concept of cumulative impacts of other such projects. The primary question posed by our anthropogenic climate crisis is whether humanity can stabilize the climate at a livable level or whether our greenhouse gas (GHG) emissions will cause our planet’s climate system to destabilize, causing a devastating collapse of the human population, leading to our extinction and the loss of most of the other life forms currently living on our planet. There is nothing provided in the SEIR Documents linking state legislative requirements with the climate stabilization question.

We will now show that the state legislative requirements will not result in avoiding climate destabilization.

From

http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf (with excerpts shown in Reference 2) comes the following ominous information:

1. Scientific research indicates that an increase in the global average temperature of 2°C (3.6°F) above pre-industrial levels, which is only 1.1°C (2.0°F) above present levels, poses severe risks to natural systems and human health and well-being.
2. To have a good chance (not a guarantee) of avoiding temperatures above those levels, studies focused on a goal of stabilizing the concentration of heat-trapping gases in the atmosphere at or below the 450 parts per million (ppm) CO₂-equivalent (CO₂e, a metric that combines the climate impact of all well-mixed GHGs, such as methane and nitrous oxide, in terms of CO₂).
3. The CO₂e target is a somewhat approximate threshold, and the exact level of CO₂e is not precisely known because the sensitivity of the climate system to GHGs has uncertainty. Different models show slightly different outcomes within this range. An example of a pre-IPCC assessment study (Meinshausen et al. 2009)¹⁵ which has synthesized many studies on climate sensitivities, concluded that we would need to stabilize at about 400 ppm CO₂e

Item 3 should bring shivers of fear and tears of regret. We are already at 410 PPM and we are far from reducing our emissions enough to stop atmospheric CO₂_e from going up. To do that, the industrial countries would need to reduce their emissions to 80% below their 1990 emission levels, which is the basis for California’s Executive Order S-3-05 (“S-3-05”), which is an order to achieve the 80% below 1990 emission levels by the year of 2050. The problem is that the S-3-05 target is for year 2050 and that is obviously far too late, based on the 3 items above.

Humanity might have a chance to stabilize the climate at a livable level if we achieve emissions that are 80% below our 1990 emission levels by 2030. However, our current state mandate, SB 32, is to reduce our emissions to 40% below our 1990 levels by 2030. To support the achievement of climate-stabilizing targets, California must double its SB 32 mandate, from 40% to 80% or, stated another way, achieve its S-3-05 target 20 years sooner.

Project Background

The section leaves out fact that the County ignored the primary San Diego Sierra Club mitigation measure of installing a car-parking system that gives its employees more choice over how they spend their wage, while significantly reducing the frequency of the choice of arriving at work in a single-occupancy vehicle (SOV). The current project again ignores that mitigation measure, in clear violation of CEQA law, as has been established in the last lawsuit.

We also disagree with the premise of the third purpose stated on Page 1-4. Given that the earth's atmospheric CO₂ is at the outrageous value of 410 parts per million (PPM) and going up significantly every single year, there can be no "GHG Threshold" below which there is some reason that the emission can be deemed "insignificant". Every project must be shown to fall within the General Plan and the Climate Action Plan and the public must be invited to suggest mitigation measures to reduce emissions further. This means all projects must go through a CEQA evaluation. As stated in CARB scoping plan documentation, in all cases, mitigation measures must be adopted if they are "technologically feasible and cost effective".

GHG Emissions Inventory

We thank you for this information and point out that On Road Transportation category, at 45%, is larger than the next three categories of Electricity (24%), Solid Waste (11%) and Natural Gas (9%). Cars and Light duty trucks, or "light duty vehicles" or "LDVs" emit most of the On Road GHG and deserve significant focus. For electricity the achieved target must be 100% renewable by 2035 and we are severely disappointed that the Board recently decided to not participate in a feasibility study of establishing a Community Choice Energy District, under California Community Choice Aggregation (CCA) law.

General Plan Amendment

We appreciate your documentation about what you are proposing. However, it is unfortunate that you are undermining CEQA, or at least making the task of advocates much more difficult, by emitting the important words, "enforceable measures". By doing that you may make the plan a useless exercise, with nothing guaranteed. If measures are not enforceable what good are they? Why leave out those critically important words?

Here is the existing (2011) Goal, with highlights added:

GPU Policy COS-20.1 (Climate Change Action Plan)

Prepare, maintain, and implement a climate change action plan with a baseline inventory of GHG emissions from all sources; GHG emissions reduction targets and deadlines, and **enforceable** GHG emissions reduction **measures**.

Here is what you are proposing:

GPU Policy COS-20.1 (Climate Change Action Plan)

Prepare, maintain, and implement a Climate Action Plan for the reduction of community-wide (i.e., unincorporated County) and County-Operations greenhouse gas emissions consistent with the California Environmental Quality Act (CEQA) Guidelines Section 15183.5.

Guidelines Section 15183.8, which states, “Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level”.

This “substantial evidence demonstrates” standard is much more difficult than the previous “enforceable” standard. This is no time to make climate action plans weaker or more difficult to evaluate.

As we have stated above, the point of CAPs should be ensuring that municipal governments are doing their part to help humanity achieve climate stabilization, not some artificial goal like a state mandate that may not be related to climate stabilization.

In order to comply with CEQA, which is about the physical world (and correct the grammar since “meet or exceed” is for a plural noun), the following new words (shown in ***bold italics***) must be added to COS-20:

GPU Goal COS-20 (Governance and Administration)

Reductions of community-wide (i.e., unincorporated County) and County Operations greenhouse gas emissions contributing to climate change that ***meet or exceed*** requirements of the Global Warming Solutions Act of 2006, as amended by Senate Bill 32 (as amended, Pavley. California Global Warming Solutions Act of 2006: emissions limit) ***and that meet or exceed targets for the industrialized countries of the world that are shown by climate scientists to, with reasonable assurance, stabilize the earth’s climate at a livable level, meaning that there would be no devastating collapse of the human population.***

Likewise:

GPU PEIR Mitigation Measure (MM) CC-1.2

Prepare a Climate Action Plan for the reduction of community-wide (i.e., unincorporated County) and County Operations greenhouse gas emissions consistent with both state-legislative ***and current climate science specified, climate-stabilizing*** targets, as described in General Plan Goal COS-20, and consistent with CEQA Guidelines Section 15183.5 or as amended, as referenced in General Plan Policy COS-20.1. As described in Section 15183.5, the key elements of the Climate Action Plan would include:

“CEQA Guidelines Section 15183.5(b)(1):

(1) Plan Elements. A plan for the reduction of greenhouse gas emissions should:

(A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;

(B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;

- (C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- (D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- (E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;
- (F) Be adopted in a public process following environmental review."

Once prepared, implementation of the Climate Action Plan will be monitored and progress reported on a regular basis, as follows:

- o Implementation Monitoring Report – prepared annually;
- o Greenhouse Gas Emissions Inventory – updated every two years; and
- o Climate Action Plan – updated every five years.

Guidelines for Determining Significance for Climate Change

Given the nature of our anthropogenic climate crisis, there is no such thing as a GHG emission that is insignificant. All GHG reduction measures must be implemented if they are technologically feasible and cost effective. Our best hope of identifying all such mitigation measures is to subject all projects to the CEQA process.

2.6 Energy

We appreciate your statement that Notice-of-Preparation (NOP) comments received showed "concern" (your word) for a Community Choice Energy (CCE) program and the impacts and location of large-scale renewable energy projects. We believe that support for CCE districts under California Community Choice Aggregation (CCA) law is widespread, for good reason. We understand that there will be concern about any large scale project to generate energy.

The transportation-related measures appear in

2.7 Greenhouse Gas Emissions

This section starts by purporting to summarize the NOP comments you received on this critical topic. However, that summary is contradicted by your Appendix A, which shows comment letters numbered 1 and 18 that point out the need for achieving climate-stabilizing targets. Your summary says nothing about the need to define, explain, and achieve climate-stabilizing targets. Comment letter 18 has significant details on this topic. This topic is the most important in all of our earth's history, because life is sacred and most of it is under threat, by a crisis that humanity can either chose to solve or ignore. The fact that you think that topic (again, whether we will stabilize the climate at a livable level) is so unimportant that it should be ignored is significant.

We agree with the NOP's first paragraph and especially these words, in that paragraph: "significant environmental impacts". "Environmental impacts" are in the physical world, not in the world of laws or executive orders. In this case, the primary negative impact or outcome, that should be avoided, is climate destabilization. Therefore, the term, "climate destabilization" must be defined and also described.

In the first paragraph of the NOP, it is written that the EIR must identify possible ways to mitigate or avoid the significant effects. Again, the “effects” are environmental in nature. This means that what will happen in the physical world must be considered. Besides this, how to avoid what would happen in the physical world must be considered.

What is needed is a description of climate destabilization and how to avoid the catastrophe of climate destabilization. CEQA and common sense require that negative environmental impacts be described, including the negative impact of climate destabilization.

General Plans and CAPs must first describe the difference between stabilizing the climate at a livable level and destabilization, where warming-system-feedbacks, such as methane gas leaking from melting permafrost, a process which is both driven by warming and creates more warming, become dominant. If they become too large, humanity will lose control, and the climate will transition to one which will no longer support most life forms on the planet, including our own species. Failing to provide this description is a CEQA violation. One authoritative source says, “the Earth is on a trajectory to warm by more than 4 degrees Celsius [and this] would be ***incompatible with continued human survival***.”

Avoidances of significant environmental impacts need to be described. Therefore, a discussion of “Greenhouse Gas Emissions” needs to state that there is a need for the EIR to have a description of how a climate is stabilized at a livable level.

We would like to help in this regard. Climate stabilization Step 1 is to get the earth’s atmospheric CO₂_e to stop increasing. This Step is shown in Figure 1.

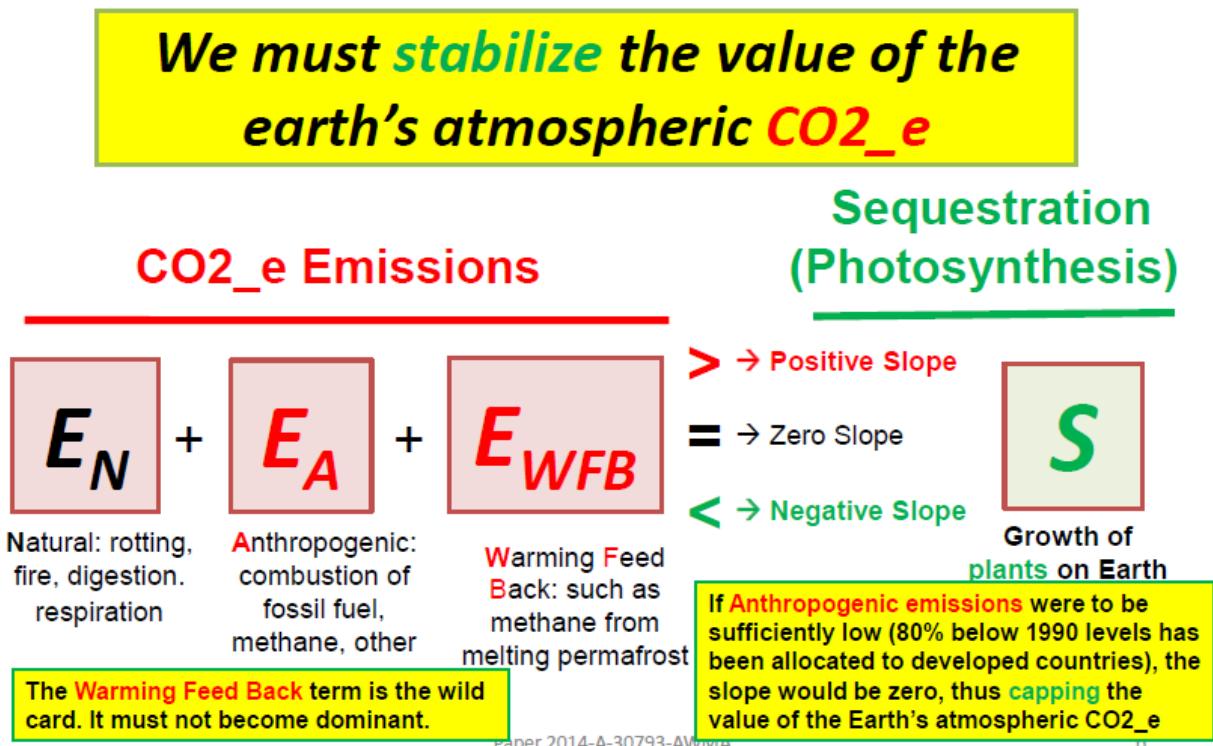


Figure 1 Stabilizing Atmospheric CO₂_e

It has been written that the industrial world must get its emissions down to a level that is 80% below 1990 levels to achieve the equality sign, which is one of the three possibilities

shown in Figure 1. It was thought that to achieve climate stabilization, humanity could do this as late as 2050 and that the atmospheric level of CO₂_e would then be at 450 PPM, corresponding to a 2 degree Celsius increase. However, it is now known that it is dangerous to allow a 2 degree Celsius change and that, even worse, an earth's atmospheric level of only 400 PPM of CO₂_e corresponds to a 2 degree Celsius change. As we all know, the earth's atmosphere is already at 410 PPM CO₂_e. This information about climate stabilization is shown in References 2 and 3.

In Figure 1, the zero slope condition will cap atmospheric CO₂_e, meaning that it will not go up and not go down. Currently, we have a positive slope condition, because our anthropogenic emissions are too high. We will require a negative slope to return our atmospheric CO₂_e to a safe level. The "wild card" in this problem is the warming feedback term. If it gets too large, we will have no hope of avoiding catastrophe.

You therefore must identify a climate-stabilizing target and then define enforceable measures to achieve that target. The principle of cumulative effects is being used here, as it must. The County must do its part. If it doesn't, it must assume that other municipal governments (around the world) will do the same and destabilization will result.

Besides this, to comply with CEQA, the CAP and its SEIR must describe destabilization's impact to our environment, to see if that is the outcome the decision makers want. During the process of destabilization, the earth will lose most of its life forms. This will not be pleasant for us or the animals, from aardvarks to zebras. We will all starve to death. This may take decades. The low-income people will starve first; the billionaires last. Of course there will be food riots; we will need to become a police state; and so on. Mass suicide and cannibalism may occur. A majority of the Board of Supervisors would rather avoid this, I assume. It is your job to make sure they understand this situation. The SEIR covers all of this up by not mentioning it. There is no excuse since it was described in NOP response Letter 18.

To achieve the CAP's identified climate-stabilizing targets, California state actions will be needed, driven by legislation and implemented by such entities as CARB, Caltrans, and the California Road User Charge Technical Advisory Committee (SB 1077.)

However, the County must also take strong actions. The County must show how climate-stabilizing targets can be achieved in each of the categories that emit greenhouse gas (GHG), assuming reasonable California actions, according to reasonable plans. These plans need to be either identified or written.

Cars and light-duty trucks emit the most GHG of any category in the County. Therefore, one thing that is needed to support the EIR is described in Reference 4, which is a sub-plank of the 2016 California Democratic Party (CDP) Platform:

[A] state plan showing how cars and light-duty trucks can hit climate-stabilizing targets, by defining enforceable measures to achieve the needed fleet efficiency and per-capita driving

To show that this is not impossible, as well as to offer a plan that the County may wish to use, we have included Reference 5, *Climate-Stabilizing, California Light-Duty Vehicle Requirements, Versus Air Resource Board Goals*.

Reference 5 shows that a climate stabilizing target is 80% below the 1990 level, by year 2030. Note that this is 20 years sooner than the final target of Executive Order S-3-05 and is double the drop from the 1990 level specified in SB 32, for 2030.

The SEIR, CAP, and GPU are proposing to only achieve legislative requirements, sometimes referred to as our “state mandates”.

However, where is it stated that “consistent with legislative requirement” is enough to avoid climate destabilization? The fact is that it is not stated. It is almost as if the authors hoped the reader won’t notice this.

It is true that the EIR needs to show how to achieve the “legislative requirement” but nowhere is it acknowledged that this is not enough to avoid catastrophe. Laws that happen to pertain to climate change, such as SB 32, do not replace or amend CEQA. CEQA may be humanity’s most important law, given our climate crisis. We must stop ignoring its most important set of requirements, related to climate: The environmental impacts of climate destabilization must be described and avoidance measures must be devised and implemented.

Effects of Climate Change on the Environment (Page 2.7-3)

This section violates CEQA. Your list of effects is incomplete. You fail to mention the fact that this crisis is essentially unbounded in the harm it can and probably will produce to humans and other life forms. This letter has already spelled that out. It shows exactly what needs to be said.

Governor Brown, in the week before the start of the *Paris Climate Talks*, said to the Pope these seven words, “Humanity must reverse course or face extinction”. Governor Brown was not exaggerating. He simply told the truth. CEQA requires the truth.

Executive Order S-3-05 (Page 2.7-5)

The Court ruled that S-3-05 was grounded in science. That is true. However, it is 2005 science. We now know much more. S-3-05 is now known to be too little too late. This was explained above, in this letter.

Assembly Bill 32 Climate Change Scoping Plan and Updates (Page 2.7-6)

This section leaves out the 3 items listed on Page 2 of this letter, showing that our climate crisis is much more urgent than we thought.

Senate Bill 375 (Page 2.7-7)

What this section fails to state is that when CARB assigned driving-reduction targets to the San Diego Association of Governments (SANDAG) and the other Metropolitan Planning Organizations (MPOs), they did not bother to make the targets part of an overall plan to ensure that cars and light-duty vehicles (LDVs) will achieve climate-stabilizing targets. If they had done that, the 2035 targets would have been about a 32% reduction in per-capita driving, with respect to 2005 levels (the SB 375 baseline), even assuming a rapid conversion to zero-emission vehicles (ZEVs). The basis for this is shown in Reference 5.

Proposed GHG Reduction Measures (Page 2.7-17)

These will be discussed in our comments regarding Chapter 3 of the Draft CAP.

CAP Impact Analysis (Page 2.7-22)

We note the words:

As climate change science and policy continues to advance, the County will be able to apply new reductions toward meeting the long-term 2050 GHG emissions reduction goal in future CAP updates, as outlined in Chapter 5 of the CAP.

However, climate science may also find that they have underestimated the reductions needed and/or underestimated the warming feedback of some effect. To comply with CEQA, the County must have a plan that contains a sufficient list of enforceable measures to achieve climate-stabilizing targets.

2.7.5.1 Issue 1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment (Page 2.7-36)

These words concern us:

*There are no additional feasible mitigation measures available to mitigate this impact based on information currently known. Therefore, this impact would be **significant and unavoidable**.*

As we have stated and as we will state with more detail in this letter, we have been suggesting a feasible car-parking-system mitigation measure that was ignored during the CEQA process of the last CAP and is being ignored during the CEQA process of this CAP. Also, energy-efficient zoning (not approving more sprawl development) is another mitigation measure that we repeatedly suggest. Again, the County ignores this suggestion by acting as if approving more sprawl development is not particularly harmful to efforts to achieve climate state mandates and climate-stabilizing targets.

It says on Page 2.7-37:

CARB recommends that “lead agencies prioritize on-site design features and direct investments in GHG reductions in the vicinity of the project” (CARB 2017). CARB also recognizes that “[w]here further design or regional investments are infeasible or not proved 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” (CARB 2017).

The County is taking the odd position that it might approve additional sprawl developments and offset the additional GHG emissions that will come with the additional driving through purchasing and retiring carbon credits issued by a recognized and reputable accredited carbon registry. But the key on-site design feature, as described by CARB above, is to not approve the additional sprawl development. Obviously, the General Plan Update design is, to a large degree, zoning. Said another way, zoning is a fundamental design parameter. To follow the CARB recommendation is to select a design, primarily zoning, which does not result in a significant increase in GHG emissions. There is nothing infeasible about selecting the design feature of not approving more sprawl development. In fact, the 2016 San Diego County Measure B ballot measure lost, even though a developer outspent the project opposition by over a 10-1 margin. The Measure B ballot measure was to approve a large additional sprawl development. This is an indication that the voters do not favor the approval of an additional sprawl development. We understand that developers who want to get their sprawl developments approved are often big contributors to candidates for the Board of Supervisors. However, casting a vote that will disappoint a big campaign

contributor is not infeasible, however painful it might be to some San Diego County Supervisors.

The discussion on Pages 2.7-37 through 2.7-40 shows a failure to understand that General Plan Updates (GPUs, or zoning changes, or additional sprawl developments) are project design features and they do not have to be approved. They in no way justify purchasing and retiring carbon credits issued by a recognized and reputable accredited carbon registry or any other such off site measure. It is true that CARB recognized if no local design feature is possible it might be acceptable to justify purchasing and retiring carbon credits issued by a recognized and reputable accredited carbon registry or any other such off site measure. However, that is not the case because GPUs do not have to be approved.

If a developer wanted an approval that required a GPU and it was going to pioneer a method of operation that would reduce emissions in a way that could be widely adopted, then it may be reasonable and conform to CEQA to allow it.

Table 2.7-1 County Greenhouse Emissions by Category (2014) (Page 2.7-42)

We note that on-road vehicles are 57% of the total. We know from the work (available on line) of our friends at the Energy Policy Initiatives Center (EPIC) that most of the on-road emissions are from LDVs. For this reason there needs to be a rigorous treatment of LDVs.

Table 2.7-2 County Emissions Forecasts, Reduction Targets and CAP Reductions (MTCO_{2e}/year) (Page 2.7-42)

Often municipal governments have no records of GHG emissions for year 1990, which is a baseline year for S-3-05. S-3-05 requires that 1990 levels are achieved in 2020. The table says that the target for year 2030 is 40% below the 2014 level, which means, since SB 32 calls for a 40% reduction from 1990 levels, that the 2014 level is coincidentally equal to what is being assumed to be the 1990 level. However, if this is true, the -2% in the 2020 column should be 0% and the -77% in the 2050 column should be -80%, to match the S-3-05 target. Please explain the discrepancies.

2.12 Transportation and Traffic (Page 2.7-12-1)

This section attempts to summarize the impacts of the transportation-related measures. We will comment on the measures as described in Chapter 3 of the CAP itself, because it seems to have the most detail. We find much of the discussion of transportation off base because it fails to recognize the overriding need to improve the methods by which we pay for the use of roads and parking.

Section 3 of the CAP

Built Environment and Transportation

Strategy T-1 is described as reducing VMT. It only has 3 measures, which would:

- acquired open space,
- acquire agricultural easements and
- update Community Plans

The first two would only “reduce VMT” in the sense that they would stop additional sprawl development which would increase VMT. If all we do is “hold the line” we have no hope of stabilizing the climate at a livable level. Updating Community Plans could be important.

We will comment on T-2 through T-4 below.

T-1.1 Acquire Open Space

It is clear that this is an on-going program that would happen in any case. The claim is made that it prevents a total of 491 homes. We agree it might, if the Supervisors were so unconcerned about climate change that they would approve additional sprawl development, without this acquisition of land. We understand this to be legitimate if the “baseline” or what is sometimes called the “business as usual” case included these homes. Is that correct or are these savings not real? To compute the GHG savings, what is the average number of trips per year per household and what is the average mileage (MPG) and trip length assumed?

T-1.2 Acquire Agricultural Easements

It looks like this is an on-going program. It is a Purchase of Agriculture Conservation Easement (PACE) Program and it is said to be an acquisition of 443 acres of agricultural easements by 2020 and an additional 4,430 acres between 2021 and 2030. The claim is made that it prevents a total of 198 homes. We agree it would, if the Supervisors were so unconcerned about climate change that they would approve additional sprawl development, without this purchase of land. We understand this to be legitimate if the “baseline” or what is sometimes called the “business as usual” case included the homes that could be approved on this land. Is that correct or are these savings not real? To compute the GHG savings, what is the average number of trips per year per household and what is the average mileage (MPG) and trip length assumed?

T-1.3 Update Community Plans

How do you compute the anticipated GHG Reduction? How do you know that the future Board of Supervisors will take this action? If they take this action, what allows you to assume how useful it will be? How do you quantify “Transit Oriented Development”? Many times the Sierra Club Transportation Chair has urged the San Diego Association of Government to replace “Smart Growth” with “VMT-Reducing Growth”. This would be far better because “VMT-Reducing Growth” can be quantified but “Smart Growth” cannot be quantified. Not one member of SANDAG’s Board or Staff gave any notice of the suggestion. Likewise, it may be that “Transit Oriented Development” has no definition and is not quantifiable in any way.

If a Community Plan has transit service is there any standard for that service to qualify it as being good enough to serve a so-called TOD? If so, what is that standard?

In an attempt to perhaps help you quantify VMT reductions, we offer the following Figure 2.

Are there any standards of density increase or maximum height increase that you are looking for in making these communities a better “TOD”, or, expressed in a more realistic way, more ‘VMT-Reducing”? Is there a metric for improving the jobs-housing balance or are you operating free of any numerical standards for that consideration?

Why does the County constantly assume that how drivers pay for parking is inconsequential? Every study of the matter finds that if, for example, all employees pay for parking with a reduced wage, whether they drive or not, many more people will drive than if the payment for parking is associated with the choice to drive.

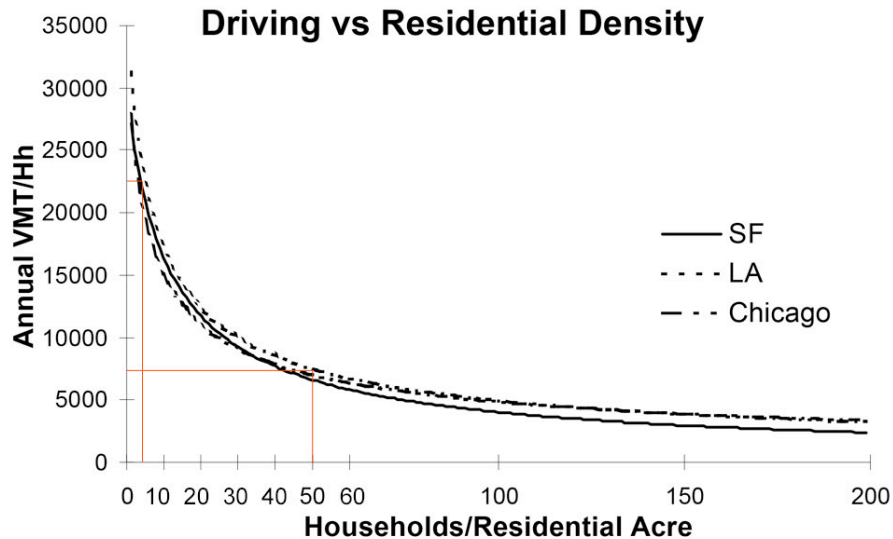


Figure 2 VMT Reductions from Increased Density

Reference 6 describes the modern round-a-bout. It includes a definition, how they improve traffic flow, how they improve air quality and reduce GHG, how they improve safety, and how much they cost. They should be part of any effort to do traffic calming or complete streets. As shown, each round-a-bout can eliminate 189 metric tons of CO₂_e per year. Will you replace stop lights in Community Plans with round-a-bouts?

The *Supporting Efforts* table on Page 3-15 is not encouraging. Those are simple things that should have been done years ago. To “study, collaborate, and promote” are not enforceable and show that the County has not yet realized the urgency of our climate crisis. Enforceable changes in policy regarding density, height, car parking, and round-a-bouts should have been done by now.

Your “Performance Metric” table means almost nothing since your “Supporting Efforts” mean almost nothing.

Strategy T-2 Shift Toward Alternative Modes of Transportation (Page 3-17)

We agree with words written on Page 3-17.

T-2.1 Improve Roadway Segments as Multi-modal

There is an insufficient definition of the “multi-modal enhancements” that are being considered and how much this would reduce VMT. We know of no definition for “bikeway”. Would this be Class 1 (separated from cars), 2 (bike lanes), or 3 (marked routes)? There may be a place for all 3 and you may have data showing that each of these 3 can encourage riding and thereby reduce VMT. However, your lack of specificity suggests that you know little of this topic.

We believe in well-maintained roads. Since we must convert rapidly to a fleet of cars that no longer burns gasoline, the answer to having enough money to perform timely road maintenance is to design and implement an environmentally-sound road-use charge (RUC) pricing and payout system. A road user charge (RUC), has been proven feasible by the work of SB 1077. Currently, the gas tax rate, although improved by SB 1, is still too low to

pay the full cost of road maintenance. Besides this, the gas tax has a poor future. How do you propose to pay for whatever improvements are being considered? We oppose raising general taxes, such as a sales tax, to pay for roads. We should not be making it artificially cheap to drive cars. What is the County's position on this issue? We fully support "complete streets". Please explain how you computed the 2030 and 2050 GHG reductions of 604 and 1292. Why did you not mention "road diet" and round-a-bouts? Cycle tracks are controversial among bicyclists. How did you decide you favor them?

T-2.2 Reduce New Non-residential Development Vehicle Miles (Page 3-20)

There is a claim of a 15% reduction by 2030. This may be based on SANDAG's Regional Transportation Plan's VMT reduction as required by SB 375. If so, the County is doing nothing to claim this reduction. Is this based on SANDAG's Regional Transportation Plan's VMT reduction as required by SB 375? If so, there may be a mismatch because SB 375 is for 2035 but the County is claiming a reduction in 2030. Please explain this mismatch in target year. There is a mention of a Transportation Demand Management (TDM) ordinance. Why has the County not passed a TDM ordinance by now? Where can we read the proposed ordinance? Can we see the calculations of the driving reduction based on the imagined ordinance? We notice that the County is still unaware that "free" parking at work is really not free because it reduces everyone's wages, even those that never drive to work. We have repeatedly explained this issue and it discourages us that the County is still unaware that so-called "free" parking is unfair to those that drive less and that it increases the mode split of single-occupancy vehicle (SOV) driving.

The county's performance metric of a 15% reduction is too low to support light-duty vehicles achieving a reasonable climate-stabilizing target, as will be shown later in this letter. Is that value per-capita? Is it with respect to the SB 375 baseline year of 2005? If it is with respect to 2014, please show how you convert an SB 375 target for year 2035 to a value with a different target year and a different baseline year.

T-2.3 Reduce County Employee Vehicle Miles Travelled (Page 3-22)

In the original Sierra Club letter to San Diego County, regarding its first effort to produce a CAP, we proposed a car-parking-pricing-and-payout system that would increase fairness and reduce the choice of driving to work. That letter, dated March 19, 2012, is Reference 7. Throughout that lawsuit we stressed this mitigation measure as a policy that could be implemented for County employees. We were very specific in our proposal.

This feasible mitigation was ignored by the County in their legally-deficient Climate Action Plan (CAP) which they subsequently rescinded under court order. This is the mitigation measure that was described during oral arguments in Appellate Court, when a Justice asked the Club lawyer to describe a feasible mitigation measure that was ignored by the County.

After hearing the description, the Justice commented, "That sounds like feasible mitigation to me."

Here is a brief description of this feasible mitigation measure. This strategy would be a "game-changer", not only for the County, but for improving our prospects for achieving climate-stabilizing targets, wherever driving is a significant source of GHG emissions and so-called "free parking" at work is common.

Demonstration Project to Eliminate the Harm of Bundled-Benefit Parking at Work

San Diego County (“County”) would develop a Demonstration Project to, in effect, Unbundle the Benefit of Parking (“Demonstration Project”) where County employees work (“Proposed Location”).

BACKGROUND: Currently, County employees do not have the ability to choose between earnings and driving – employees effectively pay for parking out of their salary, whether or not they use the parking. The Demonstration Project will provide the opportunity for the employees to choose between earnings and driving. This is functionally equivalent to the implementation of the California Air Pollution Control Officers Association (CAPCOA) measure of unbundling the cost of parking.

PROJECT: Parking would be charged at a given rate (for example \$0.02/min – roughly \$10.80/day, considering 8 hours of work and 1 hour for lunch). Funds generated from these parking charges would be distributed as earnings to all employees working at the proposed location in proportion to each employee’s time spent at work, at the proposed location. Those who decide not to drive will not be charged for parking but will still receive earnings based on their time spent at work at the location. Implemented correctly, this free-market approach will substantially reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions, by reducing the drive-alone mode.

For employees whose parking charges are greater than their parking-lot earnings, an “add-in” may be included so that no employee loses money, compared to “free parking”. (Some documentation of this method refers to this payment as a “must-drive bonus”.) With such “add-in” payments, there could be an “Opt in” or “Opt out” choice. This would mean that, if the charges and payments associated with this system were included on employee pay checks, those that “Opt out”, would see no changes on their pay check, relative to how their pay check looked during the days of “free parking”. If the charges and payments associated with this system were shown on a separate, mailed statement, those that opt out would receive no such statement.

This project may be helped by receiving a grant to pay the development and installation cost, as well as the “add in” payments, for some specified number of years. The County would need to apply for such a grant.

This feasible and sensible mitigation measure is actually a demonstration project of an overall system that would operate all types of parking, as described in Reference 8. Reference 9 is a more detailed description of this demonstration project.

Based on Table 1 of Reference 8, the driving reduction could be 25%, at places of employment. Table 1 shows driving reductions resulting from introducing a new price differential for parking, for 10 cases. Its average reduction in driving is 25% and its smallest, single-case reduction is 15%. Again, these systems can be set up so that no driver loses money. Grant possibilities include the California Air Resources Board’s *Low Carbon Transportation* program and the Strategic Growth Council’s (SGC’s) *Transformative Climate Community* program.

T-2.4 Shared and Reduced Parking in New Non Residential Development (Page 3-22)

The system we are proposing as a demonstration project (shown in the T-2.3 section, in this letter, just above this section) is a sub-system of an overall system of parking we are currently calling a “Dividend-Account Parking” system. The “Dividend” word denotes that

some people receive parking lot earnings. The “Account” word denotes that the cars parked are associated with an account, of a person responsible to pay the cost of the parking. “Account” also denotes that the cost of parking is being taken into account, instead of being ignored and hidden, as is often the case. It is documented in Reference 8. It is a system where all parking is naturally shared.

Ultimately, based on the system we are proposing, we see no reason to restrict this to either New” or to “Non Residential”, as is suggested in the County’s title of this section. The system we are proposing was peer reviewed in 2010, when it was accepted for presentation at an Air and Waste Management Association (AWMA) Conference, in Calgary, Canada. The presentation received two standing ovations: once upon the conclusion of the presentation and again at the conclusion of the question and answer portion of the presentation. The system is hosted by the National Sierra Club:

<http://sierraclub.typepad.com/files/mike-bullock-parking-paper.pdf>. The County received this paper as a reference to the Reference 7 letter, back in 2012. We have never been given any indication that anyone at the County has read the paper. The T-2-4 section, which is about parking, gives no indication that anyone at the County has read the paper. We have certainly received no criticism of the paper from the County. Since there has been no criticism, we wonder why its ideas are being ignored. Is there any County employee working for the County on the CAP and its SEIR that is aware of the Sierra Club’s submittals to the County regarding car-parking? If so, what is their opinion of the proposals? Why has the County ignored the Sierra Club’s car parking proposals for over 5 years? Could you please show us how you compute the 1454 and the 2508 GHG reductions shown? How would you handle the sharing in terms of enforcement?

T-3 Decarbonize On-road and Off-road Vehicle Fleet (Page 3-27)

We support efforts to decarbonize vehicles. This includes the efforts shown in your sections T-3.1, T-3.2, T-3.3, and T-3.4. Beyond what is shown in these subsections, we have asked the SANDAG Board to put electrifying the Coaster train into their “Unconstrained” (unconstrained by money) Regional Transportation Plan, for example. We are joining with other groups to push for purchasing only Battery Electric busses. We have not heard that the County is interested in these efforts.

We appreciate your efforts to make construction less polluting. As far as retiring old model cars that get poor gas mileage, we would like to see the County join us in advocating for a plan of enforceable measures, whereby light-duty vehicles (LDVs) achieve a climate-stabilizing target. This would require actions such as what is described in T-3.3. We would like to see the County become a force for climate stabilization at SANDAG. Could you show us how you computed the GHG reduction of 866, shown on Page 3-32? Is the County supportive of electric transit vehicles and if so, what is your plan to help bring that about?

T-3.4 Reduce the County’s Fleet Emissions (Page 3-34)

We are disappointed that the County’s goal is only 50% of new vehicle purchases. We have a climate crisis. Would you please change that to 100%?

T-4 Invest in Local Projects to Offset Carbon Emissions (Page 3-37)

We accept that many of the projects named are worthwhile. However, the car parking system that we describe above is also a worthy project. Once that system is designed, other employers will want to use it, because it increases fairness while it decreases driving.

It can spread to other types of parking because it supports the sharing of parking. It will need to spread to all types of parking, in one unified system, if we are going to have a chance to achieve climate-stabilizing targets.

Energy (Page 3-40)

We appreciate the target of 90% renewable energy in the County by 2030. This will require the measures you named, which we want to be made enforceable, and more.

San Diego is conducting a study of feasibility of CCE. Carlsbad and other cities to its South are joining together to investigate the feasibility of forming a Community Choice Energy (CCE) District, under California Community Choice Aggregation (CCA) law. In the last three years, the rise of Community Choice Energy in California has been dramatic. The first Community Choice Agency (CCA), [Marin Clean Energy](#), launched in 2010, and was the only one for four years until [Sonoma Clean Power](#) launched in 2014, followed soon after by [Lancaster Choice Energy](#) in 2015. By mid-2015 a critical mass of information-sharing and proof-of-concept had spread throughout California and by late 2016 nearly half the counties in the state and over 300 cities were either operational or at some stage of evaluation of Community Choice. The CAP and SEIR should include, as a recommended mitigation measure, joining a CCE. To do this, the County needs to act to determine the feasibility of this measure and its effectiveness in moving towards your stated goal of 90% clean energy by 2030. This target is certainly a strength of your effort.

In 2014, Lancaster started to require all new residential construction project to include solar power. There is a minimum average solar generating capability of 0.5 to 1.5 kW per unit, depending on lot size and location. Are you willing to meet or exceed that standard?

The Need for a Concerted Effort to Ensure that Light-Duty Vehicles Will Achieve a Realistic Climate-Stabilizing Target

First, You Need a Plan:

The well-known and well-respected Energy Policy Initiative Center reported that 41% of the GHG emitted in San Diego County comes from cars and light-duty trucks, denoted as “LDVs” in this report. This is larger than the sum of the next two largest emitters: electricity, at 25% and natural gas, at 9%. Because LDVs are so important, there needs to be a plan showing a set of enforceable measures ensuring that LDVs will achieve a climate-stabilizing target. The first step is to show how a reasonable climate-stabilizing target is derived. As has been shown in the letter, there are strong indications that state mandates, such as SB 32 are not good enough.

This is not just understood by us. The California Democratic Party (CDP) has come to the same conclusion, as shown in its 2016 Platform. This bullet is from that platform (Reference 4) (<http://www.cadem.org/our-california/platform/2016-platform-energy-and-environment>).

- ***Demand a state plan showing how cars and light-duty trucks can hit climate-stabilizing targets, by defining enforceable measures to achieve the needed fleet efficiency and per-capita driving***

CARB should probably do this but so far, they have issued no such plan, perhaps because they have no such plan. However, CEQA requires that decision makers understand the

environmental consequences of what they may approve. What does the state need to do, which has the primary responsibility for fleet efficiency requirements and how much it will cost to drive on the road and how will this fit with what local and regional government may do, understanding that they do RTPs, zoning, and other transportation-related policies such as complete streets, transit, and parking policies. Therefore, such a plan is required for any project that will have a significant impact on the LDV sector. This means that most EIRs have been approved in violation of CEQA law. This should come as no surprise because there are few systems engineers in the ranks of those that might challenge an EIR. Some things take time.

Reference 5 is an example of a state plan that is being requested by the CDP. It may not be perfect but it is an honest attempt and it may be the only such example on the planet. It is included to show that such a report is not impossible. The County or any other government could accept the plan as their own, if they find no errors. What the County cannot do is to take the position that no such plan is required. The County could modify the Plan if it thinks it could improve upon its methods or its assumptions.

Enforceable and Feasible Mitigation Measures to Achieve Driving Reductions

The following numbered mitigation measures must be implemented unless you can prove that they are either not “technologically feasible” or they are not “cost effective”. When considering how cost effective the measures are, keep in mind that climate destabilization, which is where humanity is currently headed, will result in a devastating collapse of the human population, which is very expensive, in many ways.

1.) Reallocate SANDAG Funds Earmarked for Highway Expansion to Transit and Consider Transit-Design Upgrades

It is well-known that the induced traffic demand resulting from adding highway lanes will cause traffic congestion to remain constant. This is true, even if the new lanes are HOV (High Occupancy Vehicle) lanes; HOT (High Occupancy Toll) lanes; or Managed Lanes, which give priority to moving transit vehicles. Any project (or other change, such as autonomous vehicles that can travel at high speeds with very little distance between vehicles) that temporarily creates space on a freeway will induce enough traffic to fill that space, returning congestion to the level it was before the project (or other change.) Therefore, additional lanes will not reduce congestion one iota. The money spent to add lanes is not just a waste of money. With more lanes and the same level of congestion as before, the result is always more frustrated drivers, more air pollution, and more GHG emissions.

The sales tax measure called “Trans-Net” allocates approximately one-third for highway expansion, one-third for transit, and one-third for road maintenance. It has a provision that allows for a reallocation of funds, if supported by at least two-thirds of SANDAG Board members, including a so-called weighted vote, where governments are given a portion of 100 votes, proportional to their population. This feasible mitigation measure is to reallocate the Trans-Net amount, earmarked for all highway expansions, to transit. It is noted that perceived political risk for decision makers does not constitute infeasibility, for a suggested mitigation measure. SANDAG needs to help educate the public about the futility of adding lanes because of induced traffic demand, as well as our responsibility to have a plan showing how cars and light-duty trucks can achieve climate-stabilizing targets. This will reduce political risk.

This money could be used to fund additional transit systems; improve transit operations; and/or redesign and implement the redesign of an existing transit system. A redesign could be

the electrification and automation, or even a wholesale technology upgrading of the Coaster/AMTRAK and Sprinter rail lines. These systems need to be frequent and operate 24/7.

The money could also be used to implement a fixed-guideway connection between the San Diego Airport and both the Santa Fe Train Station and the Old Town Transit Center. A trade-off study is needed to find out if this should be done with a trolley extension or an automated system, perhaps using the technology that connects the Oakland Airport to the Coliseum BART station.

The County needs to assume this mitigation measure and then do everything in its power to convince the SANDAG Board that it must be done. (AB 805 would help.)

2.) A Comprehensive Road-Use Charge (RUC), Pricing-and-Payout System to Improve the Way We Pay for the Use of Roads

Comprehensive means that, for example, pricing, overall, is sufficient to cover all costs, including road maintenance and externalities such as harm to the environment and health; privacy is defined and achieved; the economic interests of low-income drivers doing necessary driving would be protected; that the incentive to drive fuel-efficient cars would be at least as large as it is under the current fuels-excise tax; and, as good technology becomes available, congestion pricing is used, if needed, to protect critical driving from congestion.

The word “*payout*” means that some of the money collected would go to people that are losing money under the current system.

Currently, user fees (gas taxes and tolls) are not enough to cover road costs. Even though general-fund money is being used to operate and maintain roads, California is not doing maintenance with enough frequency to minimize cost. It is well understood that deferred maintenance will cost more than timely maintenance. Besides this, the improved mileage of the Internal Combustion Engine vehicles (ICEs) and the large number of Zero-Emission Vehicles (ZEVs), both of which are needed to have the fleet efficiency required to achieve climate mandates, mean that gas-tax revenues will drop precipitously over the coming years. In view of these facts, California has passed and is implementing SB 1077, which creates a pilot project road user charge (RUC). The Road User Charge Technical Advisory Committee (RUC TAC) has twice visited San Diego. The first time, they met in the SANDAG Board Room. The second time, they met at the CALTRANS District 4 office. SANDAG Board Members and SANDAG staff were conspicuously absent from these meetings. SANDAG staff did not inform its Board of these meetings. This is unfortunate because a RUC is the future of road funding. Unfortunately, the SANDAG Board Majority seems to think that a new sales tax can be used to expand roads. The recent defeat of Measure A suggests that this is not true.

Both SANDAG and the County need to support California in its efforts to create an effective RUC pricing-and- payout system. As the pilot project finishes, legislation is needed to get the design and implementation moving. SANDAG and the County should lobby for a good system and then, in their EIRs, they should assume a good system. Such a system will play a useful role in reducing per-capita driving.

3.) Improving the Way We Pay for the Use of Car Parking

Bundled-cost parking increases the cost of everything, from rent to food; bundled-benefit parking reduces wages. These unsustainable practices are economically unfair to those that drive less or might like to drive less, if they could receive the fair, market-priced compensation for their effort, considering the high cost of providing parking. Surface parking only provides spaces at a rate of 120 car-spaces per acre of land. Parking garage construction costs are over \$20,000 per space. Underground parking costs from \$60,000 to \$100,000 per space. The fourth bullet of the Transportation Sub-plan of the 2016 California Democratic Party Platform (Reference 4) calls for *“shared, convenient and value-priced parking, operated with a system that provides earnings to those paying higher costs or getting a reduced wage, due to the cost of providing the parking.”*

This feasible mitigation was ignored by the County in their legally-deficient Climate Action Plan (CAP) which they subsequently rescinded under court order. This is the mitigation measure that was described during oral arguments in Appellate Court, when a Justice asked the Club to describe a feasible mitigation measure that was ignored by the County. It is described in this letter in Section **T-2.3 Reduce County Employee Vehicle Miles Travelled (Page 3-22)** on Page 13 of this letter.

4.) Good Bicycle Projects and Bicycle Traffic Skills Education

The best criterion for spending money for bicycle transportation is the estimated reduction in driving per the amount spent. It is hoped that the following strategies will come close to maximizing this important parameter.

a.) Projects to Improve Bicycle Access

All of the smart-growth neighborhoods, central business districts, and other high trip destinations or origins, both existing and planned, should be checked to see if bicycle access could be substantially improved with either a traffic calming project, a “complete streets” project, more shoulder width, or a project to overcome some natural or made-made barrier. One example is to build a Vista Way bicycle bridge over I-5 in Oceanside, to allow those walking or biking to travel between the South Oceanside coastal neighborhood and the regional shopping center, which contains such large stores as *Wal-Mart* and *Stator Brothers* grocery store. Currently, those walking or biking from the Vista Way area West of I-5 must travel much further and travel over a steep hill (Cassidy Street). There are no large grocery stores in the Coastal region of Oceanside, west of I-5. Vista Way was connected for bike riders and pedestrians before the construction of I-5.

b.) League of American Bicyclist Certified Instruction of “Traffic Skills 101”

Most serious injuries to bike riders occur in accidents that do not involve a motor vehicle. Most car-bike accidents are caused by wrong-way riding, riding on sidewalks, and errors in intersections; the clear-cut-hit-from-behind accident is rare.

After attending *Traffic Skills 101*, students that pass a rigorous written test and demonstrate proficiency in riding in traffic and other challenging conditions could be paid for their time and effort.

As an example of what could be done in San Diego County, if the average class size was 3 riders per instructor and each rider passes both tests and earns \$100 and if the instructor, with overhead, costs \$500 dollars, for a total of \$800 for each 3 students, that would mean that \$160M could teach $\$160\text{M}/\$800 = 200,000$ classes of 3 students, for a total of 600,000 students. This is approximately 20% of the population of San Diego

County. If a significant percentage of the graduates become every-day, utilitarian riders, this program will be a very cost-effective mitigation measure. It is certainly technologically feasible.

If SANDAG is unwilling to do this program countywide, the County could scale the program described above down to a County-run program. Members of Oceanside's Bicycle-Pedestrian Committee and others in the County are already teaching League-Certified classes, as described above.

5.) Eliminate or Greatly Increase the Maximum Height and Density Limits Close to Transit Stops that Meet Appropriate Service Standards

As sprawl is reduced, more compact, transit-oriented development (TOD) will need to be built. This strategy will incentivize a consideration of what level of transit service will be needed, how it can be achieved, and what levels of maximum height and density are appropriate. Having no limits at all is reasonable if models show that the development can function without harming the existing adjacent neighborhoods, given the level of transit service and other *supporting transportation policies*. One such *supporting transportation policy* would be the use of car-parking systems described in References 8 and 9, which support the full sharing of parking, less driving, and less car ownership. These are reasons that the County Supervisors and Staff need to weigh in on the redesign and rezoning of the area around its downtown San Diego location. This is probably not applicable in other locations under County control because the transit service is either nonexistent or it is insufficient.

6.) Work for Installing a “Dividend-Account” Parking System at Train Stations in the County

We understand it is difficult for the County to influence SANDAG and the North County Transit District (NCTD), which runs the Coaster. We are hopeful that AB 805 will reform the decision-making of the NCTD so that it will become open to progressive change and more responsible regarding the fact of our anthropogenic climate change crisis. We would like to see the County to develop a Plan to help the NCTD adopt the same sort of Dividend-Account Parking system at the Transit Centers as what we hope will be installed at your County offices downtown. In this case, the earnings or dividend are paid to adult train riders in proportion to the time they spend on round trip train rides. These beneficiaries are selected because the car parking is being provided for adult (driving age) train riders making round-trip train rides. The parking would be available to anyone driving a car that is in the Dividend-Account Parking system, meaning that there is an account with a person responsible for paying for the parking of the car being parked. This system would allow the parking to be used by any driver with an account, including non-train riders. Fully-shared parking is generally better than parking that is not shared or is less shared. “Free parking” at train stations maximizes driving to the station. A Dividend-Account parking system would maximize ridership. Currently, a person that could easily walk or bike to the station may drive. However, this is less likely to happen after the installation of a Dividend-Account parking system. The net cost (fare minus parking dividend) to ride will be reduced. This will increase ridership. This system will also ensure that someone that drives to the station can be assured of finding a parking place, because it will not be difficult to set the price of the parking to ensure vacancy, as is described in the paper shown here: <http://sierraclub.typepad.com/files/mike-bullock-parking-paper.pdf> (Reference 8). Note that the paper provides a dynamic pricing system

to guarantee a selected minimum vacancy rate. If a person drives to the station but does not find a parking place, they may become discouraged from riding the train.

Summary of the Six Mitigation Measures Described

Do you agree that Measure 3 above is feasible and if not, why not? Do you agree that Item 4 is feasible? Do you see the value in working for Mitigation Measures 1, 2, 5, and 6?

Need to Include Plots and Explanations of the Plots, in the EIR, to Leave No Doubt About the Cause and Grave Nature of Anthropogenic Climate Change

The SEIR must fully explain the urgency and danger of humanity's anthropogenic climate change crisis, sometimes referred to as simply "climate".

The best way to do this is to include plots and explanations of the plots, that leave no doubt about the validity and grave nature of climate.

Figure 3 shows the rise of the world's atmospheric CO₂ over the last 50 years.

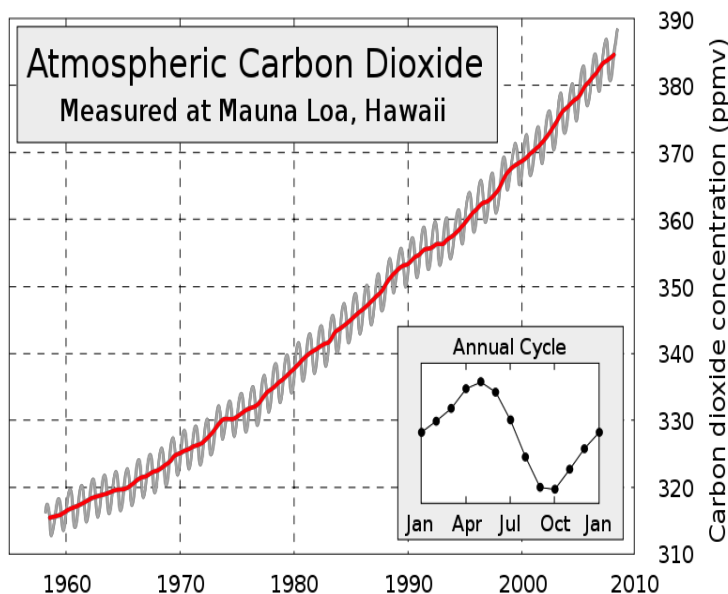


Figure 3 Atmospheric CO₂, Increasing Over Recent Decades

Figure 4 shows both atmospheric temperature (averaged over a year and averaged over all of the earth, derived from an isotope analysis) and atmospheric CO₂, over 800,000 years. (Our species is only around 300,000 years old.) Figure 4 shows that when climate deniers say that climate is always changing and so therefore climate change is normal, they are correct, except for one important consideration. There is nothing normal about the outrageous run up of atmospheric CO₂, to over 400 PPM, in such a short time that it appears to be an instantaneous spike, on Figure 4. There is no doubt that the spike is the result of our combustion of fossil fuels. The spike is clearly anthropogenic climate change.

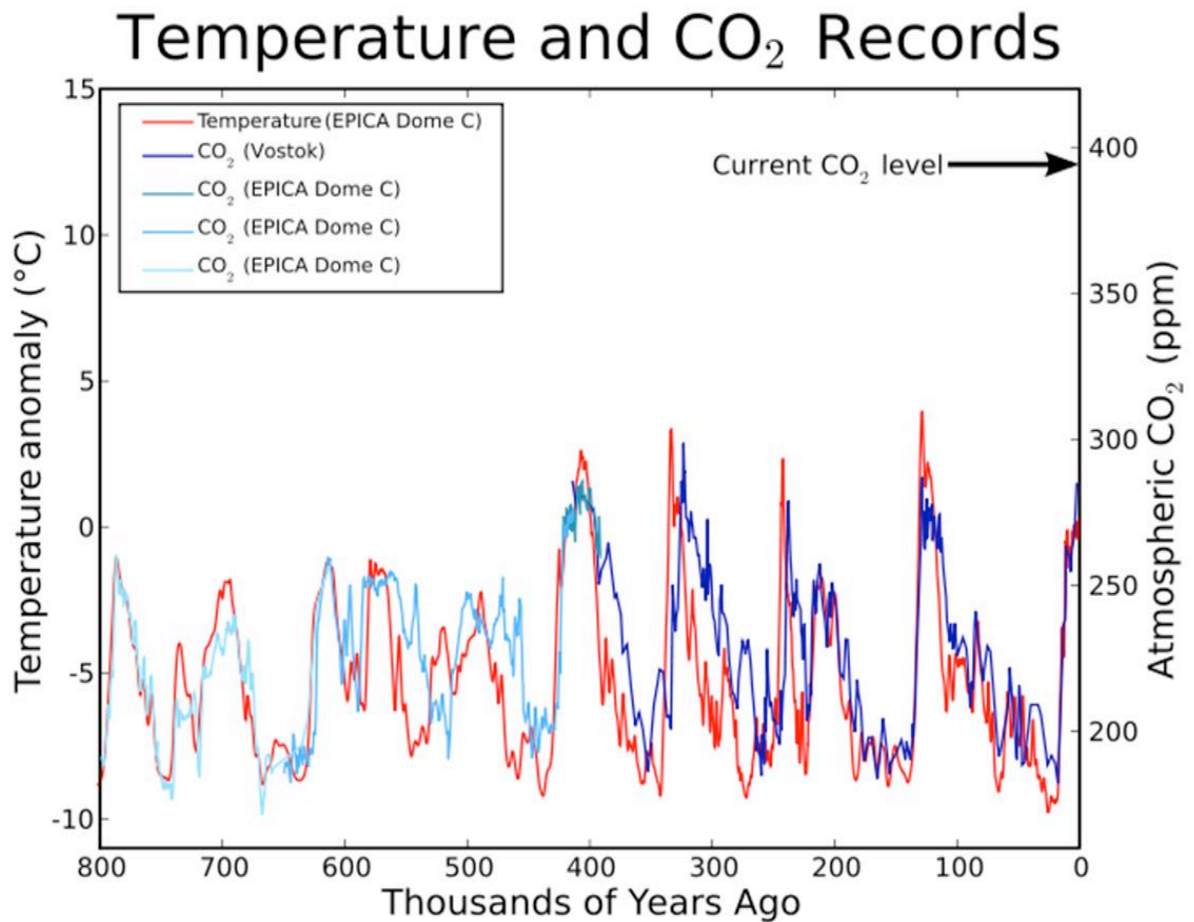


Figure 4 **Atmospheric CO₂ and Mean Temperature, from 800,000 Years Ago, with Current CO₂ PPM Shown**

Figure 5 covers all of the time of the development of our civilization. By focusing on just 1000 years, the spike's shape, in red, is revealed. Everything was normal until about 150 years ago, which is the start of our industrial revolution, when we started to burn fossil fuels. The ominous increase in temperature (in blue) is also shown. By doing extensive calculations we know how much CO₂ we have produced from the combustion of fossil fuels. Then, by directly measuring the atmospheric CO₂ and the acidity of the oceans, we know where all of that CO₂ currently resides. We also know that atmospheric CO₂ traps heat. There is no doubt that we have an Anthropogenic Global Warming (AGW) catastrophe in the making. Achieving climate-stabilizing targets is our only hope.

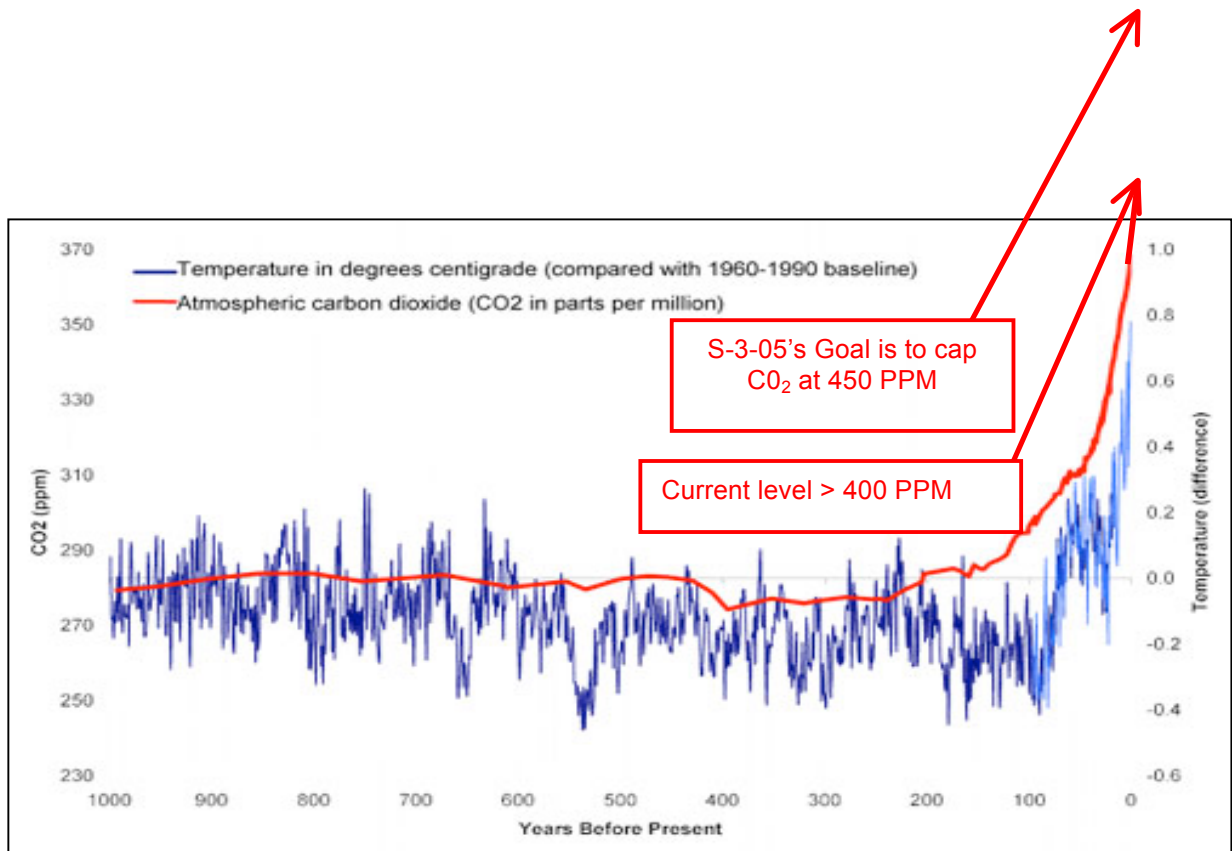


Figure 5 Atmospheric CO2 and Mean Temperature Over the Last 1,000 Years

Conclusion

We offer these words from Reference 10, which is the Superior Court Ruling, against the County (emphasis added):

*There is no time for "building strategies" or "living documents;" as the PEIR quite rightly found, enforceable mitigation measures are necessary **now**.*

We need to keep in mind the following:

- climate change has the potential to end most life forms on the planet and
- our own species could be headed towards a "devastating collapse" of our population, to quote the June 2008 issue of *Scientific American*

We would like to meet with County representatives to discuss our concerns and our proposed mitigation measures. Thank you for doing this critical and challenging work.

Respectfully submitted,

Mike Bullock mike_bullock@earthlink.net
Chair, Transportation Subcommittee
Sierra Club San Diego

George Courser
Chair, Conservation Committee
Sierra Club San Diego

REFERENCES

1. *Sierra Club versus County of San Diego*, D064243, Superior Court Number 37-2012-00101054-CU-TT-CTL
2. Excerpted text from *First Update to the Climate Change Scoping Plan, Building on the Framework* ;from:
http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf; *Achieving Climate Stabilization*
3. *Comments on Survey of CEQA Documents on Greenhouse Gas Emissions Draft Work Plan and Development of GHG Threshold of Significance for Residential and Commercial Projects*, CBD letter from to Mathew Vespa to Elain Chang of the South Coast Air Quality Management District, April 15, 2009
4. The Transportation sub-plank of the California Democratic Party Platform, 2016
<http://www.cadem.org/our-california/platform/2016-platform-energy-and-environment>
5. Bullock, Mike R; *Climate-Stabilizing, California Light-Duty Vehicle Requirements, Versus Air Resource Board Goals*, Paper 881-AWMA, from the Air and Waste Management Association's 109th Annual Conference and Exhibition; New Orleans, June 16-25, 2016; Available on request from mike_bullock@earthlink.net
6. *Modern Round-a-bouts*, article provided by the San Diego County Air Pollution Control District
7. *Comments Regarding the Draft Climate Action Plan*, Sierra Club San Diego to Anna Lowe, County of San Diego; March 19, 2012
8. Bullock, M.; Stewart, J.; *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*; Paper 2010-A-554-AWMA, from the Air and Waste Management Association's 103rd Annual Conference and Exhibition; Calgary, Canada, June 21-24, 2010. <http://sierraclub.typepad.com/files/mike-bullock-parking-paper.pdf>
9. Bullock, Michael; *Equitable and Environmentally-Sound Car-Parking Policy at a Work Site*; Aug. 30, 2015
10. *Sierra Club versus County of San Diego*, Case Number 37-2012-00101054-CTL, 04/19/2013

~~~~~

**The San Diego Chapter of the Sierra Club is San Diego's oldest and largest grassroots environmental organization, founded in 1948. Encompassing San Diego and Imperial Counties, the San Diego Chapter seeks to preserve the special nature of the San Diego and Imperial Valley area through education, activism, and advocacy. The Chapter has over 14,000 members. The National Sierra Club has over 700,000 members in 65 Chapters in all 50 states, and Puerto Rico.**



# REFERENCE 1

Filed 10/29/14

CERTIFIED FOR PUBLICATION

~~NOT TO BE PUBLISHED IN OFFICIAL REPORTS~~

California Rules of Court, rule 8.1115(a), prohibits courts and parties from citing or relying on opinions not certified for publication or ordered published, except as specified by rule 8.1115(b). This opinion has not been certified for publication or ordered published for purposes of rule 8.1115. XXXXXXXX

COURT OF APPEAL, FOURTH APPELLATE DISTRICT

DIVISION ONE

STATE OF CALIFORNIA

SIERRA CLUB,

Plaintiff and Respondent,

v.

COUNTY OF SAN DIEGO,

Defendant and Respondent.

D064243

(Super. Ct. No. 37-2012-00101054-  
CU-TT-CTL)

APPEAL from a judgment of the Superior Court of San Diego County, Timothy Taylor, Judge. Affirmed.

Thomas E. Montgomery, County Counsel, and C. Ellen Pilsecker, Chief Deputy County Counsel, for Defendant and Appellant.

Law Office of Malinda R. Dickenson, Malinda R. Dickenson; Chatten-Brown & Carstens, Douglas P. Carstens and Josh Chatten-Brown for Plaintiff and Respondent.

This action arises out of the County of San Diego's (County's) 2011 general plan update, wherein the County issued a program environmental impact report (PEIR), and adopted various related mitigation measures. In this action the Sierra Club sought, in a

petition for writ of mandate, to enforce one mitigation measure adopted by the County: the Climate Change Mitigation Measure CC-1.2 (Mitigation Measure CC-1.2). With Mitigation Measure CC-1.2, the County committed to preparing a climate change action plan with "more detailed greenhouse gas [GHG] emissions reduction [GHG] targets and deadlines" and "comprehensive and enforceable GHG emissions reductions measures that will achieve" specified quantities of GHG reductions by the year 2020.

However, the Sierra Club alleged that instead of preparing a climate change action plan that included comprehensive and enforceable GHG emission reduction measures that would achieve GHG reductions by 2020, the County prepared a climate action plan (CAP) as a plan-level document that expressly "does not ensure reductions." The County also developed associated guidelines for determining significance (Thresholds).

According to the Sierra Club, review of the CAP and Thresholds project under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) was performed after the fact, using an addendum to the general plan update PEIR, without public review, without addressing the concept of tiering, without addressing the County's failure to comply with the express language of Mitigation Measure CC-1.2, and without a meaningful analysis of the environmental impacts of the CAP and Thresholds project.

The court granted the petition, concluding that the County's CAP did not comply with the requirements of Mitigation Measure CC-1.2 and thus violated CEQA. The court found that the CAP did not contain enforceable GHG reduction measures that would achieve the specified emissions reductions.

The County appeals, asserting (1) the statute of limitations bars the claim that the mitigation measures are not enforceable; (2) the CAP met the requirements of Mitigation Measure CC-1.2; and (3) that the trial court erred in finding that a supplemental EIR was required. We affirm.

## FACTUAL AND PROCEDURAL BACKGROUND

### *A. Executive Order S-3-05*

In 2005 then-California Governor Arnold Schwarzenegger issued Executive Order No. S-3-05,<sup>1</sup> which acknowledged California's vulnerability to the effects of climate change and established targets for reducing GHG emissions in California over time. Specifically, Executive Order No. S-3-05 set statewide targets for three points in time: 2010, 2020, and 2050. The target for 2010 (2010 Target) was to reduce emissions to the levels they were at in the year 2000. The target for 2020 is to reduce emissions to the levels they were at in 1990 (2020 Target). The target for 2050 is that emissions be 80 percent below the levels they were at in 1990 (2050 Target).

Executive Order No. S-3-05 was based on then-available climate science and represented California's share of worldwide GHG reductions necessary to stabilize climate. As the Attorney General explained, "Executive Order [No.] S-3-05 is an official policy of the State of California, established by gubernatorial order in 2005, and designed to meet the environmental objective that is relevant under CEQA (climate stabilization)."

---

<sup>1</sup> On March 24, 2014, the County requested that we take judicial notice of Executive Order No. S-3-05. We grant that request.

*B. The Legislature Addresses the Need for GHG Emission Reductions*

In response to Executive Order No. S-3-05, the California Legislature enacted the California Global Warming Solutions Action of 2006, Assembly Bill No. 32. (Health & Saf. Code, § 38500 et seq.) Consistent with Executive Order No. S-3-05, Assembly Bill No. 32 required the California State Air Resources Board (CARB) to determine 1990 levels of GHG emissions and then to establish "a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020." (Health & Saf. Code, § 38550.) Assembly Bill No. 32 also stated that GHG reductions must continue after 2020, requiring that the statewide greenhouse gas emissions limit established by CARB "remain in effect unless otherwise amended or repealed" (Health & Saf. Code, § 38551, subd. (a)) and further that "[i]t 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 greenhouse gases beyond 2020." (Health & Saf. Code, § 38551, subd. (b).) Assembly Bill No. 32 also required that CARB "prepare and approve a scoping plan [for] achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions by 2020." (Health & Saf. Code, § 38561, subd. (a).)

In December 2008 CARB approved the scoping plan. The scoping plan "identifies California's cities and counties as 'essential partners' within the overall statewide effort, and recommends that local governments set a GHG reduction target of 15% below 2005-2008 levels by 2020." Thus, it was acknowledged that CARB would accept this target as a substitute for the 1990 level referenced in Assembly Bill No. 32 and Executive Order No. S-3-05.

### *C. The County's General Plan Update PEIR*

The County acknowledged in the general plan update PEIR that it needed to "reduce GHG emissions to 1990 levels by 2020" and that changes were required both in the community and in the County's operations, buildings, vehicle fleet, and with respect to its employee commutes, water, and waste.

A GHG emissions inventory was prepared as a special appendix (Appendix K). Appendix K set forth projected emissions reductions and assumptions then-available, and promised that the "Greenhouse Gas Reduction/Climate Action Plan, which will be prepared as an implementation strategy, will further detail the County's GHG emissions and how those reductions will occur."

There was extensive public comment on the general plan update, including from the California Attorney General:

"[W]e encourage the County to (1) commit in the General Plan to adopt by a date certain a CAP with defined attributes (targets, enforceable measures to meet those targets, monitoring and reporting, and mechanisms to revise the CAP as necessary) that will be integrated into the General Plan; (2) incorporate into the General Plan interim policies to ensure that any projects considered before completion of the CAP will not undermine the objectives of the CAP; and (3) for all GHG impacts the County has designated as significant, adopt feasible mitigation measures that can be identified today and that do not require further analysis." (Fn. omitted.)

### *D. Mitigation Measures*

The County thereafter promised to take a series of additional actions. These promises took the form of a group of climate change-related mitigation measures: Mitigation Measures CC-1.1 through CC-1.19 (the Mitigation Measures). The Mitigation

Measures included requirements to update, review, and implement County programs; implement a strategic energy plan; revise the zoning ordinance; coordinate with other entities; educate the public; reduce vehicle miles traveled and encourage alternative modes of transportation; and, based thereon, to revise the County guidelines for determining significance.

The County made the following finding with regard to Mitigation Measure CC-1.2:

"[Mitigation Measure] CC-1.2 requires the preparation of a County Climate Change Action Plan within six months from the adoption date of the General Plan Update. The Climate Change Action Plan will include a baseline inventory of greenhouse gas emissions from all sources and *more detailed greenhouse gas emissions reduction targets and deadlines*. The County Climate Change Action Plan *will achieve comprehensive and enforceable GHG emissions reduction* of 17% (totaling 23,572 MTC02E) from County operations from 2006 by 2020 and 9% reduction (totaling 479,717 MTC02E) in community emissions from 2006 by 2020. Implementation of this Climate Change Action Plan will contribute to meeting the [Assembly Bill No.] 32 goals, in addition to the State regulatory requirements noted above." (Italics added.)

Mitigation Measure CC-1.2 formed the basis for Mitigation Measure CC-1.8, which required "revision of the County Guidelines for Determining Significance based on the Climate Change Action Plan."

Mitigation Measure CC-1.8, in turn, formed the basis for Mitigation Measure CC-1.7, which required that the County guidelines for determining significance anticipated by Mitigation Measure CC-1.8 incorporate CARB's recommendation for a threshold for determining significance of impacts on climate change. Should the recommendation "not be released in a timely manner," the County would "prepare its own threshold."

As required by CEQA (Pub. Res. Code, § 21081.6), the County incorporated a mitigation monitoring and reporting program (MMRP) into the general plan update PEIR.

Included in the MMRP was a promise to achieve GHG reductions by 2020 through comprehensive and enforceable GHG emission reduction measures. In addition to committing to the 2020 Target, the County also committed to compliance with the Executive Order No. S-3-05 trajectory. The County found "significant impacts associated with substantial climate-related risks" such as those "on water supply, wildfires, energy needs, and impacts to public health" would occur as a result of its general plan update. However, as a result of its commitment to adopt a CAP and Thresholds, and other mitigation measures, the County was able to make a finding that the climate change impacts anticipated by the general plan update PEIR would be avoided or substantially lessened.

#### *E. The CAP and Thresholds Project*

According to the County, the CAP was prepared for the following purposes:

1. To mitigate the impacts of climate change by achieving meaningful greenhouse gas (GHG) reductions within the County, consistent with Assembly Bill No. 32, the governor's Executive Order S-3-05, and CEQA guidelines (Cal. Code Regs., tit. 14, § 15000 et seq. [CEQA Guidelines]).
2. To allow lead agencies to adopt a plan or program that addresses the cumulative impacts of a project.
3. To provide a mechanism that subsequent projects may use as a means to address GHG impacts under CEQA.

4. To comply with the 2011 adopted County General Plan Environmental Impact Report (EIR) Mitigation Measure CC-1.2, Preparation of a Climate Action Plan.

Although compliance with Mitigation Measure CC-1.2 was one purpose of the CAP, two of the four purposes relate to preparation of the CAP as a plan-level document so that environmental review could be avoided on future projects that were determined to be below specified "thresholds." (CEQA Guidelines, § 15183.5.) However, the CAP did not mitigate climate change impacts consistent with Assembly Bill No. 32 and Executive Order No. S-3-05, did not satisfy the plan-level requirements of CEQA Guideline 15183.5, and it did not meet the requirements of Mitigation Measure CC-1.2

Instead, the CAP expressly acknowledged the possibility that "communitywide inventories will indicate that the community is not achieving its reduction targets" and admitted that the CAP "does not ensure reductions." Further, the CAP did not include a meaningful analysis of "measures that extend beyond the year 2020." Rather, the County documented that instead of continuing to reduce GHG emissions after 2020, GHG emissions allowed as a result of the general plan update were anticipated to *increase* after 2020.

The CAP and Thresholds were presented to the planning commission and the board of supervisors as "the project." The Thresholds, like the CAP, purport to expressly facilitate post-2020 development that would have significant adverse climate change impacts, without any consideration of post-2020 climate science as required by Assembly Bill No. 32 and Executive Order No. S-3-05.

#### *F. The Comment Period*

The Sierra Club submitted extensive comments to the County. In particular, the Sierra Club commented on the need to take action consistent with climate science and achieve the Assembly Bill No. 32 and Executive Order No. S-3-05 GHG emissions reductions targets. The Sierra Club also provided specific examples of feasible GHG Reduction measures that would actually reduce GHG emissions and could be adopted without delay. The Sierra Club submitted additional comments and testified at the planning commission hearing, attempted to appeal the planning commission's decision, and testified at the board of supervisors hearing.

#### *G. Proceedings Before the Planning Commission*

The final agenda for the April 27, 2012 regular meeting of the County Planning Commission Regulation Meeting made no reference to the associated Thresholds, which were also presented to the planning commission. Despite acknowledging the significant climate change effects as well as the requirements of Assembly Bill No. 32 and Executive Order No. S-3-05, staff took the position that no additional environmental review was required. The planning commission voted to adopt staff's recommendation with one addition relating to installation of electric vehicle recharging stations.

#### *H. Proceedings Before the Board of Supervisors*

The Project was placed on the agenda for the June 20, 2012 board of supervisors meeting as "County of San Diego Climate Action Plan (District: All)." The staff report and supporting documents presented to the board of supervisors included (1) the CAP, (2) the Thresholds, (3) the environmental documentation, and (4) public documentation.

The environmental documentation included a memorandum referencing "CEQA Guidelines Section 15164 Addendum to the County of San Diego General Plan Update [PEIR] (SCH 2002111067)" (Addendum) which was dated the same day as the hearing, June 20, 2012. The addendum defined the project as "the CAP and Significance Guidelines." The addendum included attachments entitled "Environmental Review Update Checklist Form" (environmental checklist) and "Environmental Review Update Checklist for County of San Diego Climate Action Plan." The environmental checklist included a determination by staff that the "new information included in the CAP and Significance Guidelines represent minor technical additions to the previously certified EIR."

At the board of supervisors hearing, staff acknowledged that "[s]tate and local measures in the climate plan are insufficient to achieve our target in 2035" and explained that the CAP measures were not required, but rather that staff "believe[d]" that "education and incentives" might produce a result.

The County also documented that GHG emissions were anticipated to *increase*, not decrease, after 2020. Staff explained that the County would not comply with Executive Order No. S-3-05 because "the State's plan right now goes out to 2020." Staff further explained to the Board of Supervisors that the Thresholds would result in a less than significant finding for greenhouse gas emissions for future development projects.

Ultimately, the board of supervisors took the following actions:

1. Adopted environmental findings including in attachment C.

2. Adopted the plan titled "County of San Diego Climate Action Plan (Attachment A)."

The only findings made by the County were the following:

1. The environmental impact report (EIR) dated August 3, 2011 on file with the Department of Planning and Land Use (DPLU) as Environmental Review Number SCH 2002111067 was completed in compliance CEQA and the State and County CEQA Guidelines and that the Board of Supervisors has reviewed and considered the information contained therein and the Addendum thereto dated June 20, 2012 on file with DPLU and attached thereto; and
2. There were no changes in the project or in the circumstances under which the project was undertaken that involved significant new environmental impacts which were not considered in the previously certified EIR dated August 3, 2011, that there was no substantial increase in the severity of previously identified significant effects, and that no information of substantial importance had become available since the EIR was certified as explained in the environmental checklist dated June 20, 2012 and attached thereto.

*I. The Sierra Club Files Suit*

The Sierra Club filed a petition for writ of mandate, challenging the June 20, 2012 approval of the CAP and Thresholds project, including the associated environmental review. The Sierra Club alleged that the CAP did not meet the requirements of Mitigation Measure CC-1.2, the Thresholds were not adopted pursuant to the requirements of CEQA Guideline section 15064.7, and that an EIR should have been prepared.

*J. The Trial Court's Decision*

The trial court determined that the CAP did not comply with the requirements for a CAP as set forth in Mitigation Measure CC-1.2, and thus violated CEQA. The trial court found that the CAP neither contained enforceable GHG reduction measures that

will achieve the specified emissions reductions, nor detailed deadlines for GHG emission reductions.

The trial court further found that the approval process violated CEQA, noting: "There is no showing that the County properly considered whether the CAP is within the scope of the PEIR" and that "environmental review is necessary to ascertain whether the CAP met the necessary GHG emission reductions when considering the CAP is merely hortatory and contains no enforcement mechanism for reducing GHG emissions."

Further, the trial court determined that whether or not the Thresholds were adopted was a subsidiary issue that did not need to be reached in light of the trial court's decision on the CAP (which formed the basis for the Thresholds) and the process by which it was approved.

## DISCUSSION

### I. STANDARD OF REVIEW

The Sierra Club and the County agree as to the applicable standards of review.

In reviewing the County's actions under CEQA, we must determine whether there was "a prejudicial abuse of discretion." (Pub. Resources Code, § 21168.5.) "'Abuse of discretion is established if the agency has not proceeded in a manner required by law, or if the determination or decision is not supported by substantial evidence.'" (*Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App.4th 477, 486.)

"[A] reviewing court must adjust its scrutiny to the nature of the alleged defect." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435 (*Vineyard*).) Challenges to an agency's failure to proceed in the

manner required by CEQA are subject to a significantly different standard of review than challenges that an agency's decision is not supported by substantial evidence. (*Ibid.*)

Where the challenge is that the agency did not proceed in the manner required by law, a court must "determine de novo whether the agency has employed the correct procedures, 'scrupulously enforc[ing] all legislatively mandated CEQA requirements.'" (*Ibid.*)

Furthermore, when a prior environmental impact report has been prepared and certified for a program or plan, the question for a court reviewing an agency's decision not to use a tiered EIR for a later project "is one of law, i.e., 'the sufficiency of the evidence to support a fair argument.'" (*Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1318.) "[I]f there is substantial evidence in the record that the later project may arguably have a significant adverse effect on the environment which was not examined in the prior program EIR, doubts must be resolved in favor of environmental review and the agency must prepare a new tiered EIR, notwithstanding the existence of contrary evidence." (*Id.* at p. 1319, fn. omitted.) The court "must set aside the decision if the administrative record contains substantial evidence that a proposed project might have a significant environmental impact; in such a case, the agency has not proceeded as required by law." (*Id.* at 1317.)

## II. OVERVIEW OF CEQA

"The fundamental goals of environmental review under CEQA are information, participation, mitigation, and accountability." (*Lincoln Place Tenants Assn. v. City of Los Angeles* (2007) 155 Cal.App.4th 425, 443-444 (*Lincoln Place II*).) As the California Supreme Court has explained: "If CEQA is scrupulously followed, the public will know

the basis on which its responsible officials either approve or reject environmentally significant action, and the public, being duly informed, can respond accordingly to action with which it disagrees. [Citations.] The EIR process protects not only the environment but also informed self-government." (*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 392 (*Laurel Heights*).)

CEQA requires a public agency to prepare an environmental impact report (EIR) before approving a project that may have significant environmental effects. (Pub. Resources Code, § 21100.) The EIR is "'the heart of CEQA' . . . an 'environmental alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.'" (*Laurel Heights, supra*, 47 Cal.3d at p. 392.)

CEQA authorizes the preparation of various kinds of environmental impact reports depending upon the situation, such as the subsequent EIR, a supplemental EIR, and a tiered EIR. (Pub. Resources Code, §§ 21166, 21068.5, 21093, 21094.) Whereas the subsequent EIR and supplemental EIR are used to analyze modifications to a particular project, a tiered EIR is used to analyze the impacts of a later project that is consistent with an EIR prepared for a general plan, policy, or program. (CEQA Guidelines, § 15385; compare Pub. Resources Code, § 21166 & CEQA Guidelines §§ 15162, 15163 & 15164 [referencing "the project"] with Pub. Resources Code, § 21093 [stating that later projects may use tiering].)

CEQA requires that "environmental impact reports shall be tiered whenever feasible." (Pub. Resources Code, § 21093, subd. (b).) Tiering means "the coverage of

general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs . . . incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared." (CEQA Guidelines, § 15385; Pub. Resources Code, § 21068.5.) In the context of program and plan-level EIR's, the use of tiered EIR's is mandatory for a later project that meets the requirements of Public Resources Code section 21094, subdivision (b). (Pub. Resources Code, § 21094, subd. (a).)

Another requirement of CEQA is that public agencies "should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." (Pub. Resources Code, § 21002.) "A 'mitigation measure' is a suggestion or change that would reduce or minimize significant adverse impacts on the environment caused by the project as proposed." (*Lincoln Place II, supra*, 155 Cal.App.4th at p. 445.)

If the agency finds that mitigation measures have been incorporated into the project to mitigate or avoid a project's significant effects, a "public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation." (Pub. Resources Code, § 21081.6, subd. (a)(1).)

If a mitigation measure later becomes "impracticable or unworkable," the "governing body must state a legitimate reason for deleting an earlier adopted mitigation

measure, and must support that statement of reason with substantial evidence." (*Lincoln Place Tenants Association v. City of Los Angeles* (2005) 130 Cal.App.4th 1491, 1509 (*Lincoln Place I*.)

### III. ANALYSIS

#### A. Statute of Limitations Defense

The County asserts that the Sierra Club's claim that the mitigation measures it adopted are not enforceable is barred by the statute of limitations because the Sierra Club should have challenged the County's approval of the general plan update EIR, not the CAP. We reject this contention.

The petition was filed 30 days after the County's June 20, 2012 approval of the CAP. In addition, the lawsuit was filed 29 days after the County filed a notice of determination (NOD). The Sierra Club's July 20, 2012 petition was timely filed 29 days after. Thus, the County triggered the 30-day statute of limitations set forth in Public Resources Code section 21167, subdivisions (b) and (e).

The Sierra Club is not challenging the validity of the general plan update PEIR or the enforceability of the mitigation measures provided in that document. Rather, the Sierra Club is challenging the project before the Board of Supervisors on June 20, 2012, and seeks to enforce a key mitigation measure set forth in the EIR and MMRP - Mitigation Measure CC-1.2.

Further, the Court of Appeal in *Lincoln Place II*, *supra*, 155 Cal.App.4th 425 rejected a similar argument to that made by the County. In that case, a tenants' association sought to compel the City of Los Angeles to enforce mitigation measures

contained in a vesting tentative tract map issued by the city. The city argued that the 180-day statute of limitations contained in Public Resources Code section 21167 for challenges to approval of projects without determining whether they have a significant effect on the environment barred the plaintiffs' action. In rejecting that action, the Court of Appeal held "[t]he statute's plain language demonstrates it has no application to this case seeking to *enforce mitigating conditions*." (*Lincoln Place II*, at p. 453, fn. 23, italics added.)

Moreover, the cases cited by the County in support of its position are inapposite. The County cites *River Valley Preservation Project v. Metropolitan Transit Development Bd.* (1995) 37 Cal.App.4th 154 and *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004 for the proposition that because the time period within which to challenge the general plan update EIR has expired, the EIR is conclusively presumed to have complied with CEQA. Here, however, the Sierra Club is not challenging the general plan update EIR, but the CAP and Thresholds project, and is seeking to enforce Mitigation Measure CC-1.2.

The County's reliance upon *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018 and *Mount Shasta Bioregional Ecology Center v. County of Siskiyou* (2012) 210 Cal.App.4th 184 is also unavailing. The petitioners in those actions were challenging the adequacy of the mitigation measures themselves. Here, the Sierra Club does not attack the adequacy of the mitigation measure in the general plan update PEIR. To the contrary, the Sierra Club's lawsuit is in *support* of the County's past findings and promises to achieve GHG Reductions.

*B. Failure To Proceed in a Manner Required by Law*

As detailed, *ante*, implementation of Mitigation Measure CC-1.2 was only one of the purported purposes of the CAP and Thresholds project. The CAP and Thresholds project also purports to be a plan-level document for use in review of later projects.

As we shall explain, *post*, with respect to the CAP as mitigation for a plan-level document, the County failed to proceed in the manner required by CEQA by proceeding with the CAP and Thresholds project in spite of the express language of Mitigation Measure CC-1.2 that the CAP "include . . . more detailed greenhouse gas emissions reduction targets and deadlines" and that the CAP "will achieve comprehensive and enforceable GHG emissions reduction" by 2020. With respect to the CAP as a plan-level document itself, the County failed to proceed in the manner required by law by failing to incorporate mitigation measures into the CAP as required by Public Resources Code section 21081.6.

*1. The County failed to adopt a CAP that complied with the requirements of Mitigation Measure CC-1.2*

"Mitigating conditions are not mere expressions of hope." (*Lincoln Place I, supra*, 130 Cal.App.4th at p. 1508.) Once incorporated, mitigation measures cannot be defeated by ignoring them or by "attempting to render them meaningless by moving ahead with the project in spite of them." (*Lincoln Place II, supra*, 155 Cal.App.4th at p. 450.) This is true even where subsequent approvals are ministerial. (*Katzeff v. California Department of Forestry & Fire Protection* (2010) 181 Cal.App.4th 601, 614 [public agency "may not authorize destruction or cancellation of the mitigation—whether or not

the approval is ministerial—without reviewing the continuing need for the mitigation, stating a reason for its actions, and supporting it with substantial evidence"].) If a mitigation measure later becomes "impractical or unworkable," the "governing body must state a legitimate reason for deleting an earlier adopted mitigation measure, and must support that statement of reason with substantial evidence." (*Lincoln Place I, supra*, 130 Cal.App.4th at p. 1509.)

a. *The CAP does not include enforceable GHG emissions required by Mitigation Measure CC-1.2*

When it adopted the general plan PEIR, the County promised to achieve specified GHG reductions by 2020. However, when it approved the CAP and Thresholds project, the County stated that the CAP does not ensure the required GHG emissions reductions. Rather, the County described the strategies as recommendations.

Until this litigation was initiated, the County described the CAP as the most critical component of the County's climate change mitigation efforts. The CAP was intended to "provide[] the specific details associated with [the General Plan] strategies and measures for greenhouse gas (GHG) emissions reduction *that were not available* during the program-level analysis of the General Plan." (Italics added.)

The County agreed to the mitigating requirement of a CAP containing "comprehensive and enforceable GHG emissions reduction measures that will achieve" the specified GHG Reductions by 2020. This is because, as the County acknowledges, Executive Order No. S-3-05 requires consistent emissions reductions each year from

2010 through 2020 and then a greater quantity of emissions reductions each year from 2020 through 2050.

The County asserts that "[f]ive of the reduction measures incorporated into the CAP are also embodied in state or federal law" and that "CEQA permits reliance on existing regulatory standards as mitigation when it is reasonable to believe compliance will occur."

However, the County acknowledges that these measures will not, alone, achieve the specified GHG emissions reductions by 2020. In fact, the record shows that without local measures the requirements of Assembly Bill No. 32 will not be met.

Further, the record demonstrates that many of the mitigation measures set forth in the MMRP are not likely to achieve GHG emissions reductions by 2020 as promised by Mitigation Measure CC-1.2 because they are not currently funded. The record show that the County has not funded essential programs like replacing its own vehicle fleet, implementing water conservation programs, preparing town center plans, and reducing water demand. The County cannot rely on unfunded programs to support the required GHG emissions reductions by 2020, as Mitigation Measure CC-1.2 requires.

Transportation is a major concern, which the County concedes is the largest source of community GHG emissions. The Sierra Club presented evidence below that driving reductions needed to achieve Assembly Bill No. 32 and Executive Order No. S-3-05 targets are not met. The County did not dispute this evidence. The record shows that transit-related measures are either unfunded, that the County is not making meaningful

implementation efforts, and in some instances that the County is acting contrary to mitigation measures incorporated into the general plan update PEIR.

For example, two of the four transportation measures, T1 (increase transit use) and T2 (increase walking & biking), rely on at least one unfunded program. In addition, measures T1 and T2, as well as T3 (increase ridesharing), also rely on "coordination" with SANDAG and/or other entities.

In response to Sierra Club's comments relating to the effectiveness of these measures as a result of current SANDAG (San Diego Association of Governments) priorities, the County did not request funds based on the fact that it does not control how SANDAG spends its money. As the County stated, "The County does not control regional plans or allocation of regional transportation funding." This position was rejected by the Supreme Court in *City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 367 [holding respondent could not disclaim responsibility for making payments without first asking for funds].

The CAP's transportation section also does not include an analysis of the County's own operations, and the record appears to include contradictions even over programs over which the County has exclusive control, such as replacement of its own vehicle fleet with alternatively fueled vehicles. Although the County suggests it will implement "1 % greater efficiency per year", the County has not formally bound itself to do so. Indeed, there is no mention of potential funding sources with respect to reductions related to County operations.

b. *The CAP contains no detailed deadlines for reducing GHG emissions*

As the trial court found, the CAP contained no detailed deadlines. The County argues on appeal that the 2020 goal and the timeframes set forth in the MMRP are sufficient to meet the requirement of "more detailed . . . deadlines." However, Mitigation Measure CC-1.2 expressly required that the CAP provide more detailed deadlines. If the County did not intend for the CAP to do anything further with respect to deadlines than already set forth, the County would not have used the word "more." Indeed, in addition to not providing the promised deadlines, the CAP acknowledges that it will not be effective unless it is updated.

c. *The evidence cited by the County*

The County asserts that CAP measures will be effective because "[p]articipation rates were discussed and modified," and the "feasibility of attaining reduction targets was assessed." However, the County does not cite any evidence in the record to support its belief that people will participate in the various programs to the extent necessary to achieve the reductions asserted, or even assert that feasible measures will actually be implemented.

Rather, the County cites to entire appendices and chapters of the CAP. However, information contained in appendices are "not a substitute for "a good faith reasoned analysis."" (Vineyard, *supra*, 40 Cal.4th at p. 442.) "The audience to whom an EIR must communicate is not the reviewing court but the public and the government officials deciding on the project." (*Id.* at p. 443.)

The County also asserts that the CAP "demonstrates a [GHG emissions] reduction of 19%." However, the CAP expressly states that it does not ensure reductions. Instead, the County's evidence relates to quantification of the respective measures. Quantifying GHG reduction measures is not synonymous with implementing them. Whether a measure is effective requires more than quantification, but an assessment of the likelihood of implementation. There is no evidence in the record that the above-referenced mitigation measures will make any contribution to achieving GHG emissions reductions by 2020.

*2. The County's failure to make findings regarding the environmental impact of the CAP and Thresholds project*

Instead of analyzing and making findings regarding the environmental effects of the CAP and Thresholds project, the County made an erroneous assumption that the CAP and Thresholds project was the same project as the general plan update. (*Sierra Club, supra*, 6 Cal.App.4th at p. 1320 ["section 21166 and its companion section of the [CEQA] Guidelines appear to control only when the question is whether more than one EIR must be prepared for what is essentially the same project"].) As a result, the County failed to render a "written determination of environmental impact" before approving the CAP and Thresholds project. (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 81; Pub. Resources Code, § 21151.) This constitutes a failure to proceed in the manner required by law. (*No Oil, supra*, 13 Cal.3d at p. 81.)

By inaccurately assuming the CAP and Thresholds project was the same project as the general plan update, the County failed to analyze the environmental impacts of the

CAP and Thresholds project itself. (*Natural Resources Defense Council, Inc. v. City of Los Angeles* (2002) 103 Cal.App.4th 268, 283 [holding CEQA violated where "no evidence that the [County] formally addressed whether or not the [] project fell within the concept of a 'tiered' EIR"].) As a result, the County never made the required findings that the effects of the CAP and Thresholds project were examined, mitigated, or avoided. (Pub. Resources Code, § 21094, subd. (a).)

The facts of the present case, as the trial court found, are similar to *Center for Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156 (*CSNC*). In *CSNC*, the county prepared a general plan and PEIR. (*Id.* at p. 1162.) In the PEIR, one of the mitigation measures was the preparation of a management plan, including a fee program, to mitigate the general plan's impacts on oak woodland habitat. (*Id.* at p. 1163.) The initial study concluded that the project was merely an implementation of the county's general plan. (*Id.* at p. 1176.)

The Court of Appeal rejected this argument, holding that a tiered EIR was required to examine the management plan since the PEIR did not include sufficient details, rejecting the argument that the management plan was merely an implementation of the general plan. (*CSNC, supra*, 202 Cal.App.4th at pp. 1176, 1184-1185.)

The County attempts to distinguish *CSNC* by asserting the general plan update PEIR analyzed the same environmental issue addressed in the CAP. However, the record reveals that the necessary details were not available to the County at the time the general plan update PEIR was certified. Indeed, no component of the project, the CAP or the Thresholds, had even been created at the time of the general plan update.

As the Court of Appeal in *CSNC* explained:

"That the preceding 2004 program EIR contemplated adverse environmental impacts resulting from development under the 2004 General Plan does not remove the need for a tiered EIR for the oak woodland management plan. . . . Here, the specific project—the oak woodland management plan (including Option B fee program)—required a tiered EIR to examine its specific mitigation measures and fee rate." (*CSNC, supra*, 202 Cal.App.4th at p. 1184.)

The general plan update anticipated implementation of mitigation measures—CC-1.2, CC-1.7, and CC-1.8—as mitigating conditions to mitigate the adverse climate change environmental impacts of the general plan update. Those measures were analyzed in the PEIR. However, the PEIR never considered the use of the CAP and the Thresholds as a plan-level program. Thus, the environmental impacts of its use needed to be considered in an EIR. (*NRDC, supra*, 103 Cal.App.4th at p. 281 [project did not arise until after PEIR and thus was not contemplated therein].)

The County contends that the Board of Supervisors made an "implied finding" that the CAP complied with Mitigation Measure CC-1.2 and that finding is "entitled to great deference." However, "such an 'implicit finding' does not satisfy CEQA's requirement of express findings." (*Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1037.) "[T]he board of supervisors must make findings . . . to permit a reviewing court to bridge the analytic gap between the evidence and the ultimate decision." (*People v. County of Kern* (1976) 62 Cal.App.3d 761, 777; see *Citizens for Quality Growth v. City of Mt. Shasta* (1988) 198 Cal.App.3d 433, 442 ["passing references to the mitigation measures are insufficient to constitute a finding, as nothing in City's resolutions binds it to follow these measures"].)

Moreover, even if "implied findings" were permissible, there can be no "interpretation" of Mitigation Measure CC-1.2 contrary to its express terms. (*Southern Cal. Edison Co. v Public Utilities Com.* (2000) 85 Cal.App.4th 1086, 1105 ["an agency's interpretation of a regulation or statute does not control if an alternative reading is compelled by the plain language of the provision"]; see *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) 197 Cal.App.4th 1042, 1062 [agency's "view of the meaning and scope of its own ordinance" does not enjoy deference when it is "clearly erroneous or unauthorized"].)

3. *The County failed to proceed in the manner required by law by failing to incorporate mitigation measures directly into the CAP*

As discussed, *ante*, one of the major differences between the climate change action plan anticipated by Mitigation Measure CC-1.2 in the general plan update PEIR and the CAP and Thresholds project as prepared, is that the general plan update PEIR did not analyze the CAP as a plan-level document that itself would facilitate further development. As a plan-level document, the CAP is required by CEQA to incorporate mitigation measures directly into the CAP:

"A public agency *shall provide the measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures.* Conditions of project approval may be set forth in referenced documents which address required mitigation measures or, *in the case of the adoption of a plan, policy, regulation, or other public project, by incorporating the mitigation measures into the plan, policy, regulation, or project design.*" (Pub. Resources Code, § 21081.6, subd. (b), italics added.)

As authority for the assertion that it did not need to incorporate enforceable mitigation measures into the CAP directly, the County cites *Twain Harte Homeowners Assn. v. County of Tuolumne* (1982) 138 Cal.App.3d 664, 689-690. However, *Twain Harte* was decided before enactment of Public Resources Code section 21081.6, subdivision (b), which, as discussed, *ante*, requires "in the case of the adoption of a plan" that mitigation measures be fully enforceable "by incorporating the mitigation measures into the plan . . . ."

"The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind." (*Bozung v. Local Agency Formation Com.* (1975) 13 Cal.3d 263, 283.) By failing to consider environmental impacts of the CAP and Thresholds project, the County effectively abdicated its responsibility to meaningfully consider public comments and incorporate mitigating conditions. In addition to the example discussed, *ante*, related to transportation impacts, the Sierra Club also provided examples of mitigation implemented by other regions to mitigate the effects of climate change in the energy sector. The County neither implemented nor responded to these examples which have already been implemented elsewhere.

#### 4. *The trial court's finding that the County must prepare an EIR*

As set forth in *Lincoln Place I*, a supplemental EIR must be prepared when a public agency determines a previously adopted mitigation measure is infeasible. (*Lincoln Place I, supra*, 130 Cal.App.4th at pp. 1508-1509.) In addition, CEQA guidelines,

section 15183.5, subdivision (b)(1)(F) provides that a plan for the reduction of GHG emissions should "[b]e adopted in a public process following environmental review."

The County's failure to comply with Mitigation Measure CC-1.2 and Assembly Bill No. 32 and Executive Order No. S-3-05 supports the conclusion that the CAP and Thresholds project will have significant, adverse environmental impacts that have not been previously considered, mitigated, or avoided.

*a. Substantial evidence supports the court's finding preparation of an EIR was required*

The County asserts that the substantial evidence standard of review applies to the question of whether a supplemental EIR was required, under which deference is given to an agency's determination. (*Latinos Unidos de Napa v. City of Napa* (2013) 221 Cal.App.4th 192, 200-202.) The Sierra Club, on the other hand asserts that the "fair argument" test applies, under which "deference to the agency's determination is not appropriate and its decision not to require an EIR can be upheld only when there is no credible evidence to the contrary." (*Sierra Club, supra*, 6 Cal.App.4th at p. 1318.) We conclude that under either standard, the trial court did not err in finding a supplemental EIR was required.

The fair argument versus substantial evidence test is of no moment because, here, there is no substantial evidence in the record supporting the County's erroneous conclusion that "activities associated with the CAP and Significance Guidelines are within the scope of the General Plan Program EIR."

The County does not dispute that "to avoid serious climate change effects, atmospheric GHG concentrations need to be stabilized as quickly as possible." In fact, the County warns that expected local adverse effects of climate change include "higher temperatures, [¶] a greater number of extremely hot days, [¶] changes in the pattern and amount of precipitation, [¶] decreased water supplies accompanied by increased demand, [¶] increased wildfire risk, [¶] changes in ecosystems, and [¶] decline or loss of plant and animal species." However, the CAP and Thresholds project was approved without the appropriate environmental analysis to avoid or mitigate these consequences. As the trial court found, "environmental review is necessary to ascertain whether the CAP met the necessary GHG emission reductions when considering the CAP is merely hortatory and contains no enforcement mechanism for reducing GHG emissions."

Moreover, as the County acknowledges, the details of the CAP "were not available during program-level analysis of the General Plan." For example, the general plan update PEIR did not provide a "baseline GHG emissions inventory; detailed GHG-reduction targets and deadlines; comprehensive and enforceable GHG emissions-reduction measures; and implementation, monitoring, and reporting of progress toward the targets defined in the CAP." In 2011 the County found that implementation of mitigation measures, including CC-1.2, CC-1.7, and CC-1.8, were part of the mitigation imposed to mitigate the climate change impacts of the general plan update. It cannot be said that failing to comply with Mitigation Measure CC-1.2, Assembly Bill No. 32, and Executive Order No. S-3-05 does not change the environmental conclusions in the general plan update PEIR.

Further, the general plan update PEIR did not contemplate that preparation of the CAP and Thresholds project was at the "plan-level." As a plan-level document, the CAP and Thresholds project was required to undergo environmental review as a matter of law. (CEQA Guidelines, § 15183.5, subd. (b)(1)(F).) The general plan update PEIR also did not contemplate that as a result of the CAP, "[m]ore projects will fall below the bright line threshold, and will not have to conduct detailed analysis", much less study the environmental impact of such. County staff, the planning commission, and the board of supervisors were all aware that approving the CAP and Thresholds project would allow more projects to avoid a climate change analysis, including projects with post-2020 climate change impacts without post-2020 environmental review.

Furthermore, in 2011, the County found that climate change impacts were mitigated not only by implementation of mitigation measures, but also by "compliance with applicable regulations" including Assembly Bill No. 32 and Executive Order No. S-3-05.

By contrast, the CAP and Thresholds project now acknowledges it does not comply with Executive Order No. S-3-05. Instead of maintaining a constant rate of GHG emissions reductions after 2020, as required by Executive Order No. S-3-05, the County admits that GHG emissions will instead increase after 2020. Thus, the County's own documents demonstrate that the CAP and Thresholds project will not meet the requirements of Assembly Bill No. 32 and Executive Order No. S-3-05 and thus will have significant impacts that had not previously been addressed in the general plan update PEIR.

The explanation given to the board of supervisors for failing to address the post-2020 impacts facilitated by the CAP and Thresholds project was that "the State's plan doesn't go out that far, and it would be speculative for us to do that."

However, contrary to the County's argument that it would be "speculative" to consider the environmental impacts of the CAP, the County has acknowledged that other agencies have, in fact, been able to do so. It is an abuse of discretion to reject alternatives or mitigation measures that would reduce adverse impacts without supporting substantial evidence. (CEQA Guidelines, §§ 15043, 15093, subd. (b).) The County's assumption that considering post-2020 impacts is "speculative" is not supported by substantial evidence. (Pub. Resources Code, § 21082.2, subd. (c) ["Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly inaccurate or erroneous . . . is not substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."].)

The Sierra Club provided feasible mitigation measures. The County rejected these mitigation measures without substantial evidence for doing so.

In sum, the CAP does not fulfill the County's commitment under CEQA and Mitigation Measure CC-1.2, to provide detailed deadlines and enforceable measures to ensure GHGF emissions will be reduced.

DISPOSITION

The judgment is affirmed. The Sierra Club shall recover its costs on appeal.

NARES, J.

I CONCUR:

McCONNELL, P. J.

I CONCUR IN THE RESULT:

HUFFMAN, J.

## REFERENCE 2

# *First Update to the* **Climate Change Scoping Plan**

## ***Building on the Framework***

From:

[http://www.arb.ca.gov/cc/scopingplan/2013\\_update/first\\_update\\_climate\\_change\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf)

### **B. Achieving Climate Stabilization**

Scientific research indicates that an increase in the global average temperature of 2°C (3.6°F) above pre-industrial levels, which is only 1.1°C (2.0°F) above present levels, poses severe risks to natural systems and human health and well-being. Considering knowledge from the paleo-climate record with changes currently observed in the Greenland and Antarctic ice sheets, we can expect substantial sea level rise, 0.4 to 0.8 meters, with upper end uncertainties approaching one meter above present day during the 21st Century and continued substantial increase after 2100 even with stringent mitigation of emissions to achieve 2°C stabilization. Increased climate extremes, already apparent at present day climate warming (~0.9°C), will no doubt be more severe. **To have a good chance (not a guarantee) of avoiding temperatures above those levels, studies focused on a goal of stabilizing the concentration of heat-trapping gases in the atmosphere at or below the 450 parts per million (ppm) CO<sub>2</sub>-equivalent (CO<sub>2</sub>e, a metric that combines the climate impact of all well-mixed GHGs, such as methane and nitrous oxide, in terms of CO<sub>2</sub>).**

The CO<sub>2</sub>e target is a somewhat approximate threshold, and the exact level of CO<sub>2</sub>e is not precisely known because the sensitivity of the climate system to GHGs has uncertainty. Different models show slightly different outcomes within this range. **An example of a pre-IPCC assessment study (Meinshausen et al. 2009)<sup>15</sup> which has synthesized many studies on climate sensitivities, concluded that we would need to stabilize at about 400 ppm CO<sub>2</sub>e (Bullock note: We have already exceeded 400 PPM!!!!!!!) in order to likely avoid exceeding the 2°C threshold (even at that stabilization target, there is still about a 20 percent chance of exceeding the temperature target).** Further, a recent paper by an international team of scientists (Hansen et al. 2013)<sup>16</sup> asserts that the **widely accepted target of limiting human-made global climate warming to 2°C above preindustrial levels is likely too high and may subject future generations and nature to irreparable harm. Recognizing this fact, the international community agreed in meetings in Cancun in 2012 to review, by 2015, progress to the 2°C target and consider whether it should be strengthened to a 1.5°C threshold.**

What is important to recognize in these studies of warming thresholds is the critical importance of non-CO<sub>2</sub> gases, particularly the short-lived climate pollutants. For example, to avoid 2°C warming at a 66 percent confidence level, total carbon emissions (as CO<sub>2</sub>e) must be kept to 1000 GtC. Considering that we have already emitted about 500 GtC, which leaves 500 GtC to be divided up among nations. If the non-CO<sub>2</sub> gases are included then

the total CO<sub>2</sub>e emissions are at 790 GtC, leaving only 210 GtC to be emitted. Thus, there is a compelling case to reduce the short-lived climate pollutants.

In early May 2013, the Mauna Loa monitoring station, which has been shown to provide excellent measurements of CO<sub>2</sub> throughout the global atmosphere, recorded atmospheric CO<sub>2</sub> of 400 ppm,<sup>17</sup> substantially higher than the 316 ppm recorded when the station made its first measurements in 1958. The monitoring station offers the longest-running record of atmospheric CO<sub>2</sub> measured directly from the air. This recent reading will take a few years to become the international average; however, reaching 400 ppm at Mauna Loa is significant and has surpassed a worrisome milestone.

Although stabilizing atmospheric GHG concentration below 450 ppm CO<sub>2</sub>e is important, it does not mean that once that level is reached, temperatures will immediately level off. Because of time lags inherent in the Earth's climate, the initial warming that occurs in response to a given increase in the concentration of CO<sub>2</sub> ("transient climate change") reflects only about half the eventual total warming ("equilibrium climate change").

Observational data reveal that, in recent decades, some climate extremes are already increasing in response to relative modest warming; these extremes would likely increase considerably with warming of 2°C or more. While the findings suggest that even at relatively low levels of global warming the world will have to face significant sea level rise, the studies also demonstrate that the potential impacts are substantially greater if we allow warming to reach a level as high as 2°C. If they occur, changes such as these would not rapidly reverse, as even if the atmospheric CO<sub>2</sub> amount declines, it would take many centuries for the deep ocean to cool.

To prevent exceeding 450 ppm CO<sub>2</sub>e, developed countries must substantially reduce their emissions in the near term. The 2008 World Energy Outlook suggests that Organization for Economic Co-operation and Development (OECD) countries must reduce emissions by about 40 percent below 2006 levels by 2030.<sup>18</sup> The Union of Concerned Scientists has suggested a 2030 emissions target for the United States of 56 percent below 2005 levels (44 percent below 1990 levels).<sup>19</sup> A governmental study from the Netherlands finds that Europe would have to reduce emissions by 47 percent below 1990 levels and the United States would have to reduce emissions by 37 percent below 1990 levels by 2030.<sup>20</sup> The International Energy Agency comes to a similar conclusion, finding that the United States would have to reduce emissions by about 38 percent below 1990 levels by 2030.<sup>21</sup> Note that percent reductions by 2030 depend on the assumed overall trajectory of emissions, including the amount after 2030.

Because of the cumulative effects of GHG emissions and resultant changes to the earth's energy balance and the inertia in the climate system, delaying efforts to reduce emissions will likely mean that global average temperature will increase by more than 2°C, increasing the costs associated with combatting climate change. Reducing the global concentration to 450 ppm CO<sub>2</sub>e after delaying mitigation actions for ten more years is estimated to cost an additional \$3.5 trillion, compared to levels of investment needed now if low-carbon strategies were to be adopted immediately.<sup>22</sup>

# REFERENCE 3



April 15, 2009

***Via Electronic Mail***

Elaine Chang  
Deputy Executive Officer  
Planning, Rule Development, and Area Sources  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765-4182  
[echang@aqmd.gov](mailto:echang@aqmd.gov)

**Re: Comments on Survey of CEQA Documents on Greenhouse Gas Emissions  
Draft Work Plan and Development of GHG Threshold of Significance for  
Residential and Commercial Projects**

This letter provides comments from the Center for Biological Diversity (“the Center”) on the “Survey of CEQA Documents on Greenhouse Gas Emissions Draft Work Plan” as well as SCAQMD’s continuing efforts to develop a greenhouse gas (GHG) threshold of significance for residential and commercial projects.

SCAQMD’s survey of the GHG emissions from residential, commercial, and mixed-use projects should yield valuable data on the range of emissions resulting from these types of Projects in the South Coast air basin. Under the Work Plan, SCAQMD will use this data “to determine the level of GHG emissions for residential and commercial projects that constitute the 90th percentile ... or other percentile desired.” (Work Plan at 1.) According to SCAQMD, a threshold based on the 90% capture of sector emissions is consistent with the long-term emission reduction objectives set by Executive Order S-3-05, which calls for emission reductions to 80% below 1990 levels by 2050, or 90% below current levels. (SCAQMD Interim GHG Significance Threshold Staff Proposal (revised), at 3-2.) Compliance with Executive Order S-3-05 targets is presumed to be sufficient “to contribute to worldwide efforts to cap GHG concentrations at 450 ppm, thus, stabilizing the climate.” (*Id.*)

While the Center appreciates SCAQMD’s recognition that a GHG threshold must be based on long-term climate stabilization objectives, the best available scientific data now indicates that the threats posed by even small increases in temperature are far greater than previously thought. Stabilization of greenhouse gas emissions at 450 ppm as contemplated under Executive Order S-3-05 is insufficient to minimize the risk of catastrophic outcomes. Therefore, the capture of 90% of emissions from the residential and commercial sectors, which is based on compliance with Executive Order S-3-05, is

not a sufficiently stringent capture rate to sufficiently contribute to preventing dangerous climate change.

Importantly, while the emission reduction targets embodied in AB 32 and Executive Order S-3-05 can inform a significance determination, it is only to the extent that these targets accurately reflect scientific data on needed emissions reductions. Under CEQA, regulatory standards can serve as proxies for significance where they accurately reflect the level at which an impact can be said to be less than significant. *See, e.g., Protect the Historic Amador Waterways v. Amador Water Agency*, 116 Cal. App. 4th 1099, 1109 (2004).

To ensure that an adopted threshold of significant is an accurate reflection of scientific and factual data, this letter sets for the best available science on climate change. As set forth below, the best available science most strongly support a threshold of zero. The further a threshold is from zero, the more tenuous the evidence to support a determination that the threshold is effective at meeting the environmental objective of avoiding dangerous climate change. Framed in the context of SCAQMD's methodology, the further a threshold is from a 100% capture rate, the more tenuous the evidence to support a determination that the threshold is effective. Accordingly, in the event SCAQMD is unwilling to set a zero threshold, SCAQMD should consider increasing the capture rate beyond 90% and also require projects with emissions less than this threshold to adopt measures to reduce their GHG emissions before reaching a determination that project impacts are less-than-significant. A non-zero quantitative threshold – assuming it is sufficiently stringent – coupled with performance standards that projects under this threshold must adopt recognizes that all projects must be part of the solution to global warming and would seem to be more equitable and defensible than a bright-line non-zero threshold alone.<sup>1</sup>

Finally, with regard to the Work Plan itself, it would be helpful to included data on emissions from categorically exempt projects. In the debate over an appropriate threshold of significance for GHGs, arguments have been forwarded that a low threshold would eliminate the application of categorical exemptions. Whether or not this is the case, actual data on the emissions typically resulting from projects invoking a categorical exemption would better inform this discussion.

# **1. A GHG Threshold That Purports to Be Consistent with Executive Order S-3-05 Emission Reduction Targets Is Insufficient to Prevent Dangerous Climate Change**

CEQA calls for the identification of “any critical thresholds for the health and safety of the people of the state.” Pub. Res. Code § 21000(d). With regard to GHGs, this

---

<sup>1</sup> Were the District to adopt a non-zero threshold, a quantitative threshold that does not require projects under this threshold to take any action to reduce GHGs may also create an improper *de minimis* exception. *See, e.g., Communities for Better Env't v. California Resources Agency*, 103 Cal. App. 4th 98, 121 (2002) (“Focusing on the de minimis effect in absolute terms isolates the effect individually, and this runs counter to the combined approach that CEQA cumulative impact law requires.”).

critical threshold is avoiding dangerous anthropogenic interference (DAI) with the climate system. Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC) calls for “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference (DAI) with the climate system.”<sup>2</sup> With the United States and over 180 other countries as signatories, the UNFCCC’s objective of avoiding DAI with the climate is widely viewed as the international regulatory standard for protecting the global climate. The environmental objective of avoiding DAI is recognized in ARB’s Draft GHG Threshold Guidance. (ARB Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the CEQA (“ARB Draft GHG Threshold”), Oct. 24, 2008 at 3.) In its Policy Objective for the Interim GHG Threshold for Industrial Projects, SCAQMD seems to set a roughly analogous objective of “reducing GHG emissions to stabilize climate change.” (SCAQMD Interim GHG Significance Threshold Staff Proposal (revised), at 3-2.)

The policy objectives of both ARB and SCAQMD’s threshold proposals both state that reaching the emission reduction targets set forth by Executive Order S-3-05, whereby emissions are reduced to 80% below 1990 levels by 2050, would contribute to avoiding dangerous climate change because these reductions are consistent with a pathway to the stabilization of atmospheric concentrations of GHG emissions at 450 ppm. (ARB Draft GHG Threshold at 3; SCAQMD Interim Threshold Proposal at 3-2.) Stabilization of GHGs at 450 ppm provides a 50/50 chance of limiting mean temperature rise to 2°C above pre-industrial levels.<sup>3</sup>

A pathway toward stabilization of GHGs at 450 ppm presents two serious concerns. First, the best available scientific evidence now indicates that a warming of 2°C is not “safe” and would not prevent dangerous interference with the climate system. Second, because the consequences of overshooting a 2°C threshold could include the displacement of millions due to sea level rise, irreversible loss of entire ecosystems, and the triggering of multiple climactic “tipping points” wherein climate change begins to feed on itself and spin rapidly out of control, the risk tolerance for overshooting a 2°C temperature rise should be extremely low. Yet a stabilization target of 450 ppm seems content to, at best, flip a coin in the hopes that future generations are not left with few choices beyond mere survival. While the emission reduction targets set forth under Executive Order S-3-05 is a significant improvement from business-as-usual, because these targets are insufficient to adequately minimize the risk of DAI, compliance with Executive Order S-3-05 is not a sufficiently stringent objective from which to develop a threshold of significance.

---

<sup>2</sup> United Nations Framework Convention on Climate Change, art. 2, May 9, 1992, available at [http://unfccc.int/essential\\_background/convention/background/items/1349.php](http://unfccc.int/essential_background/convention/background/items/1349.php).

<sup>3</sup> Union of Concerned Scientists, *How to Avoid Dangerous Climate Change: A Target for U.S. Emissions* 3 (Sept. 2007); Malte Meinshausen, *What Does a 2°C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates* in AVOIDING DANGEROUS CLIMATE CHANGE 268 (Cambridge Univ. Press 2006).

Projected risks and damages from global warming are more serious than believed even a few years ago. In 2001, the Intergovernmental Panel on Climate Change (IPCC) used five Reasons For Concern (RFCs) in its Third Assessment Report (TAR) to illustrate the temperature range at which impacts may be considered dangerous.<sup>4</sup> Relationships between the impacts reflected in each RFC and increases in global mean temperature were portrayed in a “burning embers” diagram, which reflected the severity of risk from rising temperature through gradations in color from white (no or little risk) to yellow (moderately significant risk) to red (substantial or severe risk).<sup>5</sup> Depending on the RFC, substantial impacts or risks (transition from yellow to red) occurred with a temperature rise from 1°C to 4°C from current levels.<sup>6</sup>

Since the release of the TAR, scientific understanding of the vulnerability of the climate to temperature rise has evolved considerably.<sup>7</sup> Based on new findings in the growing scientific literature since the TAR was released, the burning embers diagram was revised in 2008 to reflect the dangerous risks posed by smaller increases in temperature than originally identified in the TAR.<sup>8</sup> In the updated burning embers diagram, substantial impacts or risks now occur at or near current temperature levels for a number of RFCs.<sup>9</sup> As reflected in the updated RFCs, a 2°C temperature increase from pre-industrial levels (or 1.4°C increase from 1990 levels) is well past the point where severe and irreversible impacts will occur.<sup>10</sup>

It is now estimated that a mean global temperature increase of 1.5°C above pre-industrial levels has the potential to trigger irreversible melting of the Greenland ice sheet, a process that would result in an eventual 7m sea level rise over and above that caused by thermal expansion of the oceans, and potentially causing an additional sea level rise of 0.75m, as soon as 2100.<sup>11</sup> Specific consequences of a 2°C temperature rise from pre-industrial levels include the loss of 97% of the world’s coral reefs and the transformation of 16% of global ecosystems.<sup>12</sup> At a 2°C temperature rise, approximately one to three

---

<sup>4</sup> IPCC, CLIMATE CHANGE 2001: SYNTHESIS REPORT, SUMMARY FOR POLICYMAKERS 11 (2001). The five RFCs identified in the TAR are: 1) Risks to Unique and Threatened Systems; 2) Risks of Extreme Weather Events; 3) Distribution of Impacts; 4) Aggregate Impacts; and 5) Risks of Large Scale Discontinuities. *Id.*

<sup>5</sup> *Id.*; Joel B. Smith et al., *Assessing Dangerous Climate Change Through an Update of the Intergovernmental Panel on Climate Change (IPCC) “Reasons for Concern,”* PNAS- PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA EARLY EDITION 1 (2008), available at <http://www.pnas.org/cgi/doi/10.1073/pnas.0812355106>.

<sup>6</sup> IPCC, *supra* note 4, at 11. The RFC’s assessed impacts from a baseline of 1990 temperature levels rather than pre-industrial levels. Because pre-industrial warming until 1990 was 0.6°C, an impact resulting from a temperature rise of 1°C equates to a 1.6°C rise from pre-industrial levels.

<sup>7</sup> Smith, *supra* note 5, at 1, 5.

<sup>8</sup> *Id.*

<sup>9</sup> *Id.* at 5.

<sup>10</sup> *Id.* 3.

<sup>11</sup> Rachel Warren, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases* in AVOIDING DANGEROUS CLIMATE CHANGE 95 (Cambridge Univ. Press, 2006). Unlike the IPCC’s RFC, Warren assessed impacts from temperature rise from pre-industrial levels, not 1990 levels.

<sup>12</sup> *Id.* Indeed, given increased confidence that 1°C to 2°C increase poses significant risks to many unique and threatened systems, including many biodiversity hotspots, the updated burning embers diagram indicates substantial impacts and/or moderate risks from warming that has already occurred. Smith, *supra* note 5, at 5.

billion people would experience an increase in water stress, sea level rise and cyclones would displace millions from the world's coastlines and agricultural yields would fall in the developed world.<sup>13</sup> In the Arctic, ecosystem disruption is predicted upon expectations of a complete loss of summer sea ice, with only 42% of the tundra remaining stable. This would destroy the Inuit hunting culture, cause the extinction of the polar bear and result in large losses in global bird populations. Moreover, because Arctic ice functions to reflect heat back into the atmosphere, its loss would allow more sunlight to heat the Arctic Ocean and further accelerate the buildup of heat and the melting of the Greenland ice sheet. As the devastating and irreversible impacts resulting from a 2°C mean global temperature rise are far in excess of any reasonable definition of DAI, limiting mean temperature rise to 2°C above pre-industrial levels is not a sufficient environmental objective for the purposes of developing a GHG significance threshold.

Specific impacts to California are also more dire than previously estimated. For example, in its most recent report, the Climate Action Team determined that the latest scientific findings indicate that “prior estimates [of sea-level rise] likely have been too low.”<sup>14</sup> Based on two recent models, “[b]y 2050, sea-level rise could range from 30-45 cm (11 to 18 inches) higher than in 2000, and by 2100, sea-level rise could be 60 to 140 cm (23 to 55 inches) higher than in 2000. As sea level rises, there will be an increased rate of extreme high sea-level events, which can occur when high tides coincide with winter storms and there are associated high wind wave and beach run-up conditions.”<sup>15</sup> Moreover, the rise in sea-level may be much higher than even these models predict because they do not account for the ice-melt contributions from the Greenland and Antarctic ice sheets and assume medium to medium high emissions scenarios.<sup>16</sup>

Not only are the climate impacts expected from a 2°C temperature increase far in excess of what should be considered “safe”, but policies which propose greenhouse gas stabilization levels of 450 ppm CO<sub>2</sub>eq present substantial risks of overshooting this target, thus exacerbating the problem. Equating a particular atmospheric concentration of greenhouse gases with a specific temperature increase involves a significant degree of uncertainty. This is because climate sensitivity – the extent to which temperatures will rise as a result of increasing concentrations of heat-trapping gases – depends on Earth's response to certain physical processes that are not fully understood.<sup>17</sup> Thus, due to uncertainty in climate sensitivity, scientists estimate that the mean probability of exceeding 2°C where stabilizing greenhouse gases at a CO<sub>2</sub>eq level of 450 ppm is 54% with a 30% probability that global average temperature would rise more than 3°C.<sup>18</sup> At

---

<sup>13</sup> Warren, *supra* note 11 at 98.

<sup>14</sup> California Action Team, Draft Biennial Report (Mar. 2009) at 1.9.

<sup>15</sup> *Id.* at 1.10.

<sup>16</sup> California Climate Change Center, The Impacts of Sea-Level Rise on the California Coast, CEC-500-2009-024D (March, 2009) at 1.

<sup>17</sup> See, e.g., Luers, Amy, Cayan Daniel, Franco Guido, Hanemann Michael, Croes Bart, California Climate Change Center, *Our Changing Climate: Assessing the Risks to California* at 4 (2006) CEC-500-2006-077.

<sup>18</sup> Malte Meinshausen, *What Does a 2°C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates* in AVOIDING DANGEROUS CLIMATE CHANGE (Cambridge Univ. Press) (2006) at 268-69. Meinshausen operates under assumptions that do not roughly equate CO<sub>2</sub> eq with CO<sub>2</sub> concentrations. In *What Does a*

400 ppm CO<sub>2</sub>eq, the mean probability of exceeding 2°C is 28%.<sup>19</sup> If greenhouse gas emissions were stabilized at 350 ppm CO<sub>2</sub>eq, the mean probability of exceeding 2°C would be reduced to 7%.<sup>20</sup>

Properly accounting for climate sensitivity in climate policy is critical because, as dire as the projected impacts resulting from a 2°C mean temperature increase, increases above 2°C would result in impacts of apocalyptic proportions. If a 2-3°C increase in mean global temperature occurred, feedbacks in the climate system would cause a shift in the terrestrial carbon cycle. Currently, land-based carbon acts as a sink for CO<sub>2</sub>, buffering the effects of anthropogenic climate change. If CO<sub>2</sub> concentrations continue to rise, this sink will become a source, owing to increased soil respiration, further exacerbating climate change. The most dramatic impacts will be a widespread loss of forests and grassland, including the Amazon rainforest, which would undergo a transition to savannah, triggering wide spread implications for local population, global biodiversity, and the global carbon cycle.<sup>21</sup> At a global increase in temperature of 3°C above pre-industrial levels, many additional impacts in human and natural systems would occur in ways exponentially more devastating than those predicted for a 2°C temperature increase. Few ecosystems can adapt to such a large temperature rise: 22% would be transformed losing 7% to 74% of their extent.<sup>22</sup> An additional 25 to 40 million people would be displaced from coasts due to sea level rise, an additional 1200 to 3000 million would suffer an increase in water stress and 65 countries would lose 16% of their agricultural GDP.<sup>23</sup>

Based on the severe impacts already observed as well as future impacts and risks posed by additional warming to which we are committed due to inertia in the climate system, climatologists are increasingly concluded that current climate conditions already constitute DAI and that greenhouse gas emissions ultimately must be drawn down to net negative levels through the rapid phase-out of coal and improved forest and agricultural management.<sup>24</sup> Atmospheric concentrations of CO<sub>2</sub> have risen from a pre-industrial

---

*2°C Target Mean for Greenhouse Gas Concentrations?*, Meinshausen notes that 550 CO<sub>2</sub> eq roughly corresponds to a stabilization of 475 ppm CO<sub>2</sub> only. *Id.* at 269. In a second paper that appears to utilize the same assumptions, Meinshausen notes that 500 CO<sub>2</sub> eq is approximately equivalent to 450 ppm CO<sub>2</sub> stabilization, 450 CO<sub>2</sub> eq is approximately equivalent to 400 ppm CO<sub>2</sub> stabilization, and 400 CO<sub>2</sub> eq is approximately equivalent to 350-375 ppm CO<sub>2</sub> stabilization; Union of Concerned Scientists, *How to Avoid Dangerous Climate Change: A Target for U.S. Emissions* (Sept. 2007) at 3.

<sup>19</sup> Malte Meinshausen, *What Does a 2°C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates* in AVOIDING DANGEROUS CLIMATE CHANGE (Cambridge Univ. Press) (2006) at 270.

<sup>20</sup> *Id.*

<sup>21</sup> Rachel Warren, *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases* in AVOIDING DANGEROUS CLIMATE CHANGE (Cambridge Univ. Press) (2006) at 98-99.

<sup>22</sup> *Id.* at 99.

<sup>23</sup> *Id.* at 96-97.

<sup>24</sup> James Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCIENCE J. 217, 226-27 (2008); see also Matthews H.D. & Caldeira, K., *Stabilizing the Climate Requires Near-Zero Emissions*, 35 GEOPHYSICAL RESEARCH LETTERS L04705 (2008) (“future anthropogenic emissions would need to be eliminated in order to stabilize global-mean temperature.”).

concentration of 280 ppm to 383 ppm in 2007.<sup>25</sup> Annual mean global temperature has increased by 0.76°C relative to pre-industrial times and is increasing at a rate of 0.17°C/decade.<sup>26</sup> Impacts from this anthropogenic interference with the climate has already resulted in tens of thousands of climate-related deaths, species extinction, ocean acidification and loss of coral reefs, and the significant retreat of glaciers and sea ice. In addition to the impacts already observed, additional warming “in the pipeline” due to inertia in the climate system and their feedback loops will result in further increases in temperature posing significant risks of severe and irreversible impacts.<sup>27</sup> The climate is locked into anywhere from 0.3 to 0.7°C additional warming relative to late 20th century levels due to the eventual impacts of past historical emissions.<sup>28</sup> On account of additional warming to which we are committed, Ramanathan and Feng found that there is a “high probability that the DAI threshold is already in our rearview mirror.”<sup>29</sup> Similarly, on the basis of paleoclimate evidence and ongoing climate change, James Hansen and other leading climate scientists concluded the present CO<sub>2</sub> levels of 385 ppm are “already in the dangerous zone” and that “[i]f humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO<sub>2</sub> will need to be reduced from its current 385 ppm to at most 350 ppm, but likely less than that.”<sup>30</sup> In looking at dangerous climate change through the lens of risk tolerance, Harvey concluded that, at a 10% risk tolerance, atmospheric CO<sub>2</sub> concentrations close to present levels “violates the UNFCCC” for a range of assumptions of climate sensitivity.<sup>31</sup> Accordingly, as the climate change to which we are committed is already dangerous, there is little scientific basis to conclude that any new source of emissions is innocuous.

## 2. Conclusion

The Center appreciates SCAQMD’s continued work to develop a threshold of significance for GHGs. The Center urges SCAQMD to apply the data derived from the Work Plan in a manner that is consistent with the scientific and factual data on the emission reductions necessary to avoid DAI. *See* Guidelines § 15064(h). Given the

---

<sup>25</sup> Global Carbon Project, *Carbon Budget and Trends 2007* (2008), available at: <http://www.globalcarbonproject.org/carbontrends/index.htm>.

<sup>26</sup> Kevin E. Trenberth et al., *2007: Observations: Surface and Atmospheric Climate Change in CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* 252 (Susan Solomon et al. eds., Cambridge Univ. Press 2007).

<sup>27</sup> V. Ramanathan & Y. Feng, *On Avoiding Dangerous Anthropogenic Interference With the Climate System: Formidable Challenges Ahead*, 105 PNAS 14245, 14249 (Sept. 23, 2008); James Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCIENCE J. 217, 226 (2008).

<sup>28</sup> Michael E. Mann, *Defining Dangerous Anthropogenic Interference*, 106 PNAS 4065, 4066 (Mar. 17, 2009).

<sup>29</sup> V. Ramanathan & Y. Feng, *On Avoiding Dangerous Anthropogenic Interference With the Climate System: Formidable Challenges Ahead*, 105 PNAS 14245, 14249 (Sept. 23, 2008).

<sup>30</sup> James Hansen et al., *Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?* 2 OPEN ATMOSPHERIC SCIENCE J. 217, 217-18 (2008).

<sup>31</sup> Danny Harvey, *Dangerous Anthropogenic Interference, Dangerous Climatic Change, and Harmful Climatic Change: Non-Trivial Distinctions With Significant Policy Implications*, 82 CLIMATE CHANGE 1, 20 (2007).

severe and irreversible impacts resulting from a 2°C mean global temperature rise and the significant risk that this temperature would increase beyond 2°C at GHG levels of 450 ppm, a stabilization objective of 450 ppm CO<sub>2</sub>eq is far in excess of what can be considered safe. Accordingly, setting a threshold based on consistency with a 450 ppm stabilization target is inconsistent with CEQA's purpose to "identify any critical thresholds for the healthy and safety of people of the state." Pub. Res. Code § 21000(d). Because the 90% capture rate is based on the outdated presumption that compliance with Executive Order S-3-05 targets is sufficient to avoid dangerous climate change, SCAQMD should adopt a threshold for residential and commercial projects that captures a higher percentage of emissions and requires projects with emissions below this threshold to comply with performance standards.<sup>32</sup>

Thank you for your consideration. Please do not hesitate to contact Matthew Vespa at (415) 436-9682 x309 [mvespa@biologicaldiversity.org](mailto:mvespa@biologicaldiversity.org) if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink that reads "Matthew Vespa". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Matthew Vespa  
Senior Attorney

cc: Steve Smith  
Michael Krause

---

<sup>32</sup> The 90% capture rate used for SCAQMD's industrial threshold purportedly reflected the practical concern that minimal mitigation was available for the types of projects (such as boilers) that fell under this threshold. These concerns do not apply to residential and commercial structures, where any number of mitigation measures are available for all sizes of projects to reduce GHG emissions.

# REFERENCE 4

From : <http://www.cadem.org/our-california/platform/2016-platform-energy-and-environment>

## **From the 2016 California Democratic Party (CDP) Platform**

### **Transportation**

- Support vehicle regulations to provide healthier air for all Californians, support strong and workable low-emission and zero-emission vehicle standards that will continue to be a model for the country, support Clean Vehicle Incentive programs to include the installation of charging infrastructure, and provide assistance to small businesses to meet the low-emission standards;
- Demand Regional Transportation Plan (RTP) driving-reduction targets, shown by science to support climate stabilization;
- Work for equitable and environmentally-sound road and parking operations; Support strategies to reduce driving, such as smart growth, “complete streets”; teaching bicycling traffic skills; and improving transit, from local systems to high speed rail
- Work for shared, convenient and value-priced parking, operated with a system that provides earnings to those paying higher costs or getting a reduced wage, due to the cost of providing the parking; and,
- Demand a state plan showing how cars and light-duty trucks can hit climate-stabilizing targets, by defining enforceable measures to achieve the needed fleet efficiency and per-capita driving;
- Support policies, including tax policies and the use of Greenhouse Gas Reduction Fund (GGRF) grants, that empower business owners, especially small business owners, to make investments in transportation infrastructure to ensure that freight moves by lower-emission local, short-line freight railroads, instead of adding to highway congestion and pollution.

# REFERENCE 5

# Climate-Stabilizing, California Light-Duty Vehicle Requirements, Versus Air Resource Board Goals

Paper 881

**Mike R. Bullock**

Retired Satellite Systems Engineer, 1800 Bayberry Drive, Oceanside, CA 92054

## ABSTRACT

An Introduction is provided, including the importance of light-duty vehicles (LDVs: cars and light duty trucks) and a definition of the top-level LDV requirements to limit their carbon dioxide (“CO<sub>2</sub>”) emissions.

Anthropogenic climate change fundamentals are presented, including its cause, its potential for harm, California mandates, and a greenhouse gas (GHG) reduction road map to avoid disaster.

A 2030 climate-stabilizing GHG reduction target value is calculated, using statements by climate experts. The formula for GHG emissions, as a function of per-capita driving, population, fleet CO<sub>2</sub> emissions per mile, and the applicable low-carbon fuel standard (LCFS) is given. The ratio of the 2015 value of car-emission-per-mile to the 2005 value of car-emission-per-mile is obtained.

Internal Combustion Engine (ICE) mileage values from 2000 to 2030 are identified, as either mandates or new requirements. A table is presented that estimates 2015 LDV fleet mileage.

Zero Emission Vehicle (ZEV) parameters are given. A table is shown that uses 2030 ZEV and ICE (ICE LDVs) requirements, named the “Heroic Measures” case, to compute the LDV fleet-equivalent mileage. That equivalent fleet mileage is used, with population and the required emission reduction, to compute a required per-capita driving reduction, with respect to 2005. Measures to achieve this per-capita driving reduction are described, with reductions allocated to each measure. The energy used per year for the Heroic Measures case is estimated

The “Heroic Measures” set of fractions of ZEV’s purchased, as a function of year, is compared to the California Air Resources Board (CARB) goals.

## INTRODUCTION

Within the context of working the anthropogenic-climate-change problem and from a systems engineering perspective, the top-level requirement is to reduce greenhouse gas (GHG) emissions enough to support stabilizing our climate at a livable level. This top-level requirement must flow down to the subsystem of LDVs, especially due to the magnitude of their emissions. (As an example, LDVs emit 41% of the GHG in San Diego County<sup>1</sup>.)

More specifically, LDV requirements will be identified that, taken together, will result in GHG emission reductions sufficient to “support climate stabilization”. “Support climate stabilization” means that the LDV emission level will be equal to a climate-stabilizing target. Such a target is expressed as an emission level in some target year. The target is based on climate science.

From a systems engineering perspective, at the top level, the needed LDV requirements are

- LDV fleet efficiency, meaning the greenhouse gas (GHG) emissions per mile driven, applicable to the entire fleet, on the road in the year of interest and
- an upper bound on per-capita driving, given the derived fleet efficiency and the predicted population growth.

The fleet efficiency requirement will be developed as a function of lower-level requirements, such as Corporate Average Fuel Efficiency (CAFÉ) requirements, requirements on how fast Battery Electric Vehicles (BEVs) must be added into the fleet each year, and requirements to get low-efficiency vehicles off the roads. The second top-level requirement, the upper bound on per-capita driving, will spawn transportation-system requirements designed to result in less driving, such as better mass transit. This paper will derive a formulae to compute the required per-capita driving levels, based on fleet efficiency, predicted population growth, and the latest, science-based, climate-stabilizing GHG emission target.

In this work, three categories of LDV emission-reduction strategies will be considered: cleaner cars, cleaner fuels, and less driving.

## **BACKGROUND: OUR ANTHROPOGENIC CLIMATE CHANGE PROBLEM**

### **Purpose of This Section**

Before going to work to solve a systems-engineering problem, it is important to understand the nature of the problem. How complex is the problem? How much is at stake if the problem is not solved? Is it reasonable to take a chance and only solve the problem with a reasonably high probability or is there too much at stake to gamble? This section is an attempt to answer these questions.

### **Basic Cause**

Anthropogenic climate change is driven by these two processes<sup>2</sup>: First, our combustion of fossil fuels is adding “great quantities” of CO<sub>2</sub> into our atmosphere. Second, that additional atmospheric CO<sub>2</sub> is trapping additional heat.

### **California’s First Three Climate Mandates**

California’s Governor’s Executive Order S-3-05<sup>3</sup> is similar to the Kyoto Agreement and is based on the greenhouse gas (GHG) reductions that were recommended by climate scientists for industrialized nations back in 2005. In 2005, many climate scientists believed that the reduction-targets of S-3-05 would be sufficient to support stabilizing Earth’s climate at a livable level, with a reasonably high level of certainty. More specifically, this executive order aims for an average, over-the-year, atmospheric temperature rise of “only” 2 degree Celsius, above the preindustrial temperature. It attempts to do this by limiting our earth’s level of atmospheric CO<sub>2</sub>\_e to 450 PPM by 2050 and then reducing emissions further, so that atmospheric levels would come down to more tolerable levels in subsequent years. The S-3-05 emission targets are 2000 emission levels by 2010, 1990 levels by 2020, and 80% below 1990 levels by 2050.

It was thought that if the world achieved S-3-05, there might be a 50% chance that the maximum temperature rise will be less than 2 degrees Celsius, thus leaving a 50% chance that it would be larger than 2 degrees Celsius. A 2 degree increase would put over a billion people on the planet into a condition described as “water stress” and it would mean a loss of 97% of the earth’s coral reefs.

There would also be a 30% chance that the temperature increase would be greater than 3 degrees Celsius. A temperature change of 3 degree Celsius is described in Reference 3 as being “exponentially worse” than a 2 degree Celsius increase.

The second California climate mandate is AB 32, the *Global Warming Solutions Act of 2006*. It includes provisions for a cap and trade program, to ensure meeting S-3-05’s 2020 target of the 1990 level of emissions. It continues after 2020. AB 32 requires CARB to always implement measures that achieve the maximum *technologically feasible and cost-effective* (words taken from AB 32) greenhouse-gas-emission reductions.

In 2015 Governor Brown signed Executive Order B-30-15. This Executive Order established a mandate to achieve an emission level of 40% below 2020 emissions by 2030, as can be seen by a Google search. If Executive Order S-3-05 is interpreted as a straight line between its 2020 target and its 2050 target, then the B-30-15 target of 2030 is the same as S-3-05’s implied target of 2035, because 2035 is halfway between 2020 and 2050 and 40% down is halfway to 80% down.

California is on track to achieve its S-3-05 second (2020) target. However, the world emission levels have, for most years, been increasing, contrary to the S-3-05 trajectory. In part because the world has been consistently failing to follow S-3-05’s 2010-to-2020 trajectory, if California is still interested in leading the way to stabilizing the climate at a livable level, it must do far better than S-3-05, going forward, as will be shown.

## **Failing to Achieve these Climate Mandates**

What could happen if we fail to achieve S-3-05, AB 32, and B-30-15 or if we achieve them but they turn out to be too little too late and other states and countries follow our example?

It has been written<sup>4</sup> that, “A recent string of reports from impeccable mainstream institutions-the International Energy Agency, the World Bank, the accounting firm of PricewaterhouseCoopers-have warned that the Earth is on a trajectory to warm by at least 4 Degrees Celsius and that this would be incompatible with continued human survival.”

It has also been written<sup>5</sup> that, “Lags in the replacement of fossil-fuel use by clean energy use have put the world on a pace for 6 degree Celsius by the end of this century. Such a large temperature rise occurred 250 million years ago and extinguished 90 percent of the life on Earth. The current rise is of the same magnitude but is occurring faster.”

## **Pictures That Are Worth a Thousand Words**

Figure 1 shows (1) atmospheric CO<sub>2</sub> (in blue) and (2) averaged-over-a-year-then-averaged-over-the-surface-of-the-earth world atmospheric temperature (in red). This temperature is with respect to a recent preindustrial value. The data starts 800,000 years ago. It shows that the current value of atmospheric CO<sub>2</sub>, which is now over 400 PPM, far exceeds the values of the last 800,000 years. It

also shows that we should expect the corresponding temperature to eventually be about 12 or 13 degrees above preindustrial temperatures. This would bring about a human disaster<sup>3,4,5</sup>.

Figure 2 shows the average yearly temperature with respect to the 1960-to-1990 baseline temperature (in blue). It also shows atmospheric levels of CO<sub>2</sub> (in red). The S-3-05 goal of 450 PPM is literally “off the chart”, in Figure 2. Figure 2 shows that, as expected, temperatures are starting to rise along with the increasing levels of CO<sub>2</sub>. The large variations in temperature are primarily due to the random nature of the amount of solar energy being received by the earth.

## **FURTHER BACKGROUND: CALIFORNIA’S SB 375 AND AN IMPORTANT DATA SET**

As shown in the Introduction, LDVs emit significant amounts of CO<sub>2</sub>. The question arises: will driving need to be reduced or can cleaner cars and cleaner fuels arrive in time to avoid such behavioral change? Steve Winkelman, of the Center for Clean Air Policy (CCAP), worked on this problem.

### **SB 375, the *Sustainable Communities and Climate Protection Act of 2008***

Under SB 375, the California Air Resources Board (CARB) has given each Metropolitan Planning Organization (MPO) in California driving-reduction targets, for the years 2020 and 2035. “Driving” means yearly, per capita, vehicle miles travelled (VMT), by LDVs, with respect to 2005. The CARB-provided values are shown at this Wikipedia link, [http://en.wikipedia.org/wiki/SB\\_375](http://en.wikipedia.org/wiki/SB_375). It is important to note that although this link and many other sources show the targets to be “GHG” and not “VMT”, SB 375 clearly states that the reductions are to be the result of the MPO’s Regional Transportation Plan (RTP), or, more specifically, the Sustainable Communities Strategy (SCS) portion of the RTP. Nothing in the SCS will improve average mileage. That will be done by the state and federal government by their Corporate Average Fleet Efficiency (CAFE) standards. The SCS can only reduce GHG by reducing VMT. The only way an SCS can reduce GHG by 12%, for example, is to reduce VMT by 12%.

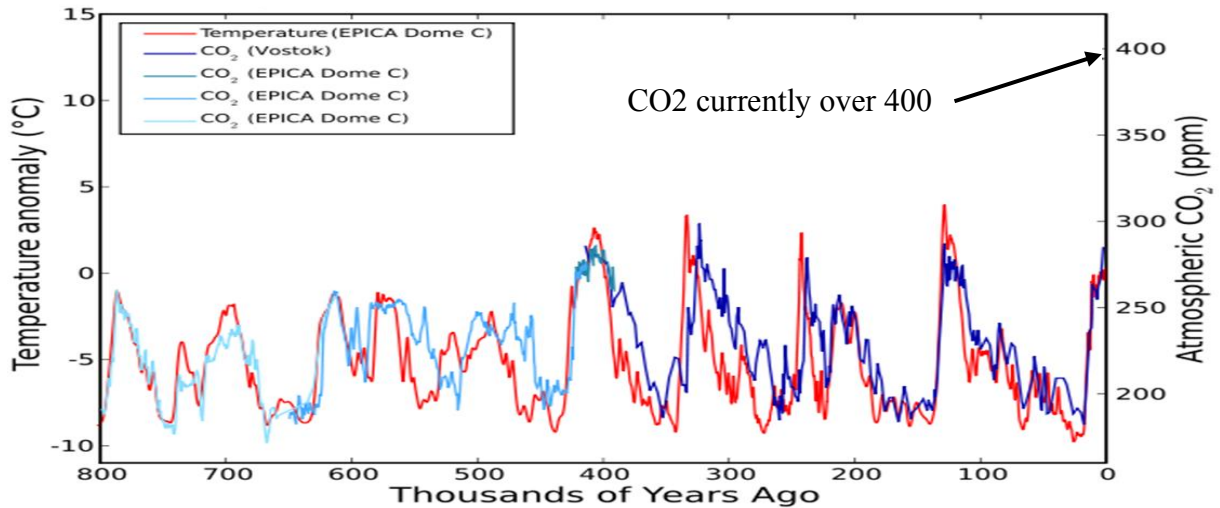
Under SB 375, every Regional Transportation Plan (RTP) must include a section called a Sustainable Communities Strategy (SCS). The SCS must include driving reduction predictions corresponding to the CARB targets. Each SCS must include only *feasible* transportation, land use, and transportation-related policy data. If the SCS driving-reduction predictions fail to meet the CARB-provided targets, the MPO must prepare an Alternative Planning Strategy (APS). An APS uses *infeasible* transportation, land use, and transportation-related policy assumptions. The total reductions, resulting from both the SCS and the APS, must at least meet the CARB-provided targets.

### **Critical Data: Useful Factors from Steve Winkelman’s Data**

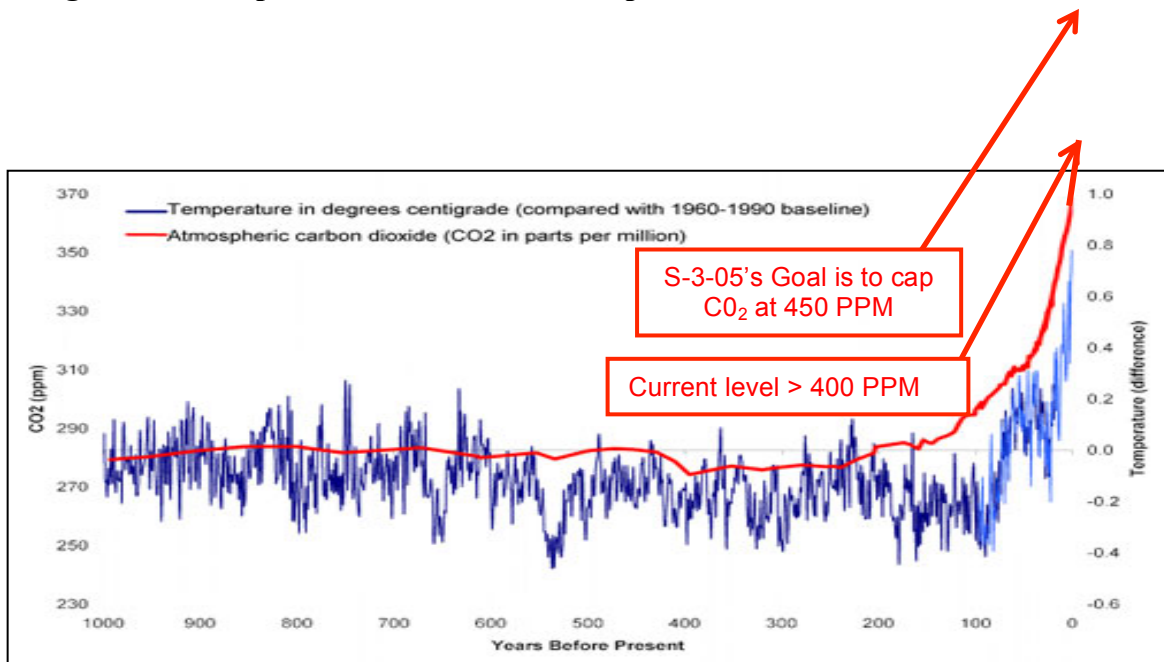
Figure 3<sup>6</sup> shows 6 variables as a percent of its 2005 value. The year 2005 is the baseline year of SB 375. The red line is the Caltrans prediction of VMT. The purple line is California’s current mandate for a Low Carbon Fuel Standard (LCFS). As shown, by 2020, fuel in California must emit 10% less per gallon than in 2005. The turquoise line is the 1990 GHG emission in California. As shown, it is 12% below the 2005 level. This is important because S-3-05 specifies that in 2020, state GHG emission levels must be at the

1990 level. The green line is the CO<sub>2</sub> emitted per mile, as specified by AB 1493, also known as “Pavley 1 and 2” named after Senator Fran Pavley. The values shown do not account for the LCFS. The yellow (or gold) line is the S-3-05 mandate, referenced to 2005 emission levels. The blue line is the product of the red, the purple, and the green line and is the percentage of GHG emissions compared to 2005. Since VMT is not being adequately controlled, the blue line is not achieving the S-3-05 line. Figure 3 shows that driving must be reduced. For this reason, Steve Winkelman can be thought of as the true father of SB 375.

**Figure 1. Atmospheric CO<sub>2</sub> and Mean Temperature from 800,000 Years Ago**

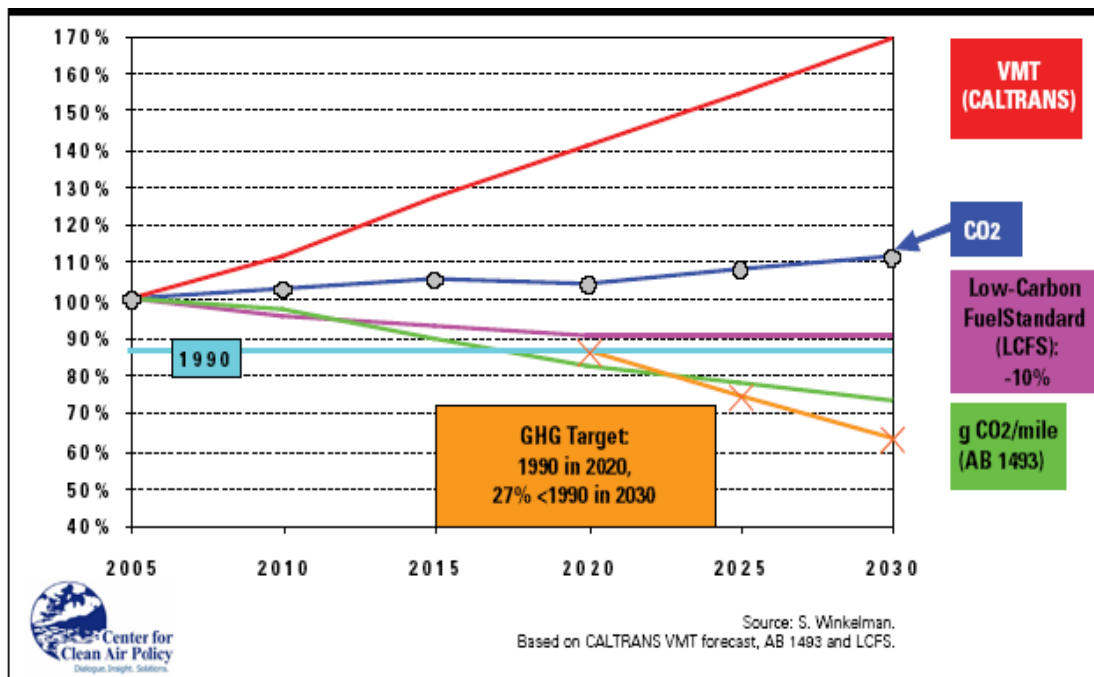


**Figure 2. Atmospheric CO<sub>2</sub> and Mean Temperature, Over the Last 1,000 Years**



This table provides inspiration for a road map to climate success for LDVs. Climate stabilization targets must be identified and achieved by a set of requirements to define fleet efficiency and per-capita driving.

**Figure 3**      **The S-3-05 Trajectory (the Gold Line) AND the CO<sub>2</sub> Emitted from Personal Driving (the Blue Line), where that CO<sub>2</sub> is a Function (the Product) of the California-Fleet-Average CO<sub>2</sub> per Mile (the Green Line), The Predicted Driving (VMT, the Red Line), and the Low-Carbon Fuel Standard (the Purple Line)**



## THE DEVELOPMENT OF CALIFORNIA'S TOP-LEVEL LDV REQUIREMENTS TO SUPPORT CLIMATE STABILIZATION

It is also clear that cleaner cars will be needed and can probably be achieved. As will be seen, much cleaner cars will be needed if driving reductions are going to remain within what many people would consider achievable. Mileage and equivalent mileage will need to be specified. A significant fleet-fraction of Zero-Emission Vehicles (ZEVs, either Battery-Electric LDVs or Hydrogen Fuel Cell LDVs) will be needed. Since mileage and equivalent mileage is more heuristic than emissions per mile, they will be used instead of CO<sub>2</sub> per mile driven.

Since the SB-375 work used 2005 as the reference year, it will remain the reference year here.

## GHG Target to Support Climate Stabilization

The primary problem with S-3-05 is that California's resolve and actions have been largely ignored by other states, our federal government, and many countries. Therefore, rather than achieving 2000 levels by 2010 and being on a track to achieve 1990 levels by 2020, world emission have been increasing. Reference 7 states on Page 14 that the required rate of reduction, if commenced in 2020,

would be 15%. That rate means that the factor of 0.85 must be achieved, year after year. If this were done for 10 years, the factor would be  $(0.85)^{10} = 0.2$ . We don't know where world emissions will be in 2020. However, it is fairly safe to assume that California will be emitting at its 1990 level in 2020, in accordance with S-3-05. This situation shows that the correct target for California is to achieve emissions that are reduced to 80% below California's 1990 value by 2030. Note that if the reductions start sooner, the rate of reduction of emissions can be less than 15% and the 2030 target could be relaxed somewhat. However, it is doubtful that the world will get the reduction rate anywhere near the needed 15% by 2020. Therefore, the target, of 80% below 1990 levels by 2030 is considered to be correct for California. Reference 7 also calls into question the advisability of aiming for a 2 degree Celsius increase, given the possibilities of positive feedbacks that would increase warming. This concern for positive feedbacks is another reason that this paper will work towards identifying LDV requirement sets that will support achieving 80% below 1990 values by 2030.

## Notes on Methods

The base year is 2005. An intermediate year of 2015 is used. The car efficiency factor of 2015 with respect to 2005 is taken directly from Figure 3. The car efficiency factor of 2030 with respect to 2015 is derived herein, resulting in a set of car-efficiency requirements. It is assumed that cars last 15 years.

## Primary Variable Used

Table 1 defines the primary variables that are used.

**Table 1 Variable Definitions**

| <b>Variable Definitions</b> |                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| $e_k$                       | LDV Emitted CO <sub>2</sub> , in Year “ $k$ ”                                                                                         |
| $L_k$                       | Low Carbon Fuel Standard (LCFS) Factor that reduces the Per-Gallon CO <sub>2</sub> emissions, in Year “ $k$ ”                         |
| $C_k$                       | LDV CO <sub>2</sub> emitted per mile driven, average, in Year “ $k$ ”, not accounting for the Low Carbon Fuel Standard (LCFS) Factor  |
| $c_k$                       | LDV CO <sub>2</sub> emitted per mile driven, average, in Year “ $k$ ”, accounting for the Low Carbon Fuel Standard (LCFS) Factor      |
| $p_k$                       | Population, in Year “ $k$ ”                                                                                                           |
| $d_k$                       | Per-capita LDV driving, in Year “ $k$ ”                                                                                               |
| $D_k$                       | LDV Driving, in Year “ $k$ ”                                                                                                          |
| $M_k$                       | LDV Mileage, miles per gallon, in Year “ $k$ ”                                                                                        |
| $m_k$                       | LDV Equivalent Mileage, miles per gallon, in Year “ $k$ ” accounting for Low Carbon Fuel Standard (LCFS) Factor, so this is $M_k/L_k$ |
| N                           | Number of pounds of CO <sub>2</sub> per gallon of fuel but not accounting for the Low Carbon Fuel Standard (LCFS) Factor              |

## Fundamental Equations

The emissions are equal to the CO2 per mile multiplied by the per-capita driving multiplied by the population, since per-capita driving multiplied by the population is total driving. This is true for any year.

$$\text{Future Year } k: \quad e_k = c_k * d_k * p_k \quad (\text{Eq. 1})$$

$$\text{Base Year } i: \quad e_i = c_i * d_i * p_i \quad (\text{Eq. 2})$$

Dividing both sides of Equation 1 by equal values results in an equality. The terms on the right side of the equation can be associated as shown here:

$$\frac{e_k}{e_i} = \frac{c_k}{c_i} * \frac{d_k}{d_i} * \frac{p_k}{p_i} \quad (\text{Eq. 3})$$

Since carbon dioxide emitted per gallon is just a constant (about 20 pounds per gallon), the constant cancels out of the ratio of emissions per mile, leaving the following relationship.

$$\text{To work with mileage:} \quad \frac{m_i}{m_k} = \frac{c_k}{c_i} \quad (\text{Eq. 4})$$

Putting Equation 4 into Equation 3 results in the following equation:

$$\frac{e_k}{e_i} = \frac{m_i}{m_k} * \frac{d_k}{d_i} * \frac{p_k}{p_i} \quad (\text{Eq. 5})$$

Showing the base year of 2005, the future year of 2030, introducing the intermediate year of 2015 and the year of 1990 (since emissions in 2030 are with respect to the 1990 value) results in Equation 6.

$$\frac{e_{2030}}{e_{1990}} * \frac{e_{1990}}{e_{2005}} = \frac{c_{2030}}{c_{2015}} * \frac{c_{2015}}{c_{2005}} * \frac{d_{2030}}{d_{2005}} * \frac{p_{2030}}{p_{2005}} \quad (\text{Eq. 6})$$

The ratio on the far left is the climate-stabilizing target, which is the factor of the 2030 emission to the 1990 emission. It is shown to be 0.20 or 80% less. The next ratio is the emission of 1990 compared to 2005. It is the turquoise line of Figure 3, which is 0.87. The first ratio on the right side of the equation is the fleet emission per mile in 2030 compared to the value in 2015. This ratio will be derived in this report and it will result in a set of car efficiency requirements. Moving to the right, the next ratio is the car efficiency in 2015 compared to 2005. It can be obtained by multiplying the purple line 2015 value times the green line 2015 value, which is 0.90 \* 0.93. The next term is the independent variable. It is the driving reduction required, compared to the 2005 level of driving. The final term on the far right is the ratio of the population in 2030 to the population in 2005. Reference 8 shows that California's population in 2005 was 35,985,582. Reference 9 shows that California's population in 2030 is predicted to be 44,279,354. Therefore,

$$\frac{p_{2030}}{p_{2005}} = 44279354 \div 35985582 = 1.2305 \quad (\text{Eq. 7})$$

Putting in the known values results in Equation 8:

$$0.20 * 0.87 = \frac{c_{2030}}{c_{2015}} * 0.90 * 0.93 * \frac{d_{2030}}{d_{2005}} * 1.2305 \quad (\text{Eq. 8})$$

Combining the values, solving for the independent variable (the per-capita driving ratio), and changing from emission-per-mile to equivalent-miles-per-gallon results in the following:

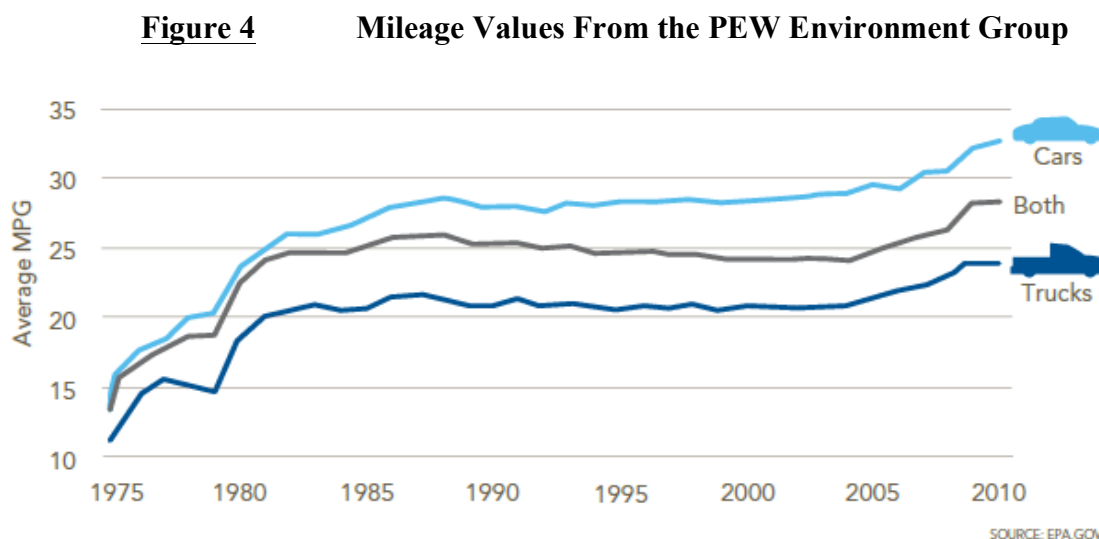
$$\frac{d_{2030}}{d_{2005}} = 0.1689 * \frac{m_{2030}}{m_{2015}} \quad (\text{Eq. 9})$$

With the coefficient being so small, it is doubtful that we can get the equivalent mileage in 2030 to be high enough to keep the driving ratio from falling below one. The mileage of the 2005 fleet will be based on the best data we can get and by assuming cars last 15 years. The equivalent mileage in 2030 will need to be as high as possible to keep the driving-reduction factor from going too far below 1, because it is difficult to reduce driving too much. The equivalent mileage will be dependent on the fleet-efficiency requirements in the near future and going out to 2030. Those requirements are among the primary results of this report.

### Internal Combustion Engine (ICE) Mileage, from Year 2000 to Year 2030

The years from 2000 to 2011 are taken from a plot produced by the PEW Environment Group, [http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Fact\\_Sheet/History%20of%20Fuel%20Economy%20Clean%20Energy%20Factsheet.pdf](http://www.pewenvironment.org/uploadedFiles/PEG/Publications/Fact_Sheet/History%20of%20Fuel%20Economy%20Clean%20Energy%20Factsheet.pdf)

The plot is shown here as Figure 4. The “Both” values are used.



The values from 2012 to 2025 are taken from the US Energy Information Agency (EIA) as shown on their website, [http://www.eia.doe.gov/federal/executive/vehicle-standards#ldv\\_2012\\_to\\_2025](http://www.eia.doe.gov/federal/executive/vehicle-standards#ldv_2012_to_2025). They are the LDV Corporate Average Fleet Efficiency (CAFE) values enacted into law in the first term of President Obama. From 2025 to 2030, it is assumed that the yearly ICE improvement in CAFE will be 2.5 MPG.

### Mileage of California’s LDV Fleet in 2015

Table 2 uses these values of the Internal Combustion Engine (ICE) LDV mileage to compute the mileage of the LDV fleet in 2015. It assumes that the fraction of ZEVs being used over these years is small enough to be ignored. The 100 miles driven, nominally, by each set of cars, is an arbitrary value and inconsequential in the final calculation, because it will divide out. It is never-the-less used, so that it is possible to compare the gallons of fuel used for the different years. The “f” factor could be used to account for a set of cars being driven less. It was decided to not use this option by setting all of the values to 1. The Low Carbon Fuel Standard (LCFS) values are taken from Figure 3. The gallons of fuel are computed as shown in Equation 10, using the definition for  $L_k$  that is shown in Table 1.

**Table 2 Calculation of the Fleet MPG for 2015**

| LDV Set                       | Years Old | Model Year | CAFE MPG | LCFS Factor<br>$L_{Year}$ | Factor Driven<br>f | Gallons Used Per<br>$f*100$<br>Miles |
|-------------------------------|-----------|------------|----------|---------------------------|--------------------|--------------------------------------|
| 1                             | 14-15     | 2001       | 24.0     | 1.0                       | 1.0                | 4.17                                 |
| 2                             | 13-14     | 2002       | 24.0     | 1.0                       | 1.0                | 4.17                                 |
| 3                             | 12-13     | 2003       | 24.0     | 1.0                       | 1.0                | 4.17                                 |
| 4                             | 11-12     | 2004       | 24.0     | 1.0                       | 1.0                | 4.17                                 |
| 5                             | 10-11     | 2005       | 25.0     | 1.0                       | 1.0                | 4.00                                 |
| 6                             | 9-10      | 2006       | 25.7     | .9933                     | 1.0                | 3.87                                 |
| 7                             | 8-9       | 2007       | 26.3     | .9867                     | 1.0                | 3.75                                 |
| 8                             | 7-8       | 2008       | 27.0     | .9800                     | 1.0                | 3.63                                 |
| 9                             | 6-7       | 2009       | 28.0     | .9733                     | 1.0                | 3.48                                 |
| 10                            | 5-6       | 2010       | 28.0     | .9667                     | 1.0                | 3.45                                 |
| 11                            | 4-5       | 2011       | 29.1     | .9600                     | 1.0                | 3.30                                 |
| 12                            | 3-4       | 2012       | 29.8     | .9533                     | 1.0                | 3.20                                 |
| 13                            | 2-3       | 2013       | 30.6     | .9467                     | 1.0                | 3.09                                 |
| 14                            | 1-2       | 2014       | 31.4     | .9400                     | 1.0                | 2.99                                 |
| 15                            | 0-1       | 2015       | 32.6     | .9333                     | 1.0                | 2.86                                 |
| Sum of Gallons:               |           |            |          |                           |                    | 54.29                                |
| Miles = 100*Sum(f's):         |           |            |          |                           |                    | 1500                                 |
| MPG = Miles/(Sum of Gallons): |           |            |          |                           |                    | 27.63                                |

$$\text{Gallons Used per } f * 100 \text{ miles} = \frac{f \times 100}{(CAFE \text{ MPG}) / L_k} \quad (\text{Eq. 10})$$

**How ICE Mileage Values Will Be Used with ZEV Equivalent Mileage Values**

As will be seen, after 2015, the net (computed using both ICEs and ZEVs) mileage values for each year are assumed to greatly improve by having a significant fraction of ZEVs. The ICE CAFÉ standards are used in this report as just the ICE contribution to fleet MPG. The ICE MPG values are inadequate by themselves and will therefore need to become less important because ZEVs will need to quickly take over the highways.

Federal requirements will need to change dramatically. Currently, federally-mandated corporate average fuel efficiency (CAFÉ) standards have been implemented, from 2000 to 2025. These standards require that each corporation produce and sell their fleet of cars and light-duty trucks in the needed proportions, so that the combined mileage of the cars they sell, at least meet the specified mileage.

The car companies want to maximize their profits while achieving the required CAFÉ standard. In California, the car companies will already be required to sell a specified number of electric vehicles, which have a particularly-high, equivalent-value of miles-per-gallon. If the laws are not changed, this will allow these companies to sell more low-mileage, high profit cars and light-duty trucks, and still achieve the federal CAFÉ standard.

It will be better to apply the CAFÉ standards to only the ICEs and then require that the fleet of LDVs sold achieve some mandated fraction of ZEVs. The ZEVs will get better and better equivalent mileage, as our electrical grid is powered by more renewable sources of energy. Therefore, their equivalent mileage is not fixed, but will improve over the years. Requirements developed here are for 2030. Therefore a high percentage of all the electricity generated in the state, including both the “in front of the meter” (known as the “Renewable Portfolio Standard” or “RPS”) portion and the “behind the meter” portion is assumed to come from sources that do not emit CO<sub>2</sub>. More specifically, the value of 80% is assumed. This therefore becomes a fleet-efficiency requirement.

## **ZEV Equivalent Mileage Values**

To calculate the mileage of the 2030 fleet of LDVs, it is necessary to derive a formula to compute the equivalent mileage of ZEVs, as a function of the percent of electricity generated without emitting CO<sub>2</sub>, the equivalent ZEV mileage if the electricity is from 100% fossil fuel, and the equivalent ZEV mileage if the electricity is from 100% non-CO<sub>2</sub> sources. The variables defined in Table 3 are used.

The derivation of the equation for equivalent ZEV mileage is based on the notion that the ZEV can be imagined to travel “r” fraction of the time on electricity generated from renewables and “(1-r)” fraction of the time on fossil fuel. If the vehicle travels “D” miles, then, using the definitions shown in Table 3, the following equation can be written.

$$G = \frac{r \times D}{m_{zr}} + \frac{(1-r) \times D}{m_{zf}} \quad (\text{Eq. 11})$$

$$m_z = D/G = D / \left( \frac{r \times D}{m_{zr}} + \frac{(1-r) \times D}{m_{zf}} \right) \quad (\text{Eq. 12})$$

Dividing the numerator and the denominator by D and multiplying them both by the product of the two equivalent mileage values results in Equations 13.

$$m_z = m_{zr} \times m_{zf} / (r \times m_{zf} + (1-r) \times m_{zr}) \quad (\text{Eq. 13})$$

Again, using the definitions in Table 3 results in the following.

$$m_z = \text{Num}/(\text{Den}) \quad (\text{Eq. 14})$$

**Table 3 Variables Used in the Calculation of ZEV Equivalent Mileage**

| <b>Variable</b> | <b>Definition</b>                                                      |
|-----------------|------------------------------------------------------------------------|
| $m_z$           | <b>ZEV Equivalent mileage</b>                                          |
| $m_{zr}$        | <b>ZEV Equivalent mileage if the electricity is from renewables</b>    |
| $m_{zf}$        | <b>ZEV Equivalent mileage if the electricity is from fossil fuels</b>  |
| $r$             | <b>fraction of electricity generated from sources not emitting CO2</b> |
| $G$             | <b>Gallons of equivalent fuel used</b>                                 |
| $D$             | <b>Arbitrary distance travelled</b>                                    |
| $Num$           | $m_{zr} \times m_{zf}$                                                 |
| $Den$           | $r \times m_{zf} + (1 - r) \times m_{zr}$                              |

Table 4 shows an assignment of assumed values and the result of a calculation, using Equations 13, 14, and the definitions in Table 3, to produce a ZEV equivalent mileage.

**Table 4 Variable Assignment and the Resulting ZEV Mileage**

| $m_{zr}$    | $m_{zf}$  | $r$        | $1-r$      | Num              | Den            | $m_z$         |
|-------------|-----------|------------|------------|------------------|----------------|---------------|
| <b>5000</b> | <b>70</b> | <b>0.8</b> | <b>0.2</b> | <b>350000.00</b> | <b>1056.00</b> | <b>331.44</b> |

### Computing an LDV Fleet Mileage Assuming Heroic Measures (HM)

Table 5 shows the additional definitions that will be used in this calculation. Table 6 computes the 2030 LDV mileage, assuming “Heroic Measures” to reduce the miles driven in poor-mileage ICE’s, in building and selling a significant fraction of ZEVs, and in getting the Low Carbon Fuel Standards to continue to improve beyond the Figure 3 minimum of 0.90.

**Table 5 Additional Variables Used in the Calculation of 2030 LDV Mileage**

| <b>Variable</b> | <b>Definition</b>                                      |
|-----------------|--------------------------------------------------------|
| $D_i$           | <b>Distance travelled by ICE vehicles</b>              |
| $D_z$           | <b>Distance travelled by ZEVs</b>                      |
| $G_i$           | <b>Gallons of Equivalent fuel used by ICE vehicles</b> |
| $G_z$           | <b>Gallons of Equivalent fuel used by ZEVs</b>         |

As shown by the values for “f”, government policies must be adopted, in 2030, to reduce the miles driven by the ICE’s, from model years 2016 to 2023. The 2016 model ICE’s are driven only 30% as much as the nominal amount. The 2017 year ICE’s can be driving 10% more. This rate of change continues up to 2023, when the ICE’s are doing less damage, due to the large fraction of ZEVs on the road.

**Table 6 Calculation of 2030 LDV Mileage Assuming Heroic Measures**

| Year                                                             | ICE Parameters and Calculations |       |         |     |       |        | ZEVs |       |       | Yearly Totals |               |          |
|------------------------------------------------------------------|---------------------------------|-------|---------|-----|-------|--------|------|-------|-------|---------------|---------------|----------|
|                                                                  | CAFÉ MPG                        | LCFS  | Eq. MPG | f   | $D_i$ | $G_i$  | z    | $D_z$ | $G_z$ | Total Miles   | Total Gallons | 2030 MPG |
| 2016                                                             | 34.3                            | .9267 | 37.01   | .3  | 30.0  | .8105  | .04  | 4     | .012  | 32.8          | .7901         | 41.51    |
| 2017                                                             | 35.1                            | .9200 | 38.15   | .4  | 40.0  | 1.0484 | .07  | 7     | .021  | 44.2          | .9962         | 44.37    |
| 2018                                                             | 36.1                            | .9133 | 39.53   | .5  | 47.5  | 1.2018 | .12  | 12    | .036  | 56.0          | 1.1494        | 48.72    |
| 2019                                                             | 37.1                            | .9000 | 40.92   | .6  | 54.0  | 1.3197 | .18  | 18    | .054  | 67.2          | 1.2567        | 53.47    |
| 2020                                                             | 38.3                            | .8500 | 42.56   | .7  | 52.5  | 1.2337 | .24  | 24    | .072  | 77.2          | 1.3225        | 58.37    |
| 2021                                                             | 40.3                            | .8000 | 47.41   | .8  | 48.0  | 1.0124 | .34  | 34    | .103  | 86.8          | 1.2162        | 71.37    |
| 2022                                                             | 42.3                            | .8000 | 52.88   | .9  | 40.5  | .7660  | .48  | 48    | .145  | 94.8          | 1.0299        | 92.05    |
| 2023                                                             | 44.3                            | .8000 | 55.38   | 1.0 | 30.0  | .5418  | .62  | 62    | .187  | 100.0         | .8733         | 114.51   |
| 2024                                                             | 46.5                            | .8000 | 58.13   | 1.0 | 15.0  | .2581  | .76  | 76    | .229  | 100.0         | .6422         | 155.71   |
| 2025                                                             | 48.7                            | .8000 | 60.88   | 1.0 | 5.0   | .0821  | .90  | 90    | .272  | 100.0         | .4358         | 229.46   |
| 2026                                                             | 51.2                            | .8000 | 64.00   | 1.0 | 5.0   | .0781  | .95  | 95    | .287  | 100.0         | .3648         | 274.16   |
| 2027                                                             | 53.7                            | .8000 | 67.13   | 1.0 | 5.0   | .0745  | .98  | 98    | .296  | 100.0         | .3255         | 307.24   |
| 2028                                                             | 56.2                            | .8000 | 70.25   | 1.0 | 5.0   | .0712  | .99  | 99    | .299  | 100.0         | .3129         | 319.56   |
| 2029                                                             | 58.7                            | .8000 | 73.38   | 1.0 | 5.0   | .0681  | .99  | 99    | .299  | 100.0         | .3123         | 320.18   |
| 2030                                                             | 61.2                            | .8000 | 76.50   | 1.0 | 5.0   | .0654  | .99  | 99    | .299  | 100.0         | .3118         | 320.75   |
| Sum of Miles and then Gallons of Equivalent Fuel:                |                                 |       |         |     |       |        |      |       |       | 1259.00       | 11.34         |          |
| Equivalent MPG of LDV Fleet in 2030:                             |                                 |       |         |     |       |        |      |       |       | 111.03        |               |          |
| Sum of ZEV Miles = 865. Fraction of Miles Driven by ZEVs = 68.7% |                                 |       |         |     |       |        |      |       |       |               |               |          |

As shown, the ZEV fraction of the fleet assumes the value of 12%, just 2 years from now (shown in the green field.) It then proceeds upward, to 18% in 2019; 24% in 2020; 34% in 2021; and so on, until it reaches 99% by 2028.

Achieving these fractions of ZEVs might be compared to what was done during World War II, when automobile productions lines were rapidly converted to produce tanks. This reduced the new cars that could be purchased. Besides this, rationing gasoline made it difficult to drive at times and, due to shortages of leather, which was being used to produce boots for soldiers, some citizens found it hard to even buy shoes. These rapid and inconvenient changes were tolerated, because most people agreed that the war needed to be won. The heroic measures assumed here may not be possible unless citizens and the political leaders they elect understand the dire consequences of climate destabilization and therefore accept, and even demand, the measures that are needed to support climate stabilization.

The equivalent miles per gallon of the LDV fleet in 2030, specifically 111.03 miles per gallon, will be considered as a potential 2030 LDV requirement.

## Computing the Heroic-Measures (HM) Case Per-Capita and Net Driving Factor Requirements, Based on the Result Shown in Table 6

Plugging the

- equivalent MPG of the LDV fleet in Year 2030, taken from the bottom of Table 6, which is 111.03 MPG ( $m_{2030}$ ), and
- the MPG of the LDV fleet in Year 2015, taken from the bottom of Table 2, which is 27.63 MPG ( $m_{2015}$ ),

into Equation 9, gives the following result:

$$\frac{d_{2030}}{d_{2005}} = 0.1687 * \frac{m_{2030}}{m_{2015}} = 0.1687 * \frac{111.03}{27.63} = 0.68 \quad (\text{Eq. 14})$$

This means that the per-capita driving in 2030 will need to be about 32% less than in year 2005. The net driving can be computed by multiplying the per-capita driving, 0.68, by the population factor of 1.2305, computed in Equation 7, resulting in 0.84 (since  $0.68 \times 1.2305 = 0.84$ .) This means that, even with the 23% increase in California's population, the net driving will have to drop by 16%. If this LDV requirement set is selected, all of California's transportation money can be used to improve transit, improve active transportation (mainly walking and biking), and maintain, but not expand, roads. The good news is that there can be little or no congestion because highway capacity now is larger than it was in 2005. Policies will be needed to achieve the required reduction in driving.

## Case 2: Computing LDV Requirements that Support Climate Stabilization but Still Allow 2005 Per-Capita Driving

The first step is to use Equation 9 and the value of the mileage in 2015 to compute the needed LDV equivalent fleet mileage for 2030 if the left side of the equation is equal to 1.0.

$$m_{2030} = 1.0 \times m_{2015} / 0.1689 = 27.63 / 0.1689 = 163.59 \text{ MPG} \quad (\text{Eq. 15})$$

Table 7 is constructed, with the fraction of ZEVs selected to achieve the needed equivalent fleet mileage of about 163.59 MPG. Since its ZEV fractions are larger and sooner than in the "Heroic Measures" table, Table 7 is showing what has been called the "Extra-Heroic Measures" (EHM) case. The ICE "f" values are unchanged; as are the LCFS values. The EHM ZEV differences from the HM case are the highlighted "z" values.

This means that with the 23% increase in California's population, computed in Equation 7, the net driving would also increase by 23%. If this LDV requirement set were to be implemented, a lot of California's transportation money would be needed to expand the highway system, leaving less to improve transit, improve active transportation (mainly walking and biking), and maintain roads.

**Table 7 Calculation of 2030 LDV Mileage Assuming Extra-Heroic Measures**

| Year                                              | ICE Parameters and Calculations |       |         |     |       |       | ZEVs |       |       | Yearly Totals |               |          |
|---------------------------------------------------|---------------------------------|-------|---------|-----|-------|-------|------|-------|-------|---------------|---------------|----------|
|                                                   | CAFÉ MPG                        | LCFS  | Eq. MPG | f   | $D_i$ | $G_i$ | z    | $D_z$ | $G_z$ | Total Miles   | Total Gallons | 2030 MPG |
| 2016                                              | 34.3                            | .9267 | 37.01   | .3  | 30.0  | .8105 | .04  | 0     | .012  | 32.8          | .7901         | 41.51    |
| 2017                                              | 35.1                            | .9200 | 38.15   | .4  | 36.0  | .9436 | .10  | 10    | .030  | 46.0          | .9738         | 47.24    |
| 2018                                              | 36.1                            | .9133 | 39.53   | .5  | 35.0  | .8855 | .25  | 25    | .075  | 62.5          | 1.024         | 61.02    |
| 2019                                              | 37.1                            | .9000 | 40.92   | .6  | 30.0  | .7332 | .40  | 40    | .121  | 76.0          | 1.000         | 75.96    |
| 2020                                              | 38.3                            | .8500 | 42.56   | .7  | 21.0  | .4935 | .65  | 65    | .196  | 89.5          | .7718         | 115.96   |
| 2021                                              | 40.3                            | .8000 | 47.41   | .8  | 8.0   | .1687 | .90  | 90    | .272  | 98.0          | .4403         | 222.59   |
| 2022                                              | 42.3                            | .8000 | 52.88   | .9  | 4.5   | .0851 | .95  | 95    | .287  | 99.5          | .3717         | 267.66   |
| 2023                                              | 44.3                            | .8000 | 55.38   | 1.0 | 5.0   | .0903 | .95  | 95    | .287  | 100.0         | .3769         | 265.31   |
| 2024                                              | 46.5                            | .8000 | 58.13   | 1.0 | 5.0   | .0860 | .98  | 98    | .296  | 100.0         | .3301         | 302.95   |
| 2025                                              | 48.7                            | .8000 | 60.88   | 1.0 | 5.0   | .0821 | .98  | 98    | .296  | 100.0         | .3285         | 304.38   |
| 2026                                              | 51.2                            | .8000 | 64.00   | 1.0 | 5.0   | .0781 | .99  | 99    | .299  | 100.0         | .3143         | 318.14   |
| 2027                                              | 53.7                            | .8000 | 67.13   | 1.0 | 5.0   | .0745 | .99  | 99    | .299  | 100.0         | .3136         | 318.88   |
| 2028                                              | 56.2                            | .8000 | 70.25   | 1.0 | 5.0   | .0712 | .99  | 99    | .299  | 100.0         | .3129         | 319.56   |
| 2029                                              | 58.7                            | .8000 | 73.38   | 1.0 | 5.0   | .0681 | .99  | 99    | .299  | 100.0         | .3123         | 320.18   |
| 2030                                              | 61.2                            | .8000 | 76.50   | 1.0 | 5.0   | .0654 | .99  | 99    | .299  | 100.0         | .3118         | 320.75   |
| Sum of Miles and then Gallons of Equivalent Fuel: |                                 |       |         |     |       |       |      |       |       | 1304.30       | 7.97          |          |
| Equivalent MPG of LDV Fleet in 2030:              |                                 |       |         |     |       |       |      |       |       | <b>163.59</b> |               |          |

### Comparing the ZEV Fraction Values of the “Heroic-Measures” (HM) Case to the “Extra-Heroic Measures” (EHM) Case

Table 8 shows the direct comparison of the ZEV fractions that are ZEV requirements for the HM Case and the EHM Case. The largest differences are highlighted. The EHM case does not appear to be achievable.

**Table 8 HM Case and the EHM Case Which Supports 2005 Per-Capita Driving**

| Cases | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| HM    | .04  | .07  | .12  | .18  | .24  | .34  | .48  | .62  | .76  | .90  | .95  | .98  | .99  | .99  | .99  |
| EHM   | .04  | .10  | .25  | .40  | .65  | .90  | .95  | .95  | .98  | .98  | .99  | .99  | .99  | .99  | .99  |

## **ACHIEVING THE REQUIRED DRIVING REDUCTION OF THE HEROIC-MEASURES (HM) CASE**

As shown in Equation 14, in 2030, the per-capita driving will need to at least 32% below the 2005 value. As shown in this link, [http://en.wikipedia.org/wiki/SB\\_375](http://en.wikipedia.org/wiki/SB_375), California's Metropolitan Planning Organizations (MPOs) are adopting Region Transportation Plans (RTPs) that will achieve reductions in year 2020 and 2035. As also shown there, the targets, for year 2035, range from 0% for Shasta to 16% for Sacramento Area Council of Governments. Since this is for 2030 instead of 2035, and to be reasonably conservative, it is assumed here that the state will achieve a 10% reduction in per-capita driving, in 2030, compared to 2005. This leaves 22% to be achieved by new programs.

The title of each of the following subsections contains the estimated per-capita driving reduction each strategy will achieve, by 2030.

### **Reallocate Funds Earmarked for Highway Expansion to Transit and Consider Transit-Design Upgrades (3%)**

San Diego County has a sales tax measure called "TransNet", which allocates one-third for highway expansion, one-third for transit, and one-third for road maintenance. It has a provision that allows for a reallocation of funds, if supported by at least two-thirds of SANDAG Board members, including a so-called weighted vote, where governments are given a portion of 100 votes, proportional to their population. It is hereby proposed to reallocate the TransNet amount, earmarked for highway expansion, to transit and to do similar reallocations throughout California.

This money could be used to fund additional transit systems; improve transit operations; and/or the redesign and implementation of the redesign of existing transit systems. The redesign could include electrification and automation or even upgrading to a different technology.

### **A Comprehensive Road-Use Fee Pricing and Payout System to Unbundle the Cost of Operating Roads (7.5%)**

*Comprehensive* means that pricing would be set to cover all costs (including road maintenance and externalities such as harm to the environment and health); that privacy and the interests of low-income drivers doing necessary driving would be protected; that the incentive to drive fuel-efficient cars would be at least as large as it is under the current fuels excise tax; and, as good technology becomes available, that congestion pricing is used to protect critical driving from congestion.

The words *payout* and *unbundle* mean that some of the money collected would go to people that are losing money under the current system.

User fees (gas taxes and tolls) are not enough to cover road costs<sup>10</sup> and California is not properly maintaining its roads. Reference 10 shows that in California user fees amount to only 24.1% of what is spent on roads. Besides this, the improved mileage of the ICEs and the large number of ZEVs needed mean that gas tax revenues will drop precipitously.

This system could be used to help reduce the ICE LDV miles driven in 2016 to 2022, as shown in the "f" column of Tables 6 and 7. This system could probably be implemented in less than 5 years.

## **Unbundling the Cost of Car Parking (7.5%)**

Unbundling the cost of car parking<sup>11</sup> throughout California is conservatively estimated to decrease driving by 7.5%, based on Table 1 of Reference 11. That table shows driving reductions resulting from introducing a price for parking, for 10 cases. Its average reduction in driving is 25% and its smallest reduction is 15%.

## **Good Bicycle Projects and Bicycle Traffic Skills Education (3%)**

The best criterion for spending money for bicycle transportation is the estimated reduction in driving per the amount spent. The following strategies may come close to maximizing this parameter.

### ***Projects to Improve Bicycle Access***

All of the smart-growth neighborhoods, central business districts, and other high trip destinations or origins, both existing and planned, should be checked to see if bicycle access could be substantially improved with either a traffic calming project, a “complete streets” project, more shoulder width, or a project to overcome some natural or made-made obstacle.

### ***League of American Bicyclist Certified Instruction of “Traffic Skills 101”***

Most serious injuries to bike riders occur in accidents that do not involve a motor vehicle<sup>12</sup>. Most car-bike accidents are caused by wrong-way riding and errors in intersections; the clear-cut-hit-from-behind accident is rare<sup>12</sup>.

After attending *Traffic Skills 101*, students that pass a rigorous written test and demonstrate proficiency in riding in traffic and other challenging conditions could be paid for their time and effort.

As an example of what could be done in San Diego County, if the average class size was 3 riders per instructor and each rider passes both tests and earns \$100 and if the instructor, with overhead, costs \$500 dollars, for a total of \$800 for each 3 students, that would mean that \$160M could teach  $\$160\text{M}/\$800 = 200,000$  classes of 3 students, for a total of 600,000 students. The population of San Diego County is around 3 million.

## **Eliminate or Greatly Increase the Maximum Height and Density Limits Close to Transit Stops that Meet Appropriate Service Standards (2%)**

As sprawl is reduced, more compact, transit-oriented development (TOD) will need to be built. This strategy will incentivize a consideration of what level of transit service will be needed, how it can be achieved, and what levels of maximum height and density are appropriate. Having no limits at all is reasonable if models show that the development can function without harming the existing adjacent neighborhoods, given the level of transit service and other supporting transportation policies (such as car parking that unbundles the cost and supports the full sharing of parking<sup>11</sup>) that can be assumed.

## **Net Driving Reduction from All Identified Strategies**

By 2030, the sum of these strategies should be realized. They total 23%, resulting in a 1% margin over the needed 22% (which is added to the existing 10% to get the needed 32%.)

## ADDITIONAL ELECTRICITY REQUIRED

The URL [http://www.energy.ca.gov/2013\\_energypolicy/documents/2013-06-26\\_workshop/presentations/09\\_VMT-Bob\\_RAS\\_21Jun2013.pdf](http://www.energy.ca.gov/2013_energypolicy/documents/2013-06-26_workshop/presentations/09_VMT-Bob_RAS_21Jun2013.pdf) shows that Californians drove about 325 Billion miles per year, from 2002 to 2011. This value can be multiplied by the 0.84 factor reduction of driving, computed right after the calculation shown in Equation 14, and the fraction of miles driven by ZEVs, shown at the bottom of Table 6, of 0.687 (from 68.7%), to give the 2030 miles driven by ZEVs = 325 Billion x 0.84 x 0.687 = 188 Billion miles per year.

Using the Tesla information here [http://en.wikipedia.org/wiki/Tesla\\_Roadster](http://en.wikipedia.org/wiki/Tesla_Roadster), it is assumed that 21.7 kW-h is used per 100 miles, or 0.217 kW-h per mile. The total energy used per year is therefore 188 Billion miles x 0.217 kW-h = 40,699 GW-h.

<http://www.cpuc.ca.gov/cfaqs/howhighiscaliforniaselectricitydemandandwheredoesthepowercomefrom.htm>, shows that California is using about 265,000 GW-h per year. Therefore the electricity needed to power California's HM ZEV LDF fleet in 2030 is 100% x 40,648/265,000 = 15.34% of the amount of electricity California is currently using. Table 4 shows that 80% (r = 0.80, with "r" defined in Table 3) of electricity must be generated without producing CO<sub>2</sub>. This estimated 15.34% increase in demand should help the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) with their planning.

## COMPARISON WITH CALIFORNIA AIR RESOURCES BOARD (CARB) PLANNING

The following quote<sup>13</sup> allows us to compare the CARB plan for LDVs with what would be required to stabilize the climate at a livable level, in the form of the Heroic Measures case:

*Regulations on the books in California, set in 2012, require that 2.7 percent of new cars sold in the state this year be, in the regulatory jargon, ZEVs. These are defined as battery-only or fuel-cell cars, and plug-in hybrids. The quota rises every year starting in 2018 and reaches 22 percent in 2025. Nichols wants 100 percent of the new vehicles sold to be zero- or almost-zero-emissions by 2030*

Table 9 shows the values implied by this statement and compares them to the HM values. Table 10, which is similar to Tables 6 and 7, computes the overall mileage of the 2030 fleet, using the CARB values.

### Computing the Heroic-Measures (HM) Case Per-Capita and Net Driving Factor Requirements, Based on the Result Shown in Table 10

Plugging the

- equivalent MPG of the LDV fleet in Year 2030, taken from the bottom of Table 10, which is 74.25 MPG, and
- the MPG of the LDV fleet in Year 2015, taken from the bottom of Table 2, which is 27.63 MPG,

into Equation 8, gives the following result:

$$\frac{d_{2030}}{d_{2005}} = 0.1687 * \frac{m_{2030}}{m_{2015}} = 0.1687 * \frac{74.25}{27.63} = 0.45 \quad (\text{Eq. 16})$$

**Table 9 Zero Emission Vehicle (ZEV) % of Fleet, for Two Cases**

| Year | CARB  | Heroic Measures | Year | CARB   | Heroic Measures |
|------|-------|-----------------|------|--------|-----------------|
| 2016 | 2.7%  | 4.0%            | 2024 | 19.6%  | 76.0%           |
| 2017 | 2.7%  | 7.0%            | 2025 | 22.0%  | 90.0%           |
| 2018 | 5.1%  | 12.0%           | 2026 | 37.6%  | 95.0%           |
| 2019 | 7.5%  | 18.0%           | 2027 | 53.2%  | 98.0%           |
| 2020 | 9.9%  | 24.0%           | 2028 | 68.8%  | 99.0%           |
| 2021 | 12.4% | 34.0%           | 2029 | 84.4%  | 99.0%           |
| 2022 | 14.8% | 48.0%           | 2030 | 100.0% | 99.0%           |
| 2023 | 17.2% | 62.0%           |      |        |                 |

This means that the per-capita driving will need to be about 55% less in 2030 than in year 2005. The net driving can be computed by multiplying the per-capita driving, 0.45, by the population factor of 1.2305, computed in Equation 7, resulting in 0.55. This means that, even with the 23% increase in California's population, the net driving will have to drop by 45%. If CARB wants the LDV sector to achieve a reasonable climate-stabilizing target, it will need to require ZEV adoption profile closer to the Heroic Measures Case. The adoption profile they have now will required a reduction in driving that will probably be very difficult to achieve.

## CONCLUSION

A requirement set named "Heroic Measures" (HM) is quantified. Table 8 shows that the HM LDV efficiency requirements are much easier to achieve than those needed to allow per-capita driving to remain close to its 2005 level, which has been quantified as the "Extra Heroic Measures Case". Strategies to achieve the required HM driving reductions are also allocated and described. They are perhaps about as difficult as achieving the HM LDV fleet efficiency. It is computed that the 2030 fleet of LDV HM ZEVs would require an amount of electricity which is equal to about 15% of what California is using today. The current CARB plan for ZEV adoption is shown to require a very large reduction in driving if LDVs are to achieve a climate-stabilizing target.

**Table 10      Calculation of 2030 LDV Mileage Assuming the CARB Values**

| Year                                              | ICE Parameters and Calculations |       |         |     |       |        | ZEVs |       |       | Yearly Totals |               |          |
|---------------------------------------------------|---------------------------------|-------|---------|-----|-------|--------|------|-------|-------|---------------|---------------|----------|
|                                                   | CAFÉ MPG                        | LCFS  | Eq. MPG | f   | $D_i$ | $G_i$  | z    | $D_z$ | $G_z$ | Total Miles   | Total Gallons | 2030 MPG |
| 2016                                              | 34.3                            | .9267 | 37.01   | .3  | 30.0  | .8105  | .03  | 3     | .008  | 31.9          | .79681        | 40.02    |
| 2017                                              | 35.1                            | .9200 | 38.15   | .4  | 40.0  | 1.0484 | .03  | 3     | .008  | 41.6          | 1.0283        | 40.48    |
| 2018                                              | 36.1                            | .9133 | 39.53   | .5  | 47.5  | 1.2018 | .05  | 5     | .015  | 52.6          | 1.2158        | 43.23    |
| 2019                                              | 37.1                            | .9000 | 40.92   | .6  | 54.0  | 1.3197 | .08  | 8     | .023  | 63.0          | 1.3787        | 45.70    |
| 2020                                              | 38.3                            | .8500 | 42.56   | .7  | 52.5  | 1.2337 | .10  | 10    | .030  | 73.0          | 1.5114        | 48.29    |
| 2021                                              | 40.3                            | .8000 | 47.41   | .8  | 48.0  | 1.0124 | .12  | 12    | .037  | 82.5          | 1.5162        | 54.39    |
| 2022                                              | 42.3                            | .8000 | 52.88   | .9  | 40.5  | .7660  | .15  | 15    | .045  | 91.5          | 1.4954        | 61.17    |
| 2023                                              | 44.3                            | .8000 | 55.38   | 1.0 | 30.0  | .5418  | .17  | 17    | .052  | 100.0         | 1.5475        | 64.62    |
| 2024                                              | 46.5                            | .8000 | 58.13   | 1.0 | 15.0  | .2581  | .20  | 20    | .059  | 100.0         | 1.4425        | 69.32    |
| 2025                                              | 48.7                            | .8000 | 60.88   | 1.0 | 5.0   | .0821  | .22  | 22    | .066  | 100.0         | 1.3477        | 74.20    |
| 2026                                              | 51.2                            | .8000 | 64.00   | 1.0 | 5.0   | .0781  | .38  | 38    | .113  | 100.0         | 1.0884        | 91.87    |
| 2027                                              | 53.7                            | .8000 | 67.13   | 1.0 | 5.0   | .0745  | .53  | 53    | .161  | 100.0         | .8577         | 116.59   |
| 2028                                              | 56.2                            | .8000 | 70.25   | 1.0 | 5.0   | .0712  | .69  | 69    | .208  | 100.0         | .6517         | 153.44   |
| 2029                                              | 58.7                            | .8000 | 73.38   | 1.0 | 5.0   | .0681  | .84  | 84    | .255  | 100.0         | .4673         | 214.02   |
| 2030                                              | 61.2                            | .8000 | 76.50   | 1.0 | 5.0   | .0654  | 1.0  | 100   | .302  | 100.0         | .3017         | 331.44   |
| Sum of Miles and then Gallons of Equivalent Fuel: |                                 |       |         |     |       |        |      |       |       | 1236.00       | 16.65         |          |
| Equivalent MPG of LDV Fleet in 2030:              |                                 |       |         |     |       |        |      |       |       | <b>74.25</b>  |               |          |

## ABBREVIATIONS AND ACRONYMS

|                         |                                        |                 |                                      |
|-------------------------|----------------------------------------|-----------------|--------------------------------------|
| <b>AB 1493</b>          | California's Assembly Bill 1493        | <b>HM</b>       | "Heroic Measures" LDV Case           |
| <b>AB 32</b>            | California's Assembly Bill 32          | <b>ICE</b>      | Internal Combustion Engine LDV       |
| <b>APS</b>              | Alternative Planning Strategy          | <b>kW-h</b>     | Kilo Watt-hour                       |
| <b>CAFE</b>             | Corporate Average Fuel Efficiency      | <b>LCFS</b>     | Low Carbon Fuel Standard             |
| <b>CARB</b>             | California Air Resources Board         | <b>LDV</b>      | Light-Duty Vehicle                   |
| <b>CBD</b>              | Center for Biological Diversity        | <b>MPO</b>      | Metropolitan Planning Organization   |
| <b>CEC</b>              | California Energy Commission           | <b>Pavley</b>   | Senator Pavley's AB 1493             |
| <b>CEQA</b>             | California Environmental Quality Act   | <b>PPM</b>      | Parts per Million                    |
| <b>CPUC</b>             | California Public Utilities Commission | <b>RPS</b>      | Renewable Portfolio Standard         |
| <b>CCAP</b>             | Center for Clean Air Policy            | <b>RTP</b>      | Regional Transportation Plan         |
| <b>CNFF</b>             | Cleveland National Forest Foundation   | <b>S-3-05</b>   | Governor's Executive Order S-3-05    |
| <b>SB 375</b>           | California's Senate Bill 375           | <b>SANDAG</b>   | San Diego Association of Governments |
| <b>CO<sub>2</sub></b>   | Carbon Dioxide                         | <b>SCS</b>      | Sustainable Community Strategy       |
| <b>CO<sub>2</sub>_e</b> | Carbon Dioxide Equivalent GHG          | <b>TransNet</b> | San Diego County sales tax           |
| <b>EHM</b>              | "Extra Heroic Measures" LDV Case       | <b>URL</b>      | Universal Resource Locator           |
| <b>GEO</b>              | Governor's Executive Order             | <b>VMT</b>      | Vehicle Miles Travelled              |
| <b>GHG</b>              | Greenhouse gas                         | <b>ZEV</b>      | Zero Emission Vehicle LDV            |
| <b>GW-h</b>             | Giga Watt-Hours                        |                 |                                      |

## ACKNOWLEDGEMENTS

Darrell Clarke, Lead Volunteer for the Sierra Club's "Beyond Oil Campaign"; Dr. Dennis Martinek, Oceanside Planning Commissioner; Sandra Goldberg, formerly California Deputy Attorney General; Dr. Nilmini Silva-Send, Senior Policy Analyst of the Energy Policy Initiative Center; Diane Nygaard, Director of Preserve Calavera and founder of *Nelson Nygaard Consulting Associates*; Jack Shu, CNFF President; Joan Bullock; San Diego Sierra Club Executive Committee Chairs: Caroline Chase, John Stump, and (former Assembly Member) Lori Saldaña; Malinda Dickenson, *Law Offices of Malinda R. Dickenson*; Conservation Committee Chair Mollie Biggers; Ed Mainland and Jim Stewart, Co-Chairs, Energy-Climate Committee, Sierra Club California; Bern Grush, Chief Scientist, *Skymeter Corporation*; and SANDAG Staff: Susan Baldwin, Senior Regional Planner; Charles Stoll, Director of Land Use and Transportation Planning; and Stephan Vance, Senior Regional Planner.

## REFERENCES

- 1 Anders, S. J.; De Haan, D. O.; Silva-Send, N.; Tanaka, S.T.; Tyner, L.; *San Diego County Greenhouse Gas Inventory*, September 2008, <http://www.sandiego.edu/epic/ghginventory/>
- 2 Tarbuck, E.; Lutgens, F.; *Earth Science*; Tenth Edition, published by Prentice Hall, 2003, page 539
- 3 Vespa, M.; *Comments on Survey of CEQA Documents on Greenhouse Gas Emissions Draft Work Plan and Development of GHG Threshold of Significance for Residential and Commercial Projects*, Letter from Center for Biological Diversity to Elaine Chang, Deputy Executive Officer of Planning, Rule Development, and Area Sources of the South Coast Air Quality Management District; dated April 15, 2009. <http://www.aqmd.gov/ceqa/handbook/GHG/2009/april22mtg/CBDcomments.pdf>
- 4 Hertsgaard, M; *Latino Climate Solution, the Nation*, Dec. 24/31, 2012.
- 5 Whitney E.; *How to Meet the Climate Crisis, UU World*, Volume XXVI No. 4, Winter 2012.

- 6 Adams, T.; Eaken, A.; Notthoff, A.; *Communities Tackle Global Warming, A Guide to California's SB 375*, June 2009, NRDC;  
<http://www.nrdc.org/globalWarming/sb375/files/sb375.pdf>
- 7 Hansen, James, Brief of Amicus Curiae, Exhibit A, Case3:11-cv-o22o3-EMC Document108 Filed 11/14/11. from  
<http://ourchildrenstrust.org/sites/default/files/Hansen%20Amicus%20.pdf>
- 8 State of California, Department of Finance, California County Population Estimates and Components of Change by Year, July 1, 2000-2010. Sacramento, California, December 2011, from <http://www.dof.ca.gov/research/demographic/reports/estimates/e-2/2000-10/>, the “[E-2. California County Population Estimates and Components of Change by Year — July 1, 2000–2010](#)”
- 9 Schwarm, Walter, Demographic Research Unit, California Department of Finance, *Total Population Projections for California and Counties: July 1, 2015 to 2060 in 5-year Increments*, from <http://www.dof.ca.gov/research/demographic/reports/projections/P-1/>, then “[Report P-1 \(County\): State and County Total Population Projections, 2010-2060 \(5-year increments\)](#)” link, to open or download the EXCEL spreadsheet file.
- 10 Henschman, Joseph; *Gasoline Taxes and Tolls Pay for Only a Third of State & Local Road Spending*; January 17, 2013; <http://taxfoundation.org/article/gasoline-taxes-and-tolls-pay-only-third-state-local-road-spending>
- 11 Bullock, M.; Stewart, J.; *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*; Paper 2010-A-554-AWMA, from the Air and Waste Management Association's 103<sup>rd</sup> Annual Conference and Exhibition; Calgary, Canada, June 21-24, 2010. <http://sierraclub.typepad.com/files/mike-bullock-parking-paper.pdf>
- 12 Forester, J. *Effective Cycling*, MIT Press, 6<sup>th</sup> Edition, 1993.
- 13 Lippert, John; *Bloomberg News* August 2, 2015; *California Has a Plan to End the Auto Industry as We Know It*; <http://www.bloomberg.com/news/articles/2015-08-03/california-regulator-mary-nichols-may-transform-the-auto-industry>

## KEYWORDS

Driving, climate, mandates, S-3-05, SB 375, RTP, CEQA, Unbundled, GHG, CAFÉ, ZEVs

# REFERENCE 6

# Modern Roundabouts

Reduce congestion and improve safety on main roads



## What is a “Modern Roundabout?”

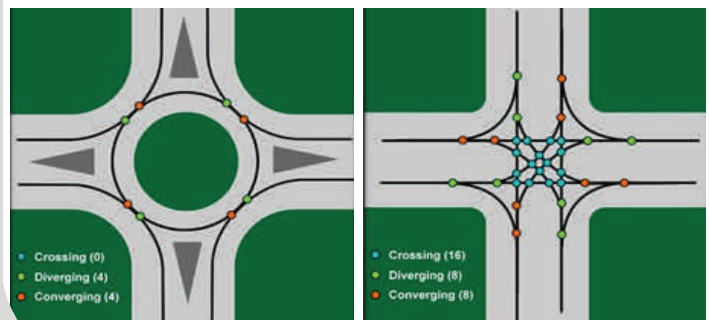
A modern roundabout is a circular intersection in which vehicles travel counterclockwise around a center island. Unlike large traffic circles or rotaries of the past, modern roundabouts are easy to navigate, environmentally friendly, attractive, and safe. Raised “splitter islands” induce arriving drivers to slow down prior to entering the intersection, and provide a refuge island for crossing pedestrians. Entering vehicles yield to traffic already in the roundabout.



Photo: SANDAG

## Why are roundabouts so much safer?

Roundabouts reduce both speed and the number of “conflict points,” from 32 to 8 (see figure).<sup>4</sup> Crashes in roundabouts are also less severe; converting intersections from signals to roundabouts reduces injury crashes by 80% and all crashes by 50%.<sup>4</sup> Severe injuries are rare; a study of 23 conversions found a 76% decrease in injury crashes and an 89% reduction in fatalities.<sup>5</sup> Bicyclists and pedestrians of different skills levels are safely accommodated in roundabouts, although visually impaired pedestrians may require special treatments.<sup>6</sup>



## How do roundabouts improve traffic flow?

Unlike signals, roundabouts keep traffic moving. Since the capacity of a street is greatly influenced by its intersections, reducing the number of stops increases road capacity, which improves traffic flow. As a result, fewer lanes are required, which has multiple safety, capacity, and cost benefits. On La Jolla Blvd. in San Diego (photos), five roundabouts allowed the City to shrink the street and widen the sidewalks, providing outdoor dining and meeting places, with less traffic noise.

## How do roundabouts improve air quality?

By reducing vehicle idling, roundabouts significantly decrease fuel consumption and emissions.

- On La Jolla Blvd. each roundabout is estimated to annually save 20,000 gallons of gasoline,<sup>1</sup> avoiding 9.9 lbs. of particulate pollution.<sup>2</sup>
- One roundabout can eliminate 189 metric tons of CO<sub>2</sub>e emissions annually, equivalent to 37 cars.<sup>1,3</sup>
- Installing 320 roundabouts in San Diego could reduce CO<sub>2</sub>e emissions by 60,480 metric tons annually — equal to the annual emissions of 10,900 cars.<sup>1,2</sup>

## How much do roundabouts cost?

As of 2014, the installation cost of a roundabout was around \$1 million, while traffic signals typically cost \$600,000. However, long-term costs for roundabouts are lower since little maintenance and no electricity are required. Costs of traffic crashes are also greatly reduced.

## Do drivers prefer roundabouts?

Until recently, roundabouts were unfamiliar to Americans. But drivers favor roundabouts once they become familiar with them. A 2002 study of roundabout conversions in three communities found that only 36% of drivers supported roundabouts before they were constructed, but 70% favored them one year after construction.<sup>8</sup>



1. Silva-Send, Nilmini (2009) *Reducing Greenhouse Gases from On-Road Transportation in San Diego County*. Energy Policy Initiatives Center, USD.  
2. U.S. EPA, *Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks* (2008).  
3. *Greenhouse Gas Emissions from a Typical Passenger Vehicle*, EPA Office of Transportation and Air Quality (2011)  
4. FHWA. *Driver Conflict Points: Roundabout vs Stop Sign*, safety.fhwa.dot.gov, accessed March 3, 2014)

5. Persand, B.N. et al. (2001) Safety effect of roundabout conversions in the United States. *Transportation Research Record*.  
6. FHWA (2010) *Roundabouts: An Informational Guide*.  
7. Lounsbury & Associates, *Myths and Facts about Roundabouts*, www.alaskaroundabouts.com/mythfact6.html, accessed July 15, 2014.  
8. Retting R.A. et al. (2002) Long-term trends in public opinion following construction of roundabouts. *Transportation Research Record*.  
Photos by Andy Hamilton, APCD, except as indicated.

# Traffic Circles

Reduce harmful emissions while improving neighborhoods



## What is a traffic circle?

Traffic circles (or “mini-roundabouts”) are circular intersection islands similar to modern roundabouts, usually installed in **2-lane streets**. Unlike with roundabouts, the approach islands (“splitter islands”) are painted rather than raised.<sup>1</sup>



Large vehicles such as buses and fire trucks can comfortably navigate traffic circles, improving safety and reducing noise on residential streets.

## How much do traffic circles improve safety?

The Institute of Transportation Engineers found traffic circles reduce intersection collisions 70%.<sup>5</sup> Similarly, the City of Seattle studied 130 sites and found a 73% decrease.<sup>6</sup> These results stem from the sideways routing (“horizontal deflection”) of the travel path, which eliminates dangerous crash types such as head-on, left turn, and right angle crashes,<sup>7</sup> and discourages speeding. In Portland, traffic circles virtually eliminated speeds over 35 mph, where before, 15% or more of traffic exceeded 35 mph.<sup>8</sup> Traffic circles are unexpected, so proper signage and markings are important.



Old and new traffic circles, in Del Mar and North Park, respectively.

## What are the main advantages of traffic circles?

Traffic circles are a relatively low-cost intervention to reduce traffic speeds and intersection crashes.<sup>2</sup> Although the geometry of the center island reduces speeds, it need not reduce the access of large trucks and emergency vehicles (above photo). To handle especially long trucks and busses, the center island typically includes a mountable “apron” less than four inches high that rear wheels can pass over.<sup>3</sup> However, the island must be large enough to prevent vehicles from making left turns in front of it. In addition to increasing safety, traffic circles provide a space for vegetation, public art, or a neighborhood identity sign.<sup>2</sup> However, It is important to consider how ongoing watering or maintenance costs will be funded.

**Cost:** On average \$10,000 — \$25,000, excluding costs of landscaping.<sup>4</sup>

## How do traffic circles reduce auto emissions?

One gallon of gasoline burned by an average San Diego vehicle produces 17.5 lb CO<sub>2</sub>, 45.4g CO, 11.3g NO<sub>x</sub>, and 4.5g VOC.<sup>9</sup> Like roundabouts, traffic circles used in place of stop signs or signals reduce these emissions two ways:

(1) Reducing starts and stops: In one study, small roundabouts were found to reduce CO by 29%, NO<sub>x</sub> by 21% and greenhouse gases by 28%.<sup>10</sup> The town of Carmel, Indiana, has converted over half its intersections to roundabouts or traffic circles, with an estimated average savings of 24,000 gallons of fuel (and accompanying emissions) per intersection per year.<sup>11</sup>

(2) Calming neighborhood traffic: Data show residents walk<sup>12</sup> or bike more — replacing some vehicle trips — when cars drive slower in their neighborhood.

1. Federal Highway Administration (2014) *Designing Sidewalks and Trails for Access*, 9.2.6 *Neighborhood Traffic Circles*. [http://fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/sidewalk2/sidewalks209.cfm](http://fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/sidewalks209.cfm)  
2. Transafety, Inc. (1998) Traffic circle design criteria. *Road Management & Engineering Journal*. <http://usroads.com/journals/rmej/9801/rm980103.htm>  
3. Seattle Department of Transportation (n. d.) *Neighborhood Traffic Operations: Traffic Circle Program*. <http://www.seattle.gov/transportation/trafficcircles.htm>  
4. City of Oceanside, CA (2011) *City of Oceanside Traffic Calming Program*, p. 40.  
5. Institute of Transportation Engineers (n. d.) *Traffic Calming Measures - Neighborhood Traffic Circle*. <http://www.ite.org/traffic/circle.asp>  
6. Fehr & Peers (2010) *Traffic Circles*. <http://www.trafficcalming.org>  
7. Federal Highway Administration (2010) *Roundabouts: An Informational Guide*,

2nd Edition. NCHRP Report 672.

8. Stein, H. et al. (1992) Portland's successful experience with traffic circles. *ITE 1992 Compendium of Technical Papers*, p. 39-44.

9. Calculated from California Air Resources Board's EMFAC2011 model.

10. Varhelyi, A. (2002) The effects of small roundabouts on emissions and fuel consumption: a case study. *Transportation Research Part D: Transport and Environment*, U.S. Transportation Research Board.

11. Insurance Institute for Highway Safety (2005) *Status Report*, Col. 40, No. 9, November 19, 2005.

12. America Walks (2011) *National Walking Survey*.

Photos by Andy Hamilton, APCD.

# REFERENCE 7



San Diego & Imperial Counties Chapter  
8304 Clairemont Mesa Blvd., Ste 101  
San Diego, CA 92111  
<http://www.sandiego.sierraclub.org>  
858-569-6005

March 19, 2012

**VIA HAND DELIVERED and EMAILED TO: (Anna.Lowe@sdcountry.ca.gov)**

Anna Lowe, Department of Planning and Land Use  
County of San Diego  
5201 Ruffin Road, Suite B  
San Diego, CA 92123-1666

Re: Comments Regarding the Draft Climate Action Plan and Related Documents

Dear Ms. Lowe:

The San Diego & Imperial Counties Chapter of the Sierra Club (the "Sierra Club" or the "Chapter") respectfully requests that the Draft County of San Diego Climate Action Plan ("Draft CAP"), the Draft Guidelines for Determining Significance: Climate Change ("Draft Significance Thresholds"), and the Draft Report Format and Content Requirements: Greenhouse Gas Analyses and Reporting ("Draft GHG Report Requirements") be returned to staff for revisions and subsequent recirculation before presentation to the Board of Supervisors for consideration at a public hearing.

In failing to require greenhouse gas ("GHG") reductions past 2020 projections, the County Draft CAP, Draft Significance Thresholds, and Draft GHG Report Requirements, if adopted, will themselves contribute to the ultimate human catastrophe: climate destabilization.

Additionally, the County has failed to keep its own promises to the people – promises made just last year in the 2011 County of San Diego General Plan Update Environmental Impact Report ("General Plan EIR").

As set forth below, the Draft CAP does not meet its stated goals of (1) complying with General Plan EIR Mitigation Measure CC-1.2 or Assembly Bill 32 ("AB 32"); or (2) mitigating the impacts of climate change consistent with the reduction requirements contained in Executive Order S-3-05 ("the Executive Order").<sup>1</sup>

To make matters worse, and instead of contributing to the solution, the Draft Significance Thresholds and the Draft Report Requirements serve to further exacerbate the devastating impacts of climate change by purporting to limit California Environmental Quality Act ("CEQA") review – and therefore consideration of mitigation measures and alternatives – based on thresholds that do nothing to avoid dangerous anthropogenic interference ("DAI") within the climate system.

---

<sup>1</sup> In addition, the Draft CAP does not mitigate the impacts of climate change consistent with the California Environmental Quality Act ("CEQA") Guidelines, allow lead agencies to adopt a plan or program that addresses the cumulative impacts of a project, or provide a mechanism that subsequent projects may use as a means of addressing GHG impacts under CEQA.

For this reason, adoption of the Draft Significance Thresholds and the Draft Report Requirements themselves would have adverse environmental impacts that have not been analyzed by the County as required by CEQA.

**I. THE DRAFT CAP DOES NOT COMPLY WITH THE REQUIREMENTS OF MITIGATION MEASURE CC-1.2 OR AB 32.**

The General Plan EIR identified significant impacts related to GHG emissions and was adopted based on findings that the mitigation measures identified and described therein would be implemented. Specifically, in certifying the General Plan EIR, the Board of Supervisors made findings that Mitigation Measure CC-1.2 would mitigate potentially significant climate change impacts to a level below significance:

**CC-1.2 requires the preparation of a County Climate Change Action Plan within six months from the adoption date of the General Plan Update. The Climate Change Action Plan will include a baseline inventory of greenhouse gas emissions from all sources and more detailed greenhouse gas emissions reduction targets and deadlines. The County Climate Change Action Plan will achieve comprehensive and enforceable GHG emissions reduction of 17% (totaling 23,572 MTCO<sub>2</sub>E) from County operations from 2006 by 2020 and 9% reduction (totaling 479,717 MTCO<sub>2</sub>E) in community emissions from 2006 by 2020. Implementation of the Climate Action Plan will contribute to meeting the AB 32 goals, in addition to the state regulatory requirements...**

General Plan EIR, Finding A-37, Attachment H-1, p. 71-72. Mitigation Measure CC-1.2 states as follows, and requires the County to:

**Prepare a County Climate Change Action Plan with an update baseline inventory of greenhouse gas emissions from all sources, more detailed greenhouse gas emissions reduction targets and deadlines; and a comprehensive and enforceable GHG emissions reduction measures that will achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emissions between 2006 and 2020. Once prepared, implementation of the plan will be monitored and progress reported on a regular basis.**

General Plan EIR, p. 7-80.

The Draft CAP is not the County Climate Change Action Plan contemplated by Mitigation Measure CC-1.2. As set forth below, the Draft CAP: (A) does not provide an updated baseline inventory; (B) does not provide detailed reduction targets and deadlines; (C) does not contain “comprehensive and enforceable GHG emissions reduction measures”; (D) does not “achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emission between 2006 and 2020”; and (E) precludes meaningful monitoring and reporting.

**A. THE DRAFT CAP DOES NOT PROVIDE AN UPDATED BASELINE INVENTORY.**

Mitigation Measure CC-1.2 required that County “Prepare a County Climate Change Action plan with an update baseline inventory of greenhouse gas emissions from all sources...” but the Draft CAP does not provide such an updated inventory. Instead, the Draft Cap appears to use 2005 and 2006 baselines that were already in existence at the time Mitigation Measure CC-1.2 was adopted.

**B. THE DRAFT CAP DOES NOT PROVIDE MORE DETAILED REDUCTION TARGETS AND DEADLINES.**

Mitigation Measure CC-1.2 required that the County “Prepare a County Climate Change Action plan with...more detailed greenhouse gas emissions reduction targets and deadlines...” but the Draft CAP in fact provides *less* detailed targets and deadlines than provided in AB 32 and the Executive Order.

The Draft CAP appears to ignore certain requirements of AB 32 as interpreted by the County’s own data. For example, the County’s position is that, “To achieve AB 32’s 2020 target, community-wide emissions would have to be reduced by 479,717 MT CO<sub>2</sub>e from 2006 levels. **A 9% reduction from 2006 levels is necessary to achieve 1990 levels...**” General Plan EIR, CEQA Findings Regarding Significant Effects, Attachment A, p.2. The Draft CAP does not distinguish between community emissions reductions and County emissions reductions and omits any reference to the 9% community reductions set forth in Mitigation Measure CC-1.2.

Instead, the entirety of the established targets and deadlines appears to be “15% below 2005 levels by 2020.” Draft CAP, p. 20. The Draft CAP in fact recognizes that to be on track to meet the goals of the Executive Order emissions reductions would have to be 49% below 2005 levels by 2035; and that the Draft CAP does not meet that goal. Draft CAP, p. 49.

As if an excuse, the Draft CAP states that only “current technology and existing state and federal regulations” are considered. Draft CAP, p. 49. Notwithstanding that there is no excuse for contributing to climate destabilization, the Draft CAP makes inaccurate assumptions and statements with respect to currently available solutions. For example, in assuming it cannot meet the Executive Order requirements, the Draft CAP must be presuming it will not meet the regulatory goals already established by the California Public Utilities Commission. If the County were to meet the already established California Energy Efficiency Strategic Plan goals for 2020, GHG emissions from stationary electricity usage would drop 50% by 2020 compared to a 2008 baseline year. See Attachment 1. The GHG reduction would exceed 80% by 2030 if the same pace of zero net energy building retrofits is assumed in the 2020-2030 timeframe. See Attachment 2. Currently available transportation related GHG reduction solutions are presented in the Appendix. See also Attachments 5-7.

**C. THE DRAFT CAP DOES NOT PROVIDE COMPREHENSIVE AND ENFORCEABLE GHG EMISSIONS REDUCTION MEASURES.**

It was no mistake that Mitigation Measure CC-1.2 used language like “comprehensive,” “enforceable,” and “will achieve.” Proposed mitigation measures are required by law to be “fully enforceable.” Cal. Pub. Res. Code § 21081.6(b); Guidelines § 15126.4(a)(2). Mitigation measures must be definite and defined so that their effectiveness is ascertainable. See, e.g., *San Franciscans for Reasonable Growth v. City & County of San Francisco*, 151 Cal.App.3d 61, 79 (1984).

Instead of “achieving” the reductions set forth in Mitigation Measure CC-1.2 and required by law, the Draft CAP concedes that it “does not ensure reductions...” Draft CAP, p. 69. In addition, the Draft CAP uses language such as “addressing,” “informing and inspiring meaningful GHG reductions,” and “Allow lead agencies to adopt a plan or program that addresses the cumulative impacts of a project.” These vague statements should be replaced with mandatory requirements that actually produce results.

The CAP provides seventeen GHG reduction measures that the drafters conclude will allow the County to achieve the goal of reducing emissions to 15% below 2005 levels by 2020. Draft CAP, p. 22. However, the measures do not explain the strategies that will be implemented, they do not provide cost breakdowns, they do not describe any incentives, they do not set forth specific mechanisms for monitoring each measure, and they do not explain the role of each implementation partner listed.

For example, measure E1, Energy-Efficient New Development, states that the County will “use incentives to encourage builders to exceed current energy efficiency standards by 15%.” Draft CAP, p. 29. What incentives? It then states there are also educational programs that “will create the educated and experienced workforce that is needed to take advantage of the County’s Green Building Incentive program.” *Ibid.* Where is the description of the County’s Green Building Incentive program? Who will participate in the educational program? How will the program be implemented or monitored? E1 also neglects to explain the likelihood of securing funding from the listed “Potential Funding Sources” and how instrumental are each to the success of the measure. *Ibid.* In addition, the measure does not indicate the roles of each implementation partner. *Ibid.* Without this important information, how could the County accurately determine the GHG reductions anticipated from this measure or the participation rate? All these things must be considered in order to provide full information and demonstrate enforceability to achieve acceptable mitigation under CEQA.

The Draft CAP concedes that some of the strategies provided in will not yield quantifiable emissions reductions. Draft CAP, p. 22. The strategies that will not yield quantifiable emissions reductions are not, and must be, identified. There is no information about the percentage of reductions that do not yield quantifiable emissions reductions, and there is therefore no way to analyze their effect on the requirements of Mitigation Measure CC-1.2.

In summary, the Draft CAP does not provide comprehensive and enforceable mechanisms that will actually reduce GHG emissions. With inadequate reduction measures it is far from clear whether or not the Draft CAP will achieve the County GHG emissions reduction target of 15% below 2005 levels by 2020. Further, with an ambiguous reduction target, it is not possible to determine that such a target will be sufficient even to comply with AB 32.

**D. THE DRAFT CAP DOES NOT PROVIDE COMPREHENSIVE REDUCTION MEASURES THAT WILL ACHIEVE A 17% REDUCTION IN EMISSIONS FROM COUNTY OPERATIONS AND A 9% REDUCTION IN COMMUNITY EMISSIONS.**

Mitigation measure CC-1.2 requires the CAP to achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emissions between 2006 and 2020. As set forth above, the Draft CAP does not actually achieve *any* emission reductions. In addition, the CAP only gives one emissions reduction target - 15% below 2005 levels by 2020.

Nowhere in the Draft CAP is there a reference to reducing “9% community emissions between 2006 and 2020.” Moreover, the terms “County” and “community” are used in the General Plan EIR, “municipal” and “community” are used in Attachment A to General Plan EIR Attachment H-1 (“Attachment A”), and just “County” is used in the Draft CAP. See e.g. Attachment A, p. 3. The inventory update in Attachment A says the *community* baseline year is changed to 2005, however, the 2005 baseline year used in the Draft CAP is for the *County*. No explanation is provided for the absence of the “9% reduction between 2006 and 2020” requirement of Mitigation Measure CC-1.2 in the Draft CAP.

#### **E. THE CAP MONITORING PROGRAM PRECLUDES EFFECTIVE IMPELEMENTATION.**

The Draft CAP also fails to provide for effective implementation. Mitigation Measure CC-1.2 requires that, “Once prepared, implementation of the plan will be monitored and progress reported on a regular basis.” The inadequate Draft CAP itself concedes that, “it is imperative to monitor progress toward the goals set in CAP and to revisit and update the CAP periodically.” Draft CAP, p. 69. However, the proposed monitoring tool that can “track progress between inventories and examine effectiveness of specific measures” and is contemplated to be “revisited periodically to reflect any changes in emissions projections or reduction potential,” neglects to define “periodically.” *Ibid.* In addition, the monitoring section of the CAP does not explain how the County will “coordinate monitoring efforts at the community and local government levels,” which seems to be the key to the success of the program. *Ibid.* Without full participation and information from those implementing the Draft CAP, as well as those affected by the Draft CAP measures, the monitoring system will not receive the necessary and relevant information to make an assessment about the progress of implemented measures.

### **II. THE DRAFT CAP DOES NOT COMPLY WITH THE EXECUTIVE ORDER**

The Governor’s Executive Order S-3-05 states:

**[T]he following greenhouse gas emission reduction targets are hereby established for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels**

The CAP acknowledges the targets established in the Executive Order and the developed emissions forecasts for 2035 necessary to reach 2050 GHG emissions reductions. Draft CAP, p. 20. The Draft CAP explains that reductions “would need to reach 49% below 2005 levels by 2035, based on emissions forecasts for 2035 and 2050 under BAU conditions, to meet the 2050 goal.” *Ibid.* However, after expressing dedication to meeting legislative goals and the need to look beyond 2020 deadlines, and determining reduction targets for 2035 and 2050, the CAP stops short. Draft CAP, p. 49, 52. The Draft CAP utilized the same measures developed for 2020 scenario for the 2035 scenario, with the only change being an increase in rates of participation. Draft CAP, p. 49. This planning only yields a potential reduction of 13.7% below 2005 levels by 2035 and “does not achieve the 49% reduction target.” *Ibid.*

The scientific community recognizes that DAI within the climate system will not be avoided by 2020 reductions alone. See Attachments 3, 4. As set forth above, the Draft CAP inaccurately states that “current technology and existing state and federal regulations” are considered. Draft CAP, p. 49. Regulatory goals already established by the California Public Utilities Commission provide current solutions and guidance to achieve 2035 and 2050

reductions. See Attachments 1, 2. Similarly, currently available transportation related GHG reduction solutions are presented in the Appendix, in which specific comments are provided and inadequacies explained. See also Attachments 5-7.

**III. THE DRAFT SIGNIFICANCE THRESHOLDS AND THE DRAFT REPORT REQUIREMENTS, AS DRAFTED, WILL CONTRIBUTE TO CLIMATE DESTABILIZATION AND ARE SUBJECT TO CEQA.**

Instead of trying to avoid DAI within the climate system, the Draft Significance Thresholds and Draft Report Requirements serve to further exacerbate the devastating impacts of climate change.

The CEQA Guidelines explained that lead agencies may adopt thresholds of significance for use in environmental review but that the thresholds must be supported by substantial evidence:

- (a) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.
- (b) Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence.
- (c) When adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

CEQA Guidelines § 15064.7. Here, there is no substantial evidence that supports adoption of the Draft Significance Thresholds and Draft Report Requirements which do not even purport to provide for emissions reductions past 2020 targets. The scientific of climate change reveals that 2020 targets are insufficient to avoid DAI within the climate system. Adoption of the Draft Significance Thresholds and/or the Draft Report Requirements will therefore themselves adversely impact the environment. An EIR would be required before either or both could be adopted.

CEQA Guideline section 15064.4, entitled, Determining the Significance of Impacts from Greenhouse Gas Emissions, provides additional guidance for determining GHG impact significance:

- (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion

to determine, in the context of a particular project, whether to:

(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or  
(2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Again, as set forth above, there has been no effort based on existing scientific and factual data to calculate the GHG emissions that would result from adoption of the Draft Significance Thresholds or the Draft Report Requirements. To the contrary, existing scientific and factual data reveals that thresholds that do not meet 2035 requirements are insufficient. See Attachment 3, Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group Meeting #15, p. 2. As set forth and referenced in the attached letter from the Center for Biological Diversity, not even compliance with the Executive Order will avoid dangerous anthropogenic interference with the climate system. See Attachment 4. Failing to address emissions reductions past 2020 necessarily renders the Draft Significance Thresholds and Draft Report Requirements insufficient.

I have attached an appendix and seven (7) documents, which are incorporated by reference as part of our comments on the County's proposed plan. This letter, its appendix and the incorporated documents must be included in any review of your plan. We request written responses to each and every comment made in this submission. Please notice our organization at the above address of any further processing of this plan or meetings on this plan.

Thank you for your fine staff work and including us in this process.

Respectfully submitted,

/s/ John Stump

John Stump, Chair  
Chapter Executive Committee

cc. Ms. Malinda Dickensen, Chapter Vice Chair  
Ms. Mollie Bigger, Chapter Conservation Chair  
Mr. Mike Bullock, Chapter Transportation Chair  
Ms. Masada Disenhouse, Chapter Climate Chair

Enclosures (7)

**Attachment 1** – California Energy Efficiency Strategic Plan, January 2011 Update

**Attachment 2** – California Energy Efficiency Strategic Plan Zero Net Energy Action Plan: Commercial Building Sector 2010-2012

**Attachment 3** – Letter from Center for Biological Diversity to Elaine Chang, Deputy Executive Officer of Planning, Rule Development, and Area Sources of the South Coast Air Quality Management District; *Comments on Survey of CEQA Documents on Greenhouse Gas Emissions Draft Work Plan and Development of GHG Threshold of Significance for Residential and Commercial Projects*, dated April 15, 2009.

**Attachment 4** – Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #5, dated September 28, 2010

**Attachment 5** – Letter from Sierra Club Transportation Chair to SANDAG Board, *California Air Resources Board (CARB) Greenhouse Gas (GHG) Reduction Targets, Issued to SANDAG, in Accordance with SB 375, for the Year 2035*, dated April 20, 2011

**Attachment 6** – M. Bullock & J. Stewart, *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*; Paper 2010-A-554-AWMA, from the Air and Waste Management Association's 103<sup>rd</sup> Annual Conference and Exhibition; Calgary, Canada, June 21-24, 2010

**Attachment 7** – Letter from M. Bullock to the Honorable President Richard Holober and Members of the Board of Trustees, San Mateo County Community College District; *An Updated Parking Policy, in Light of the Controversy Surrounding the Removal of Building 20, Greenhouse, and Gardens, to Add Parking*, dated July 27, 2011

---

The San Diego Chapter of the Sierra Club is San Diego's oldest and largest grassroots environmental organization, founded in 1948. Encompassing San Diego and Imperial Counties, the San Diego Chapter seeks to preserve the special nature of the San Diego and Imperial Valley area through education, activism, and advocacy. The Chapter has over 14,000 members. The National Sierra Club has over 700,000 members in 65 Chapters in all 50 states, and Puerto Rico.



## **APPENDIX**

### **Summary**

Improvements to Chapters 1 and 2 are given. Chapter 2 suggestions include computing the driving reductions needed to achieve the S-3-05's trajectory by 2035. Feasible mitigation measures would eliminate congestion, improve air quality, increase social equity, and empowering people to make meaningful decisions both about methods of transit and how to spend their hard earned dollars.

### **Qualifications**

Understanding the relationship between global warming and transportation requires mathematics. The Chapter Transportation Chair, Mike Bullock, a contributor to this letter and drafter of this Appendix, has a BSEE degree and a Masters of Science, Engineering (MSE) degree. He worked for 36 years at Lockheed Martin, in Sunnyvale. For the last 20 years there, he worked as a satellite-systems engineer. One of his responsibilities was to develop equations and methods to measure and then compensate out, through satellite database upload, the misalignments of the key antennas on the MILSTAR communication satellite.

### **Specific Comments on the Draft CAP**

#### **1.1 Comments on the Draft CAP's Purpose**

The Attorney General Office's (AG's) excellent letter found at [http://ag.ca.gov/cms\\_attachments/press/pdfs/n2056\\_santa\\_clarita\\_letter.pdf](http://ag.ca.gov/cms_attachments/press/pdfs/n2056_santa_clarita_letter.pdf) compels a high standard of specificity. This CAP must identify the needed GHG reductions and show how those needed reductions will be achieved.

The words, "informing and inspiring meaningful GHG reductions" should be replaced with "achieving meaningful GHG reductions."

The first sentence on the top of the right column should include the *regional* level. SANDAG's RTP2050 is a \$214B dollar plan, with direct impacts on GHG emissions. SANDAG's work should not be ignored.

Table 1.1 should be labeled so the reader understands the year of the reductions. If the year is 2020, a similar table is needed for 2035.

#### **1.3 Comments on the Greenhouse Effect**

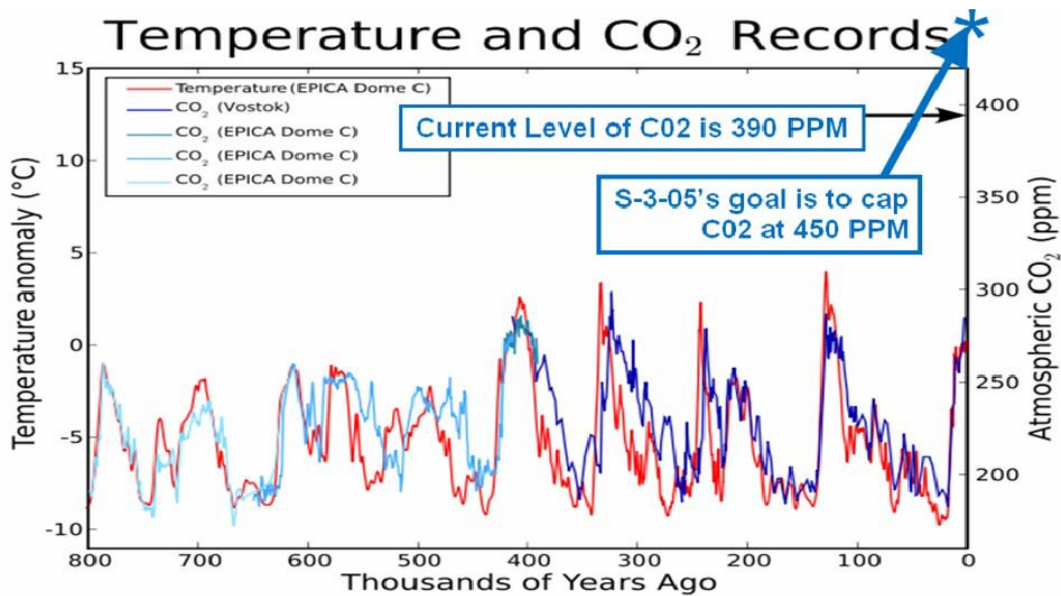
This section fails to inform the reader of the urgency and extreme danger posed by our climate crisis. The June 2008 issue of *Scientific American* (*The Ethics of Climate Change*, by Professor John Broome) reports that the levels of GHG expected in 20 years will result in a 5% chance of a 14.4 degree Fahrenheit increase in the earth's temperature and this would be an "utter catastrophe" and create the possibility of a "devastating collapse of the human population, perhaps even to extinction".

The plot shown on Page 6 fails to show the historic temperature profile. For that information, it is necessary to also show Figure 1 and 2. They are well known. Note that the 450 PPM value is shown. That would be the peak level of atmospheric CO<sub>2</sub>, if the world achieves the S-3-05 trajectory. That peak value would occur in year 2050 and then the atmospheric level of CO<sub>2</sub> would gradually be brought down to less-dangerous levels.

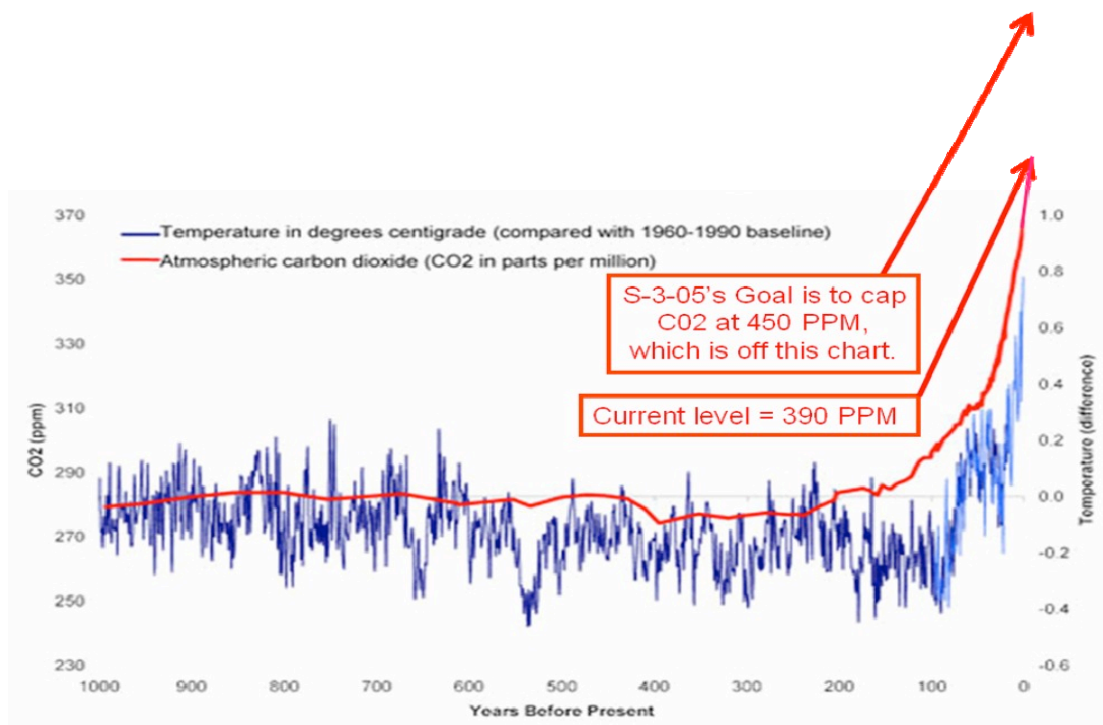
Figure 1 shows that the CO<sub>2</sub> levels shown on your Page-6 plot, which are 400 PPM up to 1000 PPM, correspond to temperatures of well over 10 degrees Centigrade. Such temperatures would risk a catastrophic collapse of the human population, to include the eventual extinction of our species. There are no adaptation strategies that could deal with such an event.

Figure 2 clearly shows that, although the temperature rise is somewhat masked by solar activity, underneath that relatively high frequency temperature variation, the temperature rise, which is due to the trapped heat caused by the higher-than-normal CO<sub>2</sub>, is already taking place. The trapped heat's effect on our atmosphere will be delayed as it melts ice and warms the ocean. We must at least achieve the S-3-05 trajectory.

**Figure 1**                      **Atmospheric CO<sub>2</sub> and Mean Temperature, 800,000 Years Ago, with 450 PPM CO<sub>2</sub> Shown**



**Figure 2 Atmospheric CO2 and Mean Temperature, Over the Last 1,000 Years**



Attachment 3, also available at <http://www.aqmd.gov/ceqa/handbook/GHG/2009/april22mtg/CBDcomments.pdf>, has descriptions of the likelihoods of various S-3-05 outcomes, first in terms of temperature rise. Even if we achieve S-3-05, there is a 50% chance that the temperature rise will exceed 2 Degrees Centigrade. A 2 degree Centigrade rise in temperature would have very serious negative consequences, as described. There is a 30% chance that the temperature change would exceed 3 Degrees Centigrade, which is described as “exponentially worse” than the 2-Degrees-Centigrade outcome. And so on. Going above 500 PPM is unthinkable and yet that seems to be exactly what we are doing.

On Page 6 the Draft CAP, failing to meet S-3-05 is described by saying that “climate change will threaten our economic well-being, public health, and environment”. The dangerous and currently out-of-control predicament in fact threatens human extinction. A bullet on Page 7 states that local effects could include “the decline or loss of species”, but does not reveal that our own species is at risk. This sort of over sight continues throughout Pages 8 and 9.

On Page 9 it says, “The extent to which these changes produce negative impacts will depend on actions taken today to ensure resilience in the face of climate change and, where necessary, adaptation to its impacts”. This ignores our responsibility to limit our GHG emissions and the fact that without sufficient and timely limitations, adaptation will not be possible.

#### **1.4 Comments on the “Local Effects of Climate Change” and “Potential Climate Change Health Effects” Sections**

These sections do not describe the severity of our climate crisis.

#### **1.5 Comments on the “Relationship to Other State and County Documents”**

It is crucial that the Draft CAP require strategies that will reduce emissions to levels at least as low as the S-3-05 trajectory.

Table 1.2 is valuable but must be improved in at least the following ways.

The description of S-3-05 needs to contain the following additional sentence: “These targets must be considered as points that define straight-line trajectories. It should also be understood that world-wide emission levels must at least stay beneath these straight lines. The net emissions, over the years, must be limited. The net emission is proportional to the area under these straight lines. Any year that emissions are above the lines creates a surplus that then requires years beneath the lines. The world is currently emitting at levels well above the line between the first two points.

The SB 375 description is incorrect because what the Metropolitan Planning Organization (MPOs) must achieve is GHG reductions that do not include reductions from state programs of cleaner cars and cleaner fuels. This means that the reductions can only be achieved by driving reductions, or, in other words, reducing vehicle miles travelled (VMTs). Therefore, it would be more accurate to simply change the “GHG emissions” words to “VMTs”, to say “VMTs from passenger vehicles must be reduced . . .”

#### **1.6 Comments on the “Scope and Content of the CAP”**

The bullet “Community Measures and Actions” should identify Table 3.2, since it provides the estimated GHG emissions. For example, T2, shown on Page 41, gives the results as a “50% increase in bicycle and pedestrian facilities”; T3 gives “50% of employers using TDM. It is not until Table 3.2 that the reader learns of the GHG reductions. Besides this, the estimated GHG reductions (only from VMT reductions, for cars and light-duty trucks) need to be for years 2035 and 2050, not just 2020 as stated in that bullet.

#### **2.1 Comments on the Draft CAP’s Chapter 2**

#### **2.2 Comments on the “Business-as-Usual Projections”**

Regarding the transportation sector; cleaner cars, cleaner fuels, and other state-transportation programs are out of the County’s direct control but the County can play an important role by seeking improved legislation and rule making. The County’s primary role, in terms of transportation, however, is to reduce VMT. Table 2.3’s BAU should therefore assume the state’s transportation programs will perform as currently estimated but assume VMT will be “BAU”, meaning as currently projected with no county or regional programs to reduce driving.

#### **2.3 Comments on the “GHG Emissions-Reduction Targets”**

We appreciate your recognition of the critical need to meet S-3-05. Given the dire predictions as set forth in Attachment 3 and reference materials therein <http://www.aqmd.gov/ceqa/handbook/GHG/2009/april22mtg/CBDcomments.pdf>, compliance with S-3-05 should be stated as the *minimum* to be accomplished.

The computation of the critical value of 49% below the 2005 value by 2035 should be set forth. This value means that the 2035 emissions need to be  $(.51) \times (2005 \text{ emissions})$ . In Attachment 5, letter from Sierra Club to SANDAG, April 20, 2011, *California Air Resources Board (CARB)*

*Greenhouse Gas (GHG) Reduction Targets, Issued to SANDAG, in Accordance with SB 375, for the Year 2035*) the computation was .525, instead of .51.

Driving reductions needed to achieve 2020 or 2035 reductions are not met. This calculation can only be done by assuming some achieved improvement from cleaner cars and cleaner fuels. The work shown here will repeat the process shown in Attachment 5.

### Overview of Relationships and Derivation of Key Formula

The S-3-05 net reduction in GHG emissions, from cars and light-duty trucks, expressed as a fraction of 2005 emissions, is obtained by multiplying four factors together. The definitions of Table 1 apply.

**Table 1** Factor Definitions, with Respect to Year 2005

| <b>Factor Definitions</b>                                                                                                                         |                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <i>All are for for the year of interest, with respect to year 2005 values.<br/>Except for Population, all are for cars and light-duty trucks.</i> |                                                                          |
| <b>f</b>                                                                                                                                          | <b>net factor of the emissions of Greenhouse Gas</b>                     |
| <b>f_Pavley</b>                                                                                                                                   | <b>factor of the average statewide mileage</b>                           |
| <b>f_Fuel</b>                                                                                                                                     | <b>factor of the reduction of GHG due to fuels that burn less carbon</b> |
| <b>f_Population</b>                                                                                                                               | <b>factor of the population in the region of interest</b>                |
| <b>f_PerCapitaVMT</b>                                                                                                                             | <b>factor of per capita driving</b>                                      |

The following equations apply.

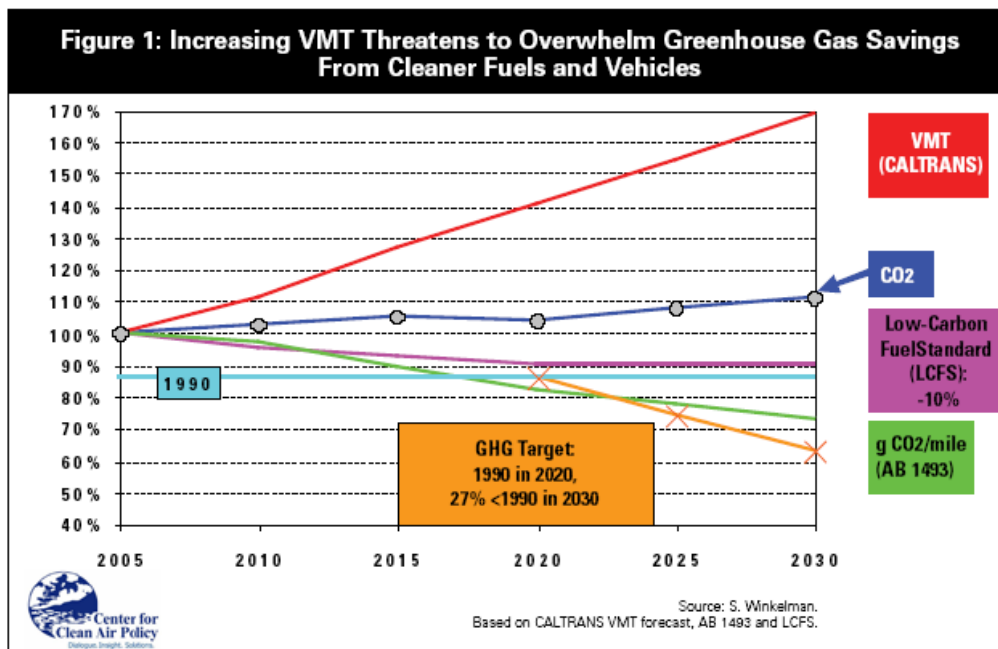
$$\text{Eq. 1} \quad f = f_{\text{Pavley}} \times f_{\text{Fuel}} \times f_{\text{Population}} \times f_{\text{PerCapitaVMT}}$$

Eq. 2 is derived from Eq. 1.

$$\text{Eq. 2} \quad f_{\text{PerCapitaVMT}} = f / (f_{\text{Pavley}} \times f_{\text{Fuel}} \times f_{\text{Population}})$$

Figure 3 is from <http://www.nrdc.org/globalWarming/sb375/files/sb375.pdf>, a widely-respected report on SB 375. Note that all of its values are in the units of factors (same as fraction) of their values in year 2005. Figure 3 will supply all of the needed values, except for the factor of population. (Neither the red line nor the blue line are used.) Its gold line is the S-3-05 trajectory. (CARB ignored this line when it issued the MPO driving-reduction values for year 2035.)

**Figure 3** GHG Reductions from Pavley (AB 1493, in Green); the Low Carbon Fuel Standard (in Purple); the Predicted Driving (VMT, in Red); the Net Result of GHG (CO<sub>2</sub>, in Blue); and the S-3-05 Trajectory (in Gold)



### Getting the Net Factor of the Emissions of Greenhouse Gas in 2035, with Respect to 2005 Values

To get the net factor of the emissions of GHG, for year 2035, with respect to year 2005, it is necessary to extrapolate the Governor's Executive Order target values (the gold line of Figure 1), out to year 2035. The gold line shows that this factor is 0.87 in 2020 and is 0.64 in 2030. Therefore, in year 2035, the factor will be

$$0.64 + [(.64 - .87) / (2030-2020)] * (2035-2030) = 0.525$$

However, as stated above, the value of .51 will be used, to correspond to your ".49 down" value.

### Getting the Factor of the Average Statewide Mileage in 2035, with Respect to the 2005 Value

To get the Pavley reduction factor, for Year 2035, it is necessary to extrapolate the average statewide mileage factor data, which is Figure 1's green line, out to Year 2035. It is 0.82 in 2020 and it is 0.73 in 2030. Therefore, in year 2035 the statewide mileage factor data will be

$$0.73 + [(.73 - .82) / (2030-2020)] * (2035-2030) = 0.685$$

Pavley 1 ends in Year 2017. It is widely assumed that it will be replaced by what is often called "Pavley 2". The extrapolation computed here is based on the assumption made by the author of Figure 1, as shown in the slope of the green line from year 2020 to 2030. Based on the authoritative credentials of the authors of Figure 1, this is the best assumption that can be made. Assuming that the California fleet will continually get

more efficient, in terms of CO<sub>2</sub> per mile driven, relies on an assumption that a significant fraction of our car owners will be able to purchase newer-model cars.

### **Getting the Factor of the Reduction of GHG Due to Fuels that Burn Less Carbon**

Looking at the purple line of Figure 1, it is clear that this factor will be 0.9 in 2035.

### **Getting the Factor of the Increase in Population**

The factor for population in San Diego County is computed using the populations estimated in CARB's <http://arb.ca.gov/cc/sb375/mpo.co2.reduction.calc.pdf>, namely 3,034,388 people in 2005 and 3,984,753 people in 2035. So the factor, from 2005 to 2035 is  $3,984,753/3,034,388 = 1.313$ . Note that this number will be different for the unincorporated area. If the unincorporated value is larger, the per-capita factor will be smaller and so the needed per-capita reduction in driving will be larger. If the unincorporated value is smaller, the per-capita factor will be larger and so the needed per-capita reduction in driving will be smaller. The net driving change compared to 2005 will be unchanged, regardless of what population growth is assumed.

### **Computing the Required Driving Reduction, for 2035**

The 4 values computed above are used in Eq. 2 to compute the required factor.

$$\text{Eq. 3 } f_{\text{PerCapitaVMT}} = .51 / (.685 \times 0.9 \times 1.313)$$

Therefore,  $f_{\text{PerCapitaVMT}} = .630$ . **This corresponds to a 37.0% reduction in per-capita driving, in year 2035, compared to year 2005.**

It is also important to compute the net driving factor and the net driving reduction. The net driving factor is the per-capita driving reduction factor (.630) multiplied by the population factor (1.313).

$$\text{Eq. 4 } f_{\text{netDriving}} = .630 \times 1.313 = .827.$$

**This means that even with more efficient cars, cleaner fuels, and a larger population; the net driving in San Diego County will have to be 17.3% less than in year 2005.**

Therefore, there is absolutely no reason to add highway capacity. The only rational course of action is to shift all the currently-allocated-highway-expansion money to transit expansion.

Please add these important calculations and conclusions to your GHG Emissions-Reduction Targets section.

## **3.0 Comments on the Draft CAP's Chapter 3 Land Use and Transportation Community Measures and Actions, for Year 2035**

Given the large role that the driving of cars and light-duty trucks plays in emitting GHG, the CAP must achieve the year 2035 driving reductions shown at the end of this letter's Section 2.0. This is a per-capita driving reduction of 37.0% and a net driving reduction of 17.3%. Both of these values are with respect to year 2005. Given the large change needed, LU1, T1, T2, and T3 will be insufficient. At least two more transportation "Measures and Actions" will be required.

### **3.1 Comments on LU 1**

This section should be improved. "Near existing and planned transit corridors" should say "Within walking distance of existing and funded transit stops on transit lines with service at or above levels shown to significantly reduce driving reductions and car ownership for those living

within walking distance of its stops.” The “25% of new development” shown in Table 3.2 should be at least 75%. As soon as possible, California needs to implement an equitable and environmentally-sound road use fee pricing system that will unbundle the costs of building roads, of maintaining roads, and of the external economic losses road use imposes on society in general, such as environmental and health costs. This will cause the market to support so-called “smart growth”, mixed-use development over urban sprawl. The County needs to seek legislation to help make this happen.

“Smart” should be defined as “VMT-reducing”. This will allow strategies that are proposed or required at such developments to be evaluated for value. Unbundling the cost of parking should also be developed and required, as described in Reference 3 (Reference 3 was presented by our Transportation Chair in Calgary, Canada, at the Sustainable Land Use and Transportation Session of the Air and Waste Management Association's 103rd Conference and Exposition, in the summer of 2010. It is therefore published and peer reviewed.) This will give consumers, residents and employees more control over their money. It will also reduce driving, as shown in Reference 3's Table 1.

Zoning within the qualifying areas should eliminate density and height limitations, as well as minimum parking requirements. Investors will respect the market limitations as there will be poor demand for developments that don't work for those that buy, rent or lease in such developments. Besides this, when projects are proposed, good modeling will determine functionality. Meeting the relaxed zoning does not have to mean automatic approval. The political process will litigate the tension between neighborhood concerns and the need to reduce driving. The off-street parking ordinance should require that the parking costs are unbundled, using either the method of parking operating as its own profit center or using the methods describe in Reference 3.

### **3.2 Comments on T 1, “Increase Transit Use”**

Many of the comments of Section 3.1 apply. Given that the CAP must achieve the year 2035 driving reductions shown at the end of this letter's Section 2.0; in particular, a net driving reduction of 17.3%, compared to year 2005; the TransNet tax money allocated to highway expansion needs to be reallocated to transit. Although this is a SANDAG Board decision, it should be pointed out by our County Board at every opportunity. However, it is still doubtful that great transit service can be expanded out to cover all of the unincorporated areas, and the unbundling proposals are important.

### **3.3 Comments on T 2, “Increase Walking and Biking”**

Most of this section is valuable. However, its reliance on the regional plans, including the Regional Bicycle Plan, should be reduced and the need to improve those plans should be stated. The primary problem with these plans stems from the reluctance of the SANDAG Board to require that expenditures be ranked on their estimated ability to decrease driving. The ranking should be based on driving reduction per dollar spent. This point has been made many times by our Transportation Chair and it has been ignored by the SANDAG's Board and Executive Director.

### **Education and Projects to Support Bicycle Transportation**

As stated, the criteria for spending money for bicycle transportation should be to maximize the resulting estimated reductions in driving. The following strategies will probably do this.

## Projects

Each of SANDAG's smart growth place types, both existing and planned, shown on SANDAG's well-documented Smart-Growth Concept Map, should be checked to see if bicycle access could be substantially improved with either a traffic calming project, a "complete streets" project, more shoulder width, or a project to overcome some natural or made-made obstacle. These projects should be prioritized using a cost/benefit ratio metric.

It is hereby assumed that 80% of the money available for the Regional Bicycle Plan (over a billion dollars) should be used to fund the projects. They should be selected for implementation, from top of the list (lowest cost/benefit ratio) down, until the money is used up. An example of one of these projects, for the proposed town center near the corner of I-5 and SR-78, is to devise a method to restore the shortest-distance route from Vista Way to Vista Way, which is currently broken by Interstate 5. This would connect a large South Oceanside coastal neighborhood with a regional shopping center, which includes a large grocery store, avoiding a circuitous and hilly current route.

Building recreational bike paths is generally not a cost-effective expenditure. It sends a message that bikes do not belong on the road.

## Education

The remaining 20% of the money should be used to do the following.

1.) Teach interested adults about bicycle accident statistics (most serious injuries occur to cyclists in accidents that do not involve a motor vehicle), car-bike accident statistics (most are caused by wrong-way riding and errors in intersections; clear cut hit-from-behind is rare), and how to ride in all conditions, to minimize problems.

2.) Teach riding-in-traffic skills and how to ride in other challenging conditions, by having the class members and instructor go out and ride in real conditions, until proficiency is achieved.

Students that pass a rigorous written test and demonstrate proficiency in traffic and other challenging conditions are paid for their time and effort.

These classes should be based on the curriculum developed by the League of American Bicyclists and taught by instructors certified by the League.

Assuming a class size of 3 riders per instructor and that each rider passes both tests and earns \$100 and that the instructor, with overhead, costs \$500 dollars, for a total of \$800 for each 3 students, means that \$200M (computed as 20% of \$1B) could educate  $\$200M/\$800 = 250,000$  classes of 3 students, for a total of 750,000 students, out to year 2050. This is about 20% of the population of San Diego County.

### **3.4 Comments on T3, "Increase Ridesharing"**

By taking the position that transportation demand management must only be programs that reduce driving, the CAP is helping to foster the widespread belief that driving levels are the result of free economic choice, and that this free choice must be made less likely by offering some new incentive to not drive or causing drivers to suffer some sort of punitive measure when they insist on driving. That approach to TDM is conventional but it is also misleading.

To engender objectivity, please generalize the concept and go beyond the conventional. More specifically, please state that TDM is the adoption of policies that affect the amount of driving. These 3 classifications of TDM are suggested in Reference 3:

- "Positive", which reduces driving, such as charging for parking at a higher rate than what is justified by its cost,
- "Zero", which is neutral in its effect on driving, such as charging for parking at the rate which is justified by its cost, and
- "Negative", which increases driving, such as charging for parking at a lower rate than what could be justified by its cost.

It should then be pointed out that so called "free parking" is a widespread form of a (significantly) negative TDM. The only way to make this TDM more negative would be to pay people for parking their car.

This treatment will increase objectivity towards the idea of "TDM". After all, who really wants their demand for anything to be "managed". However, many current policies manage demand for driving by encouraging driving. If we could just get all the "levers" adjusted to "Zero TDM", all of our congestion and driving-related climate destabilization problems would be greatly reduced. Besides this, there is a basic fairness issue. Having at least "Zero TDM" should be the law of the land. This is true, even without the challenge and mandate of climate stabilization. One of the best TDM measures would be to unbundle the cost of parking in all locations, as explained in Reference 3. After these systems are installed, it would be possible to adjust the charge above the zero TDM level. It is important to note that the earnings go back to those for whom the parking is built. This makes the positive TDM more popular since everyone likes getting monthly earnings.

### **3.5 Comments on T4, "Alternative Fuel Vehicles"**

This is a state program. The county should urge CARB to take actions to increase the GHG reductions it can achieve. It is also correct to work for enough charging stations. However, the estimate derived from Figure 3's green line is all that can be assumed at this time. If at some later time CARB believes that it can do better than Figure 3's green line, then at that time, perhaps the calculation shown in Section 2.2 can be updated. However, there is nothing wrong with achieving more GHG reductions than what is required by the S-3-05 trajectories. Most of the driving reductions will come from increased equity, in any case.

### **3.6 Comments on an Additional "Community Measure and Action"**

In Section 2.2 it was shown that the per-capita driving needs to be at least reduced by 37.0% by 2035. Reforming transportation to increase economic equity should not wait. For these reasons, LU-1, T-1, T-2, and T-3 are insufficient. This measure is needed as soon as it can be developed and instituted.

### **Unbundling the Cost of Car Parking**

For the vast majority of destinations in California, the cost of car parking is hidden within other costs. This has serious consequences. For example, at most places of employment, parking costs reduce the wages that can be paid to all the employees, even those that never use the parking. Similarly, at most apartment complexes, bundled parking costs increase the rent and this is true, even for families that do not own a car. Bundled parking costs routinely increase the costs of goods, such as groceries, for all customers. Again, this is even true for those that do not drive. Since governments require businesses to provide minimum levels of parking, they are involved in this economic discrimination towards those that drive less.

Driving less is, to some degree, a lifestyle choice. Since government has no valid reason to encourage driving, the lifestyle choice of less driving deserves constitutional, or at least legal,

protection from any practices that discriminate against it, economically. So far, the County has not taken an active role in educating its citizens on how parking policy effects economic fairness or how parking policies that are more fair could reduce driving.

On June 22<sup>nd</sup> 2010, our Transportation Chair presented a paper on how parking could be operated to unbundle parking costs in a way that supports the sharing of parking. This was at the 101<sup>st</sup> Conference and Exhibit of the Air and Waste Management Association, in Calgary, Canada. The session, *Sustainable Land Use and Transportation*, included the paper, *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*. The paper was extremely well received. It was published as a proceeding of the Conference. See Attachment 6.

The following points, taken from Attachment 6, apply.

- Vehicle miles traveled (VMT) are a major cause of global warming and pollution.
- California's Metropolitan Planning Organizations (MPOs) need to adopt strategies that reduce vehicle miles traveled (VMT), in order to at least meet the S-3-05 trajectory, for years 2020 and 2035.
- The appropriate pricing of parking is one of the least costly tools documented to reduce VMT.
- New technologies, such as sensors feeding computer-generated billing, offer the potential to efficiently bill drivers for parking and alert law enforcement of trespassers.
- Reformed parking policies can increase fairness, so that, for example, people who use transit or walk do not have to pay higher prices or suffer reduced wages, due to parking.
- Methods to unbundle parking cost are inefficient, unless they support the spontaneous sharing of parking spaces. Shared parking, with unbundled cost, would ultimately allow the county to require significantly less parking.
- Typical current systems of timed parking and metered parking are far from ideal. Such parking has no automated record keeping, so it is difficult to know where there is too much or too little parking.
- Good policies will eventually let cities and the county to turn parking minimums into parking maximums.

Less land and resources devoted to parking will support mixed use and make "smart growth" more economically viable. It should therefore be a key ingredient supporting the CAP's LU-1.

Here is a copy of the abstract of Attachment 6.

The *Introduction* shows documented driving reductions due to the pricing of parking. It notes that although the benefits of priced and shared parking are known, such parking has not been widely implemented, due to various concerns. It states that a solution, called "*Intelligent Parking*," will overcome some of these concerns, because it is easy to use and naturally transparent. It asserts that this description will support a "Request for Proposal" (RFP) process. Eight background information items are provided, including how priced parking would help California achieve greenhouse gas reduction targets. A story demonstrates some of the key features of *Intelligent Parking*. Arguments for less parking, shared parking, and priced parking are made. Barriers to progress are identified. The fair pricing of parking is described. New ways to characterize transportation demand management are presented. Seven goals of

*Intelligent Parking* are listed. Eleven definitions and concepts, that together define *Intelligent Parking*, are described. This includes a method to compute a baseline price of parking and how to adjust that price instantaneously to keep the vacancy above 15% ("Congestion Pricing"). An implementation strategy is described.

This abstract aroused enough interest among those responsible for A&WMA's *Sustainable Land Use and Parking* session that they requested that a manuscript, which was ultimately selected to become part of the written Conference Proceedings and for presentation.

The County could also play a pivotal role by helping to find a demonstration project, probably at a school or an office. Attachment 7 sets forth specific solutions. Attachment 6 describes an implementation strategy in its Implementation Section, on Page 16. The County has the authority, in its off-street parking ordinances, to require cooperation with an agency implementing unbundling and this would be the correct action, after a sufficient number of successful demonstrations have been achieved. "Successful" would need to mean that nearly all stakeholders would be pleased with the program.

If fully implemented, this strategy, by itself, would probably decrease driving throughout California by between 15% and 25%. This is shown in Table 1 of Attachment 6.

Below is an email indicating that the basic features of enforcement, charging, distributing earnings, and sending out monthly statements would not be difficult.

**Email Showing that the Basic Required Technology Could Be Easily Developed**

----- Original Message -----

**From:** [David Carta](#)

**To:** ['Lisa Rodman'](#); ['Mark Tanner'](#); ['Kelli'](#); ['Nicole'](#); ['Mark S.'](#); ['John'](#)

**Cc:** ['Mike Bullock'](#)

**Sent:** Wednesday, January 13, 2010 5:40 PM

**Subject:** RE: RFID\_ParkingNewCalsbadHS

Dear Carlsbad School Board,

I wanted to send a quick note discussing the technical feasibility of tracking cars into a lot without impacting students or requiring the need for gates. Mike Bullock and I have discussed this project; it can be accomplished straightforwardly by utilizing Radio Frequency Identification and/or Video Cameras integrated with automated license recognition systems. The cars would need to register with the system at the start, but it would be fairly painless for the users after the initial installation. The back end database system can also be implemented both straightforwardly and at a reasonable price.

This is not necessarily a recommendation of the proposal for unbundled parking. Rather it is strictly an unbiased view of the technical feasibility of the proposal to easily and unobtrusively track cars, both registered and unregistered, into a fixed lot.

Best regards,

David R. Carta, PhD  
CEO Telaeris Inc.  
858-449-3454

### **3.7 Comments on an Additional State-Wide “Community Measure and Action”, Unbundling the Costs of Driving and a Summary of Results of All Additions**

This measure would require a state and/or federal government action. Therefore, like advocating for cleaner cars, the role of the County would be to understand the value and then advocate for this measure, at the state and federal level.

#### **Unbundling**

“Unbundling”, in the heading above, denotes that the money collected should be paid out to those that are losing money under the current system. This means, for example, that the money collected to account for increased health-care costs, caused by the air pollution the public must breathe, would go to reduce the cost of health care, not to build or even maintain roads.

#### **3.7.1 A Comprehensive Road-Use-Fee Pricing System**

**Abstract** This section contains a listing of road pricing principles. It provides an example of a road-use fee structure that supports the listed principles. Useful background information is provided. Arguments in favor of the presented example are presented.

**Initial Note** For many reasons, including the climate crisis, a comprehensive road-use fee pricing system is needed. It would be optimal for the state to implement the type of system described in this section. However, the state has a long history of irresponsibility in pricing road use. It is hoped that global warming will change this. Certainly, all the MPO's in the state should be urging our state government to wake up and take action. If these efforts fail, the MPO's will have to proceed as best they can to implement as much of these road-use pricing system components as possible.

#### **Road-Use Fee Principles**

1. The first principle is that of “full-cost pricing”. Driving has enjoyed a favored status in this state and in this country, resulting in sprawl, health-damaging pollution, global warming emissions, and congestion. We should advocate for the elimination of that favoritism in California, primarily by adopting this first principle.
2. Secondly, the current economic rewards for good mileage vehicles must not be eroded. Due to global warming, motorists need to “go electric” as soon as possible.
3. In addition, road-wear factors (primarily weight), the noise generated, and the pollution generated by each individual vehicle must be taken into account. This will increase fairness and support a shift to lighter, cleaner, and quieter vehicles.
4. The time and place of travel must be incorporated to reduce congestion.
5. Any road-use fee structure must do no economic harm to low-income drivers.
6. As road-use fee technologies evolve, privacy must be protected at each step.

#### **An Example of a Conforming Road-Use Fee Structure**

##### **Condition 1**

100% of the funding for all of the expenses of public roads, *excluding* those costs associated with future expansion (covered in Condition 3), comes from a road-use fee (that may include a fuel excise tax), that ultimately (as affordable technology can support) would contain the following **Features**:

**1. VMT Fee** A base, per-mile (VMT) component fee paid by all motorized vehicles for road construction and maintenance. It would vary by model so that the incentive to drive efficient vehicles is at least as large as for our current fuel excise tax. This means that a Prius would be much cheaper, per mile, than a Hummer.

**2. Carbon Fee** An additional per-mile carbon component part is computed using an effective fee per gallon that is equal or larger than the fuel tax that this per-mile carbon fee might replace, to correlate with the amount of CO<sub>2</sub> emitted. This could either be charged at the pump, as it is now done, or could be added to the VMT fee by using a price per mile computed by dividing the effective price per gallon by the charged vehicle's (year and model) average mileage, in the units of mile per gallon.

**3. Road Wear Fee** An additional per-mile component part that is proportional to the vehicle's (year and model) average weight, or other road-wear variable of the vehicle being charged.

**4. Air Pollution Fee** An additional per-mile component part proportional to the charged vehicle's (year and model) average pollution level, to be used to compensate people, schools, businesses, governments, and corporations harmed by pollution, with this rate set for full compensation.

**5. Noise Pollution Fee** An additional per-mile component part proportional to the average noise pollution level of the charged vehicle, to compensate people, schools, businesses, governments, and corporations harmed by noise pollution, with the rate set for full compensation.

**6. Congestion Fee** An additional per-mile component part or, alternatively a multiplier, to account for either time and place, or instantaneous traffic flow rate, to reduce or eliminate congestion, with the proceeds of this fee (collection minus collection cost) used for either the expansion or the operation of transit systems that would tend to reduce this congestion.

**7. Low Income Relief** A fractional multiplier that would reduce the total per-mile cost for drivers with a sufficiently low income and a sufficiently high need to drive, but only available for a period of calendar time sufficient for the driver to change their circumstance creating the need to drive, unless this is impossible. Section V's Section 7 has more detail.

**8. Privacy** Privacy protections so that where and when people drive, the vehicle they drive, and any Feature 7 advantage, is fully protected, unless a warrant is issued by a judge in response to substantiated allegations of a serious, felony crime.

## **Condition 2**

The per-mile charges of Condition 1 must be large enough to fund yearly payments to the municipalities having large, limited access roads (AKA "freeways") within their boundaries (thereby keeping land off of their property-tax rolls), with these yearly payments equal to the average yearly property tax per acre of the adjacent land, multiplied by the total acreage covered by the road's right of way, including frontage roads.

## **Condition 3**

No expansion of the system of public roads should be done unless market research and traffic modeling show that the net revenue of the proposed road or additional lanes will fund all the expenses identified in Conditions 1 and 2.

## **Condition 4**

No expansion of the system of public roads should be done unless it is shown that the expansion will not negatively impact the state's AB32 and S-3-05 goals and responsibilities.

### **Condition 5**

The sales tax on gasoline and diesel fuel should remain. Its revenue can be used as is the revenue from any other sales tax that is collected on consumer items.

### **Background Material**

This section provides information about the current level of the fuel tax, the difficulty of raising the fuel tax, the use of the fuel *sales* tax, lane performance during times of high demand, demand under the condition of “full cost pricing”, political “push back” to full cost pricing, other opinions that a pure fuel tax is becoming obsolete, and finally, information indicating that a road-use fee could be raised by a simple majority in the state legislature.

#### **1. Current Level of Fuel Excise Tax**

A full accounting of the fuel excise tax and what it currently pays for is not our responsibility. A significant segment of the population probably believes that current fuel tax rates are high enough. However, a San Diego County newspaper, the North County Times (NCT), in a February 9, 2009 article, reported that the Chair of the California Transportation Commission (CTC) recently wrote that the fuel tax currently contributes nothing to road construction **and only provides half of the money needed annually for repairs:**

<http://www.nctimes.com/articles/2009/02/09/news/columnists/downey/z8591536f3e7332da882575510076fa1e.txt>

Increasing the state gas and diesel taxes, unchanged at 18-cents per gallon since 1994—when the final one-cent increase mandated by Proposition 111 (June, 1990 that doubled the nine-cent excise fuel tax over a 5-year period) was added, is long overdue.

#### **2. The Difficulty of Raising the Fuel Tax**

To raise the fuel tax would require a 2/3<sup>rd</sup> majority vote of the legislature. In addition, according to a CNN report, <http://www.cnn.com/2009/POLITICS/02/20/driving.tax/>

“Officials including [Secretary of Transportation] LaHood have opposed raising the national gas tax, particularly in the current recession, and have said a new system is needed.”

#### **3. Use of the Fuel Sales Tax**

California has a sales tax on all consumer items sold in the state, except food and medicine. The revenues from sales taxes are generally placed in our state's general fund. However, an exception to the general rule has been made for the sales tax on gasoline and diesel. By the conditions of a successful ballot measure, the sales tax on fuel must be used to support roads, which supplements the excise tax on fuel (also known as the “gas tax”), allowing the excise tax to be lower than necessary.

#### **4. Lane Performance During Times of High Demand**

From the DOT's Freeway Management and Operations Handbook:

[http://ops.fhwa.dot.gov/freewaymgmt/publications/frwy\\_mgmt\\_handbook/fmoh\\_complete\\_all.pdf](http://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/fmoh_complete_all.pdf), Page 1-18, comes the following:

As flow increases from zero, density also increases, since more vehicles are on the roadway. When this happens, speed declines because of the interaction of vehicles.

This decline is negligible at low and medium densities and flow rates. As the density further increases, these generalized curves suggest that speed decreases significantly just before capacity is achieved, with capacity being defined as the product of density and speed resulting in the maximum flow rate. This condition is shown as optimum speed  $S_o$  (often called critical speed), optimum density  $D_o$  (sometimes referred to as critical density), and maximum flow  $V_m$ . (7). In general, this maximum flow (i.e. capacity) occurs at a speed between 35 and 50 mph.

Efficient freeway operation depends on the balance between capacity and demand. In the simplest terms, highway congestion results when traffic demand approaches or exceeds the available capacity of the highway system. As vehicle demand approaches highway capacity, traffic flow begins to deteriorate. Flow is interrupted by spots of turbulence and shock waves, which disrupt efficiency. Then, traffic flow begins to break down rapidly, followed by further deterioration of operational efficiency.

Therefore, when demand is allowed to significantly exceed capacity, the flow rate drops well below optimum. In fact, speed can drop to nearly zero. With no intervention, freeway lanes can be counted on to fail, just when they are needed the most.

### **5. Demand, Under the Condition of “Full-Cost” Pricing**

The price-setting stipulations of “An Example of a Conforming Road-Use Fee Structure”, Features 1 through 6 of Condition 1, in conjunction with Condition 2, could be described as “full cost pricing”. It is not our responsibility to do an analysis to calculate what the average price per mile would need to be or to then determine how much driving would be reduced in reaction to this price. It could be that driving would decrease so much that congestion would disappear and the new problem would be to figure out what to do with the excess land buried under unneeded highway lanes and how to meet the large new demand for transit.

### **6. Political Pushback to the Notion of Full-Cost Pricing**

There are many, well-funded “think tanks” and political figures and institutions that argue against raising the cost of driving. So far they have been largely successful in keeping the taxes on driving low.

### **7. Other Opinions That a Pure Fuel Tax Is Becoming Obsolete**

There are many indications that more decision makers are adopting the view that the fuel tax either needs to be replaced or supplemented. We have undertaken no comprehensive search and evaluation to quantify this. However the following examples are presented, with the first three being taken from the same NCT article identified in Section-1 of this Section.

First the Chair of the CTC pointed out that, “People are driving more-fuel-efficient cars and ones that run on alternative fuels and buying less gas. As a result, they are paying less in gas taxes”. The author of the NCT article states that the CTC Chair and others are calling for “phasing out the gas tax,” in favor of a VMT fee.

Second, Will Kempton, director of the California Department of Transportation, told local officials in Valley Center recently “we need to make a transition to a new way of collecting transportation funds.” Kempton also said the state should consider following the lead of Oregon, which is exploring a tax based on the number of miles a person drives.

Third, Jim Earp, a California Transportation Commission member from Roseville, added, “Either that or we’re going to have to jack up the gas tax considerably.”

Fourth, the Christian Science Monitor editorial, February 27, 2009, "A road map to better US roads," says, "Congress should heed a panel that suggests replacing a tax on gas with one on miles driven."

<http://www.csmonitor.com/2009/0227/p08s01-comv.html> It goes on to say, "In Europe, the Netherlands will transition to a VMT by 2014 and Denmark by 2016. Changing behavior is the key to 21st century transport that must unclog crowded highways and reduce dependence on fossil fuels. Taxing miles alerts drivers to the real cost of using roads and can better motivate them to drive less. A VMT (fee) is the more reliable and efficient way to pay for transport. Its time has come."

Finally, according to a CNN report, <http://www.cnn.com/2009/POLITICS/02/20/driving.tax/>, Speaking to The Associated Press, Transportation Secretary LaHood, an Illinois Republican, said, "We should look at the vehicular miles program where people are actually clocked on the number of miles that they traveled."

## **8. Raising a Road-Use Fee Could Be Done By a Simple Majority**

The Sacramento Bee printed an article by Dan Walters, on January 20<sup>th</sup>, 2009, describing a proposal to help close California's budget gap.

<http://www.nctimes.com/articles/2009/01/20/opinion/walters/zd5e9d64561b6efd78825753e006c951a.tx>.

The key elements from the article are as follows.

- 1.) Senate President Pro Tem Darrell Steinberg, the scheme's father, insists that it's legal, basing that assertion on a 5-year-old opinion from the Legislature's legal office.
- 2.) The plan would eliminate excise and sales taxes on gasoline and raise other taxes to help close the budget deficit, then "backfill" the gasoline taxes with a new "fee" that would actually increase the bite on motorists by 50 percent, from 26 cents a gallon to 39 cents. **A "fee" can be imposed by a simple majority vote as long as it relates to actual services rendered by government.**

Note that this fee approach is relatively far from meeting all of the stipulations of this letter. However, it would represent significant progress.

## **Arguments in Favor of Road Use Fees**

This Section provides an analogy demonstrating why roads should be operated for the equal benefit of all. It presents some of the consequences of the current level of our state fuel tax. It argues that a road-use fee should include a vehicle miles traveled (VMT) component and that furthermore, a component should relate to congestion pricing (i.e. needs to account for *specific* time and place of travel). A road-use fee should account for environmental impacts, should protect low-income families, and contain privacy protections. It explains why revenue from a road use fee should be used to pay an effective property tax to municipalities. It argues that this resolution offers methods that would help to alleviate the state's budget problems. It states that it is easier to discuss setting a road use fee than it is to discuss increasing an excise tax on fuel. Finally, it briefly discusses some of the emerging technologies and the relationship between technology and this resolution.

### **1. Full-Cost Pricing**

Roads should be priced so that they are no longer an economic burden on those that choose to drive less than average. Yet, it is hard to be objective about roads. Here's an analogy.

Assume that California owned a large number of 2-bedroom apartments that it allowed families to live in if they paid a tax of \$500 a month, even though the market rental value of the apartments was \$1000 a month. Clearly, the people living in the apartments are the winners and all the other citizens of California are the losers, because if the state set the price to the market value, it would have additional money that it could either use for the benefit of all citizens or it could return the money to everyone as a tax rebate. Some might note that since there are a large number of these apartments, almost everyone that wants one could get one, so those that don't live in these 2-bedroom apartments are losing out because of their own poor choice. However, since not every citizen wants to live in these apartments, the State's practice is indefensible. The correct thing for the state to do would be to allow low-income citizens to remain in the rental units at the subsidized price of \$500 a month, stop calling the price-per-month a "tax" and instead call the price-per-month a "user fee", and set the price for the families that are not low income to the market value of \$1000 per month. In this case, the low-income families remain winners. Even though all the others are losers, they are losing much less than before. This assumes that the state takes the additional earnings and uses it in a way that benefits all citizens. Buying more 2-bedroom apartments would not qualify. This analogy's original operation is similar to what California does by underpricing road use fees, as described below.

## **2. Consequences of the Current Level of Fuel Tax**

### **a. Economic Inequity**

Because our state fuel tax is too low, funds derived from taxes (and fees) that are not related to the choice of driving a car must be used to support our system of public roads. Examples are our sales tax, our income tax, our property tax, and the development fees that increase many of our costs. In effect what is happening is that money is systematically *being taken* from those that drive less and *being given* to support those that drive more.

This violates a fundamental principle of our free market system. People should pay for what they use and, conversely, people should not be forced to pay for what they do not use. It is true that we often willingly violate this principle, for some higher purpose. Education, mass transit, and Section 8 housing are good examples. However, there is no valid reason to increase driving by making it artificially cheap to drive, or for that matter, to park a car. The facts about global warming suggest quite the opposite.

### **b. Global Warming Threat and the California Example of Road-Use Pricing**

From <http://www.sandiego.edu/EPIC/ghginventory/GHG-On-Road1.pdf>, we learn that in San Diego County, emissions from on-road vehicles are about 46% of regional GHG emissions. Many world leaders know that many of our citizens have taken all of the time and cost variables into account and then built their life around their automobiles. How can we expect the world to do its part to reduce GHG emissions, if they see us unwilling to reform the way we price the use of roads, so as to conform to the basic free-market principles that we claim to hold dear?

### **c. Other Pollution**

Besides GHG emissions it is well known that on-road transportation contributes significantly (around 50% by some accounts) to our air and noise pollution. Cars cause air and water pollution directly and indirectly. This occurs when they are manufactured, when their fuel is transported and refined (refineries are, by far, the biggest cause of ground-water contamination in California), and when they are driven.

#### **d. Urban Sprawl**

The dominance of the automobile is the primary reason for our sprawling, urban land-use patterns. For example, it is well known that a simple 4-lane freeway, with frontage roads, can consume 26 acres per mile. An acre of land can only park 117 cars. Sprawl has taken valuable farm land, wet lands, and wild-life habitat. It makes it more difficult to walk or to bicycle. It also makes it more difficult to provide or to use transit.

#### **e. Summary Statement**

GHG emissions, urban sprawl and air, water, and noise pollution are made worse by making driving seem artificially inexpensive to the public. Note that for every penny earned by raising the price per mile to drive to its correct value, a penny could be cut from other taxes and fees that are unrelated to driving. Secretary of Transportation Ray LaHood's statement ("we can't raise the gas tax in a recession") shows that he misses this important point. This point has been made by the Sierra Club, as shown in <http://www.sierraclub.org/policy/conservation/trans.aspx>, where it says, of subsidies to driving, "These subsidies should be publicly scrutinized and eliminated by appropriate fuel and carbon taxes, parking and road user charges, . . ."

### **3. The Use of the Gasoline Sales Tax**

As stated in Section III. 3, currently the *sales* tax on fuel must be used for the same purposes as the *excise* tax on fuel. This is contrary to the normal rule for sales taxes, whereby sales taxes are used for general-fund purposes, unrelated to the item sold. For example, the sales taxes from running shoes are not removed from the general fund to be used to build running facilities. Likewise, the sales tax on alcoholic beverages is not separated out to be used to subsidize the building of more drinking establishments. If we are going to end our unfortunate favoritism towards roads, we need to end the practice of using the sales tax from gasoline as if it were an additional fuel excise tax. This practice would be ended if the implied recommendations of this report were enacted. The sales tax on gasoline should continue, but the tax on the sale of gasoline should go to the general fund, as does the tax on the sale of other consumer items.

### **4. Reasons to Adopt a VMT Based, Road-Use Fee**

From a Global Warming perspective, there is a hierarchy of favored transportation modes.

Mode 0: Telecommuting (no need to leave the house)

Mode 1: Walking

Mode 2: Cycling (skate boarding and any other device-aided, non-motorized transportation mode)

Mode 3: Transit

Mode 4: Electric cars or cars that get great mileage

Mode 5: Other cars

In terms of reducing pressure to expand road capacity, Modes 0, 1 and 2 are many times more desirable than even Mode 4, which is many times better than Mode 5. The point here is that as much as we want to see more electric cars and more cars that get exceptional mileage, we should not lose sight of the fact that unless all road users pay their fair share, those people using Modes 0, 1 and 2 are not being fully rewarded for not using road capacity, and this is

poor environmental policy, based on the desirability factors suggested. All cars are large, manufactured devices with a finite life. They promote sprawl. People that routinely use Modes 0, 1 and 2 have often set up their lives so that they could drive less. Those life-style choices need to be fully rewarded. The statements of Sections 2a and 2d of this Section apply.

## **5. Reasons to Adopt Road-Use Pricing Methods Tied to *Specific* VMT**

### **a. Need to Support Section II's Feature 6**

The current fuel tax is simple and, in theory it could be raised to cover the costs of driving, for those vehicles that use fuel. Alternatively, it is easy to imagine odometers that transmit their values at scheduled times to a billing computer. With vehicle-recognition schemes, implemented at the pump or within the billing computer containing odometer data, it would be possible to expand these simple methods to support Features 1 through 5, Feature 7, and Feature 8. However, these simple methods would not support congestion pricing, Feature 6, which is sufficiently important that it must be identified and supported.

### **b. Value Feature 6: Congestion Pricing**

Various names have been proposed for Feature 6, including “congestion pricing” or “convenience pricing”. Regardless of the name, it is a powerful way to reduce our society’s propensity for expanding highways. Proponents of freeway expansion frequently mention the fact that highway “gridlock” harms our public safety because it can significantly delay emergency vehicles. Individuals in society see this in personal terms. We can all imagine a need to get home to attend to a child, or to get to an emergency room. The consequences of congestion can go well beyond being just a frustrating inconvenience. Sometimes people feel that they would pay almost anything to be able to drive at higher speeds. How many people have missed a plane, or a train, or a critical business meeting, “stuck in traffic”? Besides this, lanes also often support transit. Transit success requires dependable and reasonably fast bus travel. In addition, stop and go traffic wastes fuel, increases GHG, and increases unhealthy emissions.

“Convenience Lanes” could provide an option for drivers when they feel it is worth the extra money to drive beyond congestion speeds. This pricing also provides a means to keep one or more lanes operating close to their theoretical capacity, instead of at the greatly reduced flow rate that comes when demand is large. The pricing can adjust automatically so as to keep demand below capacity, on one or more lanes. This means that congestion in parallel lanes will clear sooner than if all lanes were allowed to stay severely congested.

“Convenience Lanes” also offer the hope of significant revenue generation, if enough people are willing to, in effect, bid up the price. (This will probably happen if the price of driving is kept low enough in regular lanes that there are still times and places where congestion is significant.) Feature 6 would require that proceeds (collection minus collection costs) be used for transit systems that would tend to reduce the congestion. The lanes and roads that are parallel to the “convenience priced” lanes can be counted on to fail to carry their capacity when serious congestion strikes. Fortunately, there is no comparable effect for transit. Although it is conceivable that transit demand could exceed transit carrying capacity, when this happens, the transit can be counted on to continue to carry its full capacity.

### **c. Feature 6 and Road Price Variability**

Some roads are relatively expensive to build; others are relatively inexpensive. There is no reason we have to settle for charging the same per-mile price for all roads. Similarly, driving at different times should be priced differently. It is well understood that freeways are sized and

expanded to facilitate peak driving times. Since it is more costly to provide the added capacity needed at peak times, it is reasonable to charge peak-time drivers more. Charging more at the times that demand is high will tend to smooth out traffic demand over various times of the day.

#### **d. Feature 6 and Pollution**

Feature 6 can reduce congestion. This is important because stop-and-go traffic emits more pollution and GHG emissions than lanes operating at “optimum speed” as identified above.

#### **e. Feature 6 Supported by the CTC**

These powerful arguments have evidently been recognized by the CTC. In their *Addendum to the 2007 Regional Transportation Plan Guidelines, Addressing Climate Change and Greenhouse Gas Emissions During the RTP Process*, adopted on May 29, 2008, they provide strong support to lane pricing.

[http://www.catc.ca.gov/programs/rtp/Adopted\\_Addendum\\_2007\\_RTP\\_Guidelines.pdf](http://www.catc.ca.gov/programs/rtp/Adopted_Addendum_2007_RTP_Guidelines.pdf),

In the CTC’s Pricing Strategies Section (Page 3), the CTC instructs Metropolitan Planning Organizations to “model adding pricing **to existing lanes**, not just as a means for additional expansion. **Variable/congestion pricing should be considered.**”

Variable/congestion pricing cannot be done without Section II’s Feature 6 of its Condition 1.

#### **f. Arguments to Support Road-Pricing Guideline**

There is widespread confusion regarding who owns existing lanes and what promises were made. Converting existing, “free” lanes to be lanes that are priced can be justified by explaining that fuel taxes have always been road-use fees and that any stated or implied promise that paying fuel tax entitled drivers, for all time forward, to drive free on the roads that the fuel taxes may have been used to fund was specious. Specifically, the claim that drivers “already paid” for roads through the payment of fuel taxes is incorrect because (i) many drivers have just started driving; (ii) many drivers that paid fuel tax for many years have died; and (iii) paying a fee to use a public road is no different than paying rent to use property and paying rent does not lead to quasi ownership. These same arguments can be used against statements supporting the idea that drivers can forever drive free over a bridge because the tolls have paid off the loan for the bridge.

### **6. Reasons for Features 2 – 5**

These features charge vehicles for their environmental impacts.

### **7. Reasons for Feature 7**

The ability of low-income families to be able to drive to work and other essential family errands must be protected. However, given our challenge of global warming, this needs to be “constructive charity”. The features shown in Section II suggest that a billing computer will probably be involved. If so, that computer’s database can, perhaps at the individual’s discretion, be supported with information such as current housing details, current salary, job location, occupation and job skills to include a full resume, childcare, location of family and friends, hobbies, or recreational pursuits, and other items that could be related to the individual’s current need to drive. When the software determines that the person qualifies for a reduced multiplier of the full cost of driving (a subsidy), it could then also run various programs to offer, in creative, tailored, form letters, suggestions for changing circumstances to reduce driving. This could involve a search for jobs, a search for suitable housing, a search for daycare, and a search for better locations to pursue hobbies or recreational pursuits. The

availability of transit would be considered in the software and would be offered. Job training could be suggested or offered at a discount. If circumstances support it, the person could also be asked if they would be interested in a class on riding a bicycle in traffic. Taking such a class could earn the person a financial award, perhaps to include a new or used bicycle. The software would put a high priority on helping the person achieve a lifestyle that requires less driving. As a last resort the software would take into account the congestion level of various routes and offer a driving route that requires a reduced subsidy. If no billing computer is involved, the person receiving the subsidy might be required to send in data to support the running of these programs to reduce driving and the subsidy to driving.

## **8. Reasons for Feature 8**

Privacy must be protected, unless confidential disclosure to law enforcement agencies is ordered by a judge based on reasonable cause. We currently rely on laws and judges to protect our privacy regarding what we say on the telephone, our emails, our internet activities, and the information we provide on our tax forms. This information could be both politically revealing and highly embarrassing, to the point where it could seriously degrade our personal and professional lives. In terms of protecting our democracy, it is especially important that our political activities be protected. Where we drive and park a car is also somewhat sensitive in this regard. However, in most cases it is less sensitive than our emails and what we say on the phone. Cell phone companies already have information about our travel. Many locations, such as Dallas, have “toll-tags” that record every time someone goes through a toll plaza and charges them accordingly. The conclusion is that the argument that many people will never accept a computer, with built in privacy protections, from having information about where we drive is overblown and not supported by the facts.

## **9. Reasons for Condition 2**

Railroads pay property tax on the land under their tracks. Utility companies pay property taxes on the land under their transmission lines. There is no reason that large highways should not pay a property tax for the land they take off the tax rolls in each community. The favored status of roads should be eliminated.

## **10. California's Budget Problem**

California currently has a large budget gap. Children may lose their health care and education cuts will probably be severe. State parks may close. Most state funding for transit may be cut. This strategy might help to reduce some of these cuts.

## **11. Raising the Fuel Tax vs. Pricing a Road-Use Fee**

There are advantages in reframing the question from should we raise the fuel tax to: Should we replace the fuel tax with a road-use fee and, if so, how should we set the price of the road-use fee? Section III. 2 showed that a 2/3rds vote is needed in the state legislature to raise a tax; while, as shown in Section III. 8, only a simple majority is needed to set and then raise a user fee. Besides this, there are a lot of common misunderstandings about our fuel taxes. Many think they are a mechanism whereby drivers somehow buy new roads. This confusion was discussed in detail in this Section's Subsection 5f. If we can move the discussion to one of how to properly set the price of road use, we will have already made large gains in framing the question to the advantage of environmentalists and everyone that recognizes that it is time to stop favoring driving.

## **12. Technology**

It is not our responsibility to pick the technologies that will ultimately be used in the implementation of the road-use pricing described. Email and phone conversations with employees of “Skymeter”, <http://www.grushhour.blogspot.com/>, indicate that they were ready to respond to a Request For Proposal (RFP) to implement VMT pricing in the Netherlands, to include every road in the country. Their proposal would have been that each car will have a GPS unit, about as large as an eye-glasses case, sitting on the dash. It will contain a database of roads and a variable set of pricing coefficients. The GPS software will determine the car’s location with sufficient accuracy so as to support software computing a running tabulation of charges, as the car is driven. They state that the final challenge was to design the software so that the unit would function when the car was being driven in the presence of GPS reflections, such as in city “canyons” which is to say around multiple large buildings. They have solved this problem with additional algorithms and have demonstrated this in the most severe conditions they could find. However, they don’t want to have to distinguish between lanes, suggesting that congestion pricing on large multi-lane roads, where pricing varies between parallel lanes, may require a Radio Frequency Identification (RFID) overlay pricing scheme, such as is currently used for “toll tags.”

There are probably several, perhaps even many, ways to accomplish road-use pricing that has the features described in this Section.

### **3.7.2 Conclusions**

The best strategies to reduce VMT are shown here, with the estimated driving reductions for each one shown in square brackets:

- Comprehensive (equitable and environmentally sound) road use fee pricing system, as could be installed by *Skymeter*; [15%]
- Unbundling the cost of car parking; [15%] (This estimate is based on Table 1 of Reference 3.)
- Good bicycle projects and bicycle education; [5%,] (This estimate should be checked by the League of American Bicyclists.)
- Stopping all freeway expansions and reconfiguring TRANSNET to be 67% for transit and 33% for road maintenance [10%]

These strategies could be implemented by 2020, not 2035, and would decrease per capita driving by a sum of at least 45% (15+15+5+10). The strategies to do this are primarily those that increase fairness for all, especially families that drive less than average.

# REFERENCE 8

# A Plan to Efficiently and Conveniently Unbundle Car Parking Costs

Air and Waste Management Association Paper 2010-A-554-AWMA

**Mike R. Bullock**

Retired Satellite Systems Engineer (36 years), 1800 Bayberry Drive, Oceanside, CA 92054

**Jim R. Stewart, PhD**

University of the West, 1409 N. Walnut Grove Avenue, Rosemead, CA 91770

## ABSTRACT

The *Introduction* shows documented driving reductions due to the pricing of parking. It notes that although the benefits of priced and shared parking are known, such parking has not been widely implemented, due to various concerns. It states that a solution, called “*Intelligent Parking*,” will overcome some of these concerns, because it is easy to use and naturally transparent. It asserts that this description will support a “Request for Proposal” (RFP) process. Eight background information items are provided, including how priced parking would help California achieve greenhouse gas reduction targets. A story demonstrates some of the key features of *Intelligent Parking*. Arguments for less parking, shared parking, and priced parking are made. Barriers to progress are identified. The fair pricing of parking is described. New ways to characterize transportation demand management are presented. Seven goals of *Intelligent Parking* are listed. Eleven definitions and concepts, that together define *Intelligent Parking*, are described. This includes a method to compute a baseline price of parking and how to adjust that price instantaneously to keep the vacancy above 15% (“Congestion Pricing”). An implementation strategy is described.

## INTRODUCTION:

It has been well established that appropriately priced parking will significantly reduce driving<sup>1</sup>. Most case studies presented in Table 1 are evaluations of the most general type of “car-parking cash-out”: *a program that pays employees extra money each time they get to work without driving*. They show that a price differential between using parking and not using parking will significantly reduce driving, even when transit is described as poor. Since driving *must* be reduced<sup>2</sup>, the pricing of parking is desirable.

Shared parking is also recognized as desirable because it can sometimes result in less parking being needed.

Although the advantages of pricing and sharing parking have been recognized for many years, these practices are still rare. This paper identifies some of the reasons for this lack of progress. The pricing and sharing method of this paper has a natural transparency and ease of use that would reduce many of the concerns. This paper also suggests that those governments that have the necessary resources can take the lead role in developing and implementing the described systems. These governments will recover their investments, over time.

This paper describes how parking facilities could be tied together and operated in an optimum system, named *Intelligent Parking*. The description of *Intelligent Parking* is sufficient to support a “Request for Proposal” process, leading to full implementation.

There are two distinct parts to *Intelligent Parking*. The first is how to set the price. The second is how to distribute the earnings. Briefly, the earnings go to the individuals in the group for whom the parking is built.

**Table 1      Eleven Cases of Pricing Impact on Parking Demand**

| <b>Location</b>                                              | <b>Number of Workers<br/>@ Number of Firms</b> | <b>1995 \$'s<br/>Per Mo.</b> | <b>Parking Use<br/>Decrease</b> |
|--------------------------------------------------------------|------------------------------------------------|------------------------------|---------------------------------|
| <b><i>Group A: Areas with poor public transportation</i></b> |                                                |                              |                                 |
| West Los Angeles                                             | 3500 @ 100+                                    | \$81                         | 15%                             |
| Cornell University, Ithaca, NY                               | 9000 Faculty & Staff                           | \$34                         | 26%                             |
| San Fernando Valley, Los Angeles                             | 850 @ 1                                        | \$37                         | 30%                             |
| Costa Mesa, CA                                               | Not Shown                                      | \$37                         | 22%                             |
| <b>Average for Group</b>                                     |                                                | <b>\$47</b>                  | <b>23%</b>                      |
| <b><i>Group B: Areas with fair public transportation</i></b> |                                                |                              |                                 |
| Los Angeles Civic Center                                     | 10,000+ @ "Several"                            | \$125                        | 36%                             |
| Mid-Wilshire Blvd, Los Angeles                               | 1 "Mid-Size" Firm                              | \$89                         | 38%                             |
| Washington DC Suburbs                                        | 5,500 @ 3                                      | \$68                         | 26%                             |
| Downtown Los Angeles                                         | 5,000 @ 118                                    | \$126                        | 25%                             |
| <b>Average for Group</b>                                     |                                                | <b>\$102</b>                 | <b>31%</b>                      |
| <b><i>Group C: Areas with good public transportation</i></b> |                                                |                              |                                 |
| U. of Washington, Seattle, WA                                | 50,000 employees, students                     | \$18                         | 24%                             |
| Downtown Ottawa, Canada                                      | 3,500 government staff                         | \$72                         | 18%                             |
| Bellevue, WA                                                 | 430 @ 1                                        | \$54                         | 39%*                            |
| <b>Average for Group, except Bellevue, WA Case*</b>          |                                                | <b>\$45</b>                  | <b>21%</b>                      |
| <b>Overall Average, Excluding Bellevue, WA Case*</b>         |                                                |                              | <b>25%</b>                      |

\* Bellevue, WA case was not used in the averages because its walk/bike facilities also improved and those improvements could have caused part of the decrease in driving.

## **PERTINENT BACKGROUND INFORMATION**

- Vehicle miles traveled (VMT) are a major cause of global warming and pollution<sup>2,3</sup>.
- California's Metropolitan Planning Organizations (MPOs) will need to adopt strategies that reduce vehicle miles traveled (VMT), in order to meet SB375 GHG reduction targets, to be issued by the California Air Resources Board in late 2010, for years 2020 and 2035<sup>2</sup>.
- The appropriate pricing of parking is one of the least costly documented tools to reduce VMT.
- New technologies, such as sensors feeding computer-generated billing, offer the potential to efficiently bill drivers for parking and alert law enforcement of trespassers.
- Reformed parking policies can increase fairness, so that, for example, people who use transit or walk do not have to pay higher prices or suffer reduced wages, due to parking.

- Methods to unbundle parking cost are inefficient unless they support the spontaneous sharing of parking spaces. Shared parking with unbundled cost would ultimately allow cities to require significantly less parking.
- Typical systems of timed parking and metered parking are far from ideal. Parking has no automated record keeping, so it is difficult to know where there is too much or too little.
- Good policies will eventually let cities turn parking minimums into parking maximums.

## **A GLIMPSE INTO A POSSIBLE FUTURE**

Jason is driving to work for the first time in several years. He has decided to save money by carrying home a new 3-D, big-screen computer, which he plans to purchase at a store near his office after work. He wanted to avoid paying delivery charges.

Things have been changing around his office development since they unbundled the cost of parking at the near-by train station. Many people who caught the early trains and lived close to the station stopped driving and parking in the best parking spaces; demand for housing close to the station went up; and wealthy riders, who insisted on driving, did so, confident that they could always find parking as close to the platform as their schedules required, due to congestion pricing. Who would have guessed how much those people were willing to pay? It was shocking. Parking-lot earnings, paid to round-trip train riders, meant that the net cost to ride the train went significantly down. Ridership and neighborhood vitality both went significantly up. All Jason knew was that the price to park at his office had been going up yearly because of increased land values. His parking-lot earnings from his office had been increasing almost every month, due to the ripple effect of train riders parking off-site at cheaper parking. Some of them were using his office parking.

As he pulls out of his driveway, he tells his GPS navigation unit his work hours (it already knew his office location), the location of the store where he plans to buy the computer, and his estimated arrival and departure times at the store. He tells the GPS unit he wants to park once, park no more than 1 block from the store, walk no more than 1 mile total, and pay no more than an average of \$2 per hour to park. He is not surprised to hear the GPS tell him that his request is impossible. He tells the GPS he will pay an average of \$3 per hour and learns that the GPS has located parking.

It guides him into a church parking lot. He hopes the church will use his money wisely. The GPS tells him the location of a bus stop he could use to get to work and the bus's next arrival time at the stop. With automatic passenger identification and billing, the bus has become easy to use, except that it is often crowded. Jason gets out of the car and walks to work, with no action required regarding the parking.

Three weeks later, when Jason gets his monthly statement for his charges and income for automotive road use, transit use, parking charges, and parking earnings, he finds that the day's parking did indeed cost about \$30 for the 10 total hours that he parked. He notes that the parking-lot earnings for his office parking averaged about \$10 per day that month. He then notices the parking lot earnings from the store, where he spent about \$1000 dollars. He sees that the parking-lot earnings percent for the store that month was 1.7%, giving him about \$17. So for the day, Jason only spent a net of about \$3 on parking. Then he realized that he should have had the computer delivered after all. If he would have bicycled that day, as he usually did, he would have still gotten the \$27 earnings from the two parking facilities and he would have paid nothing

for parking. So the choice to drive cost him \$30. He remembers that the delivery would have only been \$25 dollars. Oh well. He enjoyed his before-work and after-work walks.

## **THE CASE FOR LESS PARKING**

Less parking will support more compact development.<sup>1</sup> This makes walking and biking more enjoyable and less time consuming. There would certainly be less “dead space”, which is how parking lots feel to people, whether they arrive by car or not, after they become pedestrians.

Since parking can be expensive, less parking can reduce overhead costs significantly, such as leasing expense and parking-lot maintenance cost. Less overhead means more profit and less expense for everyone. A need for less parking can create redevelopment opportunities at existing developments and reduce project cost at new developments.

At new developments, car-parking costs could prevent a project from getting built.<sup>2</sup>

## **THE CASE FOR SHARED PARKING**

Shared parking for mixed uses means that less parking is needed. For example, shared parking could be used mostly by employees during the day and mostly by residents at night.

Fully shared parking means that very little parking would be off limits to anyone. In a central business district with shared parking, drivers would be more likely to park one time per visit, even when going to several locations. Pedestrian activity adds vitality to any area.

## **THE CASE FOR APPROPRIATELY-PRICED PARKING**

### **To Reduce Driving Relative to Zero Pricing**

#### ***Traditional Charging or Paying Cash-out Payments***

As shown in the Introduction, this relationship (pricing parking reduces driving) is not new.<sup>3</sup>

Using results like Table 1, at least one study<sup>4</sup> has used an assumption of widespread pricing to show how driving reductions could help meet greenhouse gas (GHG) target reductions. Dr. Silva Send of EPIC <http://www.sandiego.edu/epic/ghgpolicy/> assumes that all work locations with 100 employees or more in San Diego County will implement cash-out, to result in 12% less driving to work. Currently, almost all employees in San Diego County “park for free”, unless they happen to work in a downtown core area.

---

<sup>1</sup> This is especially true of surface parking, which only accommodates 120 cars per acre.

<sup>2</sup> On September 23, 2008, a panel of developers reviewed the Oceanside, Ca. “Coast Highway Vision” [http://www.ci.oceanside.ca.us/pdf/chv\\_finalvisionstrategicplan.pdf](http://www.ci.oceanside.ca.us/pdf/chv_finalvisionstrategicplan.pdf). Parts of this plan were described as smart growth.

At the review, developer Tom Wiegel said, “Parking is the number 1 reason to do nothing,” where “do nothing” meant “build no project.” The other developers at the meeting agreed.

<sup>3</sup> For many years the Victoria Transport Policy Institute (VTPI) has been recognized as a source of reliable information on “Transportation Demand Management”, or TDM.

From [http://www.vtpi.org/tdm/tdm72.htm#\\_Price\\_Parking](http://www.vtpi.org/tdm/tdm72.htm#_Price_Parking):

Even a relatively small parking fee can cause significant travel impacts and provide significant TDM benefits.

“TDM Benefits” refers to the many public and private benefits of having fewer people choosing to drive.

### ***Current, Best-Practice “Unbundling”***

The “best-practice” use of the phrase, “unbundled parking cost”, is to describe the case where either the cost of parking, for the case of a condominium, or the rent for parking, for the case of an apartment, is separated from either the purchase price and common fees or the rent of the dwelling unit.

This gives the resident families the choice of selecting the number of parking spaces they would like to rent or buy, including the choice of zero. This would tend to reduce the average number of cars owned per dwelling unit and, in this way, would also tend to reduce driving. Its major drawback is that this method does not encourage sharing.

### **To Increase Fairness and Protect the US Economy**

It is stated above that almost all employees in San Diego County “park for free”. Of course there is really no such thing as “parking for free”. So-called “free parking” always reduces wages or increases costs. At a work site, it reduces everyone’s wage, even those employees that never drive. At an apartment complex, so-called “free parking” increases the rent. Therefore, “free parking” at work or at apartments violates the fundamental rule of the free market, which is that people should pay for what they use and not be forced to pay for what they do not use. Parking should at least be priced to achieve fairness to non-drivers.

The US economy would also benefit. Reductions in driving would lead to reductions in oil imports, which would reduce the US trade deficit.<sup>4</sup>

### **BARRIERS TO PROGRESS**

Given all this, it might seem that the widespread pricing of parking should have happened by now. However there are barriers. In 2007, a majority of the City Council of Cupertino, Ca. indicated that they wanted their City Manger to negotiate reduced parking requirements with any company that would agree to pay sufficient cash-out payments. To this date, no company, including Apple Inc., has expressed an interest. Most companies probably perceive cash-out as expensive. Even if they realize they could get a reduced parking requirement in exchange for paying sufficient cash-out amounts and even if the economics worked in support of this action (quite possible where land is expensive), they want to stay focused on their core business, instead of getting involved in new approaches to parking, real estate, and redevelopment.

On the other hand, simply charging for parking and then giving all the employees a pay raise is probably going to run into opposition from the employees, who will feel that they would be losing a useful benefit.

In addition, neighbors fear the intrusion of parked cars on their streets. Permit parking, which could offer protection, is not always embraced. City Council members know that a sizable fraction of voting citizens believe that there can actually never be too much “free parking”,

---

<sup>4</sup> From [http://en.wikipedia.org/wiki/Balance\\_of\\_trade#Warren\\_Buffett\\_on\\_trade\\_deficits](http://en.wikipedia.org/wiki/Balance_of_trade#Warren_Buffett_on_trade_deficits), Warren Buffet wrote in 2006,

“The U.S. trade deficit is a bigger threat to the domestic economy than either the federal budget deficit or consumer debt and could lead to political turmoil. Right now, the rest of the world owns \$3 trillion more of us than we own of them.”

Professor Shoup's famous book<sup>5</sup> notwithstanding. Some Council members probably feel that way themselves.

It doesn't help that current methods of charging for downtown parking are often very inefficient.<sup>5</sup> For example, downtown Oceanside, California has parking meters that will only accept coins. Besides this, all their on-street, downtown parking is timed, with maximums from 10 minutes to 4 hours. These time limits are enforced by a city employee, who applies chalk from a tire to the street and then records the time. However, by watching the time and moving their car soon enough, drivers can avoid getting a ticket. Of course, they could instead drive to the mall and not have to worry about having coins or elapsed time since parking. It is not surprising that downtown merchants often object to charging for parking.

In summary, those that resist charging for parking, *based on their perceptions*, include

- Companies, *who fear the complexity and expense of paying cash-out payments*;
- Employees, *who fear of losing a current benefit*;
- City leaders, *who fear the political repercussions*;
- Downtown patrons, *who dislike the inconvenience and worry*;
- Downtown business owners, *who fear that it will drive away customers*.

## **THE COST, VALUE, AND FAIR PRICE OF PARKING**

### **Estimated and Actual Capital Cost**

#### ***Surface Parking***

One acre of surface parking will accommodate 120 cars. Land zoned for mixed use is sometimes expensive. At \$1.2 million per acre, the land for a single parking space costs \$10,000.

Construction cost should be added to this to get the actual, as-built cost of each parking space. Estimated cost can be determined by using appraised land value and construction estimates. For new developments, after the parking is constructed, it is important to note the actual, as-built cost.

#### ***Parking-Garage Parking***

One acre of parking-garage will accommodate considerably more than 120 cars. The construction cost of the garage and the value of its land can be added together to get the total cost. Dividing that total cost by the number of parking spaces yields the total, as-built cost of each parking space. Adding levels to a parking garage may seem like a way to cut the cost of each parking space, for the case of expensive land. However, there is a limit to the usefulness of this strategy because the taller the parking garage, the more massive the supporting structural members must be on the lower levels, which increases total cost. Parking-garage parking spaces are often said to cost between \$20,000 and \$40,000. The actual costs should be noted.

#### ***Underground Parking***

In order to compute an estimate for the cost of a parking space that is under a building, it is necessary to get an estimate of the building cost with and without the underground parking. The difference, divided by the number of parking spaces, yields the cost of each parking space. The

---

<sup>5</sup> According to Bern Grush, Chief Scientist of Skymeter Corporation <http://www.skymetercorp.com/cms/index.php>, often two-thirds of the money collected from parking meters is used for collection and enforcement costs.

cost or value of land plays no role in the cost of this parking. However, it does not follow that this parking is cheap. Underground parking spaces are often said to cost between \$60,000 and \$90,000 dollars each. Although there will be an “as built” cost of the building with the parking, there will never be an “as built” cost of the building without the parking. However, after the construction is done, the estimate for the cost of the underground parking should be reconsidered and re-estimated if that is needed. The final, best-estimate cost should be noted.

## **Value**

Initially, value and cost are the same. For surface parking and parking-garage parking, the value would initially be the same as the as-built cost. For underground parking, the value would initially be the same as the best-estimate cost. However, over time, the value must be updated. Both construction costs and land-value costs will change. The value assigned to a parking place should always be based on the current conditions.

## **Fair Pricing**

Parking space “values”, as described above, must first be converted to a yearly price by using a reasonable conversion factor. This conversion factor could be based on either the “cost of money” or the “earnings potential of money”. It is expected that this conversion factor would be 2% to 5% during times of low interest rates and slow growth; but could be over 10% during times of high-interest and high growth. For example, if the surface parking value is \$12,000 and it is agreed upon to use 5% as the conversion factor, then each parking spot should generate \$600 per year, just to cover capital costs. The amount needed for operations, collection, maintenance, depreciation, and any special applicable tax is then added to the amount that covers capital cost. This sum is the amount that needs to be generated in a year, by the parking space.

The yearly amount of money to cover capital cost needs to be re-calculated every year or so, since both the value and the conversion factor will, in general, change each year. The cost of operations, collection, maintenance, depreciation, and any special applicable tax will also need to be reconsidered.

Once the amount generated per year is known, the base price, per unit year, can be computed by dividing it (the amount generated per year) by the estimated fraction of time that the space will be occupied, over a year. For example, if a parking space needs to generate \$900 per year but it will only be occupied 50% of the time, the time rate charge is \$1800 per year. This charge rate per year can then be converted to an hourly or even a per-minute rate. The estimated fraction of time that the parking is occupied over a year will need to be reconsidered at least yearly.

## **NEW DEFINITIONS TO PROMOTE AN OBJECTIVE VIEW OF PRICING**

- The “fair price” means the price that accounts for all costs.
- The “baseline amount of driving” means the driving that results from the application of the fair price.
- “Zero transportation demand management” (“zero TDM”) is the amount of demand management that results when the fair price is used. It will result in the baseline amount of driving.
- “Negative TDM” refers to the case where the price is set below the fair price. This will cause driving to exceed the baseline amount. Since TDM is commonly thought to be an action that reduces driving, it follows that negative TDM would have the opposite effect.
- “Positive TDM” refers to the case where the price is set above the fair price. This would cause the amount of driving to fall below the baseline amount.

Clearly, so-called “free parking” is an extreme case of negative TDM. The only way to further encourage driving would be to have a system that pays a driver for the time their car is parked.

## **THE GOALS OF *INTELLIGENT PARKING***

- There is only one agency operating all parking. (“All parking” does not include driveways and garages in single-family homes.) *Intelligent Parking* is designed and installed by regional or state government, using low-bid contractors, with design and start-up costs covered by the overhead portion of collection fees.
- Nearly all parking is shared. Almost always, anyone can park anywhere. Those who want exclusive rights to parking will pay “24/7” (all day, every day).
- Parking is operated so that the potential users of parking will escape the expense of parking by choosing to not use the parking. This characteristic is named “unbundled” because the cost of parking is effectively unbundled from other costs.
- Parking is priced and marketed to eliminate the need to drive around looking for parking.
- Parking at any desired price is made as easy as possible to find and use.
- Records of the use of each parking space are kept, to facilitate decisions to either add or subtract parking spaces.
- The special needs of disabled drivers, the privacy of all drivers, and, if desired, the economic interests of low-income drivers are protected.

## **DEFINITIONS & CONCEPTS OF *INTELLIGENT PARKING***

### **Parking Beneficiary Groups**

There are at least 7 types of beneficiary groups. Note that in all cases, members of beneficiary groups must be old enough to drive.

- 1.) People who have already paid for the capital cost of parking. An example of this type of beneficiary group would be the owners of condominiums, where parking has been built and the cost is included in the price of the condominium. Note that although they have technically already paid for the parking, if they borrowed money to pay for some portion of the price, the cost is built into their monthly payment. This illustrates why the value of parking and the cost of borrowing money (rate of return on money) are key input variables to use to compute the appropriate base, hourly charge for parking.
- 2.) People who are incurring on-going costs of parking. An example of this type of beneficiary group is a set of office workers, where the cost of “their” parking is contained in either the building lease or the cost of the building. Either way, the parking costs are reducing the wages that can be paid to these employees.<sup>6</sup>
- 3.) People who are purchasing or renting something where the cost of the parking is included in the price. Examples of this beneficiary group are people that rent hotel rooms, rent an apartment, buy items, or dine in establishments that have parking.

---

<sup>6</sup> Such parking is often said to be “for the benefit of the employees”. Defining this beneficiary group will tend to make this statement true, as opposed to the common situation where the employees benefit only in proportion to their use of the parking.

- 4.) People who own off-street parking as a business. They could be the individual investors or could be a government or government-formed entity.
- 5.) People who are said to benefit from parking, even though the money for the parking has been supplied by a source that may have very little relationship to those that are said to benefit. An example of this group would be train riders that make round trips from a station which has parking that is said to be “for riders”. Students at a school with parking would be another example.
- 6.) People who are considered by many to be the logical beneficiaries of on-street parking. Owners of single-family homes are the beneficiaries of the parking that is along the boundaries of their property. The same status is given to residents of multi-family housing.
- 7.) Governments. Since they build and maintain the streets, they should get a significant benefit from on-street parking.

## **Unbundled Cost and Spontaneous Sharing**

“Unbundled cost” means those who use the parking can see exactly what it costs and those who don’t use the parking will either avoid its cost entirely or will get earnings to make up for the hidden parking cost they had to pay. This conforms to the usual rule of the free market where a person only pays for what they choose to use. Unbundled cost is fair.

“Spontaneous sharing” means that anyone can park anywhere at any time and for any length of time. Proper pricing makes this feasible.

### ***How to Unbundle***

The method of unbundling can be simply stated, using the concept of “beneficiary group” as discussed above. First, the fair price for the parking is charged. The resulting earnings<sup>7</sup> amount is given to the members of the beneficiary group in a manner that is fair to each member. Methods are described below.

### ***Why this Supports Sharing***

Members of a beneficiary group benefit financially when “their” parking is used. They will appreciate users increasing their earnings. They are also not obligated to park in “their” parking. If there is less-expensive parking within a reasonable distance, they might park there, to save money. This is fine, because all parking is included in the *Intelligent Parking* system.

### ***Computing the Earnings for Individuals***

*Intelligent Parking* must be rigorous in paying out earnings<sup>7</sup>. For a mixed use, the total number of parking spaces must first be allocated to the various beneficiary groups. For example in an office/housing complex, 63.5% of the parking might have been sold with the office. If so, the housing portion must be paying for the other 36.5%. For this case, it would follow that the first step is to allocate 63.5% of the earnings to the workers and 36.5% to the residents.

---

<sup>7</sup> The earnings amount is the revenue collected minus the collection cost and any other costs that will have to be paid due to the implementation of *Intelligent Parking*. The costs associated with the parking, paid *before* the implementation of *Intelligent Parking*, should *not* be subtracted from the revenue because they will continue to be paid as they were before the implementation of *Intelligent Parking*. Therefore, these costs will continue to reduce wages and increase the prices of goods and services.

How the monthly earnings are divided up among the members of the beneficiary group depends on the beneficiary group type. For each member, the group's total monthly earnings amount is always multiplied by a quantity and divided by the sum (the sum is the denominator) of that quantity, for all members.

For example, for each employee, the multiplier is the number of hours that the employee worked over the month while the denominator is the total number of hours worked by all employees over the month. At a school, for each student, the numerator is the total time spent at the school, over the month, while the denominator is the sum of the same quantity, for all the students.

For a train station with parking being supplied for passengers that ride on round trips of one day or less, the numerator is the passenger's monthly hours spent on such round trips, over the month; while the denominator is the total number of hours spent by all passengers on such round trips, over the month. Radio Frequency Identification (RFID) units on passengers could support an automated calculation of monthly charges for fares, as well as monthly hours on round trips.

At a shopping center, the numerator is the sum of the money spent by the shopper, over the month, while the denominator is the total amount of money spent by all shoppers over the month.

At a condominium, the numerator is the number of parking places that were paid for (directly or indirectly) by the resident family and the denominator is the total number of parking places at the condominium project; similarly, for apartment complexes.

### ***Where Earnings Are Low***

The goal is that if someone doesn't park, they don't pay, either directly or indirectly, because the earnings that they get will balance out their losses (like reduced wages, for example). However, charging for parking that few want to use will not sufficiently compensate the people that have been forced, or are being forced, to pay for such parking. The only remedy in this case is to redevelop the parking or lease the parking in some other way, for storage, for example. The earnings from the new use should go to those that are in the beneficiary group that was associated with the low-performing parking.

### ***Why This Method of Unbundling Will Feel Familiar to Leaders***

Developers will still be required to provide parking and will still pass this cost on, as has been discussed. There will be no need to force an owner of an exiting office with parking to break his single business into two separate businesses (office and parking).

Parking beneficiaries are identified that conform to traditional ideas about who should benefit from parking.<sup>8</sup>

### ***Unbundling the Cost of On-Street Parking***

The revenue from on-street parking in front of businesses will be split evenly between the city and the business's parking beneficiaries. All of the earnings from on-street parking in front of apartments or single-family homes will be given to the resident families.<sup>9</sup>

---

<sup>8</sup> Showing exactly where parking earnings go will reduce the political difficulties of adopting pay parking in a democracy where the high cost of parking is often hidden and rarely discussed.

<sup>9</sup> Although governments own the streets, often, back in history, developers paid for them and this cost became embedded in property values. Admittedly, how to allocate on-street parking earnings is somewhat arbitrary. With

### ***Special Considerations for Condominiums***

Unbundling for a condominium owner means that, although their allocated amount of parking has added to their initial cost, their allocated amount of parking also earns money for them. Unbundling for a condominium could also mean that an owner can choose to have control over a single or several parking places. Such parking spaces could be equipped with a red light and a green light. If the red light is lit, this will mean that the space is not available for parking, except for the person who is controlling the spot. If the green light is lit, it will mean that the space is available to anyone. A space that is being reserved with a red light is charged at the full price to the condominium owner that has control over the space. The owner that controls these spaces can change the state of the parking space (available or not available) by either a phone call, on line, or at any pay station system that might be in use for the system. After condominium owners experience the cost of reserving a space for themselves, they might give up on the idea of having their own, personal, unshared parking space; especially since *Intelligent Parking* will give most owners and their guests all the flexibility they need in terms of parking their cars.

Some people think that condominium parking should be gated, for security reasons. However, parking within parking garages needs to be patrolled at the same frequency level as on-street parking, which is enough to ensure that crime around either type of parking is very rare. Cameras can help make parking garages that are open to the public safe from criminal activity.

### ***Special Considerations for Renters***

Unbundling for renters means that, although their allocated amount of parking increases their rent, their allocated amount of parking also earns money for them. Therefore, their traditional rent (includes parking) is effectively reduced by the money earned by those parking spaces allocated to them. Renters will be motivated to either not own a car or to park in a cheaper location. Parking in a cheaper location is not a problem because all parking is part of the *Intelligent Parking* system. Renters will welcome anyone to park in “their” parking, because it will increase their earnings.

### ***Special Considerations for Employers***

At first, companies may want the option of offering “free parking” to their employees so as to be able to compete with traditional job sites. This means giving employees that drive every single day an “add-in” amount of pay so that the sum of the add-in and their parking-lot earnings equals their charge, for any given monthly statement. The operator of the parking, which sends out statements, can pay out the “add in” amount, in accordance with the company’s instruction. The company will then be billed for these amounts. There could be no requirement for the company to provide any such “add-in” amount to the employees that don’t drive every day. This would allow the company to treat its every-day drivers better than other employees and so this would be a negative TDM. However, this economic discrimination would be substantially less than the current, status-quo, economic discrimination, where drivers get “free” parking and non-drivers get nothing.

## **Clusters of Parking**

Clusters are a contiguous set of parking spaces that are nearly equal in desirability and thus can be assigned the same price. They should probably consist of from 20 to 40 spaces. For off-street

parking, they could be on either side of the access lane to the parking spaces, so that an observer could see the 20 to 40 cars, and get a feel for the vacancy rate. At a train station, clusters will normally be organized so that their parking spaces are approximately an equal distance from the boarding area. On-street clusters would normally conform to our current understanding of what a block is, which is to say from one cross street to the next cross street. The width of the street and the length of the block should be taken into account in defining on-street clusters of parking and in deciding if the parking on either side of the street should or should not be in the same cluster of parking spaces.

## **Examples of Good and Bad Technology**

### ***Parking Meters or Pay Stations***

Parking meters are a relic of an earlier period, before computers. Pay stations do not add enough usefulness to merit their inclusion in *Intelligent Parking*, except as a bridge technology. Once good systems are set up, pay stations should cost additional money to use because of their expense. It would be best to devise an implementation strategy that will minimize their use when the system is first put into effect and will take them out of service as soon as possible.

### ***Radio Frequency Identification Backed Up by Video-Based “Car Present” and License Recognition***

Government will eventually enter into an RFID (Radio Frequency Identification) age. Organizers of large athletic events already have. Organizers that put on large open-water swims, foot races, and bike rides have routinely used RFID for many years.<sup>10</sup> An RFID vendor in San Diego<sup>11</sup> states that passive RFID units cost less than \$5, are reliable, are durable, and they could be used to identify cars as well as people. He also sees no problem in implementing most of the features of *Intelligent Parking*.<sup>12</sup>

### ***Automatic Data Collection and Sending Out Statements***

Note that the “back end database” of Dr. Carta’s written statement<sup>12</sup> refers to the ability to send statements of earnings and billing to students.<sup>13</sup>

---

<sup>10</sup> For example, over 20,000 people ran the 2008 Bay-to-Breakers foot race in San Francisco. Each runner had a “chip” in their shoe lace. Each runner’s start time and finish time were recorded and all results were available as soon as the last runner crossed the finish line.

<sup>11</sup>David R. Carta, PhD, CEO Telaeris Inc., 858-449-3454

<sup>12</sup> Concerning a Final Environmental Impact Report-approved and funded new high school in Carlsbad, California, where the School Board has signed a *Settlement Agreement* to consider “*unbundled parking*”, “*cash-out*”, and “*pricing*”, Dr. Carta wrote, in a January 13<sup>th</sup>, 2010 written statement to the Board,

I wanted to send a quick note discussing the technical feasibility of tracking cars into a lot without impacting students or requiring the need for gates. Mike Bullock and I have discussed this project; it can be accomplished straightforwardly by utilizing Radio Frequency Identification and/or Video Cameras integrated with automated license recognition systems. The cars would need to register with the system at the start, but it would be fairly painless for the users after the initial installation. The back end database system can also be implemented both straightforwardly and at a reasonable price.

This is not necessarily a recommendation of the proposal for unbundled parking. Rather it is strictly an unbiased view of the technical feasibility of the proposal to easily and unobtrusively track cars, both registered and unregistered, into a fixed lot.

<sup>13</sup> In an earlier email on this subject, Dr. Carta wrote,

## ***Putting it Together***

Certainly, government, and in particular transit agencies and parking agencies, could use RFID-based technology. For example, when a person with an RFID unit which is tied to a billable address or a credit card with an open account gets on a bus or a train, they should not have to pay at that time, visit a pay station, or “swipe a card” that has a positive balance. Utility customers that pay their bills are not required to pre-pay. The same courtesy should be extended to transit riders, people that drive on roads, people that get parking-lot earnings, and people that park cars. There should be one monthly bill or statement, for all four activities.

## ***Global Positioning Systems GPS***

An alternative model is to have GPS systems in cars that would detect the car’s parking location, that location’s current charge rate, and would perform all of the charging functions in the car. The only information the parking-lot-enforcement system would need is whether or not a car being parked is owned by a bill-paying owner. The car owner’s responsibility would be to pay the bills indicated by the box in the car. The box would need to process a signal that a bill had been paid. It would also need to process pricing signals.

## ***Not Picking Winners***

The purpose of this report is to describe what an ideal system would do, *not* how it is done. How a proposed system works is left to the systems, software, and hardware engineers that work together to submit a proposal based on this description of what an ideal system does.

## **Privacy**

Privacy means that no one can see where someone has parked, without a search warrant. Also, the level of the detail of information that appears on a bill is selected by the customer.<sup>14</sup>

## **Ease of Use for Drivers**

For credit-worthy drivers that have followed the rules of the system, pay parking will not require any actions other than parking. Paying for all parking fees over a month is then done in response to a monthly billing statement. Parking will feel to the consumer like a service provided by a municipality, such as water, energy, or garbage. One important difference is that users belonging to a “beneficiary group” will get an earnings amount in their monthly statement. Those that earn more than what they are charged will receive a check for the difference. This ease of use will make all parking less stressful.

## **Base Price**

### ***Off-Street***

---

This is not too tough - we probably would integrate with a service that already sends physical mail from an electronic submission instead of re-inventing this wheel.

<sup>14</sup> License plates that have no RFID tags fail to use the best technology to accomplish the primary purpose of license plates, which is to identify and help intercept cars used in a crime. Identifying cars is a legitimate government goal. Protecting privacy is also a legitimate goal. Both goals can be realized with good laws, good enforcement, and good systems engineering.

Off-street parking is priced so that even if demand does not threaten to fill the parking beyond 85%, the money generated will at least equate to an agreed-upon return on the parking value and pay all yearly costs. Equation 1 shows the calculation of the hourly rate.

$$r_{BaselineHourly} = \frac{(r_{Investment} \times v_{Parking}) + c_{YOPD}}{(n_{HoursPerYear} \times f_{TO})} \quad (\text{Eq. 1})$$

where:

|                      |   |                                                                             |
|----------------------|---|-----------------------------------------------------------------------------|
| $r_{BaselineHourly}$ | = | the computed baseline hourly rate to park                                   |
| $r_{Investment}$     | = | yearly return on investment, such as .06                                    |
| $v_{Parking}$        | = | value of a parking space, such as (parking garage) \$40,000                 |
| $c_{YOPD}$           | = | yearly operations <sup>15</sup> plus depreciation, per space, such as \$100 |
| $n_{HoursPerYear}$   | = | number of hours per year, 24 x 365 = 8760 Hours per Year                    |
| $f_{TO}$             | = | fraction of time occupied, such as 0.55.                                    |

For the example values given, the base hourly rate of parking, to cover the cost of the investment, operations<sup>15</sup>, and depreciation is \$0.519 per hour. This could be rounded up to \$0.52 per hour. This price could also be increased to result in positive TDM, to reduce driving more than the fair-price, zero-TDM amount.

### ***On-Street***

If on-street parking is located within walking distance (one-quarter mile) of off-street parking, its base price is set equal to the closest off-street parking's base price. Otherwise, it is set to some agreed-upon value, like fifty cents per hour. However, on-street parking has a special meaning for downtown merchants and for neighborhoods, two powerful political forces in any city. Merchants that have few cars parking on their street, even though it is permitted, are probably failing in their businesses. They would like free parking to help draw visitors to their store front. Neighborhoods that are not impacted by parking would probably prefer no pricing. For these reasons, for any on-street parking cluster, no price is charged until the cluster occupancy reaches 50%. (Time of day is irrelevant.)

### **Congestion Pricing**

The time-rate price of parking is dynamically set on each cluster of parking, to prevent the occupancy rate from exceeding 85% (to reduce the need to drive around looking for parking). An 85% occupancy rate (15% vacancy) results in just over one vacant parking space per city block<sup>5</sup>. If the vacancy rate is above 30%, the price is left at the baseline hourly rate. If vacancies fall below 30%, the price can be calculated in a stair-step method, such as shown in Table 2.

Equation 2 is an alternative method.

In either case, the total charge is time parked, multiplied by the time-averaged, time-rate price. The base multiplier would be adjusted to be just large enough to keep the vacancy rate from falling below a desired level, such as 15%, so it is always easy to find parking.

---

<sup>15</sup> This includes money for policing, cleaning, maintenance, any applicable parking tax, and all collection costs. Collection costs will need to include an amount to recover the development and installation costs of *Intelligent Parking*.

**Table 2 Hourly Rates for 2 Base Multipliers and a Baseline Hourly Rate of \$0.52**

| Vacancy Rate | Base Multiplier = 2 |       |             | Base Multiplier = 2.5 |          |             |
|--------------|---------------------|-------|-------------|-----------------------|----------|-------------|
|              | Multiplication      |       | Hourly Rate | Multiplication        |          | Hourly Rate |
|              | Formula             | Value |             | Formula               | Value    |             |
| Above 30%    | $2^0$               | 1     | \$0.52      | $2^{50}$              | 1        | \$0.52      |
| 25% to 30%   | $2^1$               | 2     | \$1.04      | $2^{51}$              | 2.5      | \$1.30      |
| 20% to 25%   | $2^2$               | 4     | \$2.08      | $2^{52}$              | 6.25     | \$3.25      |
| 15% to 20%   | $2^3$               | 8     | \$4.16      | $2^{53}$              | 15.625   | \$8.13      |
| 10% to 15%   | $2^4$               | 16    | \$8.32      | $2^{54}$              | 39.0625  | \$20.31     |
| 5% to 10%    | $2^5$               | 32    | \$16.64     | $2^{55}$              | 97.6563  | \$50.78     |
| Below 5%     | $2^6$               | 64    | \$33.28     | $2^{56}$              | 244.1406 | \$126.95    |

$$r_{\text{HourlyRate}} = r_{\text{BaselineHourly}} \times (B^{(30-V)/5}), \text{ for } V < 30; r_{\text{BaselineHourly}}, \text{ otherwise (Eq. 2)}$$

where:

$r_{\text{HourlyRate}}$  = the congestion-priced hourly rate to park

$r_{\text{BaselineHourly}}$  = the baseline hourly rate to park, such as \$0.52 per hour (taken from from Eq. 1.

$B$  = the base of the multiplier being computed, such as 2.50

$V$  = the vacancy rate percent, such as 17.5, for 7 vacancies in a cluster of 40 spaces,  $100*(7/40) = 17.5$

For the example values given, the hourly rate of parking would be \$9.88 per hour.

## Pricing Predictions and Notifications

Drivers will develop strategies for their routine trips. The computer system that keeps records of parking use will also provide help for users. The *Intelligent Parking* website will direct a user to an appropriate cluster of parking if the user provides the destination location or locations, the time and date, and the hourly rate they wish to pay. If the walk is going to be long, the website could suggest using transit to get from the cheaply-priced parking to the destination. In such cases, the website may also suggest using transit for the entire trip.

Another user option is to specify the time, location, and the distance the user is willing to walk. In this case, the computer would give the cheapest cluster of parking available at the specified walk distance. The price prediction would be provided.

All price predictions would also have a probability of correctness associated with them. If a user can show that a computer has predicted a much lower price than what actually occurred, with a sufficiently high probability, it would be reasonable to charge the user the predicted price rather than the actual price.

Websites could routinely inform viewers when occupancy rates are expected to be unusually high, due to a special event (for example, a sporting event). The parking system website will always give current and predicted hourly rates for all locations. The hourly rates of parking will

also be available at a phone number and possibly at pay stations. The base-price hourly rate, for any parking cluster, would be stable and could therefore be shown on signs. Parking garage entrances could have large video screens showing both predicted and existing price. Users will also learn to look at parking and judge whether congestion pricing applies, or could apply, while their car is parked. It would not be long before these capabilities are added into GPS navigation systems.

## **Prepaid RFID**

To be inclusive, pay stations or convenience stores will offer a pre-paid RFID that can be set on the dashboard of a car. This will support drivers with poor credit or drivers who have not obtained the necessary equipment to support the normal, trouble-free methods. This will also work for drivers that do not trust the system to protect their privacy for a certain trip (by removing or disabling the permanent RFID) or for all trips. No billing would occur.

## **Enforcement**

The system would notify the appropriate law enforcement agency if an unauthorized car was parked. Authorized cars would need either a pre-paid RFID or equipment indicating that their owners had *Intelligent Parking* accounts and were sufficiently paid up on their bills.

## **IMPLEMENTATION**

This description of *Intelligent Parking* will help to implement efficient parking systems. Parking at train stations, schools, and government buildings could introduce many of these concepts. This description of *Intelligent Parking* is sufficient to support a “Request for Proposal” process, which could lead to full implementation. Widespread installation should be done by a government agency, to minimize actions required on the part of the private sector. Laws would simply require the cooperation of all private-sector and government entities.

## **SUMMARY**

A parking plan, *Intelligent Parking* has been described.

1. Technology will make it easy to use for most drivers.
2. Its parking is almost always shared, to support mixed uses.
3. It unbundles cost by charging and having earnings go to the parking beneficiaries.
4. Traditional groups, such as single-family home owners, employees, tenants, train riders, and students benefit from parking. The benefit is equal for drivers and non-drivers.
5. Baseline prices are computed primarily from the value of the parking and an agreed-upon rate of return. On-street parking is free until it is half full, at which time its base price often matches that of the closest off-street parking.
6. For all parking, price is dynamically increased to guarantee availability. Earnings are therefore only limited by what people are willing to pay.
7. Technology helps drivers find parking and decide if they want to drive or use transit.
8. Prepaid RFIDs provide service to those who have poor credit or don't want to be billed.
9. Disabled and perhaps low-income drivers will have accounts that allow them to park at reduced prices and perhaps avoid congestion pricing. Specially designated spots might also be required for disabled drivers.

10. The system will provide reports showing where additional parking would be a good investment and where it would be wise to convert existing parking to some other use.
11. Privacy will be protected. Law enforcement officials would need a search warrant to see where someone's car has been parked. The level of detail on billing would be selected by the car's owner.
12. Implementations could begin in carefully selected locations and expand.

Global warming, air pollution, trade deficits, and fairness are some of the significant reasons that governments have a responsibility to implement *Intelligent Parking*.

## ACKNOWLEDGEMENTS

The following people have offered encouragement, specific information, and/or special insights.

Dr. Dennis Martinek, Oceanside Planning Commissioner; Sandra Goldberg, California Deputy Attorney General; Jerry Kern, Oceanside, City Council; Amy Volzke, Principal Planner, City of Oceanside; Dr. Nilmini Silva-Send, Senior Policy Analyst of the Energy Policy Initiative Center; Diane Nygaard, Director of Preserve Calavera and founder of Nelson Nygaard, Consulting Associates; Lisa Rodman, Trustee, Carlsbad Unified School District; Dr. Michael McQuary, President, La Jolla Democratic Club; Joan Bullock; Judy Jones, San Diego County Central Committee, California Democratic Party; Patrick Siegman, Principal and Shareholder, Nelson Nygaard; Andy Hamilton, San Diego Air Pollution Control District; Renee Owens, Conservation Chair, San Diego Sierra Club; Caroline Chase, Executive Committee Chair, San Diego Sierra Club; Ed Mainland, Co-Chair, Energy-Climate Committee, Sierra Club California; Bern Grush, Chief Scientist, Skymeter Corporation; and the following San Diego Area Government (SANDAG) employees: Susan Baldwin, Senior Regional Planner; Bob Leiter, former Director of Land Use and Transportation Planning; Coleen Clementson, Principle Planner; and Stephan Vance, Senior Regional Planner.

## REFERENCES

- 1 Siegman, P. *How to Get Paid to Bike to Work: A Guide to Low-traffic, High-profit Development; Pro Bike Pro Walk Resource Book*; from the Ninth International Conference on Bicycle & Pedestrian Programs; Sept. 3-6, 1996, Portland, Maine; Bicycle Federation of America Pedestrian Federation of America; pp 171-175.
- 2 Adams, T.; Eaken, A.; Notthoff, A.; *Communities Tackle Global Warming, A Guide to California's SB 375*, June 2009, NRDC; <http://www.nrdc.org/globalWarming/sb375/files/sb375.pdf>.
- 3 Anders, S. J.; De Haan, D. O.; Silva-Send, N.; Tanaka, S.T.; Tyner, L.; *San Diego County Greenhouse Gas Inventory*, September 2008. <http://www.sandiego.edu/epic/ghginventory/>
- 4 Silva-Send, N.; *Reducing Greenhouse Gases from On-Road Transportation in San Diego County*, October 2009. [http://www.sandiego.edu/epic/ghgpolicy/documents/ES\\_GHG\\_Policy\\_On-Road\\_FINAL.pdf](http://www.sandiego.edu/epic/ghgpolicy/documents/ES_GHG_Policy_On-Road_FINAL.pdf)
- 5 Shoup, D. *The High Cost of Free Parking*. Chicago University Press, June 7, 2005.

## KEYWORDS

A&WMA, Parking, Unbundled, Shared, TDM, cash-out, pricing, beneficiary, greenhouse gas, GHG, GPS, RFID

# REFERENCE 9

# Equitable and Environmentally-Sound Car-Parking Policy at a Work Site

By Mike Bullock

[mike\\_bullock@earthlink.net](mailto:mike_bullock@earthlink.net)

Aug. 30, 2015

## Introduction

This paper describes a parking policy that distributes the benefit of parking to all employees, regardless of how often they choose to drive. It does this by

- Charging a fair price for the parking, per unit of time parked, and by
- Giving the total earnings (*total parking-lot earnings*) to the employees, such that each employee's share of the *total parking-lot earnings* is proportion to the time they spend at the work site served by the parking.

The following, additional, optional action would guarantee that no driver loses money under the policy:

- Adding a *must-drive bonus* to each driver's share of the *parking-lot earnings*, if it happened that their share of the *parking-lot earnings* is less than their parking-lot charge. This means that the employee's *must-drive bonus* would be equal to their *parking-lot charge* minus their share of the *parking-lot earnings*.

If an employer decided to pay a *must-drive bonus* to its employees, it would be possible to allow employees to effectively "opt out" of the program so they would not need to be mailed the car-parking statements. The system would feel like "free parking" to them.

Reference 1 describes a more comprehensive policy that will efficiently and conveniently unbundle the cost (or the benefit) of parking in all circumstances. It is available at the following URL: <http://sierraclub.typepad.com/files/mike-bullock-parking-paper.pdf>.

The system described herein is less complex because it does not include congestion pricing, price predictions, or policies that are unique to on-street parking. These features can be eliminated, because it is assumed that there will be an adequate supply of parking, so no congestion pricing is needed; that the price can be relatively stable, so no price predictions are needed; and finally, that employees can be successfully required to park only in their employee parking, so there is no need for new, on-street parking policies, designed to protect adjoining neighborhoods from the intrusion of additional parked cars. If the adjoining neighborhoods had permit parking with a 2-hour limit for cars with no permit, very few employees would ever park in those neighborhoods, in any case.

## **Rationale**

This system of “unbundled parking cost” will allow all stakeholders to see the actual value of the parking. It will reduce single-occupancy driving to work. Less driving will reduce traffic congestion, air pollution and greenhouse gas (GHG) emissions.

Parking is expensive to provide. Therefore, if no parking had been provided, the saved money could have been invested to increase employee salaries. The method described in this paper allows employees to gain some of that lost salary back, by driving less.

Providing free or underpriced parking only benefits employees that would drive every day, even if they had a method to recover some of their lost salary.

## **Methods**

The parking is operated on the behalf of the employees, as if it were their own business. Those that drive to work are therefore their own customers.

*Charge* for parking is proportional to time parked and is charged to the employee associated with the car. (A charge rate that is acceptable to all must be established.) For example, if sixty cents per hour is selected, the charging software could round off the parking duration time to the nearest minute and apply a one-cent-per-minute charge. The data-collection method could be implemented with RFID's on cars being detected at parking-lot entrances and exits. Unauthorized cars coming into the employee parking facility would be identified with license-plate detection and, if a car belonging to a felon is driven into the parking lot, a warning notice could be sent to authorities, if this is desired by the company leaders.

*Earnings* (net revenue, minus the cost of collection and distribution) are given to the employees; in proportion to the time they spend at the work site. This could be based on an employee's schedule or, for more accuracy, could be based on “time-at-the-work-site” data, collected using personal radio frequency identification units (RFIDs) and detectors that are tied to a central, implementing computer. The variables used to compute the amount of money to be paid to an employee are shown in Table 1. The corresponding formula is shown in Figure 1.

*Parking statements* are automatically sent out monthly, showing the individual's charges and earnings. If desired, the statements could include a *must-drive bonus*, so that no driver loses money under the system. The *must drive bonus* would probably need to come from funds available for employee compensation.

## **Implementation**

Since this is a new system, it would be prudent for the company leaders to have the vendor take the full responsibility for operating the system, for the first 10 years. This arrangement would ensure that the vendor would debug the system and continue to look for operational efficiencies, over the 10 year period. A sliding scale of vendor-compensation could be specified in the contract, as follows: The vendor could operate the system for 10% of the revenue, for the first 5 years; 5% of the revenue, for the next 3 years; and 2% of the revenue, for the final 2 years. For example, if it is assumed that, on average, 600 cars are parked for 8 hours, for 200 days per year, at a rate of 50 cents per hour, then the yearly revenue would be \$480,000 per year. The vendor would therefore collect \$240,000 over the first 5 years, \$72,000 over the next 3 years, and \$28,800 over the last two years. Figure 2 shows contact information and excerpts of received emails, from a San Diego vendor. This vendor has stated that the design and installation of a fully-automated system would be easy to perform.

**Table 1      Variables Used to Compute an Employee's Monthly Earnings**

| <b>Definitions to Compute an Employee's Monthly Earnings</b> |                                                    |
|--------------------------------------------------------------|----------------------------------------------------|
| <b>T<sub>Employee</sub></b>                                  | The Employee's Monthly Time at the Work Site       |
| <b>T<sub>AllEmployees</sub></b>                              | Total Monthly Time at the Work Site, All Employees |
| <b>E<sub>AllEmployees</sub></b>                              | Total Monthly Earnings from the Employee Parking   |

**Figure 1      Formula Used to Compute an Employee's Monthly Earnings**

|                                                                         |
|-------------------------------------------------------------------------|
| $E_{Employee} = T_{Employee} * ( E_{AllEmployees} / T_{AllEmployees} )$ |
|-------------------------------------------------------------------------|

## **Introducing a New Price Differential, for Driving, Compared to Not Driving**

Table 2 shows that introducing a price differential into the choice of how often to drive will decrease the amount of driving.

## **Other Benefits**

Depending on the work site's location and the size of its access roads, there could be a substantial decrease in local congestion, improving the health of all employees and those living near the congestion. This parking policy will show neighbors that the company is working to be a good citizen. This program will encourage active transportation, meaning

modes that provide exercise for the employees. It will also teach the employees the value of parking. It is recommended that the method of determining the selected rate of charge be shared with both the employees and the community at large. This program can be thought of as a demonstration project of a new approach to parking.

**Figure 2      One Set of Identified-Vendor Information**

|                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>David R. Carta, Ph.D., CEO</b><br><b>TELAERIS Inc.</b><br><b>Innovative Solutions and Rapid Development</b><br><b>9123 Chesapeake Dr., San Diego, CA 92123</b><br><b>+1.858.627.9708 : Office</b><br><b>+1.858.627.9702 : Fax</b><br><b>+1.858.449.3454 : Mobile</b><br><b>e-mail: <a href="mailto:David.Carta@Telaeris.com">David.Carta@Telaeris.com</a></b><br><b>skype: davidcarta</b> | <p>I reviewed your Intelligent Parking proposal and presentation in their entirety. The identification of vehicles which you suggest for student parking using commercially available RFID technologies is a fairly straightforward process. There are numerous, inexpensive passive (no battery required) RFID tags which have been specifically designed for use on cars and trucks. These tags are installed directly on license plates or windshields, can be read from up to 30 meters away, and can be read as cars drive up to 60 mph. Additionally, automatic license recognition systems, used in conjunction with RFID, can provide a high level of enforcement making it difficult to cheat the system, similar to the Fast Track system which allows tolls to be automatically collected.</p> <p>This is not too tough - we probably would integrate with a service that already sends physical mail from a electronic submission instead of re-inventing this wheel.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Green House Gas Impacts**

S-3-05 is a California Governor's Executive Order to drop the state's Year 2020 levels of greenhouse gas (GHG) emissions to the state's level of 1990 emissions and to drop the state's Year 2050 level of GHG emissions to 80% *below* the state's 1990 levels. If the world were to achieve similar reductions, the earth's level of atmospheric CO<sub>2</sub> would be capped at 450 parts per million (PPM). Figures 3, 4, and 5 show how large 450 PPM is, compared to values over the last 800 thousand years. Reference 2 shows that the goal of S-3-05 is to limit atmospheric CO<sub>2</sub> to 450 PPM and it also shows that even if this cap is achieved, the risk of a human catastrophe caused by global warming is significant. Reference 3's Figure 1 shows that a significant reduction in driving is critically needed.

### **Conclusion**

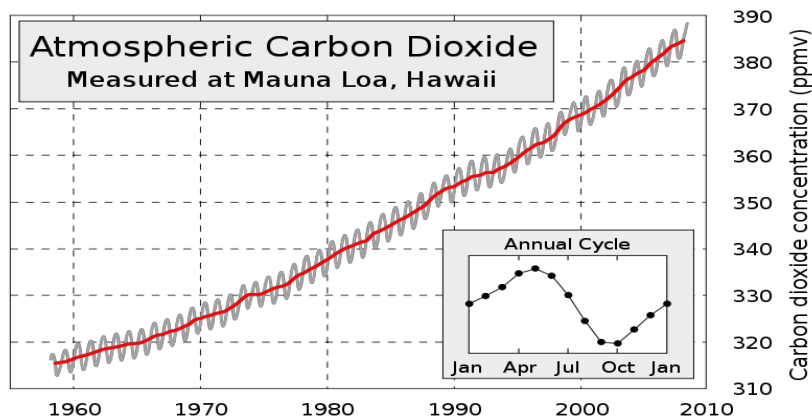
Adopting this program would benefit the employer, the employees, and the community, in many ways. They will all gain an added understanding of economics, technology, and the power of the free-market principle that sometimes it is better to have people pay for what they use and not force people to lose money for something they don't use. All the members

of the work-place community could take pride in being part of this pioneering effort to reduce driving and greenhouse gas emissions. It would be a demonstration of the fundamental features of Reference 1. It would set an example for other employers.

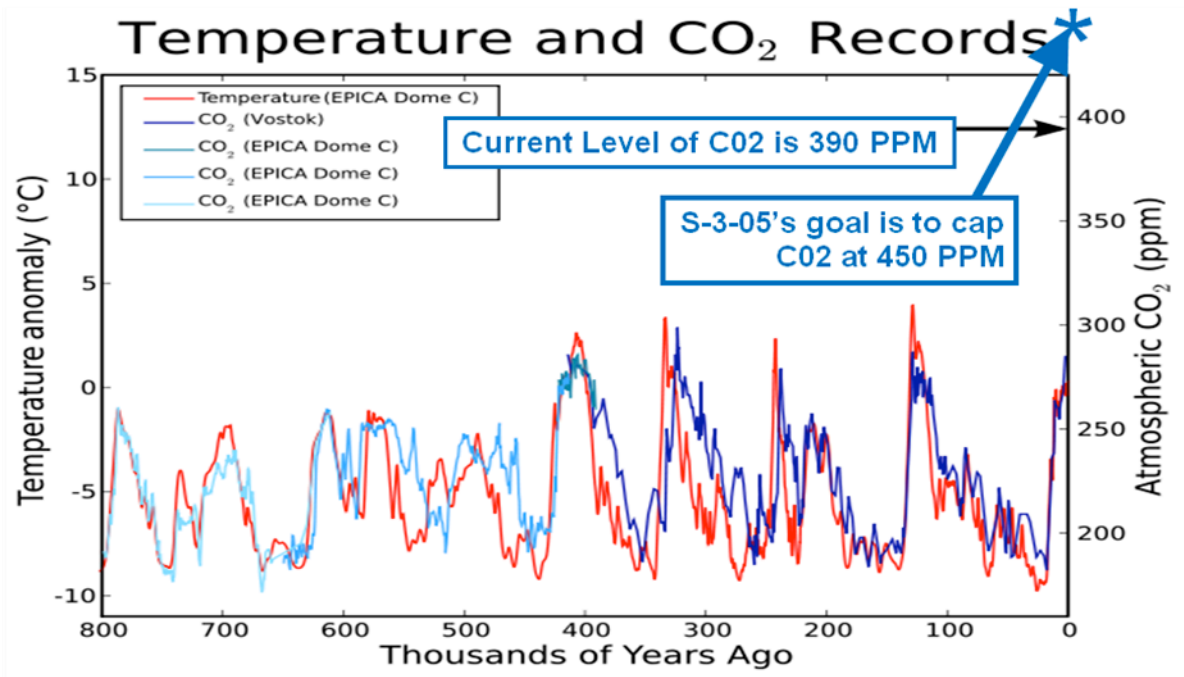
**Table 2**                      **Eleven Cases of Pricing Impact on the Amount of Driving**

| Impact of Financial Incentives on Parking Demand                                                                         |                                  |                      |                      |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------|----------------------|
| Location                                                                                                                 | Scope                            | 1995 dollars per mo. | Parking Use Decrease |
| <b>Group A: Areas with little or no public transportation</b>                                                            |                                  |                      |                      |
| CenturyCityDistrict, West Los Angeles                                                                                    | 3500 employees at 100+ firms     | \$81                 | 15%                  |
| Cornell University, Ithaca, NY                                                                                           | 9000 faculty & staff             | \$34                 | 26%                  |
| San Fernando Valley, Los Angeles                                                                                         | 1 employer, 850 employees        | \$37                 | 30%                  |
| Costa Mesa, CA                                                                                                           |                                  | \$37                 | 22%                  |
| <b>Average for Group</b>                                                                                                 |                                  | <b>\$47</b>          | <b>23%</b>           |
| <b>Group B: Areas with fair public transportation</b>                                                                    |                                  |                      |                      |
| Los Angeles Civic Center                                                                                                 | 10000+ employees, several firms  | \$125                | 36%                  |
| Mid-Wilshire Blvd., Los Angeles                                                                                          | 1 mid-size firm                  | \$89                 | 38%                  |
| Washington DC Suburbs                                                                                                    | 5500 employees at 3 worksites    | \$68                 | 26%                  |
| Downtown Los Angeles                                                                                                     | 5000 employees, 118 firms        | \$126                | 25%                  |
| <b>Average for Group</b>                                                                                                 |                                  | <b>\$102</b>         | <b>31%</b>           |
| <b>Group C: Areas with good public transportation</b>                                                                    |                                  |                      |                      |
| University of Washington, Seattle Wa.                                                                                    | 50,000 faculty, staff & students | \$18                 | 24%                  |
| Downtown Ottawa, Canada                                                                                                  | 3500+ government staff           | \$72                 | 18%                  |
| Bellevue, WA                                                                                                             | 1 firm with 430 employees        | \$54                 | 39% <sup>2</sup>     |
| <b>Average for Group, but not Bellevue Washington</b>                                                                    |                                  | <b>\$45</b>          | <b>21%</b>           |
| <b>Over All Average, Excluding Bellevue Washington</b>                                                                   |                                  |                      | <b>25%</b>           |
| <sup>1</sup> Parking vacancy would be higher! <sup>2</sup> Not used, since transit & walk/bike facilities also improved. |                                  |                      |                      |

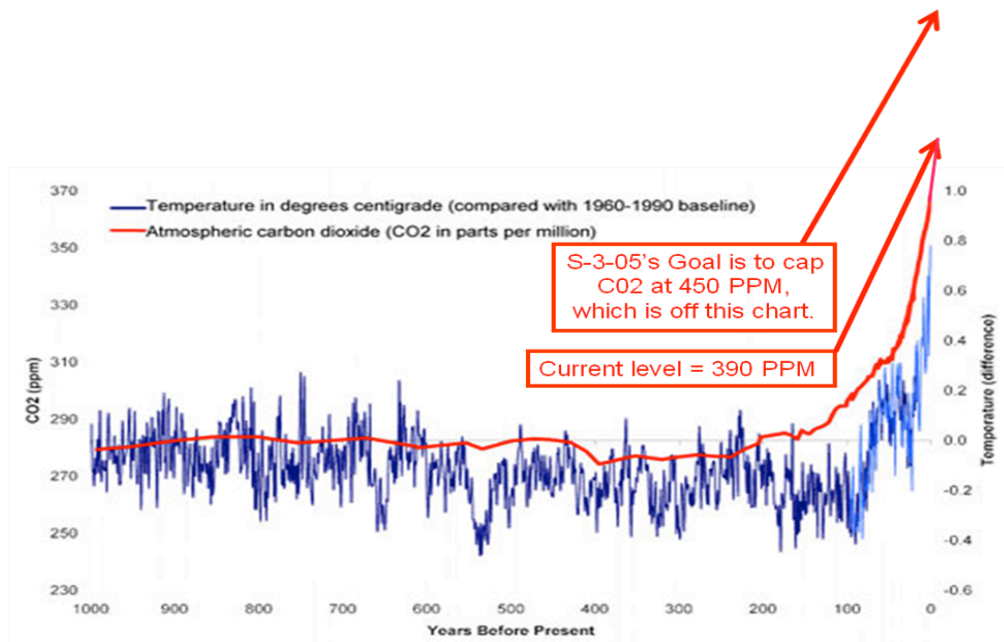
**Figure 3**                      **Atmospheric CO<sub>2</sub>, Increasing Over Recent Decades**



**Figure 4** Atmospheric CO<sub>2</sub> and Mean Temperature, 800,000 Years Ago, with 450 PPM CO<sub>2</sub> Shown



**Figure 5** Atmospheric CO<sub>2</sub> and Mean Temperature, Over the Last 1,000 Years



## **References**

- 1.) *A Plan to Efficiently and Conveniently Unbundle Car Parking Costs*, Paper 2010-A-554-AWMA of the proceedings of the 103<sup>rd</sup> Conference and Exhibition of the Air And Waste Management Association; Mike R. Bullock and Jim R. Stewart, PhD; presented on June 22<sup>nd</sup>, 2010. <http://www.sandiego.gov/environmental-services/pdf/sustainable/parkingcosts.pdf>.
- 2.) Letter from *Center for Biological Diversity*, to Elaine Chang, Deputy Executive Officer of Planning, Rule Development, and Area Sources of the South Coast Air Quality Management District; *Comments on CAPCOA's Conceptual Approaches Regarding Potential Significance Thresholds for Greenhouse Gas Emissions*; April 17, 2008. [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-1/ghg-meeting-1-comment-letter-center-for-biological-diversity.pdf](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-1/ghg-meeting-1-comment-letter-center-for-biological-diversity.pdf)
- 3.) *Communities Tackle Global Warming*, Tom Adams (California League of Conservation Voters), Amanda Eaken, and Ann Notthoff (Eaken and Notthoff are employees of the Natural Resources Defense Council); June 2009. <http://www.nrdc.org/globalwarming/sb375/files/sb375.pdf>

# REFERENCE 10

**SUPERIOR COURT OF CALIFORNIA,  
COUNTY OF SAN DIEGO  
CENTRAL**

**MINUTE ORDER**

DATE: 04/19/2013

TIME: 03:36:00 PM

DEPT: C-72

JUDICIAL OFFICER PRESIDING: Timothy Taylor

CLERK: Patricia Ashworth

REPORTER/ERM: Not Reported

BAILIFF/COURT ATTENDANT:

CASE NO: **37-2012-00101054-CU-TT-CTL** CASE INIT.DATE: 07/20/2012

CASE TITLE: **SIERRA CLUB vs. County of San Diego [E-FILE]**

CASE CATEGORY: Civil - Unlimited CASE TYPE: Toxic Tort/Environmental

---

**APPEARANCES**

---

The Court, having taken the above-entitled matter under submission on 04/19/2013 and having fully considered the arguments of all parties, both written and oral, as well as the evidence presented, now rules as follows:

**1. Overview and Procedural Posture.**

In this CEQA case, this court for the second time in the last 6 months is required to address the controversial topic of global climate change. The court last addressed this subject in *Cleveland Nat'l. Forest Foundation v. SANDAG*, Case No. 2011-00101593; that case is now on appeal (D063288). As noted in its December 2012 ruling, this court recognizes it is but a way station in the life of most CEQA cases, and it seems this one will likely fit this pattern.

Because the trial courts are not final, it is important that they be prompt, and the court has done its best in that regard. The petition was filed on July 20, 2012. The case was assigned to Judge Hayes, but the Sierra Club challenged her, and the case was reassigned to Dept. 72. ROA 9, 11. The petition was promptly served. ROA 10.

The parties were first before the court on November 6, 2012, when they sought a hearing date and supplied the court with a stipulated briefing schedule. The court granted the requests. ROA 15, 16. The County filed its answer on January 9, 2013 (ROA 19), and the briefing began in February, 2013. ROA 21-25. The 4300+ page Certified Administrative Record (AR) is contained on a compact disk which was lodged on April 4 (the CD lodged with the opening brief, ROA 22, was either blank or incompatible with the court's aging desktop computers). The court has reviewed the briefing and the record.

Sierra Club contends that the County's June 20, 2012 "Climate Action Plan" (CAP), which is AR 002-126, is insufficient and violates CEQA in several respects: it does not comply with mitigation measures spelled out in the County's 2011 Program EIR (PEIR), adopted in connection with the 2011

General Plan Update (GPU)(AR 0441 ff); it fails to satisfy the requirements for adopting thresholds of significance for greenhouse gas emissions (GHG); and it should have been set forth in a stand-alone environmental document rather than in an addendum to the PEIR. The County denies these claims, and asserts the CEQA challenge is time-barred, the CAP complies with all legal requirements, the use of an addendum was appropriate, and that all relief is barred by the Sierra Club's failure to notify the AG as required by Pub. Res. Code section 21167.7. Although briefed by Sierra Club, neither standing nor exhaustion are challenged by the County.

Following publication of a tentative ruling on April 16, the case was argued on the afternoon of April 19 by Cory Briggs, Esq. on behalf of Sierra Club, and Ellen Pilsecker, Deputy County Counsel, on behalf of the County. The arguments were focused and thoughtful. Following the arguments, the court took the matter under submission. The court's ruling follows.

## 2. Overview of the CEQA Process.

### A. The Court's Role in CEQA Cases.

In *Mira Mar Mobile Community v. City of Oceanside*, 119 Cal.App.4th 477, 486 (2004) (*Mira Mar Mobile Community*), the court explained that "[i]n a mandate proceeding to review an agency's decision for compliance with CEQA, [courts] review the administrative record de novo [citation], focusing on the adequacy and completeness of the EIR and whether it reflects a good faith effort at full disclosure. [Citation.] [The court's] role is to determine whether the challenged EIR is sufficient as an information document, not whether its ultimate conclusions are correct. [Citation.]" An EIR is presumed adequate. Pub. Res. Code § 21167.3, subd. (a).

Courts review an agency's action under CEQA for a prejudicial abuse of discretion. Pub. Res. Code § 21168.5. "Abuse of discretion is established if the agency has not proceeded in a manner required by law or if the determination or decision is not supported by substantial evidence." *Id.*; see *Mira Mar Mobile Community*, supra, 119 Cal.App.4th at 486; *County of San Diego v. Grossmont-Cuyamaca Community College Dist. ("Grossmont")*, 141 Cal. App. 4th 86, 96 (2006)(same).

In defining the term "substantial evidence," the CEQA Guidelines state: " 'Substantial evidence' ... means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made ... is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion[,] narrative [or] evidence which is clearly erroneous or inaccurate ... does not constitute substantial evidence." CEQA Guidelines, § 15384(a). "In applying the substantial evidence standard, [courts] resolve all reasonable doubts in favor of the administrative finding and decision. [Citation.]" *Mira Mar Mobile Community*, supra, 119 Cal.App.4th at 486; *Grossmont*, supra, 141 Cal. App. 4th at 96.

Although the lead agency's factual determinations are subject to the foregoing deferential rules of review, questions of interpretation or application of the requirements of CEQA are matters of law. While judges may not substitute their judgment for that of the decision makers, they must ensure strict compliance with the procedures and mandates of the statute. *Grossmont*, supra, 141 Cal. App. 4th at 96.

### B. The Three Steps of CEQA.

CEQA establishes "a three-tiered process to ensure that public agencies inform their decisions with

environmental considerations." *Banker's Hill, et al v. City of San Diego*, 139 Cal. App. 4th 249, 257 (2006)("Banker's Hill"); see also CEQA Guidelines, § 15002(k)(describing three-step process).

#### First Step in the CEQA Process.

The first step "is jurisdictional, requiring that an agency conduct a preliminary review in order to determine whether CEQA applies to a proposed activity." *Banker's Hill*, supra, 139 Cal. App. 4th at 257; see also Guidelines, § 15060. The Guidelines give the agency 30 days to conduct this preliminary review. (Guidelines, § 15060.) The agency must first determine if the activity in question amounts to a "project." *Muzzy Ranch Co. v. Solano County Airport Land Use Com.* (2007) 41 Cal.4th 372, 380. "A CEQA ...project falls into one of three categories of activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment (§ 21065.)" *Sunset Sky Ranch Pilots Assn. v. County of Sacramento* (2009) 47 Cal.4th 902, 907.

As part of the preliminary review, the public agency must also determine the application of any statutory exemptions or categorical exemptions that would exempt the proposed project from further review under CEQA. See Guidelines, § 15282 (listing statutory exemptions); Guidelines, §§ 15300–15333 (listing 33 classes of categorical exemptions). The categorical exemptions are contained in the Guidelines and are formulated by the Secretary under authority conferred by CEQA section 21084(a). If, as a result of preliminary review, "the agency finds the project is exempt from CEQA under any of the stated exemptions, no further environmental review is necessary. The agency may prepare and file a notice of exemption, citing the relevant section of the Guidelines and including a brief 'statement of reasons to support the finding.' " *Banker's Hill*, supra, 139 Cal.App.4th at 258, citing Guidelines, §§ 15061(d), 15062(a)(3).

#### Second Step in the CEQA Process.

If the project does not fall within an exemption, the agency proceeds to the second step of the process and conducts an initial study to determine if the project may have a significant effect on the environment. (Guidelines, § 15063.) If, based on the initial study, the public agency determines that "there is substantial evidence, in light of the whole record ... that the project may have a significant effect on the environment, an environmental impact report [(EIR)] shall be prepared." [CEQA, § 21080(d).] On the other hand, if the initial study demonstrates that the project "would not have a significant effect on the environment," either because "[t]here is no substantial evidence, in light of whole record" to that effect or the revisions to the project would avoid such an effect, the agency makes a "negative declaration," briefly describing the basis for its conclusion. (CEQA, § 21080(c)(1); see Guidelines, § 15063(b)(2); *Banker's Hill*, supra, 139 Cal.App.4th at 259.)

The Guidelines and case law further define the standard that an agency uses to determine whether to issue a negative declaration. "[I]f a lead agency is presented with a fair argument that a project may have a significant effect on the environment, the lead agency shall prepare an EIR even though it may also be presented with other substantial evidence that the project will not have a significant effect." (Guidelines, § 15064(f)(1), italics added.) This formulation of the standard for determining whether to issue a negative declaration is often referred to as the "fair argument" standard. See *Laurel Heights Improvement Assn. v. Regents of University of California*, 6 Cal.4th 1112, 1134–1135 (1993). Under the fair argument standard, a project "may" have a significant effect whenever there is a "reasonable possibility" that a significant effect will occur. *No Oil v. City of Los Angeles*, 13 Cal.3d 68, 83-84 (1974). Substantial evidence, for purposes of the fair argument standard, includes "fact, a reasonable assumption predicated upon fact, or expert opinion supported by fact." § 21080, subd. (e)(1).

Substantial evidence is not argument, speculation, unsubstantiated opinion or narrative, evidence that is clearly inaccurate or erroneous, or evidence of social or economic impacts unrelated to physical impacts on the environment. § 21080, subd. (e)(2).

If the initial study reveals no substantial evidence that the project may have a significant environmental effect, the agency may adopt a negative declaration. Pub. Res. Code § 21080, subd. (c)(2); Guidelines, § 15070, subd. (b); Grand Terrace, supra, 160 Cal.App.4th at 1331; Save the Plastic Bag Coalition v. City of Manhattan Beach, 52 Cal. 4th 155, 175 (2011)(holding common sense is part of the substantial evidence analysis). "Alternatively, if there is no substantial evidence of any net significant environmental effect in light of revisions in the project that would mitigate any potentially significant effects, the agency may adopt [an MND]. [Citation.] [An MND] is one in which '(1) the proposed conditions "avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (§ 21064.5 . . . )' [Citations.]" Grand Terrace, supra, at 1331-1332. The MND allows the project to go forward subject to the mitigating measures. Pub. Res. Code §§ 21064.5, 21080, subd. (c); see Grand Terrace, supra, 160 Cal. App. 4th at 1331.

### Third Step in the CEQA Process.

If no negative declaration is issued, the preparation of an EIR is the third and final step in the CEQA process. Banker's Hill, supra, 139 Cal. App. 4th at 259; Guidelines, §§ 15063(b)(1), 15080; CEQA, §§ 21100, 21151.

### C. The Environmental Impact Report.

Central to CEQA is the EIR, which has as its purpose informing the public and government officials of the environmental consequences of decisions before they are made. [Citation.] "An EIR must be prepared on any 'project' a local agency intends to approve or carry out which 'may have a significant effect on the environment.' Pub. Res. Code §§ 21100, 21151; Guidelines, § 15002, subd. (f)(1). The term 'project' is broadly defined and includes any activities which have a potential for resulting in a physical change in the environment, directly or ultimately. Pub Res. Code § 21065; Guidelines, §§ 15002, subd. (d), 15378, subd. (a); [Citation.]) The definition encompasses a wide spectrum, ranging from the adoption of a general plan, which is by its nature tentative and subject to change, to activities with a more immediate impact, such as the issuance of a conditional use permit for a site-specific development proposal." CREED v. City of San Diego, 134 Cal. App. 4th 598, 604 (2005).

"To accommodate this diversity, the Guidelines describe several types of EIR's, which may be tailored to different situations. The most common is the project EIR, which examines the environmental impacts of a specific development project. (Guidelines, § 15161.) A quite different type is the program EIR, which 'may be prepared on a series of actions that can be characterized as one large project and are related either: (1) Geographically, (2) As logical parts in the chain of contemplated actions, (3) In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.'" Guidelines, § 15168, subd. (a); CREED, supra, 134 Cal. App. 4th at 605. As the court held in CREED, a program EIR may serve as the EIR for a subsequently proposed project only to the extent it contemplates and adequately analyzes the potential environmental impacts of the project. CREED, supra, 134 Cal. App. 4th at 615.

As noted in part 1 above, the EIR at issue in this case is of the latter variety, a PEIR.

Under CEQA, an EIR is presumed adequate (Pub. Resources Code, § 21167.3), and the plaintiff in a CEQA action has the burden of proving otherwise. (Preserve Wild Santee v. City of Santee, 210 Cal. App. 4th 260, 275 (2012), internal quotation marks omitted, quoting Concerned Citizens of South Central L.A. v. Los Angeles Unified School Dist. (1994) 24 Cal.App.4th 826, 836.) Courts review an agency's determinations and decisions for abuse of discretion. An agency abuses its discretion when it fails to proceed in a manner required by law or there is not substantial evidence to support its determination or decision. [§§ 21168, 21168.5; Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova (2007) 40 Cal.4th 412, 426-427 (2007) ("Vineyard")]. "Judicial review of these two types of error differs significantly: While [courts] determine de novo whether the agency has employed the correct procedures, 'scrupulously enforc[ing] all legislatively mandated CEQA requirements' [citation], [courts] accord greater deference to the agency's substantive factual conclusions." (Vineyard, supra, 40 Cal. 4th at 435.)

Consequently, in reviewing an EIR for CEQA compliance, courts adjust "scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (Vineyard, supra, 40 Cal.4th at 435.) For example, where a petitioner claims an agency failed to include required information in its environmental analysis, the court's task is to determine whether the agency failed to proceed in the manner prescribed by CEQA. Conversely, where a petitioner challenges an agency's conclusion that a project's adverse environmental effects are adequately mitigated, courts review the agency's conclusion for substantial evidence. (Vineyard, supra, 40 Cal. 4th at 435.)

#### D. Further Requirements of CEQA.

In addition to the foregoing public process/decision maker information steps, the Legislature in enacting CEQA also intended to "provide certain substantive measures for protection of the environment. [Citations.] In particular, one court noted [Public Resources Code] section 21002 requires public agencies 'to deny approval of a project with significant adverse effects when feasible alternatives or feasible mitigation measures can substantially lessen such effects.' [Citation.] (Quail Botanical Gardens Foundation, Inc. v. City of Encinitas (1994) 29 Cal.App.4th 1597, 1601-1602, citing No Oil, Inc. v. City of Los Angeles (1974) 13 Cal.3d 68, 75 and Laurel Heights Improvement Assn. v. Regents of University of California (1993) 6 Cal.4th 1112, 1123 . . . ). The Legislature declared its intention in enacting CEQA "that all public agencies responsible for regulating activities affecting the environment give prime consideration to preventing environmental damage when carrying out their duties. [Citations.] CEQA is to be interpreted 'to afford the fullest possible protection to the environment within the reasonable scope of the statutory language.' " (Mountain Lion Foundation v. Fish & Game Com. (1997) 16 Cal.4th 105, 112.)

#### 3. RFJN.

Sierra Club, with its reply briefing, filed a Request for Judicial Notice to which was attached a copy of the AG's letter acknowledging receipt of a copy of the petition in July of 2012 (shortly after it was filed). The court grants the request for judicial notice under Evid. Code section 452(c) and (g). This conclusively eliminates the County's third affirmative defense and the argument under Pub. Res. Code section 21167.7 contained on pp. 14-15 of the County's brief. In fact, this argument was meritless from the outset, as Sierra Club filed a proof of service on the AG last July (ROA 8). In other words, the County's

argument that "the case file contains no indication that [the AG notification requirement] was met" was demonstrably untrue when the County's answer was filed and when its brief was filed. County Counsel forthrightly acknowledged this at the April 19 hearing.

#### 4. Discussion and Ruling.

Former Governor Schwarzenegger issued, in 2005, Executive Order S-03-05, which for the first time set a state goal of reducing greenhouse gas emissions. This Executive Order gave rise to the Global Warming Solutions Act of 2006 (AB 32), which is codified at H&S Code section 38500 et seq. Section 38550 provides:

"By January 1, 2008, the [Air Resources Board] shall, after one or more public workshops, with public notice, and an opportunity for all interested parties to comment, determine what the statewide greenhouse gas emissions level was in 1990, and approve in a public hearing, a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. In order to ensure the most accurate determination feasible, the state board shall evaluate the best available scientific, technological, and economic information on greenhouse gas emissions to determine the 1990 level of greenhouse gas emissions."

In the 2011 PEIR for the GPU, the County concluded that the GHG and climate-change impacts from the County's own operations and from community sources were "potentially significant" both in relation to compliance with AB 32 and with regard to the updated general plan itself. AR 488 (end of first paragraph under "Summary"), 493 (end of "Summary" paragraph). Consequently, the County had to adopt a series of mitigation measures to render these impacts insignificant. AR 494-500. Among those mitigation measures was CC-1.2, which is the focus of Sierra Club's attack:

"Prepare a County Climate Change Action Plan with an update[d] baseline inventory of greenhouse gas emissions from all sources, more detailed greenhouse gas emissions reduction targets and deadlines; and a comprehensive and enforceable GHG emissions reduction measures that will achieve a 17% reduction in emissions from County operations from 2006 by 2020 and a 9% reduction in community emissions between 2006 and 2020. Once prepared, implementation of the plan will be monitored and progress reported on a regular basis." [AR 496]

The County undertook to prepare the CAP, in accordance with Mitigation Measure CC-1.2, within six months [AR 313-314]. The County did not do so; the CAP was not approved until nearly a year after the PEIR was certified.

The central questions in this case are whether the CAP was properly approved, and whether it meets the requirements of Mitigation Measure CC-1.2. Thus, the court rejects the County's first affirmative defense which is addressed on pp. 5-7 of the County's brief. These arguments are premised on the notion that because the GPU and PEIR were adopted in the summer of 2011, an action filed in July of 2012 cannot pass muster under the 180 day limitations period of Pub. Res. Code section 21167. But the court agrees with Sierra Club that the gravamen of its petition is not an attack on the PEIR, but rather an effort to enforce the PEIR's requirement of enforceable mitigation measures. The case law relied on by the County all arose in settings in which the mitigation measures themselves were challenged as inadequate, or the cases are otherwise inapplicable. This case was filed 30 days after the June 20, 2012 approval by the County of the CAP, and it is not time-barred.

Regarding the first central question identified above: the court finds the CAP should have been the subject of a supplemental EIR instead of an addendum to the PEIR that concluded the CAP is within the scope of the PEIR. (AR 16:1372, second sentence of last paragraph.) Thus, the CAP was not properly approved and violates CEQA.

There is no explanation and no substantial evidence to justify why the CAP was not subject to a supplemental EIR with public notice and opportunity for comment. There is no showing that the County properly considered whether the CAP is within the scope of the PEIR; a supplemental EIR would require the Board of Supervisors to confront this issue. Further, environmental review is necessary to ascertain whether the CAP met the necessary GHG emission reductions when considering the CAP is merely hortatory and contains no enforcement mechanism for reducing GHG emissions.

In this regard, the case has some similarities to *Center for Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156 (County of El Dorado). That case, like this one, involved a program EIR for a general plan. *Id.* at 1175. One of the mitigation measures called for implementation of a mitigation fee program. The county later did an initial study for the fee program, and stopped short of a more complete environmental review. The court of appeal held a tiered EIR was required to examine the specific mitigation measures and fee rate, rejecting the argument that the fee program was merely implementation of the general plan. Here, the CAP "provides the specific details associated with the ... General Plan ... strategies and measures for greenhouse gas (GHG) emissions and reductions that were not available during program-level analysis of the General Plan" (AR 16:1357), and as such, the CAP should have been the subject of a supplemental EIR [as opposed to an IS followed by addendum to the PEIR]. Thus, the CAP was not properly approved and violated CEQA.

Turning to the second central question identified above: the court finds that even if the CAP was properly approved, it does not comport with the requirements of Mitigation Measure CC-1.2; thus, the CAP violates CEQA. In this regard, there is no substantial evidence in the AR that the CAP satisfies Mitigation Measure CC-1.2; in fact, the evidence in the AR discloses the reverse is true.

For instance, the AR shows the CAP fails to meet Mitigation Measure CC-1.2 GHG emission reduction goals and targets. The CAP admits "The CAP itself does not itself ensure reductions ..." [AR 2:74]; the CAP regards its goals and strategies as mere recommendations [AR 2:27 - "The goals and strategies recommended in the CAP ..."]; and the CAP describes itself as a "living document," a "working document," and "a platform for the County to build strategies to meet its emission-reduction targets" [AR 2:15, 73.] As the court noted in its December 2012 decision, the County's adoption of the CAP occurs "in a setting in which hundreds of thousands of people in [the County] live in low-lying areas near the coast, and are thus susceptible to rising sea levels associated with global climate change." There is no time for "building strategies" or "living documents;" as the PEIR quite rightly found, enforceable mitigation measures are necessary now.

The AR shows the CAP contains no detailed deadlines for GHG emission reductions. This is borne out by the consultant who prepared the CAP for the County pointing out early on "[t]he Draft CAP neglects to describe how the County will monitor the effectiveness of the plan and its component measures over time" [AR 83:1947, last paragraph]; the County's admission "the CAP did not set such dates" [County's opposition memorandum, page 11:21-22]; and the word "deadline" appears but once in the CAP, in describing Mitigation Measure CC-1.2 [AR 2:76.]

Further, the AR shows the CAP contains no enforcement mechanism for reducing GHG emissions. The

CAP's goals and strategies are mere recommendations [AR 2:27 - "The goals and strategies recommended in the CAP..."]; there is no indication in the CAP how the measures described for community activities (Chapter 3) and the County's operations (Chapter 4) can or will be enforced [AR 2:26-57, 59-63]; the County contends five of the CAP's twenty-seven GHG reduction measures are required under state law and thus enforceable but fails to address the other twenty-two reduction measures [County's opposition memorandum, page 9:1-8; and Exhibit A to County's opposition memorandum]; and no evidence is related in the AR that supports the "belief" of the County staffer that GHG emissions reductions can be achieved through only education and incentives [AR 20:1581 and AR 23:1629 - "It is important to note that, as currently written, none of these measures are mandates. We believe that the emission reduction can be achieved through education and incentives."]

At the April 19 argument, County Counsel suggested that some of the absent benchmarks can be found in the Minutes of the Board reflecting its approval of the CAP. Having reviewed the minutes, the court agrees with Sierra Club that the minutes do not set forth enforceable standards or create any mandatory duty that could later be enforced if not carried out.

As such, the CAP, even if it was properly approved, does not comport with the requirements of Mitigation Measure CC-1.2, and thus violates CEQA.

In view of the foregoing, the court finds it unnecessary to address the subsidiary dispute over whether the guidelines for determining thresholds of significance for GHG were adopted or not. Compare *Natter v. Palm Desert Rent Review Comm'n.*, 190 Cal. App. 3d 994, 1001 (1987); *Young v. Three for One Oil Royalties*, 1 Cal. 2d 639, 647-648 (1934).

Let a writ of mandate issue forthwith, directing respondent the County of San Diego to set aside its June 20, 2012 approval of the CAP. Counsel for petitioners is directed to forthwith submit same to the court for signature.

IT IS SO ORDERED.



---

Judge Timothy Taylor

Filed 10/29/14

CERTIFIED FOR PUBLICATION

~~NOT TO BE PUBLISHED IN OFFICIAL REPORTS~~

California Rules of Court, rule 8.1115(a), prohibits courts and parties from citing or relying on opinions not certified for publication or ordered published, except as specified by rule 8.1115(b). This opinion has not been certified for publication or ordered published for purposes of rule 8.1115. XXXXXXXX

COURT OF APPEAL, FOURTH APPELLATE DISTRICT

DIVISION ONE

STATE OF CALIFORNIA

SIERRA CLUB,

Plaintiff and Respondent,

v.

COUNTY OF SAN DIEGO,

Defendant and Respondent.

D064243

(Super. Ct. No. 37-2012-00101054-  
CU-TT-CTL)

APPEAL from a judgment of the Superior Court of San Diego County, Timothy Taylor, Judge. Affirmed.

Thomas E. Montgomery, County Counsel, and C. Ellen Pilsecker, Chief Deputy County Counsel, for Defendant and Appellant.

Law Office of Malinda R. Dickenson, Malinda R. Dickenson; Chatten-Brown & Carstens, Douglas P. Carstens and Josh Chatten-Brown for Plaintiff and Respondent.

This action arises out of the County of San Diego's (County's) 2011 general plan update, wherein the County issued a program environmental impact report (PEIR), and adopted various related mitigation measures. In this action the Sierra Club sought, in a

petition for writ of mandate, to enforce one mitigation measure adopted by the County: the Climate Change Mitigation Measure CC-1.2 (Mitigation Measure CC-1.2). With Mitigation Measure CC-1.2, the County committed to preparing a climate change action plan with "more detailed greenhouse gas [GHG] emissions reduction [GHG] targets and deadlines" and "comprehensive and enforceable GHG emissions reductions measures that will achieve" specified quantities of GHG reductions by the year 2020.

However, the Sierra Club alleged that instead of preparing a climate change action plan that included comprehensive and enforceable GHG emission reduction measures that would achieve GHG reductions by 2020, the County prepared a climate action plan (CAP) as a plan-level document that expressly "does not ensure reductions." The County also developed associated guidelines for determining significance (Thresholds).

According to the Sierra Club, review of the CAP and Thresholds project under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.) was performed after the fact, using an addendum to the general plan update PEIR, without public review, without addressing the concept of tiering, without addressing the County's failure to comply with the express language of Mitigation Measure CC-1.2, and without a meaningful analysis of the environmental impacts of the CAP and Thresholds project.

The court granted the petition, concluding that the County's CAP did not comply with the requirements of Mitigation Measure CC-1.2 and thus violated CEQA. The court found that the CAP did not contain enforceable GHG reduction measures that would achieve the specified emissions reductions.

The County appeals, asserting (1) the statute of limitations bars the claim that the mitigation measures are not enforceable; (2) the CAP met the requirements of Mitigation Measure CC-1.2; and (3) that the trial court erred in finding that a supplemental EIR was required. We affirm.

## FACTUAL AND PROCEDURAL BACKGROUND

### *A. Executive Order S-3-05*

In 2005 then-California Governor Arnold Schwarzenegger issued Executive Order No. S-3-05,<sup>1</sup> which acknowledged California's vulnerability to the effects of climate change and established targets for reducing GHG emissions in California over time. Specifically, Executive Order No. S-3-05 set statewide targets for three points in time: 2010, 2020, and 2050. The target for 2010 (2010 Target) was to reduce emissions to the levels they were at in the year 2000. The target for 2020 is to reduce emissions to the levels they were at in 1990 (2020 Target). The target for 2050 is that emissions be 80 percent below the levels they were at in 1990 (2050 Target).

Executive Order No. S-3-05 was based on then-available climate science and represented California's share of worldwide GHG reductions necessary to stabilize climate. As the Attorney General explained, "Executive Order [No.] S-3-05 is an official policy of the State of California, established by gubernatorial order in 2005, and designed to meet the environmental objective that is relevant under CEQA (climate stabilization)."

---

<sup>1</sup> On March 24, 2014, the County requested that we take judicial notice of Executive Order No. S-3-05. We grant that request.

*B. The Legislature Addresses the Need for GHG Emission Reductions*

In response to Executive Order No. S-3-05, the California Legislature enacted the California Global Warming Solutions Action of 2006, Assembly Bill No. 32. (Health & Saf. Code, § 38500 et seq.) Consistent with Executive Order No. S-3-05, Assembly Bill No. 32 required the California State Air Resources Board (CARB) to determine 1990 levels of GHG emissions and then to establish "a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020." (Health & Saf. Code, § 38550.) Assembly Bill No. 32 also stated that GHG reductions must continue after 2020, requiring that the statewide greenhouse gas emissions limit established by CARB "remain in effect unless otherwise amended or repealed" (Health & Saf. Code, § 38551, subd. (a)) and further that "[i]t 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 greenhouse gases beyond 2020." (Health & Saf. Code, § 38551, subd. (b).) Assembly Bill No. 32 also required that CARB "prepare and approve a scoping plan [for] achieving the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions by 2020." (Health & Saf. Code, § 38561, subd. (a).)

In December 2008 CARB approved the scoping plan. The scoping plan "identifies California's cities and counties as 'essential partners' within the overall statewide effort, and recommends that local governments set a GHG reduction target of 15% below 2005-2008 levels by 2020." Thus, it was acknowledged that CARB would accept this target as a substitute for the 1990 level referenced in Assembly Bill No. 32 and Executive Order No. S-3-05.

### *C. The County's General Plan Update PEIR*

The County acknowledged in the general plan update PEIR that it needed to "reduce GHG emissions to 1990 levels by 2020" and that changes were required both in the community and in the County's operations, buildings, vehicle fleet, and with respect to its employee commutes, water, and waste.

A GHG emissions inventory was prepared as a special appendix (Appendix K). Appendix K set forth projected emissions reductions and assumptions then-available, and promised that the "Greenhouse Gas Reduction/Climate Action Plan, which will be prepared as an implementation strategy, will further detail the County's GHG emissions and how those reductions will occur."

There was extensive public comment on the general plan update, including from the California Attorney General:

"[W]e encourage the County to (1) commit in the General Plan to adopt by a date certain a CAP with defined attributes (targets, enforceable measures to meet those targets, monitoring and reporting, and mechanisms to revise the CAP as necessary) that will be integrated into the General Plan; (2) incorporate into the General Plan interim policies to ensure that any projects considered before completion of the CAP will not undermine the objectives of the CAP; and (3) for all GHG impacts the County has designated as significant, adopt feasible mitigation measures that can be identified today and that do not require further analysis." (Fn. omitted.)

### *D. Mitigation Measures*

The County thereafter promised to take a series of additional actions. These promises took the form of a group of climate change-related mitigation measures: Mitigation Measures CC-1.1 through CC-1.19 (the Mitigation Measures). The Mitigation

Measures included requirements to update, review, and implement County programs; implement a strategic energy plan; revise the zoning ordinance; coordinate with other entities; educate the public; reduce vehicle miles traveled and encourage alternative modes of transportation; and, based thereon, to revise the County guidelines for determining significance.

The County made the following finding with regard to Mitigation Measure CC-1.2:

"[Mitigation Measure] CC-1.2 requires the preparation of a County Climate Change Action Plan within six months from the adoption date of the General Plan Update. The Climate Change Action Plan will include a baseline inventory of greenhouse gas emissions from all sources and *more detailed greenhouse gas emissions reduction targets and deadlines*. The County Climate Change Action Plan *will achieve comprehensive and enforceable GHG emissions reduction* of 17% (totaling 23,572 MTC02E) from County operations from 2006 by 2020 and 9% reduction (totaling 479,717 MTC02E) in community emissions from 2006 by 2020. Implementation of this Climate Change Action Plan will contribute to meeting the [Assembly Bill No.] 32 goals, in addition to the State regulatory requirements noted above." (Italics added.)

Mitigation Measure CC-1.2 formed the basis for Mitigation Measure CC-1.8, which required "revision of the County Guidelines for Determining Significance based on the Climate Change Action Plan."

Mitigation Measure CC-1.8, in turn, formed the basis for Mitigation Measure CC-1.7, which required that the County guidelines for determining significance anticipated by Mitigation Measure CC-1.8 incorporate CARB's recommendation for a threshold for determining significance of impacts on climate change. Should the recommendation "not be released in a timely manner," the County would "prepare its own threshold."

As required by CEQA (Pub. Res. Code, § 21081.6), the County incorporated a mitigation monitoring and reporting program (MMRP) into the general plan update PEIR.

Included in the MMRP was a promise to achieve GHG reductions by 2020 through comprehensive and enforceable GHG emission reduction measures. In addition to committing to the 2020 Target, the County also committed to compliance with the Executive Order No. S-3-05 trajectory. The County found "significant impacts associated with substantial climate-related risks" such as those "on water supply, wildfires, energy needs, and impacts to public health" would occur as a result of its general plan update. However, as a result of its commitment to adopt a CAP and Thresholds, and other mitigation measures, the County was able to make a finding that the climate change impacts anticipated by the general plan update PEIR would be avoided or substantially lessened.

#### *E. The CAP and Thresholds Project*

According to the County, the CAP was prepared for the following purposes:

1. To mitigate the impacts of climate change by achieving meaningful greenhouse gas (GHG) reductions within the County, consistent with Assembly Bill No. 32, the governor's Executive Order S-3-05, and CEQA guidelines (Cal. Code Regs., tit. 14, § 15000 et seq. [CEQA Guidelines]).
2. To allow lead agencies to adopt a plan or program that addresses the cumulative impacts of a project.
3. To provide a mechanism that subsequent projects may use as a means to address GHG impacts under CEQA.

4. To comply with the 2011 adopted County General Plan Environmental Impact Report (EIR) Mitigation Measure CC-1.2, Preparation of a Climate Action Plan.

Although compliance with Mitigation Measure CC-1.2 was one purpose of the CAP, two of the four purposes relate to preparation of the CAP as a plan-level document so that environmental review could be avoided on future projects that were determined to be below specified "thresholds." (CEQA Guidelines, § 15183.5.) However, the CAP did not mitigate climate change impacts consistent with Assembly Bill No. 32 and Executive Order No. S-3-05, did not satisfy the plan-level requirements of CEQA Guideline 15183.5, and it did not meet the requirements of Mitigation Measure CC-1.2

Instead, the CAP expressly acknowledged the possibility that "communitywide inventories will indicate that the community is not achieving its reduction targets" and admitted that the CAP "does not ensure reductions." Further, the CAP did not include a meaningful analysis of "measures that extend beyond the year 2020." Rather, the County documented that instead of continuing to reduce GHG emissions after 2020, GHG emissions allowed as a result of the general plan update were anticipated to *increase* after 2020.

The CAP and Thresholds were presented to the planning commission and the board of supervisors as "the project." The Thresholds, like the CAP, purport to expressly facilitate post-2020 development that would have significant adverse climate change impacts, without any consideration of post-2020 climate science as required by Assembly Bill No. 32 and Executive Order No. S-3-05.

#### *F. The Comment Period*

The Sierra Club submitted extensive comments to the County. In particular, the Sierra Club commented on the need to take action consistent with climate science and achieve the Assembly Bill No. 32 and Executive Order No. S-3-05 GHG emissions reductions targets. The Sierra Club also provided specific examples of feasible GHG Reduction measures that would actually reduce GHG emissions and could be adopted without delay. The Sierra Club submitted additional comments and testified at the planning commission hearing, attempted to appeal the planning commission's decision, and testified at the board of supervisors hearing.

#### *G. Proceedings Before the Planning Commission*

The final agenda for the April 27, 2012 regular meeting of the County Planning Commission Regulation Meeting made no reference to the associated Thresholds, which were also presented to the planning commission. Despite acknowledging the significant climate change effects as well as the requirements of Assembly Bill No. 32 and Executive Order No. S-3-05, staff took the position that no additional environmental review was required. The planning commission voted to adopt staff's recommendation with one addition relating to installation of electric vehicle recharging stations.

#### *H. Proceedings Before the Board of Supervisors*

The Project was placed on the agenda for the June 20, 2012 board of supervisors meeting as "County of San Diego Climate Action Plan (District: All)." The staff report and supporting documents presented to the board of supervisors included (1) the CAP, (2) the Thresholds, (3) the environmental documentation, and (4) public documentation.

The environmental documentation included a memorandum referencing "CEQA Guidelines Section 15164 Addendum to the County of San Diego General Plan Update [PEIR] (SCH 2002111067)" (Addendum) which was dated the same day as the hearing, June 20, 2012. The addendum defined the project as "the CAP and Significance Guidelines." The addendum included attachments entitled "Environmental Review Update Checklist Form" (environmental checklist) and "Environmental Review Update Checklist for County of San Diego Climate Action Plan." The environmental checklist included a determination by staff that the "new information included in the CAP and Significance Guidelines represent minor technical additions to the previously certified EIR."

At the board of supervisors hearing, staff acknowledged that "[s]tate and local measures in the climate plan are insufficient to achieve our target in 2035" and explained that the CAP measures were not required, but rather that staff "believe[d]" that "education and incentives" might produce a result.

The County also documented that GHG emissions were anticipated to *increase*, not decrease, after 2020. Staff explained that the County would not comply with Executive Order No. S-3-05 because "the State's plan right now goes out to 2020." Staff further explained to the Board of Supervisors that the Thresholds would result in a less than significant finding for greenhouse gas emissions for future development projects.

Ultimately, the board of supervisors took the following actions:

1. Adopted environmental findings including in attachment C.

2. Adopted the plan titled "County of San Diego Climate Action Plan (Attachment A)."

The only findings made by the County were the following:

1. The environmental impact report (EIR) dated August 3, 2011 on file with the Department of Planning and Land Use (DPLU) as Environmental Review Number SCH 2002111067 was completed in compliance CEQA and the State and County CEQA Guidelines and that the Board of Supervisors has reviewed and considered the information contained therein and the Addendum thereto dated June 20, 2012 on file with DPLU and attached thereto; and
2. There were no changes in the project or in the circumstances under which the project was undertaken that involved significant new environmental impacts which were not considered in the previously certified EIR dated August 3, 2011, that there was no substantial increase in the severity of previously identified significant effects, and that no information of substantial importance had become available since the EIR was certified as explained in the environmental checklist dated June 20, 2012 and attached thereto.

*I. The Sierra Club Files Suit*

The Sierra Club filed a petition for writ of mandate, challenging the June 20, 2012 approval of the CAP and Thresholds project, including the associated environmental review. The Sierra Club alleged that the CAP did not meet the requirements of Mitigation Measure CC-1.2, the Thresholds were not adopted pursuant to the requirements of CEQA Guideline section 15064.7, and that an EIR should have been prepared.

*J. The Trial Court's Decision*

The trial court determined that the CAP did not comply with the requirements for a CAP as set forth in Mitigation Measure CC-1.2, and thus violated CEQA. The trial court found that the CAP neither contained enforceable GHG reduction measures that

will achieve the specified emissions reductions, nor detailed deadlines for GHG emission reductions.

The trial court further found that the approval process violated CEQA, noting: "There is no showing that the County properly considered whether the CAP is within the scope of the PEIR" and that "environmental review is necessary to ascertain whether the CAP met the necessary GHG emission reductions when considering the CAP is merely hortatory and contains no enforcement mechanism for reducing GHG emissions."

Further, the trial court determined that whether or not the Thresholds were adopted was a subsidiary issue that did not need to be reached in light of the trial court's decision on the CAP (which formed the basis for the Thresholds) and the process by which it was approved.

## DISCUSSION

### I. STANDARD OF REVIEW

The Sierra Club and the County agree as to the applicable standards of review.

In reviewing the County's actions under CEQA, we must determine whether there was "a prejudicial abuse of discretion." (Pub. Resources Code, § 21168.5.) "'Abuse of discretion is established if the agency has not proceeded in a manner required by law, or if the determination or decision is not supported by substantial evidence.'" (*Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App.4th 477, 486.)

"[A] reviewing court must adjust its scrutiny to the nature of the alleged defect." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 435 (*Vineyard*).) Challenges to an agency's failure to proceed in the

manner required by CEQA are subject to a significantly different standard of review than challenges that an agency's decision is not supported by substantial evidence. (*Ibid.*)

Where the challenge is that the agency did not proceed in the manner required by law, a court must "determine de novo whether the agency has employed the correct procedures, 'scrupulously enforc[ing] all legislatively mandated CEQA requirements.'" (*Ibid.*)

Furthermore, when a prior environmental impact report has been prepared and certified for a program or plan, the question for a court reviewing an agency's decision not to use a tiered EIR for a later project "is one of law, i.e., 'the sufficiency of the evidence to support a fair argument.'" (*Sierra Club v. County of Sonoma* (1992) 6 Cal.App.4th 1307, 1318.) "[I]f there is substantial evidence in the record that the later project may arguably have a significant adverse effect on the environment which was not examined in the prior program EIR, doubts must be resolved in favor of environmental review and the agency must prepare a new tiered EIR, notwithstanding the existence of contrary evidence." (*Id.* at p. 1319, fn. omitted.) The court "must set aside the decision if the administrative record contains substantial evidence that a proposed project might have a significant environmental impact; in such a case, the agency has not proceeded as required by law." (*Id.* at 1317.)

## II. OVERVIEW OF CEQA

"The fundamental goals of environmental review under CEQA are information, participation, mitigation, and accountability." (*Lincoln Place Tenants Assn. v. City of Los Angeles* (2007) 155 Cal.App.4th 425, 443-444 (*Lincoln Place II*).) As the California Supreme Court has explained: "If CEQA is scrupulously followed, the public will know

the basis on which its responsible officials either approve or reject environmentally significant action, and the public, being duly informed, can respond accordingly to action with which it disagrees. [Citations.] The EIR process protects not only the environment but also informed self-government." (*Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 392 (*Laurel Heights*).)

CEQA requires a public agency to prepare an environmental impact report (EIR) before approving a project that may have significant environmental effects. (Pub. Resources Code, § 21100.) The EIR is "'the heart of CEQA' . . . an 'environmental alarm bell' whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.'" (*Laurel Heights, supra*, 47 Cal.3d at p. 392.)

CEQA authorizes the preparation of various kinds of environmental impact reports depending upon the situation, such as the subsequent EIR, a supplemental EIR, and a tiered EIR. (Pub. Resources Code, §§ 21166, 21068.5, 21093, 21094.) Whereas the subsequent EIR and supplemental EIR are used to analyze modifications to a particular project, a tiered EIR is used to analyze the impacts of a later project that is consistent with an EIR prepared for a general plan, policy, or program. (CEQA Guidelines, § 15385; compare Pub. Resources Code, § 21166 & CEQA Guidelines §§ 15162, 15163 & 15164 [referencing "the project"] with Pub. Resources Code, § 21093 [stating that later projects may use tiering].)

CEQA requires that "environmental impact reports shall be tiered whenever feasible." (Pub. Resources Code, § 21093, subd. (b).) Tiering means "the coverage of

general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs . . . incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared." (CEQA Guidelines, § 15385; Pub. Resources Code, § 21068.5.) In the context of program and plan-level EIR's, the use of tiered EIR's is mandatory for a later project that meets the requirements of Public Resources Code section 21094, subdivision (b). (Pub. Resources Code, § 21094, subd. (a).)

Another requirement of CEQA is that public agencies "should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." (Pub. Resources Code, § 21002.) "A 'mitigation measure' is a suggestion or change that would reduce or minimize significant adverse impacts on the environment caused by the project as proposed." (*Lincoln Place II, supra*, 155 Cal.App.4th at p. 445.)

If the agency finds that mitigation measures have been incorporated into the project to mitigate or avoid a project's significant effects, a "public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation." (Pub. Resources Code, § 21081.6, subd. (a)(1).)

If a mitigation measure later becomes "impracticable or unworkable," the "governing body must state a legitimate reason for deleting an earlier adopted mitigation

measure, and must support that statement of reason with substantial evidence." (*Lincoln Place Tenants Association v. City of Los Angeles* (2005) 130 Cal.App.4th 1491, 1509 (*Lincoln Place I*.)

### III. ANALYSIS

#### A. Statute of Limitations Defense

The County asserts that the Sierra Club's claim that the mitigation measures it adopted are not enforceable is barred by the statute of limitations because the Sierra Club should have challenged the County's approval of the general plan update EIR, not the CAP. We reject this contention.

The petition was filed 30 days after the County's June 20, 2012 approval of the CAP. In addition, the lawsuit was filed 29 days after the County filed a notice of determination (NOD). The Sierra Club's July 20, 2012 petition was timely filed 29 days after. Thus, the County triggered the 30-day statute of limitations set forth in Public Resources Code section 21167, subdivisions (b) and (e).

The Sierra Club is not challenging the validity of the general plan update PEIR or the enforceability of the mitigation measures provided in that document. Rather, the Sierra Club is challenging the project before the Board of Supervisors on June 20, 2012, and seeks to enforce a key mitigation measure set forth in the EIR and MMRP - Mitigation Measure CC-1.2.

Further, the Court of Appeal in *Lincoln Place II*, *supra*, 155 Cal.App.4th 425 rejected a similar argument to that made by the County. In that case, a tenants' association sought to compel the City of Los Angeles to enforce mitigation measures

contained in a vesting tentative tract map issued by the city. The city argued that the 180-day statute of limitations contained in Public Resources Code section 21167 for challenges to approval of projects without determining whether they have a significant effect on the environment barred the plaintiffs' action. In rejecting that action, the Court of Appeal held "[t]he statute's plain language demonstrates it has no application to this case seeking to *enforce mitigating conditions*." (*Lincoln Place II*, at p. 453, fn. 23, italics added.)

Moreover, the cases cited by the County in support of its position are inapposite. The County cites *River Valley Preservation Project v. Metropolitan Transit Development Bd.* (1995) 37 Cal.App.4th 154 and *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004 for the proposition that because the time period within which to challenge the general plan update EIR has expired, the EIR is conclusively presumed to have complied with CEQA. Here, however, the Sierra Club is not challenging the general plan update EIR, but the CAP and Thresholds project, and is seeking to enforce Mitigation Measure CC-1.2.

The County's reliance upon *Environmental Council of Sacramento v. City of Sacramento* (2006) 142 Cal.App.4th 1018 and *Mount Shasta Bioregional Ecology Center v. County of Siskiyou* (2012) 210 Cal.App.4th 184 is also unavailing. The petitioners in those actions were challenging the adequacy of the mitigation measures themselves. Here, the Sierra Club does not attack the adequacy of the mitigation measure in the general plan update PEIR. To the contrary, the Sierra Club's lawsuit is in *support* of the County's past findings and promises to achieve GHG Reductions.

*B. Failure To Proceed in a Manner Required by Law*

As detailed, *ante*, implementation of Mitigation Measure CC-1.2 was only one of the purported purposes of the CAP and Thresholds project. The CAP and Thresholds project also purports to be a plan-level document for use in review of later projects.

As we shall explain, *post*, with respect to the CAP as mitigation for a plan-level document, the County failed to proceed in the manner required by CEQA by proceeding with the CAP and Thresholds project in spite of the express language of Mitigation Measure CC-1.2 that the CAP "include . . . more detailed greenhouse gas emissions reduction targets and deadlines" and that the CAP "will achieve comprehensive and enforceable GHG emissions reduction" by 2020. With respect to the CAP as a plan-level document itself, the County failed to proceed in the manner required by law by failing to incorporate mitigation measures into the CAP as required by Public Resources Code section 21081.6.

*1. The County failed to adopt a CAP that complied with the requirements of Mitigation Measure CC-1.2*

"Mitigating conditions are not mere expressions of hope." (*Lincoln Place I, supra*, 130 Cal.App.4th at p. 1508.) Once incorporated, mitigation measures cannot be defeated by ignoring them or by "attempting to render them meaningless by moving ahead with the project in spite of them." (*Lincoln Place II, supra*, 155 Cal.App.4th at p. 450.) This is true even where subsequent approvals are ministerial. (*Katzeff v. California Department of Forestry & Fire Protection* (2010) 181 Cal.App.4th 601, 614 [public agency "may not authorize destruction or cancellation of the mitigation—whether or not

the approval is ministerial—without reviewing the continuing need for the mitigation, stating a reason for its actions, and supporting it with substantial evidence"].) If a mitigation measure later becomes "impractical or unworkable," the "governing body must state a legitimate reason for deleting an earlier adopted mitigation measure, and must support that statement of reason with substantial evidence." (*Lincoln Place I, supra*, 130 Cal.App.4th at p. 1509.)

a. *The CAP does not include enforceable GHG emissions required by Mitigation Measure CC-1.2*

When it adopted the general plan PEIR, the County promised to achieve specified GHG reductions by 2020. However, when it approved the CAP and Thresholds project, the County stated that the CAP does not ensure the required GHG emissions reductions. Rather, the County described the strategies as recommendations.

Until this litigation was initiated, the County described the CAP as the most critical component of the County's climate change mitigation efforts. The CAP was intended to "'provide[] the specific details associated with [the General Plan] strategies and measures for greenhouse gas (GHG) emissions reduction *that were not available* during the program-level analysis of the General Plan.'" (Italics added.)

The County agreed to the mitigating requirement of a CAP containing "comprehensive and enforceable GHG emissions reduction measures that will achieve" the specified GHG Reductions by 2020. This is because, as the County acknowledges, Executive Order No. S-3-05 requires consistent emissions reductions each year from

2010 through 2020 and then a greater quantity of emissions reductions each year from 2020 through 2050.

The County asserts that "[f]ive of the reduction measures incorporated into the CAP are also embodied in state or federal law" and that "CEQA permits reliance on existing regulatory standards as mitigation when it is reasonable to believe compliance will occur."

However, the County acknowledges that these measures will not, alone, achieve the specified GHG emissions reductions by 2020. In fact, the record shows that without local measures the requirements of Assembly Bill No. 32 will not be met.

Further, the record demonstrates that many of the mitigation measures set forth in the MMRP are not likely to achieve GHG emissions reductions by 2020 as promised by Mitigation Measure CC-1.2 because they are not currently funded. The record show that the County has not funded essential programs like replacing its own vehicle fleet, implementing water conservation programs, preparing town center plans, and reducing water demand. The County cannot rely on unfunded programs to support the required GHG emissions reductions by 2020, as Mitigation Measure CC-1.2 requires.

Transportation is a major concern, which the County concedes is the largest source of community GHG emissions. The Sierra Club presented evidence below that driving reductions needed to achieve Assembly Bill No. 32 and Executive Order No. S-3-05 targets are not met. The County did not dispute this evidence. The record shows that transit-related measures are either unfunded, that the County is not making meaningful

implementation efforts, and in some instances that the County is acting contrary to mitigation measures incorporated into the general plan update PEIR.

For example, two of the four transportation measures, T1 (increase transit use) and T2 (increase walking & biking), rely on at least one unfunded program. In addition, measures T1 and T2, as well as T3 (increase ridesharing), also rely on "coordination" with SANDAG and/or other entities.

In response to Sierra Club's comments relating to the effectiveness of these measures as a result of current SANDAG (San Diego Association of Governments) priorities, the County did not request funds based on the fact that it does not control how SANDAG spends its money. As the County stated, "The County does not control regional plans or allocation of regional transportation funding." This position was rejected by the Supreme Court in *City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 367 [holding respondent could not disclaim responsibility for making payments without first asking for funds].

The CAP's transportation section also does not include an analysis of the County's own operations, and the record appears to include contradictions even over programs over which the County has exclusive control, such as replacement of its own vehicle fleet with alternatively fueled vehicles. Although the County suggests it will implement "1 % greater efficiency per year", the County has not formally bound itself to do so. Indeed, there is no mention of potential funding sources with respect to reductions related to County operations.

b. *The CAP contains no detailed deadlines for reducing GHG emissions*

As the trial court found, the CAP contained no detailed deadlines. The County argues on appeal that the 2020 goal and the timeframes set forth in the MMRP are sufficient to meet the requirement of "more detailed . . . deadlines." However, Mitigation Measure CC-1.2 expressly required that the CAP provide more detailed deadlines. If the County did not intend for the CAP to do anything further with respect to deadlines than already set forth, the County would not have used the word "more." Indeed, in addition to not providing the promised deadlines, the CAP acknowledges that it will not be effective unless it is updated.

c. *The evidence cited by the County*

The County asserts that CAP measures will be effective because "[p]articipation rates were discussed and modified," and the "feasibility of attaining reduction targets was assessed." However, the County does not cite any evidence in the record to support its belief that people will participate in the various programs to the extent necessary to achieve the reductions asserted, or even assert that feasible measures will actually be implemented.

Rather, the County cites to entire appendices and chapters of the CAP. However, information contained in appendices are "not a substitute for "a good faith reasoned analysis."" (Vineyard, *supra*, 40 Cal.4th at p. 442.) "The audience to whom an EIR must communicate is not the reviewing court but the public and the government officials deciding on the project." (*Id.* at p. 443.)

The County also asserts that the CAP "demonstrates a [GHG emissions] reduction of 19%." However, the CAP expressly states that it does not ensure reductions. Instead, the County's evidence relates to quantification of the respective measures. Quantifying GHG reduction measures is not synonymous with implementing them. Whether a measure is effective requires more than quantification, but an assessment of the likelihood of implementation. There is no evidence in the record that the above-referenced mitigation measures will make any contribution to achieving GHG emissions reductions by 2020.

*2. The County's failure to make findings regarding the environmental impact of the CAP and Thresholds project*

Instead of analyzing and making findings regarding the environmental effects of the CAP and Thresholds project, the County made an erroneous assumption that the CAP and Thresholds project was the same project as the general plan update. (*Sierra Club, supra*, 6 Cal.App.4th at p. 1320 ["section 21166 and its companion section of the [CEQA] Guidelines appear to control only when the question is whether more than one EIR must be prepared for what is essentially the same project"].) As a result, the County failed to render a "written determination of environmental impact" before approving the CAP and Thresholds project. (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 81; Pub. Resources Code, § 21151.) This constitutes a failure to proceed in the manner required by law. (*No Oil, supra*, 13 Cal.3d at p. 81.)

By inaccurately assuming the CAP and Thresholds project was the same project as the general plan update, the County failed to analyze the environmental impacts of the

CAP and Thresholds project itself. (*Natural Resources Defense Council, Inc. v. City of Los Angeles* (2002) 103 Cal.App.4th 268, 283 [holding CEQA violated where "no evidence that the [County] formally addressed whether or not the [] project fell within the concept of a 'tiered' EIR"].) As a result, the County never made the required findings that the effects of the CAP and Thresholds project were examined, mitigated, or avoided. (Pub. Resources Code, § 21094, subd. (a).)

The facts of the present case, as the trial court found, are similar to *Center for Sierra Nevada Conservation v. County of El Dorado* (2012) 202 Cal.App.4th 1156 (*CSNC*). In *CSNC*, the county prepared a general plan and PEIR. (*Id.* at p. 1162.) In the PEIR, one of the mitigation measures was the preparation of a management plan, including a fee program, to mitigate the general plan's impacts on oak woodland habitat. (*Id.* at p. 1163.) The initial study concluded that the project was merely an implementation of the county's general plan. (*Id.* at p. 1176.)

The Court of Appeal rejected this argument, holding that a tiered EIR was required to examine the management plan since the PEIR did not include sufficient details, rejecting the argument that the management plan was merely an implementation of the general plan. (*CSNC, supra*, 202 Cal.App.4th at pp. 1176, 1184-1185.)

The County attempts to distinguish *CSNC* by asserting the general plan update PEIR analyzed the same environmental issue addressed in the CAP. However, the record reveals that the necessary details were not available to the County at the time the general plan update PEIR was certified. Indeed, no component of the project, the CAP or the Thresholds, had even been created at the time of the general plan update.

As the Court of Appeal in *CSNC* explained:

"That the preceding 2004 program EIR contemplated adverse environmental impacts resulting from development under the 2004 General Plan does not remove the need for a tiered EIR for the oak woodland management plan. . . . Here, the specific project—the oak woodland management plan (including Option B fee program)—required a tiered EIR to examine its specific mitigation measures and fee rate." (*CSNC, supra*, 202 Cal.App.4th at p. 1184.)

The general plan update anticipated implementation of mitigation measures—CC-1.2, CC-1.7, and CC-1.8—as mitigating conditions to mitigate the adverse climate change environmental impacts of the general plan update. Those measures were analyzed in the PEIR. However, the PEIR never considered the use of the CAP and the Thresholds as a plan-level program. Thus, the environmental impacts of its use needed to be considered in an EIR. (*NRDC, supra*, 103 Cal.App.4th at p. 281 [project did not arise until after PEIR and thus was not contemplated therein].)

The County contends that the Board of Supervisors made an "implied finding" that the CAP complied with Mitigation Measure CC-1.2 and that finding is "entitled to great deference." However, "such an 'implicit finding' does not satisfy CEQA's requirement of express findings." (*Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1037.) "[T]he board of supervisors must make findings . . . to permit a reviewing court to bridge the analytic gap between the evidence and the ultimate decision." (*People v. County of Kern* (1976) 62 Cal.App.3d 761, 777; see *Citizens for Quality Growth v. City of Mt. Shasta* (1988) 198 Cal.App.3d 433, 442 ["passing references to the mitigation measures are insufficient to constitute a finding, as nothing in City's resolutions binds it to follow these measures"].)

Moreover, even if "implied findings" were permissible, there can be no "interpretation" of Mitigation Measure CC-1.2 contrary to its express terms. (*Southern Cal. Edison Co. v Public Utilities Com.* (2000) 85 Cal.App.4th 1086, 1105 ["an agency's interpretation of a regulation or statute does not control if an alternative reading is compelled by the plain language of the provision"]; see *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) 197 Cal.App.4th 1042, 1062 [agency's "view of the meaning and scope of its own ordinance" does not enjoy deference when it is "clearly erroneous or unauthorized"].)

3. *The County failed to proceed in the manner required by law by failing to incorporate mitigation measures directly into the CAP*

As discussed, *ante*, one of the major differences between the climate change action plan anticipated by Mitigation Measure CC-1.2 in the general plan update PEIR and the CAP and Thresholds project as prepared, is that the general plan update PEIR did not analyze the CAP as a plan-level document that itself would facilitate further development. As a plan-level document, the CAP is required by CEQA to incorporate mitigation measures directly into the CAP:

"A public agency *shall provide the measures to mitigate or avoid significant effects on the environment are fully enforceable through permit conditions, agreements, or other measures.* Conditions of project approval may be set forth in referenced documents which address required mitigation measures or, *in the case of the adoption of a plan, policy, regulation, or other public project, by incorporating the mitigation measures into the plan, policy, regulation, or project design.*" (Pub. Resources Code, § 21081.6, subd. (b), italics added.)

As authority for the assertion that it did not need to incorporate enforceable mitigation measures into the CAP directly, the County cites *Twain Harte Homeowners Assn. v. County of Tuolumne* (1982) 138 Cal.App.3d 664, 689-690. However, *Twain Harte* was decided before enactment of Public Resources Code section 21081.6, subdivision (b), which, as discussed, *ante*, requires "in the case of the adoption of a plan" that mitigation measures be fully enforceable "by incorporating the mitigation measures into the plan . . . ."

"The purpose of CEQA is not to generate paper, but to compel government at all levels to make decisions with environmental consequences in mind." (*Bozung v. Local Agency Formation Com.* (1975) 13 Cal.3d 263, 283.) By failing to consider environmental impacts of the CAP and Thresholds project, the County effectively abdicated its responsibility to meaningfully consider public comments and incorporate mitigating conditions. In addition to the example discussed, *ante*, related to transportation impacts, the Sierra Club also provided examples of mitigation implemented by other regions to mitigate the effects of climate change in the energy sector. The County neither implemented nor responded to these examples which have already been implemented elsewhere.

#### 4. *The trial court's finding that the County must prepare an EIR*

As set forth in *Lincoln Place I*, a supplemental EIR must be prepared when a public agency determines a previously adopted mitigation measure is infeasible. (*Lincoln Place I, supra*, 130 Cal.App.4th at pp. 1508-1509.) In addition, CEQA guidelines,

section 15183.5, subdivision (b)(1)(F) provides that a plan for the reduction of GHG emissions should "[b]e adopted in a public process following environmental review."

The County's failure to comply with Mitigation Measure CC-1.2 and Assembly Bill No. 32 and Executive Order No. S-3-05 supports the conclusion that the CAP and Thresholds project will have significant, adverse environmental impacts that have not been previously considered, mitigated, or avoided.

*a. Substantial evidence supports the court's finding preparation of an EIR was required*

The County asserts that the substantial evidence standard of review applies to the question of whether a supplemental EIR was required, under which deference is given to an agency's determination. (*Latinos Unidos de Napa v. City of Napa* (2013) 221 Cal.App.4th 192, 200-202.) The Sierra Club, on the other hand asserts that the "fair argument" test applies, under which "deference to the agency's determination is not appropriate and its decision not to require an EIR can be upheld only when there is no credible evidence to the contrary." (*Sierra Club, supra*, 6 Cal.App.4th at p. 1318.) We conclude that under either standard, the trial court did not err in finding a supplemental EIR was required.

The fair argument versus substantial evidence test is of no moment because, here, there is no substantial evidence in the record supporting the County's erroneous conclusion that "activities associated with the CAP and Significance Guidelines are within the scope of the General Plan Program EIR."

The County does not dispute that "to avoid serious climate change effects, atmospheric GHG concentrations need to be stabilized as quickly as possible." In fact, the County warns that expected local adverse effects of climate change include "higher temperatures, [¶] a greater number of extremely hot days, [¶] changes in the pattern and amount of precipitation, [¶] decreased water supplies accompanied by increased demand, [¶] increased wildfire risk, [¶] changes in ecosystems, and [¶] decline or loss of plant and animal species." However, the CAP and Thresholds project was approved without the appropriate environmental analysis to avoid or mitigate these consequences. As the trial court found, "environmental review is necessary to ascertain whether the CAP met the necessary GHG emission reductions when considering the CAP is merely hortatory and contains no enforcement mechanism for reducing GHG emissions."

Moreover, as the County acknowledges, the details of the CAP "were not available during program-level analysis of the General Plan." For example, the general plan update PEIR did not provide a "baseline GHG emissions inventory; detailed GHG-reduction targets and deadlines; comprehensive and enforceable GHG emissions-reduction measures; and implementation, monitoring, and reporting of progress toward the targets defined in the CAP." In 2011 the County found that implementation of mitigation measures, including CC-1.2, CC-1.7, and CC-1.8, were part of the mitigation imposed to mitigate the climate change impacts of the general plan update. It cannot be said that failing to comply with Mitigation Measure CC-1.2, Assembly Bill No. 32, and Executive Order No. S-3-05 does not change the environmental conclusions in the general plan update PEIR.

Further, the general plan update PEIR did not contemplate that preparation of the CAP and Thresholds project was at the "plan-level." As a plan-level document, the CAP and Thresholds project was required to undergo environmental review as a matter of law. (CEQA Guidelines, § 15183.5, subd. (b)(1)(F).) The general plan update PEIR also did not contemplate that as a result of the CAP, "[m]ore projects will fall below the bright line threshold, and will not have to conduct detailed analysis", much less study the environmental impact of such. County staff, the planning commission, and the board of supervisors were all aware that approving the CAP and Thresholds project would allow more projects to avoid a climate change analysis, including projects with post-2020 climate change impacts without post-2020 environmental review.

Furthermore, in 2011, the County found that climate change impacts were mitigated not only by implementation of mitigation measures, but also by "compliance with applicable regulations" including Assembly Bill No. 32 and Executive Order No. S-3-05.

By contrast, the CAP and Thresholds project now acknowledges it does not comply with Executive Order No. S-3-05. Instead of maintaining a constant rate of GHG emissions reductions after 2020, as required by Executive Order No. S-3-05, the County admits that GHG emissions will instead increase after 2020. Thus, the County's own documents demonstrate that the CAP and Thresholds project will not meet the requirements of Assembly Bill No. 32 and Executive Order No. S-3-05 and thus will have significant impacts that had not previously been addressed in the general plan update PEIR.

The explanation given to the board of supervisors for failing to address the post-2020 impacts facilitated by the CAP and Thresholds project was that "the State's plan doesn't go out that far, and it would be speculative for us to do that."

However, contrary to the County's argument that it would be "speculative" to consider the environmental impacts of the CAP, the County has acknowledged that other agencies have, in fact, been able to do so. It is an abuse of discretion to reject alternatives or mitigation measures that would reduce adverse impacts without supporting substantial evidence. (CEQA Guidelines, §§ 15043, 15093, subd. (b).) The County's assumption that considering post-2020 impacts is "speculative" is not supported by substantial evidence. (Pub. Resources Code, § 21082.2, subd. (c) ["Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly inaccurate or erroneous . . . is not substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."].)

The Sierra Club provided feasible mitigation measures. The County rejected these mitigation measures without substantial evidence for doing so.

In sum, the CAP does not fulfill the County's commitment under CEQA and Mitigation Measure CC-1.2, to provide detailed deadlines and enforceable measures to ensure GHGF emissions will be reduced.

DISPOSITION

The judgment is affirmed. The Sierra Club shall recover its costs on appeal.

NARES, J.

I CONCUR:

McCONNELL, P. J.

I CONCUR IN THE RESULT:

HUFFMAN, J.

**KAMALA D. HARRIS**  
**Attorney General**

**State of California**  
**DEPARTMENT OF JUSTICE**



110 WEST "A" STREET, SUITE 1100  
SAN DIEGO, CA 92101

P.O. BOX 85266  
SAN DIEGO, CALIFORNIA 92186-5266

Public: (619) 645-2001  
Telephone: (619) 645-2013  
Facsimile: (619) 645-2012  
E-Mail: [tim.patterson@doj.ca.gov](mailto:tim.patterson@doj.ca.gov)

September 16, 2011

Honorable Jerome Stocks  
Chair, Board of Directors  
San Diego Association of Governments  
401 B Street, Suite 700  
San Diego, CA 92101

**RE: Oraft Environmental Impact Report for 2050 Regional Transportation Plan  
and Sustainable Communities Strategy**

Dear Chairman Stocks and Honorable Members of the Board:

Attorney General Kamala D. Harris submits the following comments on the Draft Environmental Impact Report (DEIR) prepared for the San Diego Association of Governments' (SANDAG) 2050 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS).<sup>1</sup> While we recognize the difficulty of SANDAG's task- to prepare the first SCS in the State as required by SB 375<sup>2</sup>...our review of the DEIR for the RTP/SCS has revealed some significant legal problems, as set forth below. We believe that SANDAG has the ability to correct these problems and improve the RTP/SCS, which will benefit not only the San Diego region, but will help to set the standard for other Metropolitan Planning Organizations across California.

---

<sup>1</sup> The Attorney General submits these comments pursuant to her independent power and duty to protect the environment and natural resources of the State from pollution, impairment, or destruction, and in furtherance of the public interest. (See Cal. Const., art. V, § 13; Gov. Code, §§ 12511, 12600-12612; *D'Amico v. Bd. of Medical Examiners* (1974) 11 Cal.3d 1, 14-15.) This letter is not intended, and should not be construed, as an exhaustive discussion of the DEIR's compliance with the California Environmental Quality Act (CEQA).

<sup>2</sup> Senate Bill 375 (Chapter 728, Statutes of 2008).

## Comments on the DEIR

### Localized Air Pollution

The SANDAG region has some of the most serious local air quality problems in the State and the nation - in substantial part caused by vehicle emissions. The harm from these pollutants is not necessarily distributed equally throughout the region, but may be more concentrated in communities immediately adjacent to large-scale industrial and commercial development and major transportation corridors, and may more particularly affect certain segments of the population. As discussed below, our review of the DEIR indicates that SANDAG has set too low a bar for determining whether the air quality impacts of its RTP/SCS are significant, and, further, has failed to analyze the impacts of projected increases in pollution on communities that are sensitive or already overburdened with pollution, in violation of CEQA.

#### Background: Pollutants of Concern in the San Diego Air Basin

It is well established that "[t]he significance of an activity depends upon the setting." (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 718 [citing Cal. Code Regs., tit. 14, § 15064, subd. (b)]; see also *id.* at 721.) Accordingly, the significance of any added pollutant emissions must be judged in the context of an air basin that already exceeds health-based federal air quality standards. (See *ibid.*) The San Diego area was ranked by the American Lung Association this year as having the seventh worst ozone problem, and the fifteenth worst particulate pollution problem, in the nation.<sup>3</sup> Pollutants of concern in the San Diego air basin include ozone, the chemical commonly called "smog," which may permanently decrease lung function;<sup>4</sup> and particulate matter, which impairs lung function and can exacerbate asthma. Small particulate matter (2.5 microns in size or less), a component of diesel exhaust, is of particular concern, because it can penetrate deeply into the lungs, bypassing the body's defenses, and can carry carcinogens on the surface of the particles.

The seriousness of the localized air pollution problem as it exists today in the region can hardly be overstated. The area exceeded the health-based federal ozone standard on 24 days in 2009, and it exceeded the federal particulate standard on 4 days. The basin exceeded the more stringent California standard for ozone on 127 days in 2009, and the fine-particulate standard on 78 days. The area has a history of failing to meet applicable air quality objectives. The San Diego Air Pollution Control District (APCD) stated in its 2009 Regional Air Quality Strategy (RAQS) that it has not consistently met the Health and Safety Code's 5% per year ozone reduction target during any year during the 2003-2006 time period, and that the APCD expects reductions of only about 3% per year during the 2006-2009 time period. (San Diego APCD 2009-RAQS, p. 2.)

---

<sup>3</sup> American Lung Association, *State of the Air 2011*, at pp. 11, 13.

<sup>4</sup> Gauderman, et al., *The Effects of Air Pollution on Lung Development from 10 to 18 Years of Age* (Sept. 9, 2004) 351 *The New England Journal of Medicine* 1057-1068.

SANDAG's Focus on "Conformity" with the State Air Pollution Plans Fails Adequately to Address the Region's Serious Air Quality Problems.

Where an area exceeds federal air quality standards for air pollutants, federal law allows funding of the individual transportation projects listed in an RTP only if the RTP "conforms" to a federally approved state plan to meet those federal standards. The DEIR's analysis of whether localized air pollution resulting from the RTP/SCS is significant under CEQA focuses almost exclusively on whether such conformity is achieved. There are significant problems with this limited approach, which substitutes a determination of whether certain federal laws are met for SANDAG's obligation under CEQA to conduct a thorough analysis of the actual effects on the air and on public health that will result from the addition of the many hundreds of miles of highway expansion and extensions that are in the RTP/SCS.

California's most recent federally approved plan was prepared in 2007, and therefore does not reflect current conditions. The DEIR acknowledges that the federal EPA is expected to soon reclassify the San Diego Air Basin as in "serious" nonattainment of the federal ozone standard, a designation that requires attainment of the federal standard by June of 2013. (DEIR, p. 4.3-6.) Demonstrating conformity with the 2007 plan emissions budgets does not, by itself, show that relevant health effects created by the new pollution generated by the RTP/SCS have been analyzed and disclosed, or even that the relevant federal standards will be met. Instead, EPA's reclassification of the air basin as having worse air quality, and the imposition of such a short deadline for meeting the federal ozone standard, indicates a more serious air pollution problem that may require more stringent control measures to protect the public health.<sup>5</sup>

In addition, the DEIR fails to analyze whether the California standard for ozone, more stringent than the federal standard, will be met during the life of the RTP/SCS, or what the RTP/SCS's contribution to current or future violations of that standard will be. The DEIR appears to rely solely on the RAQS to meet the state ozone standard. (See DEIR at p. 4.3-29-30.) Yet, as noted, the region has not consistently met the RAQS 5% per year ozone reduction target. The fact that U.S. EPA is expected to reclassify the Basin as in "serious" nonattainment of the less stringent federal ozone standard would indicate that the RAQS standards have not been enough to prevent deteriorating air quality. Thus, any assumption that the RAQS will consistently achieve the 5% reduction target in the future is unsupported, and any assertion that the RAQS will attain the state ozone standard at a time certain unfounded. A full analysis is

---

<sup>5</sup> Even if conformity with federal standards in state-approved plans were an appropriate benchmark for significance under CEQA, the DEIR does not contain a quantitative analysis, using the most recent available air quality measurements as the baseline, to determine whether the federal air quality standards will actually be met, and what the public health consequences would be of adding the expected pollutant load from the RTP/SCS to existing conditions. (DEIR, at p. 4.3-14.)

needed to show that the emissions caused by the RTP/SCS at different time points during its life will not contribute significantly to violations of the state ozone standard in the San Diego Air Basin.

SANDAG Has Failed Adequately to Address Impacts to Public Health and Communities Already Burdened with Pollution.

We commend SANDAG for including in its DEIR a chapter entitled "Environmental Justice." (DEIR, ch. 4.06.) That section appears to focus primarily on the RTP/SCS's effect on access to transit by traditionally underserved communities. SANDAG has, however, failed to analyze other equally, if not more, significant effects of the RTP/SCS on communities currently experiencing environmental justice. The principal omission of the DEIR is the lack of any discussion of the impacts of the increased air pollution that will result from carrying out the RTP/SCS on communities already severely impacted by air pollution. As noted, CEQA requires that the significance of environmental impacts be considered in context. (*Kings County Farm Bureau, supra*, 221 Cal.App.3d at 718.) Such context may appropriately include (1) whether the region includes communities or subpopulations that may be particularly sensitive to increases in pollution; and (2) whether such communities or groups are already at or near their capacity to bear any additional pollution burden.

The DEIR does not identify whether the area affected by the RTP/SCS includes particularly sensitive communities that will be affected disproportionately by the acknowledged increase in pollution. "[A] number of studies have reported increased sensitivity to pollution, for communities with low income levels, low education levels, and other biological and social factors. This combination of multiple pollutants and increased sensitivity in these communities can result in a higher cumulative pollution impact." (Office of Environmental Health Hazard Assessment, *Cumulative Impacts: Building a Scientific Foundation* (Dec. 2010), Exec. Summary at p. ix.)<sup>6</sup> Research in other parts of California has shown that disadvantaged and minority communities are often exposed to unhealthy air more frequently and at higher levels than other groups.<sup>7</sup> Identifying these communities is an essential part of describing the relevant CEQA setting.

Once such communities are identified, SANDAG must analyze how the health of the residents in these communities would be expected to be particularly affected. As discussed, residents already are experiencing serious air pollution that is impacting health and welfare, and it is reasonable to assume that these effects currently are more concentrated in certain areas of the region, for example, in communities adjacent to large-scale industrial or commercial operations or transportation corridors used by heavy-duty trucks. In addition, viewed at the individual community scale, there may be synergistic adverse effects. For example, research

---

<sup>6</sup> Available at <http://oehha.ca.gov/ej/cipa123110.html>.

<sup>7</sup> Hall and Brajer, *The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Valley Air Basins* (2008) at 22-23.

has shown that increases in greenhouse gas emissions may result in localized ozone increases; such increases have been observed in California.<sup>8</sup>

We believe that particulate pollution may be of special concern to already burdened communities. As discussed, diesel particulate emissions have serious health effects, since they impact respiratory function and can exacerbate asthma. Further, diesel particulates are known to the State of California to cause cancer,<sup>9</sup> and have been listed by the Air Resources Board (ARB) as a toxic air contaminant.<sup>10</sup> The DEIR shows that particulate matter pollution will increase over the life of the RTP/SCS. (DEIR, Table 4.3-5, p. 4.3-25.) It also reports that the ARB estimated in 2000 - over a decade ago - that a subset of particulate pollution, fine particulates emitted by diesel vehicles, created an additional cancer risk of 720 cancer cases per one million persons exposed in the San Diego Air Basin. (DEIR, p. 4.3-8.) For comparison purposes, a private business must provide a warning if it exposes individuals to a chemical that poses an increased cancer risk often cases in one million people exposed. (Cal. Code Regs, tit. 27, § 25703(b).)

Despite this high cancer risk, and the DEIR's own recognition that particulate pollution will increase over the life of the RTP/SCS, the DEIR does not analyze what public health effects the increase in particulate matter will cause. Nor does it estimate what portion of the increase in particulate pollution will be carcinogenic diesel particulate matter, and disclose the public health effects that increase may cause. Such an analysis is required under CEQA, so that both the decision maker and the public can know the full consequences of the decision being made. (*Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-1220.) We are especially concerned that no analysis is presented either of the current risk from particulate pollution, nor of the impact of the projected increase in particulate pollution, on already overburdened or sensitive communities. Given the increase in particulate emissions shown in the DEIR, given the emphasis in the RTP/SCS on the Goods Movement Strategy for the San Diego region (RTP/SCS, Chapter 6), and given the DEIR's recognition that much of this goods movement will be accomplished by diesel trucks (DEIR, p. 4-16-8; see, also, RTP/SCS, Tech. Appdx. 4, p. 4 [estimating that roads and truckways will carry 90% by volume of goods through the region]), it is incumbent on SANDAG to fully analyze the public health consequences of the RTP/SCS in general, and of the Goods Movement Strategy, in particular.<sup>11</sup>

---

<sup>8</sup> Jacobson, *Enhancement of Local Air Pollution by Urban CO2 Domes* (2010) Environ. Sci. Technol. 2497-2502. This phenomenon is of concern because, as discussed, under the RTP/SCS, vehicle miles travelled (VMT) trends up as the total number of vehicles on the road increases. (DEIR, pp. 4.12-16, 4.12-21, 4.12-24; contrast with Table TA 3.1, showing an overall decrease of 1% in VMT by 2050.) Increases in VMT cause increased emissions of greenhouse gases, which may in turn exacerbate localized pollution.

<sup>9</sup> Cal. Code Regs., tit. 27, § 27001.

<sup>1</sup> Cal. Code Regs., tit. 17, § 93000.

<sup>11</sup> See *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-1220, cited above.

The goal of an RTP/SCS is a sustainable community, and no community can be sustainable unless its public health is protected. Thus, while the inclusion of a separate chapter of the DEIR on environmental justice is commendable, the current analysis is deficient, and should be redone and expanded to disclose the full scope of the air pollution and public health consequences of the RTP/SCS, and to propose mitigation measures for those consequences that are proportional to the seriousness of the impacts. (*City of Marina v. Board of Trustees of the California State University* (2006) 39 Cal.4th 341, 361-62.) We would be happy to work with SANDAG in making this part of the DEIR more meaningful.

SANDAG Has Failed Adequately to Consider Feasible Mitigation for Localized Air Quality Impacts.

Although it finds the RTP/SCS's impacts on localized air pollution to be significant, the DEIR proposes almost no mitigation measures to reduce or offset these impacts. Instead, the DEIR states that "mitigation measures at the program level is [sic] infeasible" for ozone precursors and carbon monoxide, and defers all mitigation for these pollutants to individual project-level CEQA processes. (DEIR, pp. 4.3-46, 4.3-47, 4.3-48.) CEQA requires that project changes or mitigation either be adopted or shown through substantial evidence to be infeasible; the DEIR, however, does not make such a showing.

The DEIR offers virtually no evidence that program-level mitigation is actually infeasible, and the mitigation measures it does propose lack certainty and are incomplete. For example, compliance with future local land use plans (the scope of which is not now known) is identified as the only feasible mitigation for ozone-related impacts. (DEIR, p. 4.3-48.) Mitigation for fine particulate matter is not discussed separately from mitigation for coarse particulates, despite their different sizes, health impacts, and sources. The dust control measures in the DEIR are not shown to be effective against fine particulates, which come more from industrial processes and fuel combustion than from ground disturbance.. The DEIR's treatment of mitigation for conventional air pollution does not comply with CEQA's substantive mandate to mitigate all significant impacts. (Pub. Resources Code, §§ 21002, 21081(a).)

It is vital for the health of the San Diego region's public that all feasible mitigation be adopted and carried out to prevent further deterioration of the already unhealthy air, and it is also vital for the region's economy. Research shows consistently that the costs of reducing pollution are far outweighed by clean-air benefits such as increased worker productivity, increased agricultural outputs, and reductions in mortality and illness that result from cleaner air.<sup>12</sup> The research cited above -- finding minority communities more severely affected by air pollution -- also calculated the significant costs associated with polluted air in other air basins. Costs ranged

---

<sup>12</sup> On a nationwide basis, the Office of Management and Budget has estimated that the benefits of clean air regulations outweigh the costs by a ratio of about four to one. OMB, "Informing Regulatory Decisions: 2003 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities."

from \$1,250 per person per year in the South Coast Air Basin to \$1,600 per person per year in the San Joaquin Valley Air Basin, due to increased health care costs and emergency room visits, missed work and school days, and even premature deaths.<sup>13</sup> CEQA mandates that SANDAG improve its analysis of the feasibility of localized air pollution mitigation, and the economic benefits of cleaner air and healthier communities must be considered in the feasibility calculus.

### **Climate Change Impacts: Greenhouse Gas Emissions**

Before discussing the DEIR's treatment of GHG emissions, it is important first to establish the relevant context for evaluating significance. The climate is affected by the concentration of GHGs in the atmosphere. The concentration of carbon dioxide, the primary GHG, has increased from approximately 280 parts per million (ppm) in pre-industrial times to well over 380 ppm, according to the National Oceanic and Atmospheric Administration's (NOAA) Earth Systems Research Laboratory.<sup>14</sup> Almost all of the increase is due to human activities (such as fossil fuel use).<sup>15</sup> The current rate of increase in carbon dioxide concentrations is about 1.9 ppm/year; present carbon dioxide concentrations are higher than any time in at least the last 650,000 years.<sup>16</sup> GHGs persist in the atmosphere for decades and in some cases millennia.<sup>17</sup>

The atmosphere and the oceans are reaching their capacity to absorb GHGs without significantly (and perhaps abruptly) changing the Earth's climate. California is already seeing the effects of climate change. As the Resources Agency observed in its 2009 report, we already are experiencing sea level rise, coastal erosion, increased average temperatures, more extreme hot days and increased heat waves, fewer shifts in the water cycle, and increases in the frequency and intensity of wildfires. (Resources Agency, *2009 Climate Adaptation Strategy* at p. 3.)<sup>8</sup> These effects are expected to increase with rising GHG levels in the atmosphere.

The burdens of climate change will not be shared equally. Future climate scenarios are expected to disproportionately affect, for example, the urban poor, the elderly and children, traditional societies, agricultural workers and rural populations. (Office of Environmental Health Hazard Assessment, *Indicators of Climate Change in California: Environmental Justice Impacts* (Dec. 2010) at p. 2.)<sup>19</sup>

---

<sup>13</sup> Hall and Brajer, at 5.

<sup>14</sup> See <http://www.epa.gov/climatechange/science/recentac.html>.

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> Intergovernmental Panel on Climate Change, *Frequently Asked Questions*, FAQ 10.3 (2007), available at [www.ipcc.ch/pdf/assessment-report/ar4/wgl/ar4-wgl-fags.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/wgl/ar4-wgl-fags.pdf).

<sup>18</sup> Available at <http://www.chmatechange.ca.gov/adaptation/>.

<sup>19</sup> Available at <http://oehha.ca.gov/multimedia/epic/epicl23110.html>.

In order to stabilize the climate and avoid the most catastrophic outcomes of climate change, we must substantially reduce our annual GHG emissions over time, achieving a low-carbon future by midcentury. California has memorialized this overarching environmental objective in law. Under AB 32<sup>20</sup>, by 2020, California must reduce its total statewide greenhouse gas emissions to the level they were in 1990. (Health & Saf. Code, § 38550). To achieve AB 32's 2020 target, total statewide greenhouse gas emissions must be reduced by approximately 15 percent from current (2008) levels. AB 32 implements Executive Order S-03-05 (2005),<sup>21</sup> which set the statewide 2020 target as an interim step to reducing statewide emission levels, by 2050, to 80 percent below 1990 levels. "The 2020 goal was established to be an aggressive, but achievable, mid-term target, and the 2050 greenhouse gas emissions reduction goal represents the level scientists believe is necessary to reach levels that will stabilize climate." (Air Resources Board (ARB), Scoping Plan at p. 4.)<sup>22</sup>

The emissions reductions required to reach our statewide climate objective are substantial. In the longer term, we must reduce our total GHG emissions by approximately four percent per year between 2020 and 2030, and our per capita emissions by slightly less than five percent per year during the 2020 to 2030 period, with continued reductions required through midcentury. (These reductions required are graphically illustrated by the chart from ARB's Scoping Plan, attached to this letter as Exhibit A.) One of the prime objectives of SB 375, a law supporting and complementary to AB 32, and of the requirement for Sustainable Communities Strategies, is to create a long-term downward trajectory for GHG emissions in California through transportation and land use strategies.

Given the seriousness of the climate change problem, and the enormity of our GHG reduction task, we are greatly concerned that, when viewed in context, the RTP/SCS seems to be setting the region on a course that is inconsistent with the State's climate objectives. Specifically, per capita GHG emissions from cars and light-duty trucks increase as compared to the previous year after 2020 (see RTP, Table 301 at p. 3-3), while AB 32 requires that we must aggressively and steadily reduce total per capita GHG emissions during this time period. (See Exhibit A.) Moreover, the total number of vehicle miles travelled (VMT) driven in the San Diego region will steadily increase over the life of the RTP/SCS over the 2010 baseline by 10%, 32%, and 51% in 2020, 2035, and 2050, respectively. (DEIR, pp. 4.12-16, 4.12-21, 4.12-24;

<sup>20</sup> Cal. Health and Safety Code, § 38,500, *et seq.*

<sup>21</sup> The DEIR states that the Executive Order "does not constitute a 'plan' for GHG reduction, and no state plan has been adopted to achieve the 2050 goal." (DEIR, pp. 4.8-29 to 4.8-30.) The DEIR therefore does not find the RTP/SCS's failure to meet the Executive Order's goals to be a significant impact. This position fails to recognize that Executive Order S-3-05 is an official policy of the State of California, established by a gubernatorial order in 2005, and designed to meet the environmental objective that is relevant under CEQA (climate stabilization). SANDAG thus cannot simply ignore it.

<sup>22</sup> Available at [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf). The Scoping Plan was readopted by ARB on August 24, 2011.

contrast with Table TA 3.1.) Under the most optimistic figures presented in the DEIR, total VMT will drop only 1% over current levels by 2050. Moreover, the DEIR predicts that the 14.33 million metric tons of greenhouse gases (expressed as MMT of carbon dioxide equivalent) emitted by cars and light duty trucks in 2010 (DEIR, p. 4.8-5) will fall to 12.04 MMT in 2020 (DEIR, p. 4.8-20), based largely on statewide tailpipe and fuel standards, but will then begin rising again, to 12.94 MMT in 2035 and 14.74 MMT in 2050. (DEIR, pp. 4.8-23, 4.8-25, respectively.) Thus, although SANDAO will meet the SB 375 goals for per capita OHO targets for cars and trucks set for it by ARB in 2020 and 2035, the DEIR shows that total OHO emissions from cars and light-duty trucks in 2050 will increase over the 2010 emissions level.

The DEIR finds the impact of the RTP/SCS on OHO emissions to be not significant in 2020 (DEIR, p. 4.8-20), significant in 2035 (DEIR, p. 4.8-23), and significant in 2050 (DEIR, p. 4.8-25). SANDAO must, however, make a determination whether the project as a whole has significant climate change impacts. We believe strongly that it does. What the DEIR shows is that the suite of strategies relied on by SANDAO, which include a heavy reliance on roadway expansion projects, does not deliver OHO reductions that are sustainable in the long term. In fact, infrastructure and land use decisions made in the early years of the RTP/SCS may lock in transportation inefficiencies and preclude any realistic possibility of meeting the Executive Order's goal of an 80% reduction in OHO emissions. The DEIR states that "[t]otal land-use based OHO emissions in 2050 are projected to be 21.85 MMT CO<sub>2</sub>e, or 50 percent greater than OHO emissions in 2010 (Table 4.8-11)," (DEIR at p. 4.8-24.) The DEIR should address the impact of the draft RTP/SCS on this important long-term policy in greater detail.

The DEIR is legally deficient for the additional reason that it does not analyze potential changes to the project design or specific mitigation measures for the OHO emissions impacts from land use; it makes only a generalized promise to prepare future RTPs "to incorporate policies and measures that lead to reduced OHO emissions." (DEIR, p. 4.8-35.) Further, the DEIR proposes some mitigation measures for OHO emissions attributable to transportation, but does not include any transportation mitigation that relates to land use, nor does it show that any such measures would be infeasible. We believe that CEQA requires much more analysis of potential mitigation measures, and that postponing this discussion and analysis until future RTP/SCS's and individual projects is a violation of CEQA's substantive provisions. (Public Res. Code §§ 21002, 21081(a); see *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 89-96.) SANDAO has the authority to approve the RTP/SCS even if it will have substantial environmental impacts, and CEQA will not second-guess the wisdom of that choice, so long as substantial evidence supports SANDAO's findings. (Public Res. Code § 21081(b).) However, SANDAO may not approve an environmentally damaging project until and unless it has adopted all feasible mitigation measures or shown that further mitigation - including land use mitigation - is infeasible. The DEIR does not yet do so.

We recognize that this is the first SCS prepared in California, and that SANDAO is chaiting new territory. However, the legal requirements of CEQA, including the requirement to mitigate significant impacts to the extent feasible, are not satisfied simply because the RTP/SCS meets the targets contained in SB 375 for 2020 and 2035. CEQA demands a full analysis and all

Honorable Jerome Stocks  
Chair, Board of Directors  
September 16, 2011  
Page 10

feasible mitigation of every significant impact resulting from the implementation of the RTP/SCS, throughout the full life of the Plan. The DEIR does not now provide this for GHG emissions.

### **Comments on RTP/SCS**

Although we are not commenting directly on the legal adequacy of the RTP/SCS under SB 375, we concur in the comments submitted to SANDAG by the California Office of Planning and Research (QPR). As discussed above, we are particularly concerned that per capita greenhouse gas (GHG) emissions associated with cars and light-duty trucks (and associated co-pollutants like particulate matter) begin to rise after 2020. (See QPR comment letter at pp. 3-4; Draft RTP at p. 3-3, Table 3.1; see also DEIR at Tables 4.3-5, p. 4.3-25.) As OPR notes, this "implies that future growth will be unavoidably less transportation efficient, which counters SB 375's underlying purpose." (QPR comment letter at p. 3.) If the RTP/SCS in fact runs counter to SB 375's purpose to reduce transportation-related GHG emissions over time, this would bear on whether the effects of the plan should be considered significant under CEQA.

In addition, OPR's comments discuss a failure of the DEIR and RTP/SCS to fully disclose the methodology by which VMT was projected, making it difficult or impossible for the lay public to determine for itself whether the information presented in the two documents is accurate and supported by substantial evidence. This lack of transparency is also a crucial flaw under CEQA, a statute whose purposes include accountability as to governmental decisions that affect the environment. (*Laurel Heights Improvement Ass'n v. Regents of the University of California* (1989) 47 Cal.3d 376,392 [holding that "the EIR ... is a document of accountability" for the public officials who certify it].)

### **Conclusion**

We appreciate the difficulty of preparing the first SCS in California. We believe that SANDAG has not yet prepared a DEIR on the RTP/SCS that fully satisfies CEQA's requirements, and urge SANDAG to redo several parts of the DEIR, as described in our comments herein. This RTP/SCS presents SANDAG with an opportunity to integrate transportation and land-use planning in a way that reduces GHG emissions and harmful air pollution, and that produces other benefits such as increased mobility and better public health for all the region's residents, particularly its sensitive and already overburdened communities. We

Honorable Jerome Stocks  
Chair, Board of Directors  
September 16, 2011  
Page 11

would be happy to work with SANDAG to take the additional steps needed to take full advantage of this opportunity. We appreciate your consideration of our comments.

Sincerely,

/ *tf.A,,{4.,u.r-0*  
TIMOTHY R TTERSON *4\_et 8-L\_!)*  
Supervising Deputy Attorney General

---

SUSAN DURBIN  
Deputy Attorney General

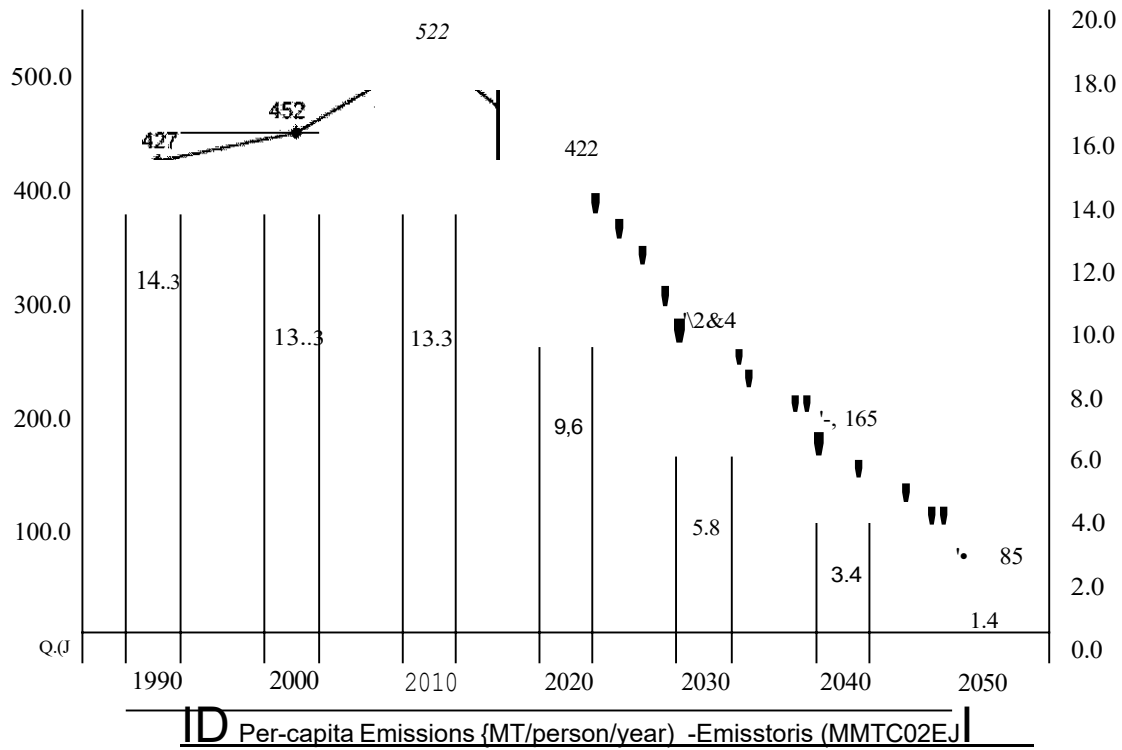
For KAMALA D. HARRIS  
Attorney General

cc: Gary Gallegos, Executive Director, San Diego Association of Governments.  
Julie D. Wiley, General Counsel, San Diego Association of Governments

Attachment

## EXHIBIT A

### Emissions Trajectory Towards 2050



(ARB, Scoping Plan, Figure 6, at p. 118.)

## Exhibit A

### Brief of Amicus Curiae James Hansen

DANIEL M. GALPERN (*Pro Hac Vice Pending*)  
Western Environmental Law Center  
1216 Lincoln Street  
Eugene, OR 97401  
T: (541) 359-3243 / F: (541) 485-2457  
Email: galpern@westernlaw.org

PAIGE M. TOMASELLI State Bar No. 237737  
Center for Food Safety  
303 Sacramento St., 2<sup>nd</sup> Floor  
San Francisco, CA 94111  
T: (415) 826-2770 / F: (415) 826-0507  
Emails: ptomaselli@icta.org

*Counsel for Amicus Curiae*

UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

ALEC L., *et al.*,

Plaintiffs,

vs.

LISA JACKSON, *et al.*,

Defendants.

) Case No.: 4:11-cv-02203 EMC

)  
) Brief for Amicus Curiae Dr. James Hansen

)  
) (Hon. Edward M. Chen)

## TABLE OF CONTENTS

|    |                                                                    |     |
|----|--------------------------------------------------------------------|-----|
| 1  |                                                                    |     |
| 2  | TABLE OF AUTHORITIES .....                                         | iii |
| 3  | INTEREST AND IDENTITY OF AMICUS CURIAE DR. JAMES HANSEN.....       | 1   |
| 4  | SUMMARY OF ARGUMENT.....                                           | 2   |
| 5  | ARGUMENT.....                                                      | 3   |
| 6  | I. INTRODUCTION: THE RELEVANT STATUS QUO IS AN ATMOSPHERE THAT     |     |
| 7  | ENSURES A HABITABLE CLIMATE SYSTEM. ....                           | 3   |
| 8  | II. GLOBAL WARMING HAS ALREADY REACHED THE DANGEROUS LEVEL         |     |
| 9  | AND, WITHOUT EFFECTIVE ACTION, WILL PRODUCE CATASTROPHIC AND       |     |
| 10 | IRRETRIEVABLE LOSSES.....                                          | 4   |
| 11 | a. Present Impacts.....                                            | 5   |
| 12 | b. Future Effects.....                                             | 7   |
| 13 | III. ACTION TO PHASE OUT CO2 EMISSIONS IS URGENTLY REQUIRED, WHILE |     |
| 14 | DELAY VIRTUALLY ENSURES CALAMITY.....                              | 9   |
| 15 | CONCLUSION.....                                                    | 12  |

# TABLE OF AUTHORITIES

Page(s)

## CASES

|                                                           |                    |
|-----------------------------------------------------------|--------------------|
| <i>Massachusetts v. EPA</i> ,<br>549 U.S. 497 (2007)..... | <a href="#">11</a> |
|-----------------------------------------------------------|--------------------|

## OTHER AUTHORITIES

|                                                                                                                                                                                               |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Hansen, Decl. at ¶ 40, 2006 WL 4761053 (D. Vt. 2006).....                                                                                                                                     | 5             |
| Hansen et al, The Case for Young People and Nature: A Path to a Healthy,<br>Natural, Prosperous Future.....                                                                                   | <i>Passim</i> |
| Hansen et al, Target Atmospheric CO <sub>2</sub> : Where Should Humanity Aim?, hereinafter referred<br>to as “Target CO <sub>2</sub> ,” 225, The Open Atmospheric Science Journal (2008)..... | 4             |
| Hansen et al., Dangerous human-made interference with climate,<br>Atmos. Chem. Phys., 7, 2287, 2308 (2007).....                                                                               | 5             |
| Hansen et al., Brief of Amici Curiae Climate Scientists, <i>Chamber of Commerce of the United<br/>States v. EPA</i> , 2010 WL ____.....                                                       | 6             |
| Hansen et al, Climate Variability and Climate Change: The New Climate Dice,<br>Nov. 10, 2011.....                                                                                             | 6             |
| INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 2007: IMPACTS, ADAPTATION, AND<br>VULNERABILITY, Table 4.1 (“IPCC Working Group II”).....                                                          | 6             |
| James Hansen and Makiko Sato, Paleoclimate Implications for<br>Human-Made Climate Change 8-14 (2011).....                                                                                     | 3             |
| U.S. Global Change Research Program, 2009: <i>Global Climate Change Impacts in the United<br/>States</i> , T. Karl, J.M. Melillo, T.C. Peterson (eds.), Cambridge Univ. Press.....            | 6             |

1                    INTEREST AND IDENTITY OF *AMICUS CURIAE* JAMES HANSEN

2                    *Amicus Curiae* James Hansen, Ph.D., appears here in his individual capacity and not as a  
 3 representative of any institution with which he is affiliated. The information and opinions in this  
 4 brief are not necessarily those of any institution with which he is affiliated or those of any party  
 5 to the present litigation. This brief is offered as an aid to the Court's deliberations over whether  
 6 the relief sought by plaintiffs in their motion for preliminary injunction is needed to preserve a  
 7 climate system that is conducive to the survival and wellbeing of our children and their progeny.

8                    Dr. James Hansen directs the NASA Goddard Institute for Space Studies in New York  
 9 City and is an Adjunct Professor of Earth Sciences at Columbia University's Earth Institute. He  
 10 was trained in physics and astronomy in the space science program of Dr. James Van Allen at the  
 11 University of Iowa, receiving his Ph. D. in physics in 1967. Since the mid-1970s, Dr. Hansen has  
 12 focused on computer simulations and studies of the Earth's climate, for the purpose of  
 13 understanding the human impact on global climate. Dr. Hansen's testimony to Congress in the  
 14 1980s helped raise broad awareness of the global warming issue. In recent years Dr. Hansen has  
 15 drawn attention to the danger of passing climate tipping points, producing irreversible climate  
 16 impacts that would yield a different planet from the one on which civilization developed. As part  
 17 of his work in recent years, Dr. Hansen has outlined steps that are needed to stabilize climate,  
 18 with a cleaner atmosphere and ocean.

19                    Dr. Hansen was elected to the National Academy of Sciences in 1995.

20 //

21 //

22 //

23 //

24 //

25 //

26 //

27 //

28 //

## SUMMARY OF ARGUMENT

Global warming due to emissions of greenhouse gases, mainly CO<sub>2</sub> from fossil fuel consumption, is already 0.8°C, and a similar or greater amount is “in the pipeline” without any further change of atmospheric composition. Already-observed impacts of this warming include rising sea levels, increased atmospheric moisture resulting in more intense precipitation events, higher temperatures causing more frequent and intense heat waves and droughts, loss of sea ice, ice sheet mass and glaciers, expansion of the subtropics, acidification of the oceans, shifting distributions of plant and animal species, and an increasing rate of species extinctions.

Maintaining a climate that resembles the Holocene epoch, the world of a relatively stable climate system under which civilization developed, requires rapid reduction of fossil fuel CO<sub>2</sub> emissions and reforestation. Atmospheric CO<sub>2</sub> concentrations passed the level that is estimated to be safe on the long term in, approximately, 1988; global mean temperature now exceeds the Holocene peak; and unabated fossil fuel emissions continue to drive the Earth increasingly out of energy balance. Unless action is undertaken without further delay, so as to return the atmospheric concentration of CO<sub>2</sub> to 350ppm by 2100, Earth’s climate system will be pressed toward and past points of no return. Effective action remains possible, but delay in undertaking sharp reductions in emissions will undermine any realistic chance of preserving a habitable climate system -- needed by future generations no less than by prior generations.

Plaintiffs in this case seek a preliminary injunction to ensure that Defendants in this matter submit to the Court a plan to preserve the climate system, including a cap on CO<sub>2</sub> emissions at 2011 levels by 2013, and emissions reductions thereafter by a minimum of 6% annually. That prescription is consistent with scientific understanding of what is minimally needed to avert truly dangerous climate change and preserve the physical status quo of a habitable climate system. In light of the fossil fuel industry’s stranglehold of Congress, the President’s demonstrated disinclination to utilize his authority to act, and the fact that further delay vastly increases the risk of irretrievable damage to the climate system, action by this Court now is essential.

## ARGUMENT

### I. INTRODUCTION: THE RELEVANT STATUS QUO IS AN ATMOSPHERE THAT ENSURES A HABITABLE CLIMATE SYSTEM.

Plaintiffs and Defendants both appeal to the Court to preserve the “status quo.” Pl’s Mot’n for Prelim. Inj at 10; Def. Opp’n to Pl. Mot’n for Prelim. Inj. at 9. Amicus James Hansen also seeks to preserve the status quo; accordingly, this brief begins with an explanation as to what this implies for the global climate system.

Paleoclimate research conducted by Dr. Hansen and others establishes that for most of the Holocene period – the period of the most recent 10,000 years – Earth’s climate, though highly variable on a regional basis, has been characterized by reasonably constant mean global temperatures. James Hansen et al., *The Case for Young People and Nature: A Path to a Healthy, Natural, Prosperous Future* (attached hereto as Exhibit 1) at 6.<sup>1</sup> This constancy enabled the Greenland and Antarctic ice sheets to remain in near mass balance, sea levels to be relatively stable, species to diversify, and civilization to develop.

Largely due to the burning of fossil fuels, the atmospheric CO<sub>2</sub> concentration has climbed sharply in recent decades – from 316ppm in 1959 to 390ppm in 2010.<sup>2</sup> In that period, US CO<sub>2</sub> emissions more than doubled, from 2.83 to 5.67 billion metric tons.<sup>3</sup> The CO<sub>2</sub> concentration is now to a level not seen on Earth for at least 3 million years. Exhibit 1 at 6. The CO<sub>2</sub> increment functions as an added blanket on the planet, reducing the amount of heat that would otherwise be re-radiated to space and throwing the planet into energy imbalance. In response, Earth has warmed by approximately 0.8°C over the last century, likely exceeding the prior Holocene peak.

<sup>1</sup> See also, James Hansen and Makiko Sato, *Paleoclimate Implications for Human-Made Climate Change* 8-14 (2011).

<sup>2</sup> Mauna Loa CO<sub>2</sub> annual mean data from <http://www.esrl.noaa.gov/gmd/ccgg/trends/>.

<sup>3</sup> Carbon Dioxide Information Analysis Center (CDIAC), *National CO<sub>2</sub> Emissions from Fossil-Fuel Burning, Cement Manufacture, and Gas Flaring: 1751-2008*, <http://cdiac.ornl.gov/ftp/trends/emissions/usa.dat>. The text of this amicus brief here provides the data in units of CO<sub>2</sub> by utilizing the CDIAC’s carbon-to-CO<sub>2</sub> conversion factor of 3.667.

1 *Exhibit 1* at 7-8. The already apparent impact of this warming is reviewed in the next section.  
 2 Due to Earth's thermal inertia, a similar or greater amount of additional 2.0°C warming is "in the  
 3 pipeline" before Earth reaches energy balance at the present level of atmospheric CO<sub>2</sub>  
 4 concentration.<sup>4</sup>

5 Avoidance of climate tipping points and subsequent points of no return<sup>5</sup> requires effective  
 6 action to return the atmospheric CO<sub>2</sub> concentration to approximately 350ppm by the end of the  
 7 century. *Exhibit 1* at 8. This would allow additional heat radiation to escape to space so as to  
 8 restore the planet's energy balance without additional prolonged global warming. *Id.* Such action  
 9 could stabilize Earth's climate system and mitigate human suffering, but further delay may doom  
 10 this prospect.

11 The relevant status quo with respect to the present litigation, therefore, is an atmosphere  
 12 whose composition of greenhouse gases ensures a relatively stable climate system conducive to  
 13 the survival and well being of humanity and nature. This requires, then, action to restore the  
 14 atmospheric CO<sub>2</sub> concentration to no more than 350ppm. In that we have currently overshot this  
 15 safe atmospheric concentration level, as discussed *infra*, failure to act with all deliberate speed in  
 16 the face of the clear scientific evidence of the danger<sup>6</sup> functionally becomes a decision to  
 17 eliminate the option of preserving a habitable climate system.

18  
 19 II. GLOBAL WARMING HAS ALREADY REACHED THE DANGEROUS LEVEL  
 20 AND, WITHOUT EFFECTIVE ACTION, WILL PRODUCE CATASTROPHIC  
 AND IRRETRIEVABLE LOSSES.

21 Global climate change does not present merely "the possibility of some remote future  
 22 injury." Def. Opp'n to Pl. Motion for Prelim. Inj at 9. Instead, it is a phenomenon that is already  
 23 undermining human and natural systems, causing loss of life, and pressing species to extinction.

24  
 25 <sup>4</sup> Hansen et al, Target Atmospheric CO<sub>2</sub>: Where Should Humanity Aim?, hereinafter referred to  
 as "Target CO<sub>2</sub>," 225, The Open Atmospheric Science Journal (2008).

26 <sup>5</sup> *Id.*

27 <sup>6</sup> J. Hansen et al., Dangerous human-made interference with climate, Atmos. Chem. Phys., 7,  
 2287, 2308 (2007)

1 Unless arrested by effective action, climate change will produce calamitous consequences for  
 2 humanity and nature alike, as tipping points are reached and points of no return are crossed.<sup>7</sup>  
 3 Present and future impacts are addressed in turn.

4 (a) Present Impacts

5 While, as noted, global warming to date measures 0.8°C above the 1880-1920 period,<sup>8</sup> it  
 6 has already led to a 40 percent reduction and an accelerating downward trend in summer Arctic  
 7 sea ice cover, and an even faster decline in its thickness. *Exhibit 1* at 4. Continental ice sheets of  
 8 Greenland and Antarctica have begun to shed ice at a rate of several hundred cubic kilometers  
 9 per year. *Id.* In the past decade, sea level increased about 3cm—a rate of about one foot per  
 10 century, and nearly twice as fast as the rate of increase during the preceding century.<sup>9</sup> This rise  
 11 has resulted in losses of coastal wetland areas and greater levels of damage from coastal  
 12 flooding.<sup>10</sup> For example, in the United States, increased sea level has led to the loss of 1900  
 13 square miles of coastal wetland in Louisiana, which in turn exacerbates the area’s vulnerability  
 14 to storm surges like Hurricane Katrina.<sup>11</sup> Mountain glaciers, the source of fresh water to major  
 15 world rivers during the dry season, are receding rapidly all around the world. *Exhibit 1* at 4. In  
 16 1850, Glacier National Park in Montana had 150 glaciers measuring larger than twenty-five  
 17 acres—today, it has just twenty-five.<sup>12</sup>

19 \_\_\_\_\_  
 20 <sup>7</sup> Hansen, et al define “the tipping level [as] the global climate forcing that, if long maintained,  
 21 gives rise to a specific consequence [and] the point of no return [as] a climate state beyond which  
 22 the consequence is inevitable, even if climate forcings are reduced. Target CO<sub>2</sub> at 225.

23 <sup>8</sup> The 1880-1920 period is the earliest time at which instrumental data allows accurate  
 24 specification of global temperature, and the temperature in that period is estimated to be close to  
 25 pre-industrial temperature averaged over several centuries.

26 <sup>9</sup> Decl. James Hansen at ¶ 40, 2006 WL 4761053 (D. Vt. 2006).

27 <sup>10</sup> INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 2007: IMPACTS, ADAPTATION, AND  
 28 VULNERABILITY, Table 4.1 (hereinafter “IPCC Working Group II”).

<sup>11</sup> U.S. Global Change Research Program, 2009: *Global Climate Change Impacts in the United States*, T. Karl, J.M.  
 Melillo, T.C. Peterson (eds.), Cambridge Univ. Press.

<sup>12</sup> Brief of Amici Curiae Climate Scientists James Hansen et al., *Chamber of Commerce of the  
 United States v. EPA*, 2010 WL \_\_\_\_ (citing to U.S. Geological Survey, *Melting Glaciers Signal  
 Change in National Parks*, <http://www.nwrc.usgs.gov/world/content/land5.html>).

1 Tropospheric water vapor and heavy precipitation events have increased. Droughts are  
 2 more common, especially in the tropics and subtropics. *Exhibit 1* at 4. Coral reef ecosystems are  
 3 being impacted by a combination of ocean warming and acidification from rising atmospheric  
 4 CO<sub>2</sub>, resulting in a 1-2% per year decline in geographic extent. *Exhibit 1* at 4. World health  
 5 experts have concluded with "very high confidence" that climate change already contributes to  
 6 the global burden of disease and premature death with altered distribution of some infectious  
 7 disease vectors.<sup>13</sup> Subtropical climate belts have expanded, contributing to more intense  
 8 droughts, summer heat waves, and devastating wildfires in the southern United States, the  
 9 Mediterranean and Middle East regions, and Australia. *Exhibit 1* at 4. Mega-heat waves have  
 10 become noticeably more frequent, including the 2010 heat wave in Moscow and in Texas in  
 11 2011. *Exhibit 1* at 4. It is nearly certain that such "outlier" heat events would not have occurred  
 12 in the absence of global warming.<sup>14</sup>

13 (b) Future effects

14 Scientific prediction of long-term impacts from climate change is imprecise in part  
 15 because of uncertainty about the relative speed with which amplifying feedbacks, including  
 16 disintegration of Earth's major ice sheets, will occur. *Exhibit 1* at 13. Citing the Paleoclimate  
 17 record, Dr. Hansen and colleagues noted the following most recently:

18 Precise consequences of continuing [business as usual] emissions for  
 19 several decades are difficult to define, because Earth has never experienced such a  
 20 large rapid increase of climate forcings as would occur with burning of most  
 21 fossil fuels this century. The closest analogy in Earth's history is probably the  
 22 PETM (Paleocene-Eocene Thermal Maximum) in which rapid global warming of  
 23 at least 5°C occurred. The PETM warming spike occurred in conjunction with  
 24 injection of 3000-5000 GtC of carbon into the surface climate system during two  
 1-2 thousand year intervals separated by several thousand years. It is often  
 assumed that the carbon originated from melting of methane hydrates, because of  
 the absence of other known sources of that magnitude. PETM occurred during a  
 10-million year period of slow global warming, and thus methane release might  
 have been a feedback magnifying that warming.

25 The PETM witnessed extinction of about half of small shelled deep ocean

26 <sup>13</sup> IPCC Working Group II.

27 <sup>14</sup> J. Hansen, M. Sato, R. Ruedy, Climate Variability and Climate Change: The New Climate  
 28 Dice, Nov. 10, 2011.

animals that serve as a biological indicator for ocean life in general, but, unlike several other large warming events in Earth's history, there was little extinction of land plants and animals. An important point is that the magnitude of the PETM carbon injection and warming is comparable to what will occur if humanity burns most of the fossil fuels, but the human-made warming is occurring 10-100 times faster. The ability of life on Earth today to sustain a climate shock comparable to the PETM but occurring 10-100 times faster is highly problematic. Climate zones would be shifting much faster than species have ever faced. Thus if humanity burns most of the fossil fuels, Earth, and all species residing on it, will be pushed into uncharted climate change territory.

*Exhibit 1* at 13 (internal citations omitted).

Based on measurements of observed climate change, computer simulations of the climate system's responses to additional CO<sub>2</sub> emissions, as well as information from the paleoclimate record, Dr. Hansen and others have concluded that continued burning over several decades of fossil fuels renders multi-meter sea level rise "practically certain," and create cause "millions of global warming refugees from highly populated low-lying areas . . . throwing existing global demographics into chaos." *Exhibit 1* at 14 (internal citations omitted).

These researchers note, as well, that acidification stemming from ocean uptake of a portion of increased atmospheric CO<sub>2</sub> is expected to increasingly disrupt coral reef ecosystem health, with potentially devastating impacts to certain nations and communities. *Exhibit 1* at 16. Hansen and others warn of receding mountain glaciers "with effects on seasonal freshwater availability of major rivers," *Exhibit 1* at 4, illustrating that present atmospheric CO<sub>2</sub> levels are "already a threat for future fresh water security." *Id.* at 16.

Increased concentration of CO<sub>2</sub> and associated increased global temperatures will deepen impacts on human health, with children being especially vulnerable. *Exhibit 1* at 16. Climate threats to health move through various pathways, especially by placing additional stress on the availability of food, clean air, and clean water. *Exhibit 1* at 16 (*citing to* Bernstein and Myers, *Climate Change and Children's Health*, Current Opin. Pediatrics, 23, 221-226 (2011)). Other principle climate-related impacts on human health include heat waves, asthma and allergies, infectious disease spread, drought, pests and disease spread across taxa: forests, crops and marine life, and winter weather anomalies. *Exhibit 1* at 18 (Table 1).

As noted *supra*, climate zones are already shifting at rates that exceed natural rates of change; this trend will continue as long as the planet is out of energy balance, a conclusion “based on comparison of the observed trend with inter-decadal variability in climate simulations.”<sup>15</sup> Dr. Hansen and others note that “as the shift of climate zones becomes comparable to the range of some species, the less mobile species will be driven to extinction.” *Exhibit 1* at 15. In 2007, the Intergovernmental Panel on Climate Change (IPCC) summarized studies estimating species extinctions from additional global warming and estimated<sup>16</sup> that for global warming of 1.6°C or more, relative to pre-industrial levels, 9-31 percent of species will be driven to extinction, while with global warming of 2.9°C, an estimated 21-52 percent of species will be driven to extinction.<sup>17</sup>

### III. ACTION TO PHASE OUT CO<sub>2</sub> EMISSIONS IS URGENTLY REQUIRED, WHILE DELAY VIRTUALLY ENSURES CALAMITY.

The 2007 consensus statement by the IPCC, summarizing research through 2005, indicated that human-induced warming of Earth of approximately 2°C constituted dangerous climate change. From that, however, no conclusion logically could be drawn as to the danger inherent in lower levels of global warming.

Research by Dr. Hansen and others to assess this question has been spurred on by the realization, as described *supra*, that large climate impacts have commenced already, even though Earth’s lagged temperature response to the recent climb in atmospheric CO<sub>2</sub> is only 0.75°C above preindustrial levels. Hansen et al estimate that this warming is already at least 0.25°C above the prior Holocene maximum. *Exhibit 1* at 5. Empirical research showing an ongoing and

<sup>15</sup> Hansen, J., M. Sato, R. Ruedy, *et al.*, 2007b: Dangerous human-made interference with climate: a GISS modelE study, *Atmos. Chem. & Phys.*, 7, 2287-2312.

<sup>16</sup> IPCC Working Group II.

<sup>17</sup> Hansen et al note that “mass extinctions have occurred in conjunction with rapid climate change during Earth’s long history. While new species evolved over hundreds of thousands and millions of years, such time scales are almost beyond human comprehension. Accordingly, if we drive many species to extinction we will leave a more desolate planet for our children, grandchildren, and as many generations as we can imagine.” *Exhibit 1* at 15.

1 accelerating mass loss of the Greenland and West Antarctic ice sheets, which began within the  
2 last few decades, provides strong confirmation that today's global temperature has reached a  
3 level higher than prior Holocene temperatures. *Id.*

4 Accordingly, the best available current science establishes that today's global temperature is  
5 already close to or into the "dangerous zone." *Exhibit 1* at 106. Because the recently-observed  
6 climate effects with respect to the ice sheets are still relatively small compared to total ice sheet  
7 mass, these feedbacks may not be a major factor if maximum global warming overshoot of  $\sim 1^{\circ}\text{C}$   
8 occurs only briefly and then recedes. *Exhibit 1* at 10-12.

9 Action therefore must be undertaken to restore the atmosphere's safe level of  $\text{CO}_2$   
10 concentration to 350ppm, so as to avert any avoidable additional warming that may drive the  
11 climate system past tipping points "that assure transition to a very different planet," *Id.* at 12, and  
12 keep the period of overshoot to an absolute minimum.

13 Two underlying reasons that such action must be undertaken without further delay is  
14 indicated in Amicus Hansen's most recent research, summarized here, and illustrated in Fig. 1  
15 *infra*. First, a substantial share of any additional infusion of  $\text{CO}_2$  lasts in the atmosphere for  
16 centuries (and while there, continuously acts to further heat the planet). Accordingly, Earth's  
17 temperature response to the "radiative forcing" effect of the higher atmospheric  $\text{CO}_2$   
18 concentration is a function not only of recent emissions, but the persisting share of prior  
19 emissions. Second, as a consequence of the long-lived nature of  $\text{CO}_2$  and the fact that human-  
20 derived emissions have already cause a substantial overshoot of the long-term safe atmospheric  
21 concentration level, any substantial delay in undertaking effective action – even if such action  
22 compelled a sharp cut-off of emissions – would render it impossible to return the atmospheric  
23  $\text{CO}_2$  concentration to 350ppm within this century. Thus, as illustrated in Fig. 1b, if emissions of  
24  $\text{CO}_2$  are allowed per business as usual for even two decades longer the concentration of  $\text{CO}_2$  in  
25 the atmosphere will not return, until the year 2150, to the nominally safe level of 350ppm even if  
26  
27  
28

all such emissions were abruptly ceased in the year 2030.<sup>18</sup> In contrast, complete cessation in 2011 would return to the atmospheric CO<sub>2</sub> concentration to 350ppm by mid-century. *Exhibit 1* at 9.

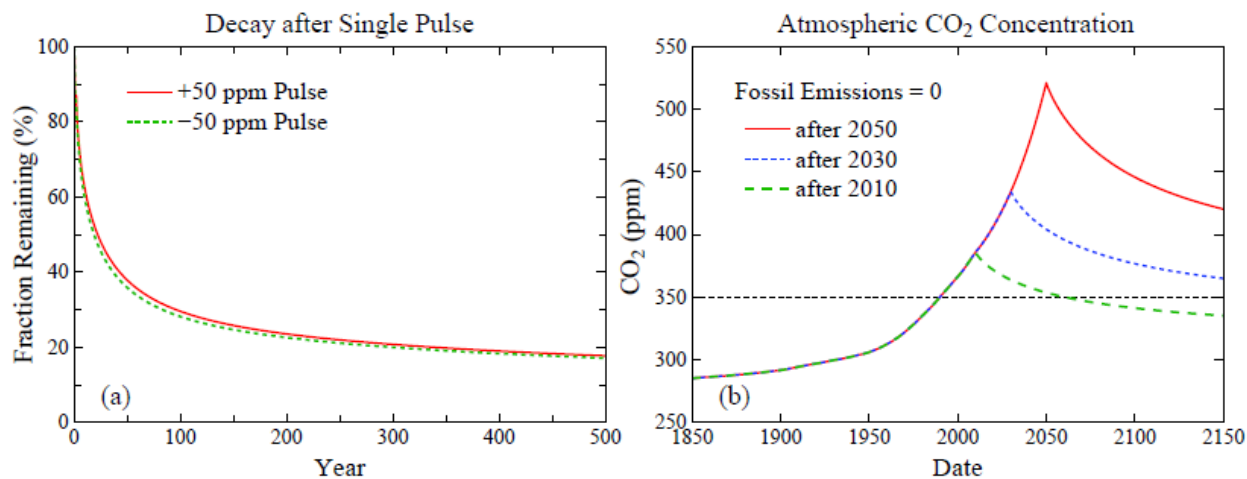


Figure 1. (a) Decay of instantaneous (pulse) injection and extraction of atmospheric CO<sub>2</sub>, (b) CO<sub>2</sub> amount if fossil fuel emissions are suddenly terminated at the end of 2010, 2030, 2050. (Hansen et al., *The Case for Young People and Nature: A Path to a Health, Natural, Prosperous Future*.)

An abrupt cessation of all CO<sub>2</sub>, whether in 2011 or 2030, is unrealistic, in part because industry, other business, and consumers alike need time to retool and reinvest in emission-free options to fossil fuels. Accordingly, Hansen et al have proposed a glide path to secure an atmosphere whose CO<sub>2</sub> concentration is no higher than 350ppm. Their plan requires emission reductions of 6 percent annually, coupled with a program of reforestation. *Exhibit 1* at 10. This will achieve the goal of restoring the atmosphere to approximately 350ppm if the plan is commenced without delay, and then adhered to. However, consistent with the abrupt phase out scenarios discussed in the prior paragraph *supra*, if the 6 percent annual emission reductions are delayed until 2030, then the global temperature will remain above 1°C higher than preindustrial

<sup>18</sup> *Exhibit 1* at 9. Further, were the emission cessation to commence only after 40 years, Dr. Hansen estimates that the atmosphere would not return to 350ppm CO<sub>2</sub> for nearly a 1000 years. *Id.*

1 levels for nearly 300 years. It would be “highly unlikely,” that the planet’s major ice sheets  
 2 would remain “stable at their present size with such long-lasting warmth.” *Exhibit 1* at 12-13.

3 Considered in another way, the required rate of emissions reduction would have been  
 4 about 3.5% per year if reductions had started in 2005, while the required rate of reduction, if  
 5 commenced in 2020, will be approximately 15% per year. *Id.* at 6. This illustrates, again, that  
 6 “the dominant factor, by far, is the date at which fossil fuel emission phase-out begins.” *Id.* at 11.

7 The present danger and impending calamities presented by continued CO<sub>2</sub> emissions, and  
 8 the urgent need to get beyond fossil fuels before Earth is altered in fundamental respects –  
 9 including its ability to sustain civilization – renders it a first-order tragedy that all serious  
 10 attempts to address the problem in Congress to date either have been still-borne or killed after  
 11 some debate. Equally tragic, the executive branch, including our current president, has declined  
 12 to act with any degree of effectiveness to restrict CO<sub>2</sub> and other greenhouse gas emissions from  
 13 the largest sources – bowing to industry pressure at virtually every turn even though, pursuant to  
 14 the Supreme Court’s leading global warming decision, *Mass. v. EPA*, 549 U.S. 497 (2007), it  
 15 retains authority to act. The “absence of effective leadership” is attributable, as Amicus Hansen  
 16 points out, to the “undue sway of special financial interests on government policies.”<sup>19</sup> In the  
 17 absence of political leadership, an Order by this Court granting the injunctive relief sought by  
 18 plaintiffs in this matter may be the best, the last, and, at this late stage, the only real chance to  
 19 preserve and restore the atmosphere and climate system.

## 20 CONCLUSION

21 Systematic reductions in CO<sub>2</sub> emissions, for the reasons provided by Dr. Hansen in his work  
 22 cited throughout this amicus brief, must be undertaken in conjunction with reforestation so as to  
 23 return the concentration of CO<sub>2</sub> in the atmospheric to a level no higher than 350ppm by the end  
 24 of the century, if not sooner. Plaintiffs in this matter seek an Order by the Court to require  
 25 Defendants to submit a “Climate Recovery Plan” by next March whose key features, if followed,

26 <sup>19</sup> *Exhibit 1* at 10 (citing to Oreskes, N.; Conway, E.M., 2010: Merchants of Doubt: How a  
 27 Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.  
 28 Bloomsbury Press, 355 pp. merchantsofdoubt.org.).

1 will restore the atmosphere and preserve a habitable climate system. This brief has established  
2 that such action is urgently required. In particular, the failure to commence CO<sub>2</sub> reductions  
3 without further delay, and to undertake other measures consistent with the prescription  
4 developed by Dr. Hansen and others, and advanced in these proceedings by Plaintiffs, would  
5 consign our children and their progeny to a very different planet, one far less conducive to their  
6 survival.

7 Respectfully submitted this 14th day of November, 2011.

8  
9 /s/

10 Daniel M. Galpern  
11 Western Environmental Law Center  
12 1216 Lincoln Street  
Eugene, OR 97401  
T: (541) 359-3243 / F: (541) 485-2457  
Email: galpern@westernlaw.org

13 PAIGE M. TOMASELLI State Bar No. 237737  
14 Center for Food Safety  
303 Sacramento Street, 2nd Floor  
San Francisco, CA 94111  
15 T: (415) 826-2770 / F: (415) 826-0507  
Email: ptomaselli@icta.org

16  
17 *Counsel for Amicus*  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28