

Baxamusa, Murtaza

From: Reese Chad [REDACTED]
Sent: Friday, December 3, 2021 4:28 PM
To: Baxamusa, Murtaza
Cc: Lueg, Zerocarbon
Subject: [External] RE: Your comments due this Friday

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Murtaza,
Thanks for the opportunity to review, and to provide feedback.

On page 257, our official name needs to be updated from "San Diego International Airport Authority" to the "San Diego County Regional Airport Authority".

Understanding this is the first draft, that will serve as my official comments at this point. Thank you for the links to additional info in your email (below). I'm looking forward to reviewing future drafts, and also our upcoming dialogue with the San Diego Regional Climate Collaborative, of which I'm the Co-Chair.

Have a nice weekend.
Chad

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VDQ IR UJ



From: Baxamusa, Murtaza <Murtaza.Baxamusa@sdcounty.ca.gov>
Sent: Monday, November 29, 2021 9:54 AM
To: Reese Chad [REDACTED]
Cc: Lueg, Zerocarbon <Zerocarbon.Lueg@sdcounty.ca.gov>
Subject: Your comments due this Friday

Dear Chad,
Thank you for serving on the Technical Working Group for the Regional Decarbonization Framework. Our team would appreciate if you can please send in your comments by this **Friday, December 3**. You can attach your comments in a single document in reply to this email or to zerocarbon@sdcounty.ca.gov.

Baxamusa, Murtaza

From: Keehan, Kathleen
Sent: Friday, December 3, 2021 3:09 PM
To: Baxamusa, Murtaza
Cc: Watt, Michael
Subject: Regional Decarbonization Framework Comments APCD

Good afternoon Murtaza,

Below are the comments San Diego APCD has compiled for the Regional Decarbonization Framework. Please feel free to call or email me if you have questions or need more information. Thank you for the opportunity to comment.

Kathy

Kathleen Keehan (she/her/hers)
Supervising Air Resources Specialist
San Diego County Air Pollution Control District
10124 Old Grove Rd, San Diego, CA 92131
Desk: 858-586-2726
Kathleen.Keehan@sdapcd.org
www.sdapcd.org
<https://twitter.com/sdapcd>
<https://www.facebook.com/SDAPCD>



Decarbonization Framework Comments – San Diego County Air Pollution Control District 12/3/2021

The San Diego County Air Pollution Control District (District) appreciates the opportunity to comment on the Regional Decarbonization Framework (RDF) and looks forward to continued participation in efforts to reduce greenhouse gas (GHG) emissions in the region. The District's mission is to improve air quality to protect public health and the environment, and it is responsible for regulating stationary sources of criteria pollutants such as ozone and particulate matter as well as toxic air contaminants in the region. The District accomplishes this by formulating regulations, issuing permits, and carrying out compliance and monitoring activities to ensure the region works toward meeting the federal and state limits for these criteria pollutants. Many health conditions, including asthma and other cardiovascular diseases are directly related to these criteria air pollutants, particularly in traditionally underserved communities. As the local agency responsible for air quality, the District recognizes that efforts to reduce GHG emissions frequently benefit other air quality issues and those actions can provide health benefits to our residents.

The District supports this work and provides the specific comments and questions below.

1. Study Framework

- a. Is the Study Framework chapter intended to be an executive summary of the report or will there be a separate document or chapter summarizing the RDF?
- b. Given "This Regional Decarbonization Framework (RDF) presents a science-based approach to help governments in the San Diego region plan for policies and investments to achieve emissions reductions"

consistent with the state target of carbon neutrality by 2045 (pg 5), please consider starting the document with the proposed policies and investments outlined in Chapter 7 and 8, and then delve into the technical details in the specific sector chapters.

- c. Analysis of regional policies and actions to achieve decarbonization should include high level analysis of co-benefits or impacts, including those impacting air quality, particularly in locations disproportionately affected by air pollution.
- d. The District supports the system-wide approach outlined in this document, and agrees that “national, state, and local governments need to move in concert in their policies and investments in order to achieve decarbonization, given the interconnected nature of the energy system.”

2. Chapter 3 – Accelerating Deep Decarbonization in the Transportation Sector

- a. Although the District does not have a direct regulatory role for mobile sources, it supports the acceleration of electric vehicle (EV) adoption principally through our incentive programs such as Clean Cars 4 All for passenger vehicles, and Goods Movement Emission Reduction Program for heavy-duty vehicles. Mobile sources are a major source of pollution in the region and transformation in this sector will provide significant benefits to air quality.
- b. Although electric vehicles are an important component to decarbonization of the transportation sector, the District also supports other zero-emission technologies such as renewable hydrogen for sectors that are not as easily electrified such as long-haul trucking and marine equipment.
- c. The District supports the recommendations and policy options outlined in Figure 3.4 that it will be necessary to provide zero-emission fueling infrastructure as part of the decarbonization effort (Note: The paragraph at the end of page 65 describing Figure 3.4 appears to have switched the spectrum of policies from left side to right side). Currently the District participates in a partnership with SANDAG and the California Energy Commission to provide incentives for EV charging through the CALeVIP project.
- d. The District supports policies and programs that reduce vehicle miles traveled, including those outlined in the Draft 2021 Regional Plan and those detailed in Table 3.6.
- e. To support equitable transition to zero emission transportation, the District encourages this document to further analyze the equity impacts of various transportation strategies and to prioritize policies that promote environmental justice.

3. Chapter 5 – Decarbonization of Buildings

- a. Decarbonization of building heating and water heating would provide additional co-benefits for air quality, particularly emissions of nitrogen oxides which is a component of ground level ozone, a criteria pollutant. The District regulates emissions of air pollutants such as nitrogen oxides from equipment including boilers, process heaters, steam generators, water heaters, and furnaces at residential, commercial, and industrial facilities. The District estimates that the eventual replacement of these types of fuel fired equipment with electric units could result in the reduction of approximately 970 tons per year of nitrogen oxides upon full implementation.
- b. It would be helpful if the costs of building electrification (capital, operation, and maintenance) were more clearly delineated in Chapter 5 for various sectors including residential, commercial, and industrial buildings, or perhaps the total costs to the region noted in the synopsis of the chapter on page 121. Tables 5.2, 5.3, and 5.5 appear to provide estimates on installation costs but it’s not clear if these estimates include operation and maintenance costs also. (Note: The paragraph at the beginning of page 139 incorrectly references Table 7.5 instead of Table 5.5).

4. Chapter 7 – Key Policy Considerations for the San Diego Region

- a. In general, this chapter needs more information on how this effort can influence state, federal, and international opportunities. It should also expand on opportunities for the San Diego region to learn from and leverage work already done by others outside the region.

- b. On page 211, the report notes that the state will fund “Regional Climate Collaboratives” through the Strategic Growth Council, and these collaboratives are community driven and need to exist outside the County. The report could acknowledge the existing San Diego Regional Climate Collaborative and should note that there are opportunities for the County and other regional partners to help facilitate creation and function of the collaboratives, by providing space, financial resources, technical expertise, and other supports to ensure San Diego collaboratives can be competitive for these funding opportunities.
- c. In Table 7.1 Key Actions and Areas of Leverage, some additional County Policy Leverage items could include:
 - i. Buildings – clarify the “Reducing embodied carbon in buildings through zoning or building codes” item. Does this encompass policies that encourage retention and conservation of existing buildings while providing incentives for encouraging retrofit of those existing buildings to reduce operational carbon emissions?
 - ii. Transportation – some additional policy actions for the County could include policies and action that support transit funding, using the existing leverage with MTS/NCTD to support VMT reducing transit improvements, creating statewide partnerships and actions regarding VMT reduction strategies, and leverage cooperation between jurisdictions inside and outside the County (such as League of California Cities, Port of San Diego, or other groups) to influence state and federal policies.
- d. In the Takeaways sections, including specific examples of where recommendations have worked in other jurisdictions could help bolster the case. It would be helpful to outline a situation where “Aligning a governance structure with sectors will allow for tailored policy solutions as well as seamless integration of expertise from industry and academia.” Are there some examples of this we can point to show the potential for success?
- e. In Takeaway 5, it will be important for whatever structure or group is active in San Diego to look at the market impact of various incentives, how equity can be incorporated into incentive programs, and a mechanism for managing unintended consequences of programs.
- f. Page 215 – typo “An existing collaborative institution in San Diego, Accelerate to Zero Emissions together” should be “to gather”?
- g. Page 216 – Figure 7.3 should be titled “A2Z” not “A20”
- h. Page 216 – it would be helpful to note specific successes of the Decarbonization Roadmap Study in Massachusetts. Did the effort result in specific policies and actions that have been implemented?
- i. On page 219, is the Steering Committee envisioned to have members from industry and equity-based community groups? These would be important voices to have at that level.
- j. For Sector Working Groups, the phrase “if funding opportunities for pilot programs and investment funds become available”. To be successful, this RDF effort should not wait for opportunities to become available, but rather leverage our local regional collaboration to influence the structure of those funding programs at the state and federal level so the region is able to be very competitive in accessing that funding.
- k. Conference of Governments. Perhaps it is just a question of naming, but we recommend this conference be broader than just governments and should encompass all parties with an interest in climate.
- l. On page 220 – “The governments in the San Diego region should identify key state and federal policies necessary to achieve decarbonization at the local level.” The work of this group should be to do more than identify the policies – they should be actively influencing those policies to ensure they work for the region.
- m. Page 221 – under energy efficiency and conservation, consider including a point on adaptive reuse to minimize embedded carbon in buildings.
- n. Page 222 – Mechanisms for Upscaling. One additional way of upscaling would be for San Diego regional leaders to take advantage of opportunities for leadership roles in existing collaborations and structures at the state, federal, and international level. As an example, San Diego region leadership on the

California Air Resources Board allows San Diego's innovative programs and policies to be seen and influence state actions.

5. Chapter 8 – Local Policy Opportunity

- a. Page 228, figure 8.1. Perhaps include in the results line a box for “opportunities for extra-regional leadership”
- b. Page 231 – under the analysis of “What state and federal players can influence or regulate GHG emissions” the authors could include an analysis of what levers are available to influence state and federal policies.
- c. Page 232 – the air district should be noted as the San Diego County Air Pollution Control District.

6. Chapter 9 – San Diego as a Model

- a. Please note if there are other San Diego participants in UN Sustainable Development Solutions Network.



December 3, 2021

Murtaza H. Baxamusa, PhD, AICP
Land Use and Environment Group
County of San Diego
San Diego, CA 92101

Subject: Building Electrification Institute (BEI) Feedback on San Diego County Regional Decarbonization Framework

Dear Dr. Baxamusa,

Thank you for the opportunity to submit comments on the San Diego County Regional Decarbonization Framework. The Building Electrification Institute (BEI) congratulates San Diego County for developing a robust technical analysis framework that will be able to serve as a foundation for equitable climate policy action and accelerate the transition away from fossil fuels across the San Diego region.

At BEI, we envision a world where we no longer burn fossil fuels in our buildings. As a result, we will have cleaner air, safer and more affordable housing, and healthier, more livable communities. With this transition, we can create good local jobs for those who need them most and equitably share the benefits of transitioning away from fossil fuels across all communities. BEI believes cities can be catalysts of change by helping to develop local and regional markets for building electrification, creating innovative new approaches that enable an equitable transition, and working with broad and diverse coalitions of partners to scale up solutions. BEI equips cities across North America with the knowledge, tools, and resources they need to accelerate the equitable transition of buildings away from fossil fuels and toward highly efficient electric systems.

BEI currently works with twelve cities across the country on equitable building electrification strategies, including the City of San Diego. The comments below are based on several years of experience working with these cities on detailed technical analysis and policy development to help accelerate the transition away from fossil fuels.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jenna L. Tatum'.

Jenna L. Tatum
Director
Building Electrification Institute

FEEDBACK ON CHAPTER 5: DECARBONIZATION OF BUILDINGS

BEI appreciates the technical detail and sophistication of the analysis included in Chapter 5, which will serve as a critical foundation for future policymaking in the San Diego region. BEI offers the following comments for consideration to strengthen the analysis and help support future policies that accelerate the decarbonization of buildings.

Technical Analysis and Methodology

- The timeline for this analysis for the draft Regional Decarbonization Framework is set to 2045, however the County Board of Supervisors recently set a goal to achieve carbon neutrality by 2035, as did the City of San Diego. The impacts of the transition as well as the potential plans and policies needed to achieve a 2045 vs. 2035 carbon neutrality goal will be significantly different. For example, it may be possible to replace all or nearly all heating, hot water, and cooking equipment at the end of its useful life with a 2045 timeline (thus lowering the total costs of the transition), but this will be unlikely to occur with a 2035 timeline, since existing equipment can typically last 20-30 years or longer. It would be helpful for the final Framework to use a consistent timeline, or to provide some commentary on why a different timeline is used.
- Data from 2014 included a commercial market report developed for the CPUC shows that heat pumps already made up over 50% of heating systems in commercial buildings in SDG&E territory.¹ This seems to run counter to the analysis on page 131 of the Framework, which indicates the majority of space heating equipment in commercial buildings use gas. It is important to understand the cause of this discrepancy, especially if this is underpinning all the other analysis in the report.
- Figure 5.17 can be misleading and should be shown in the context of total electric consumption to help policymakers and others better understand the potential implications. According to analysis in the Framework, regional electricity consumption is 14 TWh/year. Figure 5.17 shows a 3 TWh increase in electricity consumption, which would lead to a total of 17 TW. Compared to 14 TWh, this is roughly a 20% increase in total electricity use. Additionally, as the Framework describes, much of the increase could happen on currently off-peak hours in the winter as more electricity is used for heating, which can help increase system utilization and could actually help lower electric rates.
- Based on the analysis in the Framework, the total capital costs of building decarbonization appear to be \$12.8 billion across the County (in the high electrification scenarios). This is a low estimate however, because it only includes the marginal costs of equipment replacement, assuming that all equipment is replaced at the end of its useful life, and not mid-way through its useful life. To achieve the City and County's 2035 decarbonization goals, it can be assumed that a large amount of equipment will need to be replaced before the end of its useful life, and

¹ Itron, INC. *California Commercial Saturation Survey* (page 373). Prepared for the California Public Utilities Commission, August 2014. http://calmac.org/publications/California_Commercial_Saturation_Study_Report_Finalv2.pdf.

therefore total costs may need to be included for some portion of equipment (rather than marginal costs). This cost analysis also doesn't appear to include the costs of other needed health and safety upgrades that may be uncovered when doing these replacements (which are likely needed, particularly for more affordable or low-income housing, and could be high cost). In order to ensure equitable policymaking and distribution of costs, it would be important to understand the total cost of the transition, not just marginal costs of electrification equipment at the time of replacement.

- Related to the point above, the Framework does not include discussion of how the transition might be funded, who should pay for it, and how to ensure that low-income residents and renters are not the ones bearing the costs. While there are a range of solutions that can be deployed, the Framework should be clear that specific protections and funding will need to be put in place to ensure low-income customers are not negatively affected or bearing the costs of a climate crisis they did not cause. More considerations on this is included in the "Broader Considerations" section of these comments below.
- While it is relevant for the Framework to discuss strategies for SDG&E to restructure its gas-side business model and rate structure, it is concerning to see a prioritization of the perspective of utility investors in this discussion, with little discussion of how SDG&E's restructuring must protect low-income ratepayers. While there may be ways to structure solutions that benefit both utility investors and ratepayers, it would be helpful to give each explicit consideration.

Prioritization of GHG Benefits vs. Other Societal Benefits of Decarbonization

- While the electrification of space and water heating pose important GHG benefits, there are many additional benefits of fuel-switching of all appliances that are not included in this analysis. For example, adding cooling to buildings will reduce heat-related illness in the County, especially as high temperatures and heat waves increase due to climate change. An additional missing element is an assessment of the air quality impacts, including both who currently experiences the worst air quality in San Diego County and how much they would benefit from building decarbonization through lowered asthma rates and other improved health outcomes. For this assessment, the County could build on the analysis of CalEnviroScreen and/or the City of San Diego's [Climate Equity Index](#). Additionally, funding the replacement of building equipment for historically marginalized communities (many of which have been disinvested in due to past government policies such as redlining) can also help address current and historical inequities in housing quality and affordability. A quantitative analysis of the health, safety, and equity benefits from building decarbonization would be helpful to assess the true costs and benefits of equitable building decarbonization policies across the County, in addition to the GHG benefits.

Prioritization of Electrification Technologies vs. Unproven Technologies

- While it is justifiable to consider a number of pathways to achieve building decarbonization, the focus should be on proven technologies and solutions as viable options for local and regional

governments to begin pursuing immediately. The partial electrification scenario appears to include “low carbon gas,” biomethane, and hydrogen-based fuels that would require significant investment, research, and development to reach scale. Multiple studies have found that there are considerable supply chain constraints and these fuels would come at significantly higher cost than all-electric heat pumps and other electrification technologies.² Further analysis should be completed to identify specific justifiable uses for these fuels (such as heavy industry or long-haul transportation), but this should not come at the expense of or delay action to scale up proven electrification technologies.

FEEDBACK ON CHAPTER 6: EMPLOYMENT IMPACTS THROUGH DECARBONIZATION

BEI appreciates the inclusion of an analysis of workforce impacts in the draft Framework, as it will be critical to create good quality, family-sustaining jobs and to ensure fossil fuel workers are protected. BEI offers the following comments for consideration to help support future policies and decision-making to achieve these outcomes.

- This assessment concludes that there will be “no contraction” of the natural gas workforce by 2030, however this is based on a 2045 timeline. It is likely that workforce impacts will be significantly affected by the 2035 carbon neutrality targets recently set by both the City and the County, and these new timelines should be incorporated into this analysis. It would be difficult to imagine that there would be no workforce impacts from transitioning away from fossil fuels by 2030 under a 2035 timeline.
- This chapter of the Framework could benefit from some discussion of the other infrastructure investments that are planned or necessary across the County—including those outside of climate-related investments, such as water and sewer investments—that would help offset the projected fossil fuel job losses. It would be helpful if this analysis also included an assessment of the specific occupation types affected by the fossil fuel transition, and which occupations will experience job growth from planned or necessary investments. BEI has recently completed an initial analysis for the City of San Diego that covers some of these same research questions, which may be beneficial to build on for this work.
- Considering the high-quality jobs that appear to be at risk from building decarbonization, and the lower relative pay and benefits for current clean energy sector jobs, it is clear that by simply creating new jobs in the clean energy space, it will not be sufficient to ensure a just transition. Future policymaking efforts and/or future iterations of Chapter 6 should include policy tools that can be deployed to increase the quality (including pay and benefits) of new jobs, so that this transition creates family-sustaining jobs that will help build the middle class and reduce inequality across San Diego County (jobs which unions are typically able to provide).

² See, for example, Energy and Environmental Economics (E3), *Deep Decarbonization in a High Renewables Future* (analysis on page 34). Prepared for the California Energy Commission, June 2018. https://www.ethree.com/wp-content/uploads/2018/06/Deep_Decarbonization_in_a_High_Renewables_Future_CEC-500-2018-012.pdf

BROADER CONSIDERATIONS FOR LOCAL AND REGIONAL POLICY OPPORTUNITIES

As the County moves from technical analysis and into policy analysis and recommendations (potentially housed within Chapter 8: Local Policy Opportunities), BEI offers several considerations, which are based on its work with the City of San Diego and in other cities and regions across the country, to help prioritize equitable climate action and scale up the most effective solutions for buildings.

The Need for Regional Coordination

- The final Framework and all future policy analysis should consider which entities are appropriate partners for the long-term transition and what their roles could or should be. This should at a minimum include SDG&E, San Diego Community Power, and the San Diego County Air Pollution Control District, as well as all 18 local governments across San Diego County. Some sort of governance structure for action across these stakeholders would also be helpful for ensuring sustained and coordinated progress.
- There is also a critical need for better alignment between the region's affordable housing programs and goals and building decarbonization goals. For example, there could be significant efficiency and economies of scale to be gained by better integrating building electrification into affordable housing preservation programs. As an example, NYC's Green Housing Preservation Program identifies unregulated affordable housing and provides low-interest financing, including 0% interest, forgivable loans for energy efficiency and electrification work, in exchange for these buildings entering into affordability agreements with the City.³ These and other models could be replicated in San Diego County to achieve both housing affordability and electrification goals.

Policies for New Buildings

- There is a strong opportunity for all cities within San Diego County to move toward an all-electric Reach Code policy for new construction as soon as possible. This effort would reduce the costs of having to retrofit existing buildings in the future and would also minimize the risks of stranded gas assets. This also aligns with one of the Framework's key takeaways that "stranded cost risk is mitigated by minimizing unnecessary extensions or replacements of the gas pipeline system and by accelerating depreciation of existing utility assets." While the State of California is moving state code in this direction by 2025, San Diego County local governments can take accelerated action by passing stricter Reach Codes within the next several years.

Policies for Existing Buildings

- Achieving electrification across all (or a significant portion) of existing buildings will require both: 1) requirements/mandates for converting heating systems and 2) funding and technical assistance, targeted for those who cannot afford to pay for the transition. As such, the planned

³ *Green Housing Preservation Program*, NYC Department of Housing Preservation and Development.
<https://www1.nyc.gov/site/hpd/services-and-information/green-housing-preservation-program-ghpp.page>

Local Policy Opportunity chapter should include some assessment/direction on both of these strategies.

- When considering existing building policies, the County (and the Framework) should more forcefully point to the need for funding (not just “assistance”) for buildings that house low-income residents and renters. These buildings will need both technical assistance and direct funding to ensure that capital costs are not passed on to renters. Also, low-income residents should be prioritized for electrification and rate protections should be included to ensure energy bills for vulnerable residents do not drastically rise.
- Chapter 5 of the draft Framework appears to rely on timing upgrades at the end of useful life of fossil fuel equipment. While this is overall a lower-cost solution than most (if not all) alternatives, it will likely require buying down the installation costs of heat pump equipment to ensure cost parity to gas alternatives, particularly for price sensitive customers and/or low-income customers. Thought needs to be given to how much funding should go to which buildings or residents and at what points in time. However, across the board it will be difficult to convince building owners and decision-makers to make the necessary upgrades when the upfront cost is substantially higher than alternative gas equipment. Based on BEI’s work in California cities, some ideas for high priority opportunities to accelerate building decarbonization in the near-term (which can be implemented by SDG&E, San Diego Community Power, or others) could include:
 - Customers replacing both their air conditioning (A/C) and heating system are likely to see lower total installation costs if they install a heat pump to serve both needs, rather than a new A/C and a new furnace. These customers could be targeted for early wins since this is already a lower cost solution.
 - Customers replacing or installing air conditioning for the first time could also be targeted for funding/incentives, since this provides resilience benefits (particularly as summers get hotter in the region as a result of climate change), and they could immediately start using the heat pump to help offset heating needs as well.
 - Customers with wall furnaces or other inadequate heating systems may also be good candidates for near-term targeting for funding and incentives. Wall furnaces have been shown to emit more indoor air pollution than other types of systems and often do not provide sufficient heat throughout the home.⁴
- Another interesting takeaway from Chapter 5 is that water heating is responsible for significantly more emissions than space heating in San Diego County (which is not surprising given the mild climate). This could be a reason to focus on the water heating market, since in the single-family and smaller multifamily building sectors, the overall costs of replacing water heating systems are likely to be lower than replacing heating systems, and the retrofit is less expensive than a full heating system upgrade. The County could work with partners like SDG&E

⁴ Mullen, et. al. *Results of the California Healthy Homes Indoor Air Quality Study of 2011-2013: impact of natural gas appliances on air pollutant concentrations*. <https://pubmed.ncbi.nlm.nih.gov/25647016/>

and San Diego Community Power to drive incentives that bring these systems to cost parity and/or work with the regional Air Pollution Control District to place emissions limits on gas water heaters to phase them out.

- In planned Chapter 8, it would be helpful to perform a review of jurisdictions that have already begun policy planning for electrifying their existing buildings, since most local governments in San Diego County have not done this and there is an opportunity to learn from leaders in the field. Models that may be particularly relevant are under development in Berkeley, CA; Burlington, VT; Denver, CO; San Jose, CA; Ithaca, NY.

Ensuring an Equitable Distribution of Costs and Benefits of the Transition

- Throughout the transition, it is critical that San Diego regional stakeholders and local governments avoid inequitable policies and programs that direct incentives to the wealthy at the expense of the low-income residents. Often, “market-driven” utility incentive programs leave historically under-invested communities behind, which not only limits these communities’ access to clean energy technologies, but also serves to redistribute wealth from lower income communities to higher income ones since all residents pay for utilities’ systems benefit charges that fund their incentive programs.⁵
- When rolling out policies and programs, particular consideration should be given to tailoring the approach for different types of buildings and different types of residents and decision-makers in the buildings. The Green and Healthy Homes Initiative has called for a “Vaccine Rollout” strategy for building electrification that would help ensure that buildings and residents with different needs and starting places are addressed appropriately in order to reach broader building decarbonization goals.⁶
- A critical strategy called out in the draft Framework to ensure equitable distribution of costs is for SDG&E to start planning for “targeted electrification” (also known as “strategic decommissioning”), which would help mitigate the risks of stranded gas assets and potentially dramatic gas rate increases that would disproportionately impact low-income San Diegans. An example of this effort is underway in Northern California, where PG&E is engaged in a pilot with the City of Berkeley that could serve as a model and/or partnership opportunity for SD. BEI can provide more information about this if of interest.
- Additionally, it will be critical for policymakers to work closely and collaboratively with community stakeholders—particularly those from under-served communities who are typically left out of the policymaking process—to identify the needs of these communities, potential negative impacts from building decarbonization, and develop plans to mitigate these impacts for

⁵ Roth, Sammy, *California’s clean energy programs are mainly benefiting the rich, study finds*. The Los Angeles Times, 25 June 2020. <https://www.latimes.com/environment/newsletter/2020-06-25/will-the-rich-continue-to-be-the-main-beneficiaries-of-californias-clean-energy-future-boiling-point>

⁶ Green and Healthy Homes Initiative, *Leading with Equity and Justice in the Clean Energy Transition: Getting to the Starting Line for Residential Building Electrification* (page 10-14). https://www.greenandhealthyhomes.org/wp-content/uploads/2021-GHHI-Leading-with-equity_wp_Final.pdf

vulnerable residents. For example, without protections, both voluntary programs and requirements on landlords to upgrade rental buildings could cause capital costs that could be passed on to low-income renters in the form of higher rents, which could exacerbate housing unaffordability across the region. These and other challenging equity concerns need to be at the forefront of policy development, which is only possible if policymakers work to ensure that members of historically marginalized communities are engaged in the policymaking process. This engagement must go beyond tokenization and consultation and instead take the form of true collaboration. A key resource to reference for developing effective and equitable community engagement strategies is the *Spectrum from Community Engagement to Ownership*, developed by Rosa González of Facilitating Power in collaboration with Movement Strategy Center.⁷ BEI can also share its experiences supporting cities in their equitable community engagement efforts.

CONCLUSION

BEI appreciates the robust technical analysis included in San Diego County's draft Regional Decarbonization Framework and congratulates the County for taking these significant steps toward achieving an equitable transition across the region. BEI would be happy to serve as a resource to the County in its continued efforts and would be happy to provide any follow up information as needed or requested.

⁷ USDN, Facilitating Power, and Movement Strategy Center. *From Community Engagement to Ownership: Tools for the Field with Case Studies of Four Municipal Community-Driven Environmental & Racial Equity Committees* (page 3-5). https://www.usdn.org/uploads/cms/documents/community_engagement_to_ownership_-_tools_and_case_studies_final.pdf



December 1, 2021

Murtaza H. Baxamusa
Program Manager for Regional Sustainability
Land Use and Environmental Group
5510 Overland Avenue
San Diego, CA 92123

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Industry Association

National Association
of Home Builders

RE: Industry Comments on Proposed Regional Decarbonization Framework (RDF).

Dear Mr. Baxamusa,

The Building Industry Association of San Diego County represents 650-member companies and a workforce of over 30,000 men and women throughout the region. The Building Industry has worked closely with state regulators over the years on energy standards and supported four successive energy standard updates from 2011 thru 2020. We are equally committed to working with the County and region on local decarbonization efforts.

It is critical that any Regional Decarbonization Framework plan recognize the fact that housing availability and affordability are critical to the social and economic well-being of the San Diego region. The impacts of the chronic housing crisis are known to all and regulatory efforts to address climate change must not impede the ability to provide housing at all income levels throughout the region.

The BIA is concerned with the strategy to 'disincentivize' development in rural or non-infill areas due to transit issues. (Table 3.6) The County's consideration of a regional VMT methodology would place communities such as Lakeside, Ramona and Alpine in 'inefficient areas' thereby curtailing most development opportunities affecting nearly 60,000 residents. The long-term economic sustainability of communities such as these could be affected by overly restrictive development regulations. Legislation to allow electric cars as part of VMT mitigation would be beneficial in light of these difficulties and we call on the County to support such an effort.

New homes produced locally and throughout California are the most energy efficient units in the nation if not the world. However, the annual housing production represents a small fraction of the 1.2 million existing housing stock, of which 2/3 were built pre-1980 before the first energy

regulations were adopted in California. Additional mandates on new home production will have a small impact on decarbonization efforts compared to the benefits associated with existing housing stock retrofitting. Any regional approach should focus on improvements to existing housing stock to have a more immediate and beneficial impact toward RDF goals.

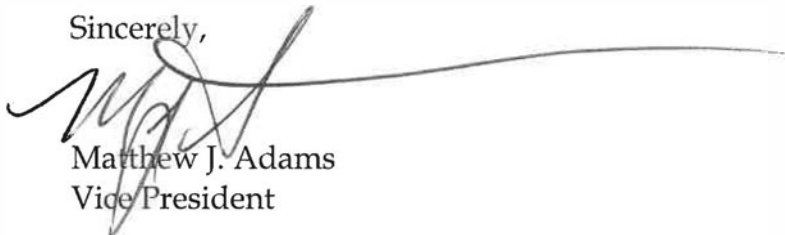
We commend the County's desire to focus on "proven, scalable technologies" to meet the intended RDF goals. Electrification pursuits can clearly provide benefits, but a tempered approach is recommended to ensure electric grid safety and reliability as we move forward with decarbonization. It is also needed to ensure that local efforts do not get too far ahead of state efforts that result in unintended conflicts. For example, the County should be aware that electric tankless water heaters are not permissible under current Title 24 regulations. This prohibition leaves new home builders' little choice other than to install less efficient, full-tank water heaters which is actually a step backwards. Cooperation and collaboration at all levels of government is essential.

The state has also recognized that electrification comes with increased up-front costs, such as 400-amp electric panels that would be necessary for 100% electric homes and additional design costs to install electric heat pumps and water heaters. While the RDF looks to "rapidly increase EV adoption," the state Housing and Community Development (HCD) and the Building Standards Commission (BSC), the two agencies that propose green building standards in California, are taking a more moderate approach in multifamily housing, proposing 5% fully functioning EV Charging.

Finally, we ask that the BIA be provided a seat on any Regional Governance Committee to provide input as representatives of the regulated community. Having such input would be beneficial as policies are considered and adopted.

The BIA appreciates the opportunity to provide comment on the Regional Decarbonization Framework plan and looks forward to working with the county on a realistic and comprehensive program.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Matthew J. Adams', with a long horizontal flourish extending to the right.

Matthew J. Adams
Vice President



December 9, 2021

Dr. Murtaza Baxamus, Program Manager
County of San Diego
San Diego, CA 92123

**Re: San Diego County Regional Decarbonization Framework Draft
Report Comments**

Dear Dr. Bazamus:

Bloom Energy is pleased to provide comments on San Diego County's Regional Decarbonization Framework Draft Report (Decarbonization Framework). We appreciate the opportunity to work with the County of San Diego (County) to help identify pathways to meet the goal of a fully decarbonized energy system. Bloom Energy hopes that these comments are helpful and would be happy to provide additional information as needed.

Bloom Energy is an international clean technology company headquartered in San Jose, CA, where the company manufactures high heat solid oxide distributed fuel cell power systems, which are among the most energy efficient on the planet. Bloom Energy Servers produce reliable electricity using an environmentally superior non-combustion process that reduces carbon dioxide emissions while virtually eliminating localized air pollution and water usage. Bloom fuel cells are fuel flexible and can run on natural gas, biogas, hydrogen or a combination of hydrogen and methane. The result is an energy infrastructure option that combines increased electrical reliability and improved energy security with significantly lower environmental impacts than many alternatives.

The Decarbonization Framework seeks to identify renewable electricity resources to achieve a 100% decarbonized energy system by 2050. Chapter 2, *Geospatial Analysis of Renewable Energy Production*, finds that while the scenarios explored can likely generate enough energy to meet forecasted demand, the mismatch between the timing of supply and demand across days and seasons means that the resources identified in Chapter 2 alone will not be able to meet the 99.97% reliability standard set by the North American Electricity Reliability Corporation (NERC).¹ As such, 100% reliance on renewable and zero carbon resources requires a combination of excess intermittent generation, long and short duration storage, clean dispatchable power generation, and demand-side management.²

In this letter we briefly discuss (1) the environmental, reliability, and resiliency attributes of stationary fuel cells, (2) opportunities for utilizing biogas resources in the County to help meet decarbonization goals, (3) recommending for inclusion of electricity produced from biogas via fuel cells in the Decarbonization Framework, (4) Federal clean hydrogen initiatives, and (5) how fuel cells connected to a decarbonized gas system support building and transportation electrification.

- (1) Stationary fuel cells are uniquely suited for providing the 24/7/365 clean firm power required by data centers, hospitals, universities, and other facilities that can't tolerate power outages. Additionally, fuel cells and fuel cell powered microgrids can support the grid during supply shortfalls caused by extreme weather or other unscheduled maintenance events either by islanding from the grid, thereby reducing demand, or exporting power to the grid. For example, in August 2020, in response to urgent requests

¹ San Diego Regional Decarbonization Framework, Chapter 2, p. 24.

² IBID, p.24

to support California's energy system and reduce rolling outages at net peak, Bloom Energy customers voluntarily exported power to the grid, in addition to cutting their own load by a commensurate amount, effectively doubling the export value. In doing so, Bloom Energy's customers contributed to the gigawatt or more of behind-the-meter (BTM) resources brought to bear in that emergency.³

Stationary fuel cells are an important decarbonization resource because the combination of high efficiency and extremely high capacity factor results in the displacement of more GHG emissions than equivalent nameplate-sized intermittent renewable resources. In fact, the most significant GHG and criteria air pollutant emissions reductions in the California Self-Generation Incentive Program were made by fuel cells operating on natural gas.⁴ Fuel cells running on biogas, biomethane or renewable hydrogen are an eligible resource under California's Renewable Portfolio Standard and can achieve even greater reductions, while providing resiliency and reliability.⁵ Additionally, stationary fuel cells are an efficient scalable resource with global project sizes ranging from under 1Kw to 78 MW⁶ with a very small footprint when compared to utility scale solar and wind and have virtually no land use or wildlife impacts. For example, a 1 MW solar PV facility would require 6,250 sq. meters as opposed to a 1 MW fuel cell installation which would require only 50 sq. meters.

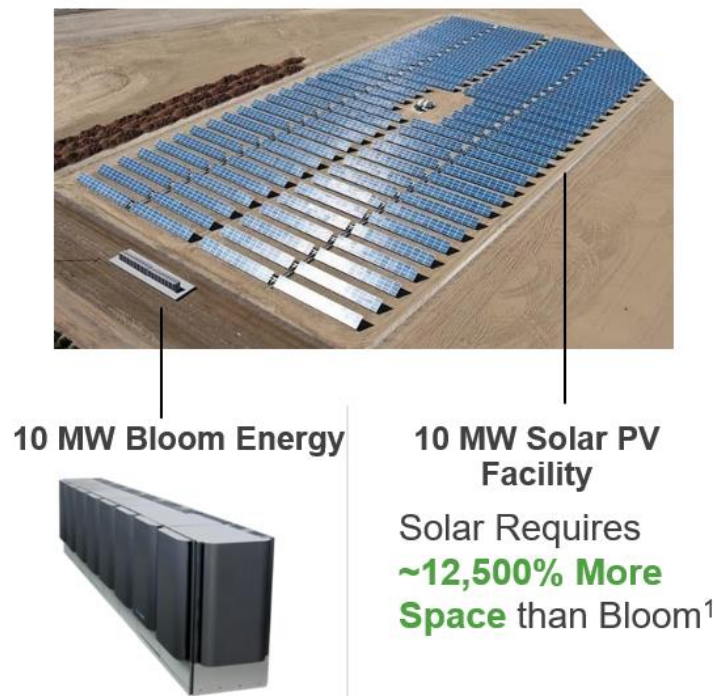
³ BTMs, including demand response and batteries, contributed well over one gigawatt of capacity in the August 2020 events. See Joint Agency Final Root Cause Analysis, available at: <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>; Penn, "Its Electric Grid Under Strain, California Turns to Batteries" (N.Y. Times, Sept. 30, 2020)(Penn/NY Times), available at <https://www.nytimes.com/2020/09/03/business/energyenvironment/california-electricity-blackout-battery.html>; St. John, "Consumers are Playing a Big Role in Keeping the Lights on in California This Week" (GreenTech Media, Aug. 19, 2020), available at <https://www.greentechmedia.com/articles/read/how-california-has-escaped-more-rollingblackouts-this-week>

⁴ SGIP 2016-2017 Self-Generation Incentive Program Impact Evaluation Report. Submitted by Itron to Pacific Gas & Electric Company and the SGIP Working Group, September 28, 2018. Available at: <https://www.cpuc.ca.gov/General.aspx?id=7890>

⁵ See Fuel Cells for Resilience and Decarbonization in California, by Dr. Jeff Reed and Dr. Jack Brouwer for additional information. This presentation may be found on the California Public Utilities Commission's website at https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/resiliency-and-microgrids/resiliency-and-microgrids-events-and-materials/10_2021_ca-stationary-fuel-cell-collaborative.pdf.

⁶ World's Largest Hydrogen Fuel Cell Power Plant Jointly Built by Doosan Fuel Cell Put Into Service, December 13, 2021 (<https://fuelcellworks.com/news/worlds-largest-hydrogen-fuel-cell-power-plant-jointly-built-by-doosan-fuel-cell-put-into-service/>)

High Power Density



- (2) The County has biogas resources that should be included in the Decarbonization Framework as a source of clean firm power. Four of the County's wastewater plants can provide ~30MW of 24X7 carbon free electricity. These plants are:
- San Diego Metro Biosolids Center (MBC)
 - Point Loma Wastewater Treatment Plant
 - Encina Wastewater Authority
 - Escondido Hale Ave RRF

Attached is a presentation presented to San Diego County Supervisor Nathan Fletcher on November 9, 2021. The presentation reviews the environmental and efficiency advantages of fuel cells compared to onsite combustion, including a 99% reduction in local air pollution, 40% more power from the biogas supply, and lower or equal OpEx on a \$/kWh basis, with greater reliability. While the presentation is focused on wastewater, the attributes are applicable to other waste sources (e.g. landfill, dairy, food waste etc). As the SB 1383 January 1, 2022⁷ deadline for diverted organic waste diversion implementation nears, the County will need to harmonize its renewable energy plan with the SB 1383 requirements, including utilizing the biogas generated from the organic waste produced within its boundaries to meet its decarbonization and sustainability goals.

- (3) Chapter 2, *Geospatial Analysis of Renewable Energy Production*, identifies a necessary expansion of the electricity supply to meet estimated ~50,000 GWh of demand (or ~5,700 MW of capacity) by 2050.⁸ As such, Bloom strongly encourages the County to include an evaluation of biogas produced from county facilities as part of its assessment of available renewable energy production resources.

- (4) We have focused on biogas opportunities from County facilities in this letter, but we also

⁷ Assembly Bill 1383 (Chapter 395, Statue of 2016) Section 42652.5 (a)

⁸ San Diego Regional Decarbonization Framework, Chapter 2, p. 35

want to flag recent federal clean energy developments. The Bipartisan Infrastructure Bill includes funding for clean hydrogen, including \$8 billion for at least 4 hydrogen hubs. The pending Build Back Better legislation includes both an investment tax credit (ITC) and a production tax credit (PTC) for clean hydrogen, as well as direction to the U.S. Department of Energy to develop a national hydrogen strategy. These developments signal that as a non-carbon emitting source of energy, hydrogen will play a key role in achieving reliable, affordable, and decarbonized energy systems. We would be pleased to provide you information about Bloom's solid oxide high heat electrolyzer at the appropriate time.

- (5) Finally, a key takeaway of the overall report was a call for the rapid depreciation of the natural gas infrastructure to decarbonize buildings. Electrifying the end-use appliances within the building footprint is a critical step towards decarbonization. Technologies, like Bloom fuel cells, produce clean electricity to power these end uses, and meet the resulting increased demand. As the County considers the best way to utilize the natural gas system to support electrification, we want you to be aware that fuel cells are an important part of this equation.

Thank you for the chance to provide input on San Diego County's Decarbonization Framework. We look forward to future opportunities to work with you to help the County achieve its decarbonization goals. Please see us as an information resource as well as a technology provider and feel free to contact us with any questions.

Sincerely,

Kendal K. Asuncion
Manager, Government Affairs

CC: Chair Nathan Fletcher
Emily Wier, Director of Policy – Office of Chair Nathan Fletcher
Kelly Bray, Chief-Sustainability Planning

BOULEVARD PLANNING GROUP

PO Box 1272, BOULEVARD, CA 91905

DATE: 11-15-2021

TO: San Diego County Board of Supervisors via publiccomment@sdcounty.ca.gov

FROM: Donna Tisdale, Chair: [REDACTED]

RE: BOS NOV 17-ITEM 6: COMMENTS ON FIRST DRAFT REGIONAL DECARBONIZATION FRAMEWORK¹

On October 7th, our Boulevard Planning Group voted unanimously (Seat 1 vacant) to authorize me to submit comments. These initial comments are limited due to sheer volume of current projects, under consideration at the County level, that can and will have adverse impacts on our rural communities.

Guiding Principles: (1) Data-Driven Approach, (2) Regional Collaboration, and (3) Stakeholder Input.

While it is appreciated that focus will reportedly be applied to rooftop solar (parking lot solar shades should be incentivized / required for new projects), urban infill projects, and expanding urban tree cover, the devil is in the details.

Attachment A²:

- The cover page clearly states it is a DRAFT-NOT FOR CITATION report.
- However, an excerpt from Board Letter page 1 states the following contradictory statement:
 - “These baseline assessments and science-based pathways make up the technical reports included as Attachment A and will form the basis of future policy recommendations.”
 - ***How can Attachment A be both a draft that is NOT for citation AND the basis of future policy recommendations?***
 - ***Some of the Data included in Attachment A is outdated and should not be relied upon, including RETI Candidate Project Areas (CAP) from 2009, including Boulevard!***

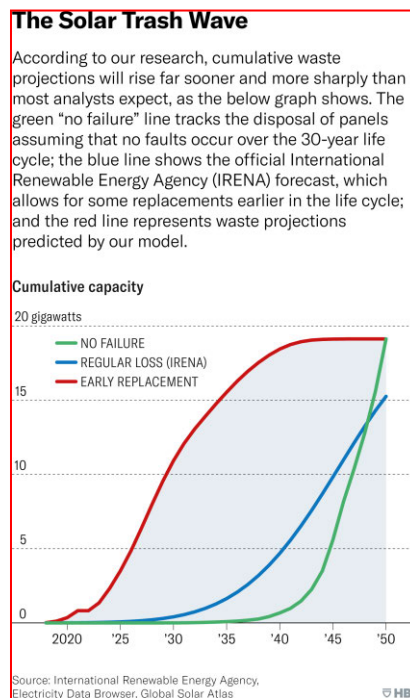
PROJECT TEAM; STAKEHOLDERS & EQUITY IMPACT STATEMENT: While the draft Regional Decarbonization Framework focuses most of the disruptive land use changes on historically marginalized and the most disproportionately impacted rural sacrifice zone communities of Boulevard and Jacumba, along with Imperial County, there does not appear to be any real “project team” or “stakeholder” representation for those areas which challenges the so-called equity statement.

Figure 1.1 Overview of the lifetimes of common energy consuming or producing infrastructure at page 9:

¹ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fbosagenda.sandiegocounty.gov%2Fcob%2Fcosd%2Fcob%2Fdoc%3Fid%3D0901127e80dcde24&clen=539419

² chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fbosagenda.sandiegocounty.gov%2Fcob%2Fcosd%2Fcob%2Fdoc%3Fid%3D0901127e80dcde3a&clen=16513180

- **The graphic fails to include the ‘lifetimes’ of industrial wind, solar, energy storage components that are apparently heavily relied upon to reach net zero. What’s up with that?**
- There are well-documented problems with wind, solar, and battery components failing to meet longevity and productivity expectations, including catastrophic project failures.
- Two local examples:
 - SDG&E has a Power Purchase Agreement for 265 MW Ocotillo Wind Express in western Imperial County. In September 2021, a second tower collapse since start of operations in late 2012 has resulted in full project suspension by Bureau of Land Management that is still in place two months later—with no turbines turning or producing power.
 - SDG&E has/ had a Power Purchase Agreement with Kumeyaay Wind located on tribal land in Boulevard. The 2009 catastrophic failure rendered all 25-2MW Gamesa wind turbines inoperable³. A \$30 million settlement was reached between Gamesa and Infigen for site repairs and replacement of all 75-turbine blades at Kumeyaay Wind⁴. The turbines were down and not producing for many months.
- Solar panel failures, early degradation, and looming solar panel trash wave are detailed in new report published in the Harvard Business Review June 18, 2021:
 - **The Dark Side of Solar Power** by Atalay Atasü, Serasu Duran, and Luk N. Van Wassenhove⁵
 - **“Summary:** Solar energy is a rapidly growing market, which should be good news for the environment. Unfortunately there’s a catch. The replacement rate of solar panels is faster than expected and given the current very high recycling costs, there’s a real danger that all used panels will go straight to landfill (along with equally hard-to-recycle wind turbines). Regulators and industry players need to start improving the economics and scale of recycling capabilities before the avalanche of solar panels hits.”



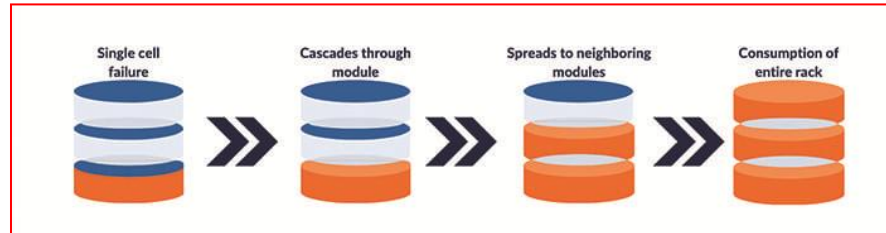
³ <https://www.wind-watch.org/news/2013/12/18/new-questions-raised-over-wind-turbine-fire-in-campo/>

⁴ <https://nawindpower.com/infigen-and-gamesa-end-years-long-legal-battle-over-wind-turbines>

⁵ <https://hbr.org/2021/06/the-dark-side-of-solar-power>

- **Energy Storage Systems (ESS)**

- ESS must be carefully protected from fire and explosion hazards that are not uncommon and can create toxic smoke and runoff.
- *(Excerpt: “There are serious risks associated with lithium-ion battery energy storage systems. Thermal runaway can release toxic and explosive gases, and the problem can spread from one malfunctioning cell to neighboring cells, resulting in catastrophe. Having the right detection and protection systems in place can reduce the risk”⁶.*



2. Geospatial Analysis of Renewable Energy Production

- **Key Takeaways (excerpt):** “This chapter identifies low-impact, high-quality areas for wind and solar development in San Diego and neighboring Imperial County.”
 - We strongly object to the term low-impact in reference to the Boulevard/ Jacumba Planning Areas in rural east county.
 - Industrial wind and solar represent significant and cumulatively significant impacts for resident humans, wildlife, wild lands, visual and cultural resources, increased noise, electrical pollution, wildfires, and more.
 - Unfortunately, those impacts are generally dismissed through CEQA’s Overriding Considerations and alleged Community Benefits, if any, that rarely benefit the actual project-impacted community at ground zero.
 - During the contentious Wind Energy Ordinance review in 2011-2013⁷, we provided enough *science-based data* regarding wind turbine generated low-frequency noise and vibration impacts on human health and safety that the **Board of Supervisors voted on 5-08-13 to restrict San Diego County’s Wind Resource Area⁸ to a small location north of I-8 that is still far too close and harmful to residents and sensitive wildlife**. They determined that south of I-8 was too densely populated to allow intrusion of industrial wind turbines into occupied neighborhoods.
 - Now, almost a decade later, industrial wind turbines have grown in size from average 1.5 MW each to 3.2-4.2 MW each and stand close to 600 ft tall, taller than any current San Diego skyscraper.

⁶ <https://www.powermag.com/protecting-battery-energy-storage-systems-from-fire-and-explosion-hazards/>

⁷ <https://www.sandiegocounty.gov/content/sdc/pds/ceqa/Soitec-AR-Wind-Ord-POD10-007.html>

⁸ chrome-

extension://efaidnbmnnnibpcjpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.sandiegocounty.gov%2Fcontent%2Fdam%2Fsd%2Fpds%2Fceqa%2FSoitec-Documents%2FRecord-Documents%2FWind-Energy-Zoning-Ord-and-GPA-Docs-POD10-007%2F2013-05-08-Board-Report-POD10-007-Attachment-E.pdf&clen=898781&chunk=true

- And yet, during recent Campo Wind project review, where proposed Terra-Gen's turbines are 4.2 MW and will stand at 586 ft or so, the Draft and Final EIS and joint EIR relied on vastly inadequate review of impacts limited to turbines up to 2 MW that are less than ½ the size of proposed turbines. AND THE CURRENT BOARD OF SUPERVISORS INEXPLICABLY SUPPORTED THAT NEGLIGENT REVIEW!
- I have personally been involved in numerous professional on-site research studies that documented acoustic and electrical pollution at both tribal and private homes impacted by Kumeyaay Wind, Tule Wind, Ocotillo Wind, and Energia Sierra Juarez Wind turbines. These reports have been repeatedly submitted during formal project comment periods and yet they continue to be ignored because they don't support the current PC agenda.
- In general, scientific research that counters the politically correct pro-wind / solar advocates does not get funded, gets slandered, gets banned, and / or all of the above.
- Science for sale seems to be at play, based on our own and other communities' experience⁹.
 - ***(excerpt) "By using a variety of ploys to manufacture doubt, a whole industry of science-for-hire experts helps corporations put profits over public health and safety."*** David Michaels – Boston Review
- Externalizing the destructive land use conversion for renewable energy to rural communities and Imperial County represents environmental injustice with the wealthier San Diego County taking advantage of the impoverished rural communities and Imperial County where tens of thousands of acres of productive farmland and carbon sequestering desert soils have already been converted to wind and solar for export to Los Angeles and San Diego Counties.

2.2 Data RETI Candidate Project Areas (CPA)

- Again, the identified 2009 stakeholders and steering committee that reportedly produced the CPA's that include Boulevard, Jacumba and Imperial County, did not include rural residents who would be the most impacted and who have the most local knowledge.
- The CPA data is a decade out of date and does not reflect current projects and knowledge.

Some Newer Potential Alternatives for Consideration:

- Build solar into fences and noise barrier walls: <https://et-sun.com/Solar-Fences/>
- Convert use of wooden pallets for supply lines to use of coco fiber pallets that press waste materials to sustainable, bio-based 100% wood-free recyclable coco pallets that reduces cost and CO2 in the supply chain, when compared to wooden pallets, and can be composted to improve soil and help soil sequester carbon : <https://www.cocopallet.com/what>
- Require more Heat pumps: <https://www.energy.gov/energysaver/heat-pump-systems>
- Consider small modular nuclear reactors like those announced by Rolls Royce and those that will enjoy new funding through the newly passed federal infrastructure bill that includes about \$8 billion for nuclear¹⁰:

⁹ <https://bostonreview.net/science-nature/david-michaels-science-sale>

¹⁰ <https://www.zerohedge.com/markets/rolls-royce-develop-mini-nuke-reactors-decarbonize-power-grid>

- Rolls-Royce Group, BNF Resources UK Limited, and Exelon Generation Limited will develop small modular nuclear reactors (SMRs) that will allow the country to meet net zero commitments.¹¹

Thank you for consideration of these limited initial comments...

Attachment: San Diego County Wind Resource Map approved 5-08-13

#

¹¹ <https://www.rolls-royce.com/media/press-releases/2021/08-11-2021-rr-announces-funding-secured-for-small-modular-reactors.aspx>

#1
ATTACHMENT

For Item

#03

**Wednesday,
November 03, 2021**

**PUBLIC COMMUNICATION RECEIVED BY THE
CLERK OF THE BOARD**

DISTRIBUTED 11/01/2021

From: Cherry Diefenbach [REDACTED]
Sent: Sunday, October 31, 2021 10:28 AM
To: FGG, Public Comment
Cc: Anderson, Joel; Lawson-Remer, Terra; Fletcher, Nathan (BOS); Vargas, Nora; Desmond, Jim; Jeffrey Osborne; GREG CURRAN; Katrina Westley; jacari cousins; Vertino, Timothy
Subject: [External] streamlining renewable energy projects, Agenda item 5, BOS hearing Nov 3, 2021
Attachments: BOS hearing Nov. 3, 2021; renewable energy agenda item 5 comments.docx

Hi Andrew,

Attached are the JCSG's comments about streamlining renewable battery storage projects which is agenda item #5 on the BOS hearing on Nov. 3, 2021.

Thank you in advance for making sure they are included in the BOS packets.

Cherry Diefenbach
Chair, JCSG
[REDACTED]

JACUMBA COMMUNITY SPONSOR GROUP (JCSG)

October 31, 2021

From: Chair, JCSG: Cherry Diefenbach [REDACTED]

To: Supervisors Vargas, Anderson, Lawson-Remer, Fletcher, and Desmond

Subj: Proposal to Streamline Renewable Energy Battery Storage Projects, Agenda Item 5 for BOS Hearing on November 3, 2021

Dear Supervisors,

On October 11, 2021, the JCSG authorized me, as Chair, to submit the following comments on the County's proposal to update and streamline renewable battery storage projects in two industrial zones: M-50 and M-52.

The JCSG believes that expediting the permitting of renewable energy generation and storage facilities near their point-of-use, urban population centers, has always been the right direction. In fact, the siting of huge battery storage facilities in the wildfire-prone backcountry should be entirely prohibited. It is bad enough that the County has been allowing the systematic destruction of our rural landscape by greedy developers seeking to capitalize on the renewable energy credits associated with industrial-scale solar and wind facilities.

Mankind has a responsibility to protect the environment. **Therefore, we request that any future zoning ordinance on renewable energy battery storage (of any size), be required to use non-flammable batteries such as the iron-flow battery.** (These batteries contain NO toxic rare-earth materials which makes them 100 percent recyclable.) So, what if these batteries are a little more expensive than the lithium-ion batteries which can experience thermal runaway and burn uncontrollably?

Increasing distributive renewable energy through the streamlining the permitting of battery storage facilities on land that is already zoned for industrial use (M-50 and M-52) seems logical and the JCSG supports this. **We would reject streamlining battery storage facility permits on land not zoned for industrial use, such as C-44 commercial property.**

Our community continues to request meaningful programs from county and city leaders that would incentivize/subsidize rooftop solar systems for low-income residents and that would require retrofitting solar systems on all commercial and government-owned buildings and parking lots. *The County still owns commercial properties that have not yet been converted to solar power and it should be leading by example.*

Respectfully,

Cherry Diefenbach
Chair, JCSG

From: Donna Tisdale [REDACTED]
Sent: Sunday, October 31, 2021 4:31 PM
To: FGG, Public Comment
Subject: [External] Nov 3 Board item 3 - renewables & battery storage
Attachments: BPG to BOS renewables - ESS 10-31-21.pdf; RDF Fig 2.7-2.8.pdf

Item # 3 Board meeting 11-3-21: OPTIONS TO UPDATE REGULATIONS FOR RENEWABLE ENERGY PROJECTS IN THE UNINCORPORATED AREA INCLUDING BATTERY STORAGE PROJECTS

Hello,
Please find the attached 2-page comment letter and 1 page attachment.
Thank you,
Donna Tisdale, Chair
Boulevard Planning Group
[REDACTED]

BOULEVARD PLANNING GROUP

PO BOX 1272, BOULEVARD, CA 91905

DATE: 10-31-21

TO: SUPERVISORS FLETCHER, VARGAS, ANDERSON, LAWSON-REMER & DESMOND, via

PublicComment@sdcounty.ca.gov

FROM: Donna Tisdale, Chair: [REDACTED]

RE: Item # 3 Board meeting 11-3-21: OPTIONS TO UPDATE REGULATIONS FOR RENEWABLE ENERGY PROJECTS IN THE UNINCORPORATED AREA INCLUDING BATTERY STORAGE PROJECTS

These comments are submitted in my name only due to timing of our regular monthly meetings held on the First Thursday of every month. These comments fall in line with numerous previous Boulevard Planning Group (BPG) votes taken on the San Diego County Climate Action Plan, the Regional DeCarbonization Framework, Community Benefits Agreements, the JVR Solar project, the Campo Wind project, the Boulder Brush Substation project, the ECO Substation / Boulevard Substation rebuild project, the Sunrise Powerlink, the Torrey Wind project, the Tule Wind project, the Shu'luuk Wind project, Soitec's Rugged Solar, Tierra Del Sol Solar, Lan-West, Lan-East and Los Robles projects, the Chapman Ranch Solar project, Enel Green Energy's Jewel Valley Wind project, and many other projects planned, approved, and/or pending in or adjacent to our ruggedly beautiful and wildfire prone backcountry community planning area. *People and wildlife do live here and are truly adversely impacted and disrupted by these large-scale energy projects. Developers have enough funds and lobbyists to run right over us many times over!*

Please support Staff Recommendation 2A: Make Battery Storage a Site Plan Permit in Two Industrial Zones:

- Please know that Battery Storage Projects / Energy Storage Systems (ESS) are not benign.
- While placing highly flammable ESS in industrial areas is a much better fit than allowing them in our fire-prone backcountry areas, with limited fire-fighting resources, some industrially zoned areas do have residential and other sensitive uses in close proximity that must be considered.

PLEASE REJECT OPTION 2D IN ATTACHMENT A: Streamline Large-Scale Battery Storage in All Zones: "Direct the Chief Administrative Officer to (1) amend the Zoning Ordinance to streamline the permit process for largescale battery energy storage (i.e., Minor Impact Utilities) projects in all zones, including industrial, residential, commercial, and agricultural...":

- **First Draft Regional Decarbonization Framework:**¹ See attached Figures 2.7 and 2.8 at pages 26-27 (pdf) that currently show the predominantly low-income Boulevard and Jacumba Planning Areas as being dominated and overwhelmed by designation as renewable energy sacrifice zones for wind, solar and transmission projects; by far the most impacted of any other communities in San Diego County. Significant and cumulatively significant fire and electrical pollution components are not isolated to the project sites. They can move off-site quickly.

¹ <https://www.sandiegocounty.gov/content/sdc/sustainability/regional-decarbonization.html>

- It is no surprise that the Decarbonization maps fail to include mapping notations identifying local freeways, roads, community names or any markers that would make it easier for the public to understand the magnitude of the pending impacts to places they love.
 - We are already disproportionately overburdened with these dangerous energy projects that create their own form of noise, electrical, and visual pollution that harm the health and well being of our human and natural communities.
 - Streamlining these massive projects would only add insult to injury. Our historically marginalized rural communities deserve better.
- **ESS fires and overheating and high voltage arc events:**
 - The real potential for catastrophic runaway thermal battery failures can spark wildfires in our drought prone High Severity Fire Hazard Zone that is predicted to get even hotter, drier, and more fire prone due to climate change. Numerous battery storage fires / events have occurred in the last few years.
 - **September 2021: Vistra Energy's 300-MW Moss Landing lithium-ion battery facility in California remains offline** while the company investigates why several modules overheated enough to trigger sprinkler systems, preventing a fire and any offsite impacts.²
 - **September 2021: "Lithium-ion energy storage battery explosion incidents"**; Published in Journal of Loss Prevention in the Process Industries³; Highlights"
 - Accounts of energy storage battery fires and explosions.
 - Lithium-ion battery thermal runaway gas explosion scenarios.
 - Deflagration pressure and gas burning velocity in one important incident.
 - High-voltage arc induced explosion pressures.
 - **August 2021: Fires raise concern over energy storage battery safety in South Korea.** Over 30 ESS fire events.⁴
 - **July 29, 2021: The Tesla battery storage fire in a lush green area of Australia required 30 fire rigs and 150 firefighters over several days:**⁵
 - (excerpt) "...A toxic blaze at the site of Australia's largest Tesla battery project is set to burn throughout the night. The fire broke out during testing of a Tesla megapack at the Victorian Big Battery site near Geelong. A 13-tonne lithium battery was engulfed in flames, which then spread to an adjacent battery bank. More than 150 people from Fire Rescue Victoria and the Country Fire Authority responded to the blaze, which has been contained and will be closely monitored until it burns itself out."If we try and cool them down it just prolongs the process," the CFA's Assistant Chief Fire Officer Ian Beswicke said."But we could be here anywhere from 8 to 24 hours while we wait for it to burn down..."
 - **2019 2MW battery fire in Surprise, AZ, injured 8 firefighters**⁶

Thank you for consideration of the comments. Please put safety first.

² <https://ihsmarket.com/research-analysis/vistra-battery-storage-facility-in-california-remains-shut-aft.html>

³ <https://doi.org/10.1016/j.jlp.2021.104560>

⁴ https://www.infolink-group.com/en/storage/energy%20storage_market%20trends/fires-raise-concern-over-energy-storage-battery-safety-in-south-korea

⁵ [Massive Tesla battery on fire at renewable energy plant in Australia - CNET](https://www.cnet.com/news/tesla-battery-on-fire-at-renewable-energy-plant-in-australia/)

⁶ <https://www.firehouse.com/community-risk/video/21147915/report-outlines-factors-in-az-battery-site-blast-injuring-eight-firefighters>

October 2021

San Diego Regional Decarbonization Framework

DRAFT – NOT FOR CITATION



**SDG
POLICY
INITIATIVE**

Scenario 1: Solar and Wind within San Diego County

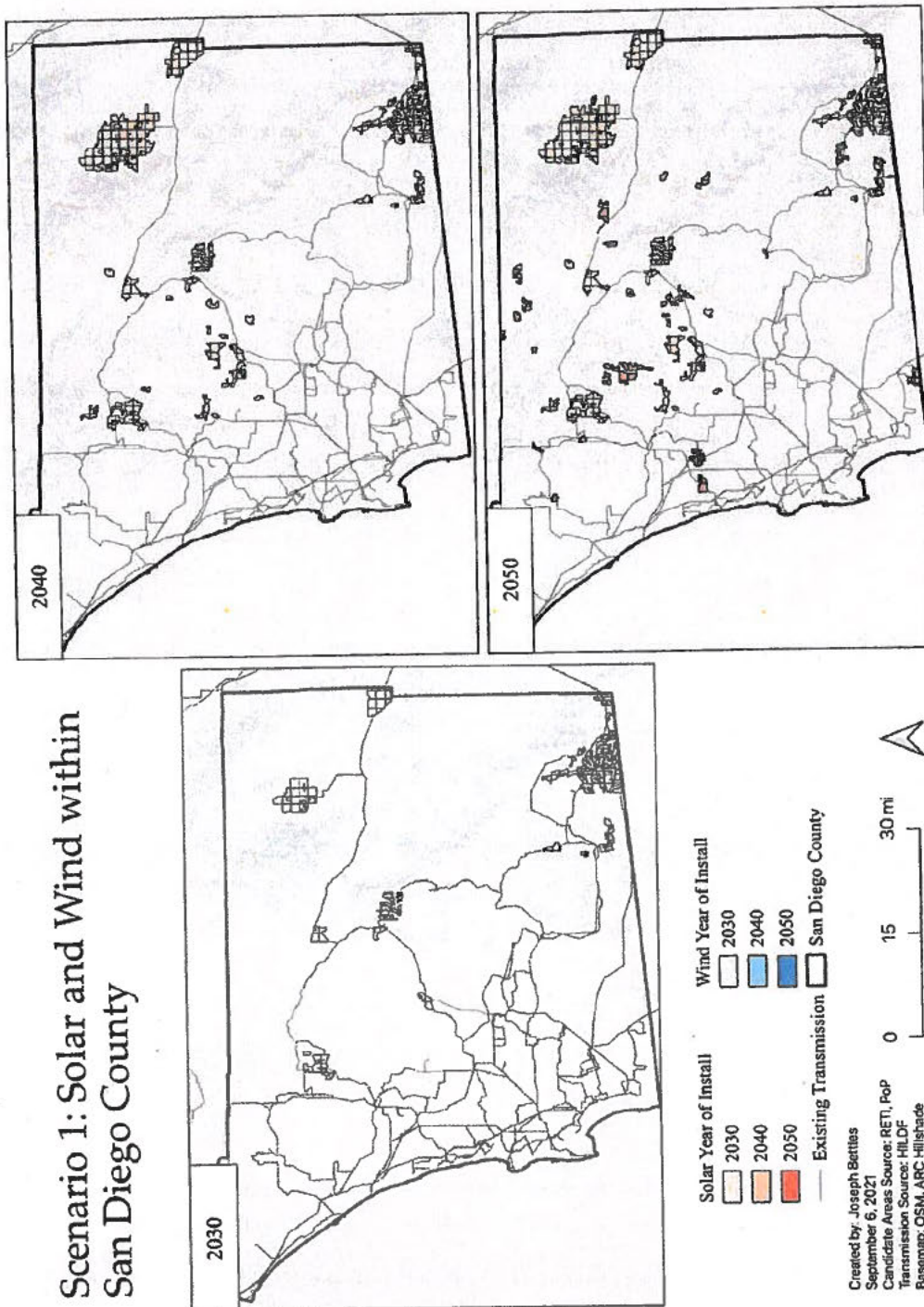


Figure 2.7. Site Selection Scenario: San Diego County Only.

Scenario 2: Solar, Wind and Geothermal within San Diego and Imperial Counties

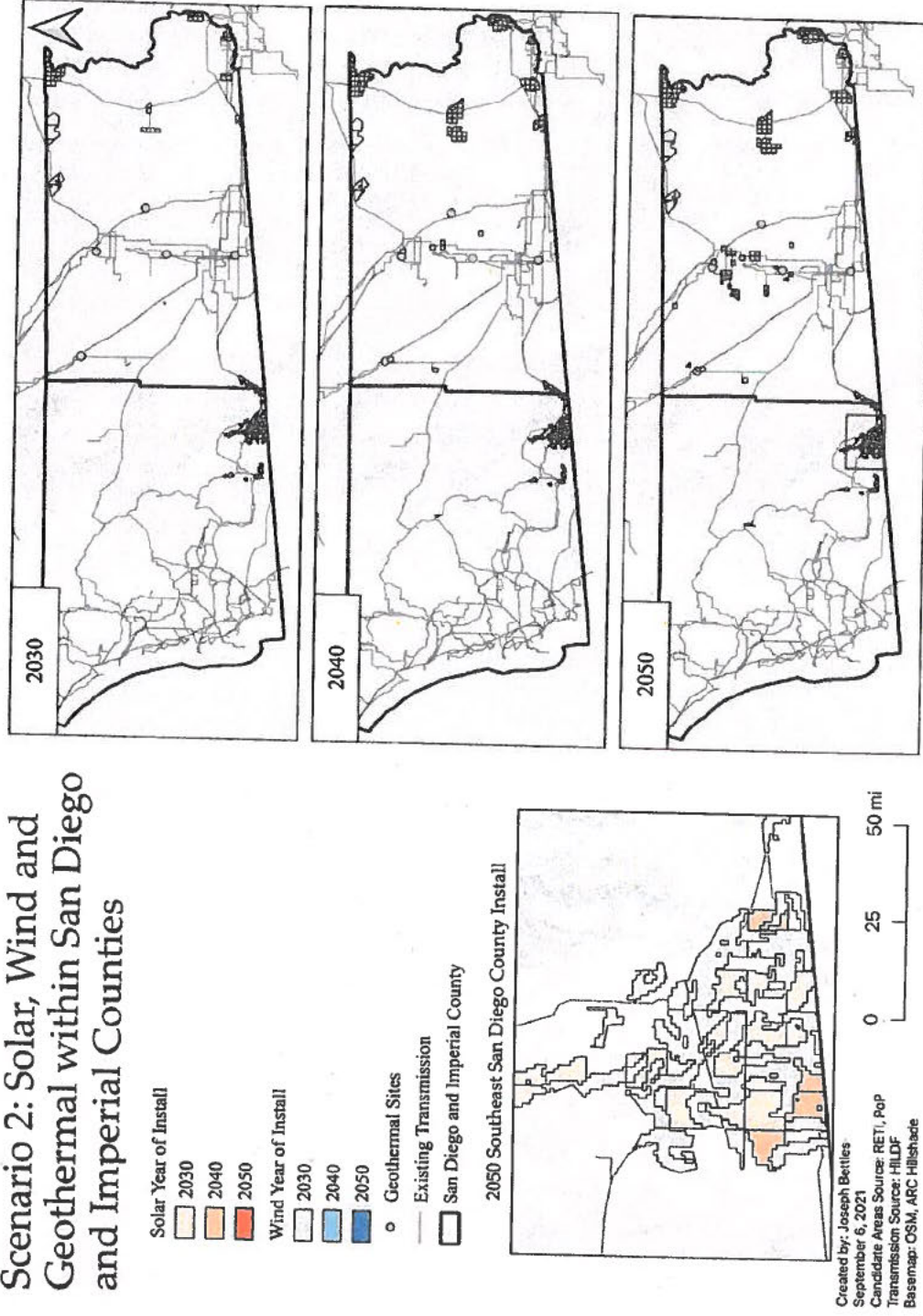


Figure 2.8. Site Selection Scenario: San Diego and Imperial Counties.

BOULEVARD PLANNING GROUP

PO Box 1272, BOULEVARD, CA 91905

DATE: 11-15-2021

TO: San Diego County Board of Supervisors via publiccomment@sdcounty.ca.gov

FROM: Donna Tisdale, Chair: [REDACTED]

RE: BOS NOV 17-ITEM 6: COMMENTS ON FIRST DRAFT REGIONAL DECARBONIZATION FRAMEWORK¹

On October 7th, our Boulevard Planning Group voted unanimously (Seat 1 vacant) to authorize me to submit comments. These initial comments are limited due to sheer volume of current projects, under consideration at the County level, that can and will have adverse impacts on our rural communities.

Guiding Principles: (1) Data-Driven Approach, (2) Regional Collaboration, and (3) Stakeholder Input.

While it is appreciated that focus will reportedly be applied to rooftop solar (parking lot solar shades should be incentivized / required for new projects), urban infill projects, and expanding urban tree cover, the devil is in the details.

Attachment A²:

- The cover page clearly states it is a DRAFT-NOT FOR CITATION report.
- However, an excerpt from Board Letter page 1 states the following contradictory statement:
 - “These baseline assessments and science-based pathways make up the technical reports included as Attachment A and will form the basis of future policy recommendations.”
 - ***How can Attachment A be both a draft that is NOT for citation AND the basis of future policy recommendations?***
 - ***Some of the Data included in Attachment A is outdated and should not be relied upon, including RETI Candidate Project Areas (CAP) from 2009, including Boulevard!***

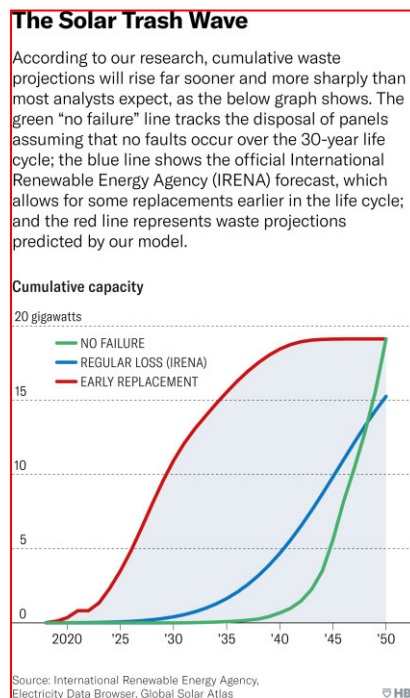
PROJECT TEAM; STAKEHOLDERS & EQUITY IMPACT STATMENT: While the draft Regional Decarbonization Framework focuses most of the disruptive land use changes on historically marginalized and the most disproportionately impacted rural sacrifice zone communities of Boulevard and Jacumba, along with Imperial County, there does not appear to be any real “project team” or “stakeholder” representation for those areas which challenges the so-called equity statement.

Figure 1.1 Overview of the lifetimes of common energy consuming or producing infrastructure at page 9:

¹ chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fbosagenda.sandiegocounty.gov%2Fcob%2Fcosd%2Fcob%2Fdoc%3Fid%3D0901127e80dcde24&clen=539419

² chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fbosagenda.sandiegocounty.gov%2Fcob%2Fcosd%2Fcob%2Fdoc%3Fid%3D0901127e80dcde3a&clen=16513180

- **The graphic fails to include the ‘lifetimes’ of industrial wind, solar, energy storage components that are apparently heavily relied upon to reach net zero. What’s up with that?**
- There are well-documented problems with wind, solar, and battery components failing to meet longevity and productivity expectations, including catastrophic project failures.
- Two local examples:
 - SDG&E has a Power Purchase Agreement for 265 MW Ocotillo Wind Express in western Imperial County. In September 2021, a second tower collapse since start of operations in late 2012 has resulted in full project suspension by Bureau of Land Management that is still in place two months later—with no turbines turning or producing power.
 - SDG&E has/ had a Power Purchase Agreement with Kumeyaay Wind located on tribal land in Boulevard. The 2009 catastrophic failure rendered all 25-2MW Gamesa wind turbines inoperable³. A \$30 million settlement was reached between Gamesa and Infigen for site repairs and replacement of all 75-turbine blades at Kumeyaay Wind⁴. The turbines were down and not producing for many months.
- Solar panel failures, early degradation, and looming solar panel trash wave are detailed in new report published in the Harvard Business Review June 18, 2021:
 - **The Dark Side of Solar Power** by Atalay Atasü, Serasu Duran, and Luk N. Van Wassenhove⁵
 - **“Summary:** Solar energy is a rapidly growing market, which should be good news for the environment. Unfortunately there’s a catch. The replacement rate of solar panels is faster than expected and given the current very high recycling costs, there’s a real danger that all used panels will go straight to landfill (along with equally hard-to-recycle wind turbines). Regulators and industry players need to start improving the economics and scale of recycling capabilities before the avalanche of solar panels hits.”



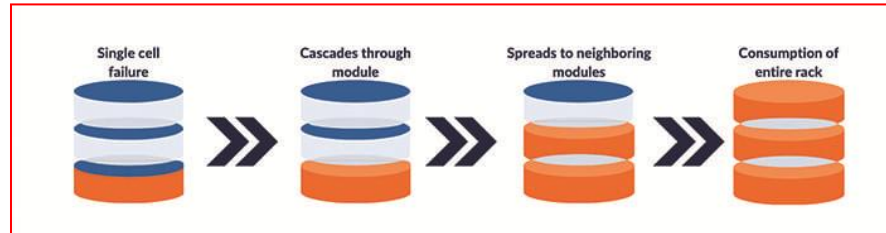
³ <https://www.wind-watch.org/news/2013/12/18/new-questions-raised-over-wind-turbine-fire-in-campo/>

⁴ <https://nawindpower.com/infigen-and-gamesa-end-years-long-legal-battle-over-wind-turbines>

⁵ <https://hbr.org/2021/06/the-dark-side-of-solar-power>

- **Energy Storage Systems (ESS)**

- ESS must be carefully protected from fire and explosion hazards that are not uncommon and can create toxic smoke and runoff.
- *(Excerpt: “There are serious risks associated with lithium-ion battery energy storage systems. Thermal runaway can release toxic and explosive gases, and the problem can spread from one malfunctioning cell to neighboring cells, resulting in catastrophe. Having the right detection and protection systems in place can reduce the risk”⁶.*



2. Geospatial Analysis of Renewable Energy Production

- **Key Takeaways (excerpt):** “This chapter identifies low-impact, high-quality areas for wind and solar development in San Diego and neighboring Imperial County.”
 - We strongly object to the term low-impact in reference to the Boulevard/ Jacumba Planning Areas in rural east county.
 - Industrial wind and solar represent significant and cumulatively significant impacts for resident humans, wildlife, wild lands, visual and cultural resources, increased noise, electrical pollution, wildfires, and more.
 - Unfortunately, those impacts are generally dismissed through CEQA’s Overriding Considerations and alleged Community Benefits, if any, that rarely benefit the actual project-impacted community at ground zero.
 - During the contentious Wind Energy Ordinance review in 2011-2013⁷, we provided enough *science-based data* regarding wind turbine generated low-frequency noise and vibration impacts on human health and safety that the **Board of Supervisors voted on 5-08-13 to restrict San Diego County’s Wind Resource Area⁸ to a small location north of I-8 that is still far too close and harmful to residents and sensitive wildlife**. They determined that south of I-8 was too densely populated to allow intrusion of industrial wind turbines into occupied neighborhoods.
 - Now, almost a decade later, industrial wind turbines have grown in size from average 1.5 MW each to 3.2-4.2 MW each and stand close to 600 ft tall, taller than any current San Diego skyscraper.

⁶ <https://www.powermag.com/protecting-battery-energy-storage-systems-from-fire-and-explosion-hazards/>

⁷ <https://www.sandiegocounty.gov/content/sdc/pds/ceqa/Soitec-AR-Wind-Ord-POD10-007.html>

⁸ chrome-

extension://efaidnbmnnnibpcjpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.sandiegocounty.gov%2Fcontent%2Fdam%2Fsd%2Fpds%2Fceqa%2FSoitec-Documents%2FRecord-Documents%2FWind-Energy-Zoning-Ord-and-GPA-Docs-POD10-007%2F2013-05-08-Board-Report-POD10-007-Attachment-E.pdf&clen=898781&chunk=true

- And yet, during recent Campo Wind project review, where proposed Terra-Gen's turbines are 4.2 MW and will stand at 586 ft or so, the Draft and Final EIS and joint EIR relied on vastly inadequate review of impacts limited to turbines up to 2 MW that are less than ½ the size of proposed turbines. AND THE CURRENT BOARD OF SUPERVISORS INEXPLICABLY SUPPORTED THAT NEGLIGENT REVIEW!
- I have personally been involved in numerous professional on-site research studies that documented acoustic and electrical pollution at both tribal and private homes impacted by Kumeyaay Wind, Tule Wind, Ocotillo Wind, and Energia Sierra Juarez Wind turbines. These reports have been repeatedly submitted during formal project comment periods and yet they continue to be ignored because they don't support the current PC agenda.
- In general, scientific research that counters the politically correct pro-wind / solar advocates does not get funded, gets slandered, gets banned, and / or all of the above.
- Science for sale seems to be at play, based on our own and other communities' experience⁹.
 - ***(excerpt) "By using a variety of ploys to manufacture doubt, a whole industry of science-for-hire experts helps corporations put profits over public health and safety."*** David Michaels – Boston Review
- Externalizing the destructive land use conversion for renewable energy to rural communities and Imperial County represents environmental injustice with the wealthier San Diego County taking advantage of the impoverished rural communities and Imperial County where tens of thousands of acres of productive farmland and carbon sequestering desert soils have already been converted to wind and solar for export to Los Angeles and San Diego Counties.

2.2 Data RETI Candidate Project Areas (CPA)

- Again, the identified 2009 stakeholders and steering committee that reportedly produced the CPA's that include Boulevard, Jacumba and Imperial County, did not include rural residents who would be the most impacted and who have the most local knowledge.
- The CPA data is a decade out of date and does not reflect current projects and knowledge.

Some Newer Potential Alternatives for Consideration:

- Build solar into fences and noise barrier walls: <https://et-sun.com/Solar-Fences/>
- Convert use of wooden pallets for supply lines to use of coco fiber pallets that press waste materials to sustainable, bio-based 100% wood-free recyclable coco pallets that reduces cost and CO2 in the supply chain, when compared to wooden pallets, and can be composted to improve soil and help soil sequester carbon : <https://www.cocopallet.com/what>
- Require more Heat pumps: <https://www.energy.gov/energysaver/heat-pump-systems>
- Consider small modular nuclear reactors like those announced by Rolls Royce and those that will enjoy new funding through the newly passed federal infrastructure bill that includes about \$8 billion for nuclear¹⁰:

⁹ <https://bostonreview.net/science-nature/david-michaels-science-sale>

¹⁰ <https://www.zerohedge.com/markets/rolls-royce-develop-mini-nuke-reactors-decarbonize-power-grid>

- Rolls-Royce Group, BNF Resources UK Limited, and Exelon Generation Limited will develop small modular nuclear reactors (SMRs) that will allow the country to meet net zero commitments.¹¹

Thank you for consideration of these limited initial comments...

Attachment: San Diego County Wind Resource Map approved 5-08-13

#

¹¹ <https://www.rolls-royce.com/media/press-releases/2021/08-11-2021-rr-announces-funding-secured-for-small-modular-reactors.aspx>



December 3, 2021

Murtaza H. Baxamusa, PhD, AICP
Land Use and Environment Group
County of San Diego
San Diego, CA 92101
[Via Email](#)

Subject: Climate Action Campaign comments on the draft Regional Decarbonization Framework for the Technical Working Group

Dear Dr. Murtaza H. Baxamusa,

Climate Action Campaign (CAC) is a non-profit organization based in San Diego and Orange County with a simple mission: stop the climate crisis through effective policy action.

We applaud the County for developing the Regional Decarbonization Framework (RDF) as a regional tool that can help our communities take action in line with climate science, as well as promote public health, equity, and a prosperous green economy. The potential for this Framework is huge, and we hope this plan can ultimately model regional climate planning and decarbonization for the rest of the nation. We also thank the County for the opportunity to serve on the County's Technical Working Group, and look forward to continuing to partner on this Framework.

As a member of the County's Technical Working Group, please accept the following comments regarding the draft RDF. We have also included a number of attachments related to our organization's on-going advocacy.

Chapter 1: Study Framework

To ensure this Framework is successfully utilized, the final RDF should be accompanied with implementation strategies that include associated costs and timelines, as well as a suite of identified possible funding sources to help implement the strategies. While we recognize that

the RDF models various pathways for consideration and is not meant to be “a precise blueprint,” the RDF will be a guiding source document for all 18 cities and the county, and we need additional structure and direction to help ensure the plan is useful for future implementation, and not just stuck on a shelf gathering dust. We recommend the study framework include detailed and specific implementation and funding strategies as part of the final RDF.

Further, the County can be a facilitator and leader in developing a regional approach on decarbonization. We urge the County to partner with SANDAG and other stakeholders like CAC to set up a Regional Climate Authority at SANDAG to help lead regional conversations, help raise and distribute funds, and engage with state and federal officials to identify pathways for implementing climate solutions and climate resiliency and adaptation strategies. As the climate emergency worsens, regional collaboration and joint funding efforts will be essential.

Chapter 2: Geospatial Analysis of Renewable Energy Production

Renewable energy is one of the core pillars of decarbonization, as identified in the report. Decarbonizing our grid and transportation systems, as well as removing dangerous fossil gas from our buildings, will require an extraordinary and coordinated regional effort and political alignment.

We are fortunate to have so many resources here in San Diego and Imperial counties to help build out this necessary clean energy future, while also creating unprecedented local economic and workforce opportunities. We applaud the pathways outlined in the draft RDF to achieve local clean energy independence to help transition our region off fossil fuel electricity.

Distributed Energy Resources

We recommend that the draft RDF perform a deeper dive into additional direct benefits and co-benefits of rooftop solar, community solar, battery storage, microgrids and other distributed energy resources (DERs) within our existing built environment. DERs help reduce long term costs, protect against wildfire risks, save natural and working lands, and build resiliency and reliability in our energy system. In fact, DERs will likely save many lives and keep power on when our grid system inevitably fails or PSPS (public safety power shutoffs) occur during heat waves, wildfires and other climate disasters.

Many studies have demonstrated the benefits of local DERs. One study found cumulative savings in California of \$120 billion in reduced distribution and transmission costs through 2050

if the state invests in local DERs over utility scale generation, savings that can help families and businesses afford the necessary transition to an all-electric future.¹

The economic and social benefits of reduced public safety power shut offs (PSPS) are also a significant benefit, with local DERs being able to stay online while distant, transmission-dependent resources shut down during ever more frequent wildfires and other related climate disasters. PSPS impacted over 2.9 million Californians in 2019 alone, with many already turning to DERs to blunt blackouts.²

The state and region have enormous potential for additional DERs that can help protect natural and working lands from being converted from carbon sinks to industrial uses. A 2016 analysis by the National Renewable Energy Laboratory found that California has the potential to meet more than 75% of its electricity demand with rooftop solar.³ With that capacity potential, the state could save over 148,000 acres of natural lands, with 1 GW of rooftop solar potentially avoiding the conversion of nearly 5,200 acres of natural lands.⁴

Local build out of DERs has been proven feasible. As of January 2020, the City of San Diego has 600 MW in local solar capacity, and 90,000 local solar installations, alone.⁵ This generation can be significantly increased with ample capacity within existing cities in the region to meet local clean energy demand, as exemplified by a 2018 study commissioned by the City of San Diego “which identified over 490 MWac of technical solar PV siting potential across more than 120 sites, with each site being able to host a solar PV system of at least 1,000 kWac.”⁶ We encourage the RDF to include more analysis on what that build out may look like, and review Protect Our Communities Foundation’s informative report “Roadmap to 100 Percent Local Solar Build-Out by 2030 in the City of San Diego” to see what is possible.⁷

Utility-Scale Generation

Even with the increased transmission, distribution, and land use change costs, and reduced resiliency, there will be a need for utility scale generation. We recommend the County fully vet the impacts of utility scale projects as part of the RDF, and include specific recommendations to

¹ Vibrant Clean Energy. “[Role of Distributed Generation in Decarbonizing California’s Economy by 2045](#).” (July 2, 2021).

² Environment California. “[The Environmental Case for Rooftop Solar Energy](#).” (June 2021).

³ National Renewable Energy Laboratory. “[Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment](#).” (January 2016).

⁴ Environment California. “[The Environmental Case for Rooftop Solar Energy](#).” (June 2021).

⁵ California Distributed Generation Statistics. [Database, Statistics and Charts](#). (2021).

⁶ Clean Coalition. “[San Diego Solar Siting Survey Final Summary Report: Solar Photovoltaic \(PV\) Commercial-Scale Sites for 1,000 kWac and Larger](#).” (December 2018).

⁷ Protect Our Communities Foundation. “[Roadmap to 100 Percent Local Solar Build-Out by 2030 in the City of San Diego](#).” (May 2020).

mitigate those impacts on communities that may have reservations about such developments.⁸ An analysis of Community Benefit Agreement (CBA) policies, something the County is currently exploring, would be helpful to all jurisdictions and agencies in the region to further understand what can be done to address community concerns and mitigate negative impacts.

We also recommend the RDF include a clear analysis on the cost of new transmission lines and distribution systems. Transmission and distribution costs have driven higher electricity rates across the country, adding additional cost pressures to families and businesses.⁹ Reducing those cost pressures with DERs may be an ideal solution to stop spiraling electricity bills.

Geothermal Resources and Lithium Extraction

We recommend that geothermal opportunities in the Imperial Valley be further considered and explored. As the state and federal government look to make massive investments in clean energy technology, geothermal resources can provide significant 24/7 clean electricity resources, as well as offset potential job losses in fossil fuel industries.

However, it is critical for the San Diego region to listen, understand, and partner with Imperial and Riverside county communities to develop strong CBAs that can uplift communities of concern and provide good middle class and union jobs. We recommend the RDF analyze the work of the Lithium Valley Commission to better understand geothermal and related-lithium extraction issues, and connect with community and place-based organizations near these proposed facilities around the Salton Sea to hear their concerns and needs.¹⁰

Community Choice Energy

CCE will be our only pathway to achieving a 100% renewable energy future. Since their inception, CCE programs have created or contracted nearly 10,000 MW of long-term new-build clean energy resources, making them pivotal to meeting state and local renewable energy targets.¹¹

To help coordinate local renewable energy development, we recommend the County work with San Diego Community Power (SDCP) CCE program, which is about to conduct an energy needs assessment, the first step toward creating a Community Power Plan (CPP) for its member

⁸ San Diego Union Tribune. "[Jacumba residents sue to stop 600-acre solar project](#)." (September 21, 2021).

⁹ US Energy Information Administration. "[Electricity prices reflect rising delivery costs, declining power production costs](#)." (September 7, 2021).

¹⁰ California Energy Commission. [Lithium Valley Commission](#). (2021); Alianza Coachella Valley. [Environmental Justice](#). (2021).

¹¹ CalCCA. "[California CCAs Secure Almost 10,000 Megawatts in Long-Term Contracts with New-Build Clean Energy Resources](#)." (November 3, 2021).

jurisdictions. SDCP's CPP will be modeled after East Bay Community Energy's "Local Development Business Plan"—a roadmap for local renewable energy and program development.¹² We recommend the RDF explore and learn more about these opportunities for renewable energy planning. We also recommend that the region's other CCE program, Clean Energy Alliance, be part of these discussions as well.

A note on Emerging Technologies

As the climate crisis accelerates, we must rapidly transition away from fossil fuel resources by deploying and scaling existing technologies: solar, wind, geothermal, battery storage, etc. While an exploration of emerging technologies can be helpful, we do not have the time to wait for them to become feasible. Hydrogen, biomass, carbon capture, and "renewable" natural (methane) gas are dead-end pathways that distract us from proven solutions, while perpetuating the fossil fuel industries that created the climate crisis harming our communities today.¹³ The RDF must focus on existing opportunities and proven technologies for its clean electricity pathways, not fossil fuel industry proposals that will lock in more emissions for decades to come.

Chapter 3: Accelerating Deep Decarbonization in the Transportation Sector

We appreciate that the draft RDF includes strong support for existing and planned transportation strategies, including SANDAG's forthcoming 2021 Regional Plan and 5 Big Moves, the County's Electric Vehicle (EV) Roadmap, and other plans. To succeed, these plans require the region's support, and together, will put San Diego County on a path toward dramatically reducing transportation emissions.

However, we find it problematic that the model used to inform Chapter 3 (EnergyPATHWAYS) assesses decarbonization through fuel shifts, not mode shifts. Unlike SANDAG's Activity Based Model (ABM2+), the draft RDF does not consider a Vehicle Miles Travelled (VMT) reduction. The County has a long track record of avoiding legally-defensible transportation goals, both in previous iterations of the Climate Action Plan, and with SB 743 implementation, due to lack of commitments to VMT and mode share, even though studies have shown that single occupancy vehicle electrification is not a silver bullet to achieve deep decarbonization.

¹² East Bay Community Energy. "[Local Development Business Plan](#)." (July 18, 2018).

¹³ EarthJustice. "[Hydrogen No Silver Bullet for Climate Crisis, Focus on Electrification](#)." (August 31, 2021); EarthJustice and Sierra Club. "[Rhetoric vs. Reality: The Myth of "Renewable Natural Gas" for Building Decarbonization](#)." (July 14, 2020); Cleantechnica. "[Another Carbon Capture & Storage \(CCS\) Project Doesn't Live Up To Its Targets](#)." (September 13, 2021).

Mode shift and VMT reduction goals are also important, because by the draft's own admission, even SANDAG's planned 2021 Regional Plan (RP) and existing local strategies will not be sufficient to meet local and state transportation decarbonization targets. CAC and Circulate San Diego came to the same conclusion after analyzing SANDAG's projected mode share for the RP within the City of San Diego—the RP “will only achieve 27% of commuters taking bike, walk, and transit in City of San Diego TPAs by 2035.”¹⁴ While this is a significant improvement when compared to the 2015 RP, it is not enough to meet the City CAP's 50% target. The RDF should be just as aware of these VMT reduction projections when developing recommended transportation pathways.

VMT reduction must also be a priority to meet international climate targets. The Rocky Mountain Institute's “Policy Brief: US Sector-Level Strategies and Targets to Limit Warming to 1.5°C” identifies a 20% reduction in VMT from 2019 levels as necessary to keep the planet safe from climate change.¹⁵ A report by C40 Cities concluded that “city residents worldwide need to choose modes like walking, biking and transit for at least 40 percent of the miles they travel by 2030 in order to prevent global heating from exceeding the 1.5°.”¹⁶ Again, EV strategies alone will not decarbonize the transportation sector fast enough to prevent the worst impacts of the climate crisis.

Transportation and Public Health

There are also significant public health benefits in biking, walking, and transit focused pathways. A 2016 study of 14 cities around the world found that “design of urban environments has the potential to contribute substantially to physical activity.”¹⁷ In our region, “areas such as Barrio Logan, western National City, Chula Vista, Southeast San Diego, San Ysidro, and El Cajon are some of the most polluted neighborhoods in California.”¹⁸ Bikeable, walkable neighborhoods near transit, jobs and amenities promote healthier lifestyles and social outcomes, in addition to reducing emissions and providing cleaner air, especially in frontline, working-class communities of color.

¹⁴ Climate Action Campaign. “[Missing the Mark: City of San Diego must double down on Bike/Walk/Transit Targets in Climate Action Plan](#).” (October 2021).

¹⁵ Rocky Mountain Institute. “[Policy Brief: US Sector-Level Strategies and Targets to Limit Warming to 1.5°C](#).” (April, 2021).

¹⁶ Streetsblog USA. “[Report: Climate Goals Impossible Unless Sustainable Transport Claims 40 Percent of Mode Share](#).” (November 12, 2021).

¹⁷ The Lancet. “[Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study](#).” (April 1, 2016).

¹⁸ Climate Action Campaign. “[The Dream is Possible: World-Class Transit In The San Diego Region](#).” (May 2021).

Transportation and Land Use

The RDF should also more closely link transportation and land use pathways to reduce emissions and VMT. As the California Air Resource Board (CARB) made clear in 2018, no region will meet their emissions reduction targets without significant land use changes that reduce trip distance and auto-dependence.¹⁹ We recommend that both the transportation and land use elements of the RDF be more closely aligned, and that any specific pathways related to transportation decarbonization be considered and tied to corresponding land uses to reduce emissions and VMT.

Chapter 4: Natural Climate Solutions and Other Land Use Considerations

Sprawl Development

To achieve a zero carbon future, the County and local jurisdictions must avoid development on natural and working lands, which the draft RDF correctly identifies as effective carbon sequestration and sinks. However, just as our 2021 report “Solving Sprawl: Building Housing for A Sustainable and Equitable San Diego” concludes, the RDF must be direct in recommending to policy makers that sprawl development, which destroys natural habitats and brings greater wildfire and public health risks, must be stopped for our region to have any chance at meeting and exceeding local and state emissions reduction targets.²⁰

Affordable and Missing Middle Housing

Climate policy does not exist in a vacuum, and the housing affordability crisis in our region must be addressed. Jurisdictions and agencies can plan, invest, and develop both affordable deed-restricted and missing middle market rate housing in existing and future urbanized areas near transit and job centers. To support this key emissions and VMT reduction strategy, we recommend the draft RDF align its land use recommendations with SANDAG’s “Sustainable Communities Strategy” housing allocation numbers and SB 743 VMT efficient areas.²¹ Consistent regional planning that aligns our climate, housing, and transportation goals is key. See our sprawl report for additional recommendations to promote housing affordability and prevent displacement.

Land Use Changes, Emissions Accounting, and Offsets

We agree that positive carbon emissions from land use changes should be accounted for in the final RDF and Climate Action Plans. We hope the RDF elevates this recommendation to all

¹⁹ California Air Resources Board. “[Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets](#).” (February 2018).

²⁰ Climate Action Campaign. “[Solving Sprawl: Building Housing for A Sustainable and Equitable San Diego](#).” (October 2021).

²¹ SANDAG. [Sustainable Communities Strategies](#). (2021).

jurisdictions so they may incorporate the costs of emissions from land use changes and the lost sequestration potential when considering land use planning decisions. This accounting will be critical to consider as the lost annual negative emissions would need to come from other sources like other natural and working lands or reductions in other sectors.

We also support governments utilizing the most recent and localized data possible when estimating natural climate solutions' contributions to decarbonization. Localized data is crucial because inaccurate data can lead to overestimating net negative emissions, thus leading to falling short of net zero goals, or underestimating net negative emissions, which may permit inefficiencies or higher costs incurred in other sectors contributing to net zero goals. The County's history of overinflating carbon offset opportunities makes accurate data even more critical. The Energy Policy Initiatives Center (EPIC) report "Opportunities for Local Carbon Offset Credits in the San Diego Region" is a helpful analysis on this issue.²²

Land Use and Transportation

To have any impact, land use and transportation decarbonization pathways must be interlinked consistently. We recommend that the County collaborate with MTS and NCTD to develop pathways for complete streets policies, smart growth strategies, and optimize world class transit options to create inclusive bikeable, walkable neighborhoods.

Chapter 5: Decarbonization of Buildings

Building decarbonization will be one of the most challenging and critical transitions to a Zero Carbon future. The draft RDF analysis includes a number of pathways to achieve building decarbonization, though there must be more focus on proven solutions, rather than pursuing half measures that will perpetuate fossil fuel consumption. As we noted in our comments on Chapter 2 of the draft RDF, dead end pathways are unjustifiable in the face of a rapidly worsening climate crisis. To that point, we recommend the RDF remove the partial electrification pathway, and focus instead on central (high electrification) scenarios. Unproven technologies like "low carbon" fuels, biomethane, and hydrogen-based fuels should not take precedence over proven, cost-effective, and scalable electrification solutions.

The RDF must include strong examples of how jurisdictions and agencies can develop all-electric reach codes to stop the proliferation of fossil fuel infrastructure and stranded assets in our communities. The San Diego region is home to the first city in California to adopt an all-electric reach code (the City of Carlsbad), in a state that now has more than 50 cities, including the cities

²² Energy Policy Initiatives Center. "[Opportunities for Local Carbon Offset Credits in the San Diego Region](#)." (June 2021).

of Encinitas and Solana Beach, who have passed building electrification ordinances for new construction.²³ These “no regret” policies are critical to stop the building of stranded fossil fuel infrastructure assets, and must be elevated and explained in detail in the RDF for cities to explore and enact.²⁴

Building electrification strategies must also be informed by existing research and case studies. We recommend the RDF explore and include concrete examples of building electrification efforts across the country to model best practices. The Building Electrification Institute’s resource library includes a number of reports with recommendations the County may want to review and include for jurisdictions and agencies to consider as part of their overarching building decarbonization strategies.²⁵

Building Electrification and Public Health

Building electrification is not only critical to our climate, but also to our individual and collective public health. Methane gas pumped into our homes has been proven countless times to increase negative health outcomes.²⁶ A recent study in Australia linked indoor air pollution from methane gas as equivalent to secondhand smoke in asthmatic children.²⁷ And we have known about the negative health impacts of methane gas for decades, including a 1992 study that found children who live in a home with a methane gas stove have a nearly 20% increased risk of developing respiratory illnesses.²⁸ The Aliso Canyon gas leak also demonstrated the dangers of methane gas to outdoor air quality as well.²⁹ We recommend the RDF include an analysis of the public health impacts of indoor and outdoor air pollution from methane gas, including the health and social benefits of electrification.

Starting-Line Disparities in Building Electrification

The RDF may consider complementary pathways to address starting-line disparities in building decarbonization. Deferred maintenance in old buildings, which are more likely to be occupied by working-class communities of color and low income families, face deadly health impacts from lead, mold, asbestos, and other structural deficiencies. The RDF should recognize these risks as part of the broader building decarbonization effort, and prioritize equity in

²³ Sierra Club. “[California's Cities Lead the Way to a Gas-Free Future](#).” (July 22, 2021).

²⁴ Rocky Mountain Institute. “[Decarbonizing Homes: Improving Health in Low-Income Communities through Beneficial Electrification](#).” (October 2021).

²⁵ Building Electrification Institute. “[Resources](#).” (2021).

²⁶ Physicians for Social Responsibility, Rocky Mountain Institute, et al. “[Gas Stoves: Health and Air Quality Impacts and Solutions](#).” (2020); Power Past Fracked Gas. “[Methane Gas: Health, Safety, & Decarbonization](#).” (August 2021).

²⁷ Climate Council. “[Kicking the habit: How gas is harming our health](#).” (2021).

²⁸ Journal of the Air & Waste Management Association. “[Synthesis of Environmental Evidence: Nitrogen Dioxide Epidemiology Studies](#).” (1992).

²⁹ California Air Resource Board. “[Aliso Canyon Natural Gas Leak](#).” (2021).

electrification pathways which may require significant, targeted investments in pre-weatherization and weatherization in communities of concern. The Green and Healthy Homes Initiative 2020 report on this issue is a good resource to explore starting-line disparities.³⁰

Equitable Community Engagement, Outreach, and Partnership

Building decarbonization must be completed with a careful eye on community and worker impacts. Equitable electrification for communities of concern and a just transition for fossil fuel workers must be key elements of any building electrification strategy. There has been significant research and progress made on how to engage with communities and workers. The Greenlining Institute's "Equitable Building Electrification" report includes some key case studies of communities in California who have undergone building decarbonization, which may prove insightful for our region.³¹ We recommend the RDF building decarbonization component include an analysis of equitable building electrification and just transition strategies, with key takeaways for jurisdictions and agencies to consider. We have additional comments and recommendations on just transition planning in the next section.

Chapter 6: Employment Impacts through Decarbonization for the San Diego Region

The jobs analysis is an exciting highlight of new jobs and career pathways for San Diegans as part of the region's decarbonization. We also appreciate the preliminary framework for just transition pathways outlined in the draft RDF. While we do not have any recommendations related to the jobs impact methodology and are eager to see the final workforce development pathways report, we will elevate some key examples and reports of just transition planning across the country.

Illinois Clean Energy Jobs Act

This past September, the state of Illinois passed the Clean Energy Jobs Act (CEJA).³² A comprehensive framework, CEJA includes a number of critical components to ensuring a just transition for displaced fossil fuel workers, coupled with policies and programs designed to increase renewable energy development and high-road jobs and careers. As key element of CEJA is "The Displaced Energy Workers Bill of Rights" which includes:

³⁰ Green and Healthy Homes Initiatives. "[Leading with Equity and Justice in the Clean Energy Transition: Getting to the Starting Line for Residential Building Electrification.](#)" (2020).

³¹ The Greenlining Institute. "[Equitable Building Electrification: A Framework for Powering Resilient Communities.](#)" (September 30, 20219).

³² State of Illinois. "[Gov. Pritzker Signs Transformative Legislation Establishing Illinois as a National Leader on Climate Action.](#)" (September 15, 2021).

- Advanced notice of closure
- Financial advice to displaced workers
- Continued health care and retirement packages; and
- Full tuition scholarships at state and community colleges and trade programs with guaranteed state funding³³

We hope the final workforce development pathways report and final RDF will analyze and include something as comprehensive as Illinois' CEJA approach.

Authentic Engagement with Workers

As the region looks to develop just transition pathways, we also recommend it do so in an equitable way that approaches these complex issues with sensitivity and cultural competency. We recommend the Equity Research Institutes "Just Transition/Transition to Justice" report that provides some concrete ideas on how to decarbonize our communities with a focus on equity and social justice.³⁴

Good Union Jobs and Equitable Access to High-Road Careers

Having high worker standards will be key to building community buy-in for decarbonization pathways. As the draft RDF discovered, many of the best paying jobs are union jobs, protected by collective bargaining, and offering prevailing wages, healthcare benefits, and pensions. We recommend the County ensure the transition to an all-electric and fossil fuel free future be built by union workers. Equally important will be ensuring equitable access to these jobs for working class communities of color, which can be accomplished through targeted zip code hiring requirements, and government, workforce development, and union investments in pre-apprenticeship and apprenticeship programs in communities of concern. The RDF should encourage these investments to advance economic, social, and racial justice in our region.

Chapter 7: Key Policy Considerations for the San Diego Region

We value the RDF proposal for region-wide institutional governance for decarbonization. To establish effective collaboration between jurisdictions and agencies, and to ensure long lasting and innovative solutions for decarbonization, we recommend that regional governance involves procedures to:

³³ Illinois Clean Jobs Coalition. "[Supporting Fossil Fuel Workers and Communities, A Just Transition to a Clean Energy Economy](#)." (September 2021).

³⁴ Equity Research Institute. "[Just Transition/Transition to Justice: Power, Policy and Possibilities](#)." (June 2021).

- Monitor and evaluate progress towards targets; regularly evaluating progress and updating plans can assist local governments in reflecting the latest science, technological advancements, financial situations, and development capacities.³⁵
- Create systems to help maintain clear, open, and continuous communication between all jurisdictions and agencies.
- Identify and/or develop new funding mechanisms to raise money to ensure the implementation of effective decarbonization actions.
- Work in a multi-level governance framework to avoid policy gaps between local climate action plans and state, national, and international frameworks.
- Ensure equitable climate action and investment across the region.
- Create a Regional Adaptation Plan to plan for regional climate impacts such as fires, droughts, extreme heat, sea level rise, etc.
- Provide sample ordinances and policy recommendations for cities and act as a one-stop-shop for best practices.
- Analyze and monitor regional progress on climate targets and act as a data repository.
- Coordinate regional efforts to build a local, clean energy economy with a just transition for workers across sectors and industries.
- Collaborate with neighboring tribes and advance Indigenous and traditional ecological knowledge (e.g. cultural burning to mitigate wildfires, environmental stewardship).

The governance structures, mechanisms, and principles should be designed to achieve ambitious decarbonization objectives. The RDF's suggested institutional framework is a good starting point that must be developed and built up.

Regional coordination is critical because today in San Diego, local governments are working in silos to address the climate crisis, and are struggling to meet climate goals—citing lack of funding, political will, and know-how. Climate solutions have not been equitably implemented, and the COVID-19 pandemic has deepened existing inequities. On top of these issues, no local governments are prepared to do what climate scientists say is necessary—rapid decarbonization to zero carbon.

Collaboration across cities, sectors, and industries is essential to accomplish the state's most ambitious climate goal—Executive Order B-55-18, which aims to achieve carbon neutrality by no later than 2045—and ensure solutions are implemented equitably with an emphasis on communities of concern, and adapt to the impacts of the climate crisis that are too late to mitigate.

³⁵ Sustainability. "[Strategies and Governance for Implementing Deep Decarbonization Plans at the Local Level.](#)" (2021).

To address these regional issues and ensure successful implementation of the Regional Decarbonization Framework, we recommend the establishment of a Regional Climate Authority under the jurisdiction of SANDAG.

A Regional Climate Authority would serve as the County's climate coordinator and resource center, working with local governments, regional bodies, tribal governments, non-profits, academic institutions, and the State of California to mobilize the region toward climate targets and prepare for a changing climate.

Chapter 8: Local Policy Opportunities

We support efforts to analyze local Climate Action Plans (CAPs) in aggregate to understand what commitments exist to reduce emissions across the San Diego region. We encourage the EPIC team leading on this analysis to include an additional analysis of implementation efforts thus far. Climate Action Campaign releases an annual report card scoring cities on their CAPs and corresponding implementation efforts.³⁶ A technical report on implementation efforts showing specific emissions reductions (or lack thereof) from local CAPs would be helpful in highlighting the opportunities and challenges that exist to reaching full decarbonization in our region. We hope this analysis will ultimately encourage local policymakers to work together in concert at SANDAG to reduce and eliminate emissions.

Chapter 9: San Diego as a Model

We hope the RDF may become a model for successful regional climate planning across the state, nation, and world. Our region has a long history leading on climate policy, including the City of San Diego's landmark 2015 Climate Action Plan that included the first in the nation top 10 city commitment to 100% clean energy by 2035.³⁷ The RDF may continue that legacy, though we hope the County and region will not repeat the same mistakes the City has made in failing to implement its vision for a climate safe and ready future.

In the Outline Guidebook, we hope there will be a consistent emphasis on implementation planning and centering equity in a climate policy. The Greenlining Institute has a number of resources available on best practices for engaging and uplifting vulnerable working-class

³⁶ Climate Action Campaign. "[4th Edition: San Diego Climate Action Plan Report Card](#)." (February 2020).

³⁷ The New York Times. "[San Diego Vows to Move Entirely to Renewable Energy in 20 Years](#)." (December 15, 2015).

communities of color, which may be informative for other regions looking to develop comprehensive climate solutions that can meet their communities of concern where they are.³⁸

Conclusion

We applaud the County for leading on this critical planning document that can help protect public health, build a fossil fuel free economy, and create a climate safe San Diego region. We hope the final RDF, paired with a robust implementation plan with identified funding strategies and project timelines, can become the backbone for regional climate action, and model complete decarbonization pathways for other metropolitan areas across the state and nation.

Sincerely,



Matthew Vasilakis
Co-Director of Policy
Climate Action Campaign



Maleeka Marsden
Co-Director of Policy
Climate Action Campaign



Madison Coleman
Policy Advocate
Climate Action Campaign



Brenda Garcia Millan
Research and Policy Analyst
Climate Action Campaign



Noah Harris
Transportation Policy Advocate
Climate Action Campaign

³⁸ The Greenlining Institute. [All Resources](#). (2021).



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CLIMATE SOLUTIONS
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SAN DIEGO
GREEN
BUILDING
COUNCIL



GRID
ALTERNATIVES
San Diego



December 2, 2021

Board of Supervisors
County of San Diego
1600 Pacific Highway
San Diego, CA 92101
Via Email

Re: Recommendations for the County Regional Decarbonization Framework (RDF)

Dear Chair Fletcher, Vice Chair Vargas, and Supervisors,

On behalf of the undersigned organizations, please accept the following feedback to ensure the County RDF is as strong as possible to address the scale and scope of the climate emergency, and to achieve climate justice and equity throughout the region.

We appreciate the County's work on this plan, promoting science-based solutions and taking the first step in looking at policy solutions to address the crisis. We understand that this is the beginning of the process and we look forward to engaging with you as the framework is developed. It is critical that the County moves swiftly to coordinate with cities and other agencies to ensure that they take the bold measures needed. We are already feeling the consequences of the climate emergency, and it will only worsen if we do not implement the necessary proactive solutions swiftly.

Equity and a Just Transition Must Be Central to the RDF

Environmental Justice Communities face disproportionate effects of the climate crisis in San Diego and worldwide. While equity is mentioned in the Regional Decarbonization framework, there must be a plan with concrete, measurable steps to achieve it. We look forward to the workforce analysis and a strategy for the equitable transition of any workers who are at risk of being displaced in the decarbonized economy. Also, of utmost importance is to create a pathway for good union jobs in Environmental Justice Communities. This must be a key focus of the framework.

Eliminate Emissions Through Building Electrification

As our cities work to achieve 100% clean electricity, natural gas remains one of the most significant sources of emissions in our region, so to fully transition away from fossil fuels, we must reduce and ultimately eliminate natural gas consumption. We recommend requiring all newly constructed or renovated buildings to be all electric, paired with solar power and energy storage, as well as providing incentives and streamlining to electrify existing buildings. We also recommend centering equity and public health in any building electrification plan to protect communities of concern from being stranded with the increasing costs and the dangers associated with the gas infrastructure.

Decarbonizing buildings must be all electric rather than encouraging impractical and expensive “low-carbon” fuels. The “partial electrification” model should be removed from the framework, and instead multiple scenarios to achieve “high electrification” should be provided. Additionally, the County and the cities should prioritize decarbonizing municipal buildings as soon as possible.

Transportation and Land Use

We are pleased that the RDF recognizes the centrality of reducing transportation-related emissions to achieve regional climate goals. In order to achieve these, policies must be adopted that reduce vehicle miles traveled (VMT), build out transit, end sprawl development, develop affordable housing near transit and have more options for those without access to a car. Sprawl development only increases VMT and greenhouse gases and makes housing less affordable and equitable. We are happy that the Framework recognizes the SANDAG “mobility hubs” model for concentrating density.

Building affordable housing near transit and job centers is a key equity strategy to reduce vehicle miles travelled (VMT), slash transportation emissions and solve the housing crisis. To create inclusive and sustainable communities the County must advance the development of ample affordable housing near current and future transit centers and high-frequency bus lines, in alignment with SANDAG’s 2021 Regional Plan.

We are disappointed to see the extensive focus on electric vehicles and hydrogen-powered vehicles rather than on public transportation and active transportation (walking and biking). The

RDF needs to have safe and effective transportation solutions that support getting cars off the road and prioritizing transit equity.

Clean and Renewable Electricity

Community Choice Aggregation (CCA) is making progress in the development of 100% renewable electricity and storage, both statewide and locally. The framework identifies the desert areas as optimal for industrial-scale PV solar installations as it is the most cost effective (less expensive per megawatt hour, as noted in the report). The development of solar farms in the desert over the next decade will enable CCAs to meet regulatory obligations to secure two-thirds of its renewable electricity and storage through long-term contracts. Industrial solar supports good union jobs as well.

Yet, prioritizing rooftop solar in urban areas has significant regional job and economic benefits, particularly in the identified Communities of Concern. A major step in this direction will be undertaken by San Diego Community Power in 2022, which is funding the development of a “Community Power Plan” to assess the needs and identify the benefits of local infill solar that prioritize community benefits. It is imperative that other factors beyond cost be considered and that the cost of transmission lines and fire dangers be factored into the assessment of where to place solar installations. Although PV solar will be the primary renewable electricity developed regionally, it is notable that the framework also considers other renewable electricity resources, such as wind and geothermal as potential solutions to moving away from our dependence on fossil fuels.

Implement Education and Infrastructure Programs that Support Individuals to Make Sustainable Choices

This framework should include educating the public and advocating for policies that make it easier for individuals to make sustainable choices around the foods they eat, the cars they drive, home equipment they buy and the transportation options they use. The framework should encourage people and businesses to eat healthier plant-based foods, waste less food, electrify their homes, and take transit.

Carbon Capture

The climate crisis is here and there is limited time to reduce our greenhouse gas emissions. The inclusion of carbon capture has no place in the RDF. Carbon capture, like “renewable natural gas” and hydrogen technologies, is an expensive technology unproven at scale that has not produced the results needed to be considered a viable decarbonization pathway for the region. The RDF must focus on real reductions in the use of fossil fuels and resources should be allocated towards real solutions.

Implement the Framework and Partner with Cities and Agencies at SANDAG

We appreciate the County providing critical funding and resources to identify concrete decarbonization pathways, and hope the RDF will do more than sit on a shelf. We encourage the County to work with other local governments and agencies in partnership at SANDAG to coordinate a truly regional approach to decarbonization and climate justice. The County must include an implementation plan, identify funding sources, and keep the momentum going at SANDAG.

Conclusion

Thank you for the opportunity to weigh in on the development of this critically important document. We urge you to consider this feedback as you revise the plan.

Sincerely,

Jim Miller
American Federation of Teachers, Local 1931 VP
and Chair of **San Diego Labor, Environmental, and Community Coalition**

Terry Bunting
Labor Representative
California Nurses Association

Kyra Greene, PhD
Executive Director
Center for Policy initiatives

Tama Becker-Varano
Founder and Leader
Change Begins With ME (Indivisible)

Suzanne Hume
Educational Director and Founder
CleanEarth4Kids.org

Mathew Vasilakis
Co-Director of Policy
Climate Action Campaign

Danielle Wilkerson
East County BIPOC Coalition

Pam Heatherington
Board of Directors
Environmental Center of San Diego

Cathy Gere
Steering Committee
Green New Deal at UCSD.

Clovis Honoré
Senior Outreach Coordinator
GRID Alternatives San Diego

Tara Hammond
Founder & CEO
Hammond Climate Solutions

Joyce Lane
Board Vice-President
SanDiego350

Courtney Ransom
Director of Membership
San Diego Democrats for Environmental Action

Colleen FitzSimons
Executive Director
San Diego Green Building Council

Maleeka Marsden
Chair
San Diego Green New Deal Alliance

J.P. Bruner
Climate Change Committee Lead
Surfrider Foundation

Moses Cuevas
Regional Manager
United Domestic Workers of America

Rick Bates
Lead Research and Policy Analyst
UNITEHERE! Local 30



December 2, 2021

Re: San Diego Regional Decarbonization Framework

Dear Honorable San Diego County Supervisors,

The [San Diego Building Electrification Coalition](#) (SDBEC) is an alliance of community, business, faith, justice, and environmental organizations coming together to accelerate electrification in residential and commercial buildings.

Our coalition would like to thank the County of San Diego for its recent leadership on environmental issues by crafting the Regional Decarbonization Framework (RDF) study. We are particularly pleased that the RDF includes many strategies that focus on building decarbonization and specifically building electrification. However, we feel that the framework can and should go further to gain additional positive impacts. We recommend that the RDF include the following:

- Decarbonizing buildings needs to be all-electric rather than the dead-end strategy of impractical and expensive “low-carbon” fuels like biomethane and hydrogen.
- The “Partial Electrification” model should be removed from the framework, and instead multiple scenarios to achieve “High Electrification” should be provided. If you leave the “Partial Electrification” model in, it needs much more analysis on all the impacts and uncertainties around “low-carbon” fuels.
- The Decarbonization Framework should specifically recommend that new construction be all-electric immediately and that municipal buildings be decarbonized as soon as possible (no-regret policies).
- Indoor air pollution (e.g., nitrogen oxides, PM2.5, carbon monoxide) due to the combustion of methane gas in buildings needs to be addressed and eliminated by mandating all-electric appliances including cooktops.
 - “Natural gas” is a clever marketing term for methane gas, a very potent greenhouse gas. Burning methane gas in cooktops results in increased incidence of respiratory and cardiovascular diseases, and is particularly dangerous for children and pregnant women.
- Equity and a just transition must be central to building decarbonization
- This framework should include educating the public and advocating for policies that make it easier for individuals and businesses to electrify their buildings

As you are well aware of the UN’s recent IPCC report¹ reveals that we are in a “Code Red” for humanity and for our planet. The world must stop using fossil fuels and decarbonize as soon as possible. In fact, building electrification is the most affordable and effective tool for decarbonizing California’s homes and buildings. Most importantly, it is an existing solution

¹ <https://www.ipcc.ch/assessment-report/ar6/>



which can produce significant results right now. We urge you to adopt the recommendations above and mandate in the RDF that San Diego's built environment be all-electric. It is the just and equitable thing to do.

Sincerely,

 <p>Ann Feeney Strategy Committee Chair San Diego Building Electrification Coalition</p>	 <p>Colleen FitzSimons Executive Director San Diego Green Building Council</p>	 <p>HAMMOND CLIMATE SOLUTIONS <i>Dynamic Action for a Sustainable Planet</i></p> <p>Tara Hammond Founder & CEO Hammond Climate Solutions</p>
 <p>Susan Wayo Board Member & Secretary Center for Community Energy</p>	 <p>Oliver Curley Sustainability Coordinator Leading Edge Consulting Services, LLC</p>	 <p>Matthew Vasilakis Co-Director of Policy Climate Action Campaign</p>
 <p>Jim Miller Vice President AFT 1931</p>	 <p>Kelly Lyndon Co-chair Building Electrification San Diego 350</p>	 <p>Marian Sedio Board Member North County Climate Change Alliance</p>



 <p>Suzanne Hume Educational Director & Founder CleanEarth4Kids.org</p>	 <p>Tyson Siegle Energy Analyst The Protect Our Communities Foundation</p>	 <p>Lucero Sanchez Community Policy Coordinator San Diego Coastkeeper</p>
 <p>Peter Zahn, CEO Futures Unbound</p>	 <p>Alex Kaufman PE CEM Founder Solutions in Sustainability</p>	 <p>American Institute of Architects San Diego</p>
 <p>Rhea and Armin Kuhlman Co-Chair, Climate Justice Team First Unitarian Universalist Church of San Diego</p>	 <p>Luke Stroth Green New Deal at UCSD</p>	 <p>Sean Armstrong Managing Principal Redwood Energy</p>
 <p>Wilder Zeiser Climate Campaigner Stand.Earth</p>	 <p>Peg Engel Council Secretary STAY COOL for Grandkids</p>	 <p>Adam Cooper Political Action Team Leader Sunrise Movement San Diego</p>



Climate Action Campaign 11/17/2021 RDF Public Comment Transcripts

Madison Coleman Public Comment:

Good morning/afternoon Supervisors, my name is Madison Coleman with Climate Action Campaign, a member of the San Diego Green New Deal Alliance.

I want to focus my comments on the land use section of the RDF. The most effective and inexpensive natural climate solution needed to achieve a zero carbon future is to avoid developing natural and working lands that sequester and store carbon.

To save these valuable carbon sinks, the County must stop permitting sprawl development in high VMT, high fire hazard zones. Auto-centric sprawl is one of our region's greatest sources of emissions, destroying natural habitats and green spaces, and brings greater wildfire and public health risks to adjacent natural lands.

This is why we recommend that the County align its CAP and RDF with SANDAG's Sustainable Communities Strategy allocation of 7,419 units and only develop more affordable housing near current and future mobility hubs.

Lastly, the County should consider incorporating analysis of the potential loss of carbon sequestration from land use change into future land use planning decisions.

Thank you.

Brenda Garcia-Millan Public Comment:

Good morning/afternoon Supervisors, my name is Brenda Garcia Millan with Climate Action Campaign, a member of the San Diego Green New Deal Alliance.

We are here today to urge the County to ensure the RDF is accompanied and passed with a detailed implementation and funding plan. These plans must provide clear pathways to decarbonization and identify feasible actions, costs and funding sources for each project.

Second, we urge the County to help establish a Regional Climate Authority housed at SANDAG. As a first step to further the RDF and regional efforts to stop the climate emergency, we recommend the County help create a subcommittee at SANDAG, similar to the recently established Equitable Housing Subcommittee.

We also look forward to the local policy opportunity analysis, and hope it can identify future decarbonization policies and actions to stop the climate crisis and protect public health.

Thank you.

Noah Harris Public Comment:

Good morning/afternoon Supervisors. This is Noah Harris, with Climate Action Campaign, a member of the San Diego Green New Deal Alliance, commenting on RDF's transportation element.

There is a pervasive belief that EVs are a silver bullet climate solution, but this is not true. CARB has made clear that aggressive VMT-reduction is essential to achieving state climate goals. VMT-reduction also provides a host of equity and public health benefits, such as: better access to jobs, safer streets, conservation, and more.

We appreciate the acknowledgment of the gains that would be achieved through the 5 Big Moves, but are disappointed to see a greater emphasis on EV strategies in the RDF.

To decarbonize transportation while securing more equitable, sustainable communities, we urge the County and all local jurisdictions to expand on SANDAG's 2021 Regional Plan bike/walk/transit investments, while supporting infill housing and stopping sprawl. These are key regional strategies to stopping the climate crisis.

Thank you.

Bertha Rodriguez Public Comment:

Good morning Chair Fletcher and Supervisors, my name is Bertha Rodriguez, an organizer with the San Diego Green New Deal Alliance.

Having organized and advocated for a zero carbon San Diego region by 2035 for the last two years, we applaud the County for prioritizing this ambitious, yet critical goal with the development of the Regional Decarbonization Framework.

While our Alliance is still digging into the plan, we want to highlight our 4 key priorities for this document:

- The RDF should commit to getting off fossil fuels entirely, and not look to unproven technological solutions to achieve "net zero."
- This Framework should center equity throughout, and explicitly identify how the region will prioritize cleaner air and healthier communities.
- We have heard that this plan will be coupled with a jobs analysis and Just Transition plan, and look forward to the release of that component of the Framework.
- And lastly, to ensure success, we need more than a framework--we need an implementation plan with associated costs and funding sources.

Our Alliance is optimistic for this effort to chart the path off fossil fuels. Thank you!

Matthew Vasilakis Public Comment:

Good morning Supervisors, my name is Matthew Vasilakis with Climate Action Campaign, a member of the San Diego Green New Deal Alliance.

We are here today to urge the board to support an all-electric 100% clean renewable energy future. We applaud the County for joining San Diego Community Power, our only pathway to achieving 100% clean energy, and look forward to working with County staff, workers and the community on how best to decarbonize our homes, businesses, and buildings.

We also look forward to next year's worker impact analysis, and contrary to what you may hear, we are encouraged that local unions, leading national labor experts, and local governments are having serious and thoughtful conversations about how we can ensure a just transition for fossil fuel workers to an all-electric future.

Climate policy is energy policy is worker policy. We stand ready to support equitable and sustainable decarbonization pathways, local renewable energy such as rooftop solar and storage, innovations like geothermal, and good union jobs as part of a just transition.

We strongly believe the county is well positioned to lead the region's necessary decarbonization efforts. We appreciate the Board for making these historic investments in climate planning.

A note on carbon capture, hydrogen and renewable natural gas, like fusion energy referenced by staff today, it remains and will remain for the foreseeable future, an unproven technology that will not save us from the climate crisis. Let's focus and invest in what works and not stall for the fossil fuel industry.

Thank you, and we look forward to partnering with you on this important effort.

From: Billie Jo Jannen, Chairman, Campo Lake Morena CPG

To: San Diego County Regional Sustainability, Land Use and Environment Group

Re: San Diego County Draft Decarbonization Framework

December 1, 2021

Dear Planners:

The Campo Lake Morena CPG, on November 29, approved the following comments unanimously.

This framework has been repeatedly presented as a document intended to support practical plans of action to be crafted later by policymakers at all levels. It is too far away from being that to even be released as a draft and should be sent back to the drawing board until it can be re-released as something that people can use for its intended purpose.

Problems with the report overall

1. This framework is mostly a literature study of literature studies of more literature studies. Some local science would have informed us much better about what we need to do. How can this plan serve as a practical roadmap when the necessary supporting studies are either pending or pawned off as the responsibility of local government? We have all seen what happens when you leave politicians and bureaucrats to come up with solutions sans hard facts and a solid understanding of the consequences of their actions.
2. You aren't writing this for other PhDs. This framework is intended to be utilized by politicians and other policymakers – most of whom have only a marginal understanding of science -- yet it uses language and abbreviations that exclude most people from fully following the content. If your intent is to make the language inaccessible to the average reader, then job well done. Otherwise, please consider revising the language to INCLUDE readers, rather than EXCLUDE them. At the very least, take the trouble to define terms like “flux multiplier” and $\text{MT CO}_2\text{e ha}^{-1}\text{yr}^{-1}$. You might also consider parenthesizing the American/English usage next to your numerical values. For example, 10 hectares (24.7 acres).
3. The entire document appears to be intended to support partial solutions already proposed by politicians. An egregious example is the location of renewable energy sacrifice zones that have already been chosen by bureaucrats. Does the sun shine brighter in Jacumba than it does on Camp Pendleton? Does the wind blow better in Boulevard than it does off the coast of La Jolla? These policies come across as political solutions based on who has the money and the votes to fight back.

Population pressure

The report contains no discussion about the impacts of population growth, nor the lifetime emissions of human residents. The carbon cost of increasing the population is the root cause of all warming, so solutions to THAT should have been included in this “roadmap.” The average annual carbon footprint for a person in the United States is 16 tons. Population increases in San Diego County, both from births and in-migration, have already contributed to shortages in everything, including water, housing, electricity and transportation.

The impacts of population growth are unpredictable and large, and could make this report obsolete very quickly. It's time to stop dancing around the edges of this problem and look it straight in the eye. Quantify the problem and suggest solutions, or you really can't call this a plan for zero emissions.

Sequestration and natural solutions

1. Your maps are incomplete and uninformative. For example, the map on page 83 doesn't reflect substantial swathes of forest/woodland on both the 94 corridor and the 8 corridor. Where is all the oak woodland in Potrero, Descanso and Boulevard? It would help if the maps in the report named major roads and communities so people can tell what they are looking at.

The map of carbon stocks (page 93) also ignores areas of higher sequestration in the backcountry, identifying only one lonely little spot of high sequestration, which ironically is smack in the middle of your renewable energy sacrifice zone. Like the other maps of the region, place names and major roads are unlabeled. The following map (page 94) also identifies that one of the best sub-regions for sequestration is recommended elsewhere in the report for sacrifice to renewables. What is the carbon cost of decisions based on such vague information?

2. Sequestration maps also retain the vast acreage that is identified elsewhere in the report for sacrifice to renewable energy. The monstrous carbon releases from those lands, once they are torn up, are not accounted for. Significant sequestration will likely never occur on those lands again, so that also needs to be part of any analysis, both in this report and in project EIRs. This needs to be noted on the maps, and the text revised with real numbers that correctly characterize these losses.

3. The report text includes no discussion on management and expansion of oak forests/corridors using management methods that take advantage of natural plant community behavior. Expanding oak woodland/forest corridors out from their edges can be done much more affordably than your report implies.

4. Also glossed over is any discussion of the additional sequestration carried out by underground microbes and mycorrhiza in arid regions. This needs to be better understood, especially since renewable projects destroy 100 percent of sequestration and prevents the land from recovering in the future. Please include sequestration studies over time in industrial scale fields of both wind turbines and solar panels, and subtract those results from the county's store of sequestration.

5. There is also little discussion of how and to what extent invasive non-native plants interfere with soil moisture, nutrients and mycorrhiza access needed by the native plant community (which does the heavy lifting on sequestration). The document offers no solutions or suggested implementation methods. Please correctly quantify the impacts of invasive non-native plants. Consult with the farm bureau about this.

6. There is no mention of education, tools and/or financial incentives for non-farming landowners, many of whom are well positioned to maintain and improve soil and plant health by natural means. In fact, all your three policy recommendations on page 100 are very general and really appear to lack much in the way of strategic thought. I feel certain that the local farm bureau can help with policies and action proposals, as well as education materials geared to the public.

7. The section on blue carbon repeatedly skirts the elephant in the room: how to walk back the destruction of wetlands, while moving the built environment back from the predicted foot of sea level rise. Move the city settlement areas back and let the rising sea do the rest. The latter will have to be done sooner or later anyway. At the very least, it's time to start thinking and talking about it. Bury your head in the sand on this issue, and you're liable to drown.

8. The framework glosses over wetlands, seasonal creeks and oak forest corridors throughout the rural region – along with the endangered wildlife we all seek to protect. It's unfortunate that SDC has done nothing in 20 years to complete the East County MSCP, and by the time it's done, vast portions of these precious lands will already be destroyed by renewables. Please correct this oversight and identify where we can retain and improve these areas to be better sinks. Some resources to consult:

- *"Maintaining a Landscape Linkage for Peninsular Bighorn Sheep"* by The Nature Conservancy
- *"Wildlife Linkages Within the San Diego County Preserve System"* by San Diego Association of Governments
- *"South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion"* by South Coast Wildlands
- *"Las Californios Binational Initiative 2015"* by The Nature Conservancy
- *"California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California"* by California Department of Transportation and California Department of Fish and Game

Transportation

What happens to discarded gas/diesel vehicles when the vaunted fleet upgrades are made? Do they stay on the road via resale? Or do the taxpayers bear the financial and carbon cost of junking them instead? Either way, what have we gained (or lost)?

Technology

The report focuses solely on mapping out the use of electrical generation technology that is obsolete or can be expected to reach obsolescence soon. The emphasis on industrial wind turbines and solar is yet another example of the preconceived notions of bureaucrats and politicians wagging the scientists instead of the other way around. Following are just a few of the options.

1. Wind turbines are currently under development that are small enough to be placed on light poles all through a city, giving the city an affordable option for becoming its own microgrid. Why build miles of hyper-destructive transmission lines when you can use the prevailing winds and flow batteries to provide for your citizens? Examples:

<https://www.theguardian.com/environment/2021/mar/12/o2-arena-to-install-mini-wind-turbines-that-can-harness-even-a-breeze>

<https://www.windpowerengineering.com/a-new-idea-in-micro-wind-turbines/>

2. Small modular nuclear plants are affordable – even for small municipalities – and have achieved a vastly improved safety profile. This is only one of several new nuclear technologies, and given the advantages, are not something that should be excluded just because a couple of your commenters threw their hands up in horror at the thought. Nuclear is carbon-free and reliable. SMRs require only an estimated 1 percent of the land area needed for wind, solar, biomass or hydropower.

<https://www.energy.gov/ne/articles/nrc-approves-first-us-small-modular-reactor-design>

<https://www.cnbc.com/2021/06/28/oklo-planning-nuclear-micro-reactors-that-run-off-nuclear-waste.html>

3. Ocean waves provide tremendous kinetic energy and is yet another way to provide electricity to the user without the attendant losses of shipping it over transmission lines.

https://openei.org/wiki/PRIMRE/Databases/Projects_Database

<https://www.scientificamerican.com/article/wave-power-charges-ahead-with-static-electricity-generators/>

4. Solar “nantenna” electromagnetic collectors are also under development and would provide a solution to the limited space available for solar panels in city neighborhoods. Once in mass production, every home, no matter how small, could generate its own power.

<https://digital.library.unt.edu/ark:/67531/metadc895407/#description-content-main>

These are only a sampling of the solutions under development as we speak. Imagine a future where no one needs to be dominated and directed by the obsolete business model of Big Energy monopolies; a future where cities could simply provide their own power independent of commercial entities, or even attachment to the grid. Picture how much more secure municipal power supplies would be, and how much land would be protected for sequestration.

If these and other emerging technologies were somehow found unsuitable by preparers, then tell us why in the framework. Otherwise, please provide an overview of new and emerging technologies and how they can be used to achieve carbon free energy production.

Offshore wind

Where is the analysis of offshore wind? Offshore wind offers a far more reliable supply than terrestrial installations and produces much closer to its nameplate capacity due to the relative consistency of the ocean wind. Terrestrial installations are notoriously unreliable and spend much of their time either not turning due to wind cessation, or locked up to avoid damage from excessive wind speeds.

In a coastal county, it seems wasteful and closeminded to continue to insist on terrestrial installations so far from the end user. This is one of the framework elements most likely to convince the reader that its treatment was motivated by political considerations, and not by frank and honest science. We have plenty of data on the downtime and annual generation from terrestrial turbine fields, along with all we need to know about blade failures, fires and continual airborne particulate matter affecting the health of residents. We also have the production figures of countries that rely heavily on offshore wind.

Please provide a complete assessment of offshore wind capacity and include it in the county’s energy planning. If you can’t do that, then the framework should AT LEAST provide a full explanation of why it wasn’t included.

Negative worldwide impacts

The report ignores the environmental and social harm done to other countries so that we can call ourselves clean and green. The production of industrial scale solar and wind components requires thousands of tons a year of rare earths mining and processing – and it will be even more when everyone needs high capacity batteries for EV autos and giant community batteries to even out the power supply. Rare earths are among the most devastating sources of pollution ever seen on Earth, and one that has permanently poisoned thousands of acres, billions of gallons of drinking water, and even entire towns in China and Malaysia.

Mining, smelting and fabricating metals and plastics to make wind turbines and solar panels all use vast quantities of fossil fuels and raise GHGs worldwide. All of those products must be transported to their final destinations by trucks, boats, helicopters and planes, as must untold tons of concrete manufactured and transported to the site. And let’s not forget the blasting, earth work and road construction to and through energy fields.

All of these GHG costs – and they are huge – are blithely shrugged off when our planners envision our wonderful “clean” future, but there is no excuse for failing to factor all of this in to the emissions math.

Most horrifying of all is the people who are being sickened and killed by high-pollution production. In China, the enslavement of its Muslim minority to make solar panels is well-known and notorious worldwide. The report can talk all it wants about providing environmental justice to minority communities inside California, but it is contributing cheerfully to the cancer deaths and enslavement of thousands of human beings in other people's countries.

Please revise the document to explain how we can ensure that the renewable supply chain will be cleansed of abusive social practices and to correctly calculate the GHG costs in both the supply chain and permanent GHG releases from plants and soil. These figures and assurances should not only be covered in this document, but should also be required in permit applications for individual projects.

Natural gas

Natural gas generation is dismissed with little real discussion of its proven value. Natural gas generation has already been a leading factor in reducing emissions in the United States, where many municipalities have used it to replace coal, oil and diesel generation. Aside from its obvious money savings over renewables, it carries none of the social harm, and considerably less of the environmental harm associated with building industrial scale renewables and massive batteries. As such, it is a real disservice to the public that you fail to provide analysis of its emissions compared to a cradle-to-grave analysis of the all-renewables scenario.

It is clear that renewables will struggle to meet the demands of millions of all-electric households and all-electric cars, which is something natural gas could handle with ease and relatively little additional infrastructure.

What if we were to discover that gas generation with carbon recovery, plus unimpaired sequestration on lands that would otherwise be destroyed by renewables, would provide a comparable reduction in emissions with a much smaller price tag to society as a whole? This is important information and shouldn't be dismissed out of hand because of preparers' inherent bias against natural gas.

Finally, **stop excluding regular people from having anything to say in the drafting of this framework.** Your entire list of "stakeholders" are people who make money – or not – based on how it is written and implemented. We are not cattle, to be herded and managed by the wealthy and elite for the sake of SEMPRA's bottom line, or some politician's re-election bid. Our lives will be forever impacted by what is decided as a result of this process and we deserve to have our voices heard. We are, in fact, the ultimate stakeholders.

Sincerely



Billie Jo Jannen, Chairman, CLMPG

cc: Supervisors Jim Desmond, Tara Lawson-Remer, Nathan Fletcher, Joel Anderson and Nora Vargas

Section	Comment
General	Be aware the load capacity and constraints of existing transmission line can accommodate new additions of renewable power.
General	Be aware to avoid the transmission lines between new RE and substations passing through (environment) sensitive areas.
General	To me to NWL section is like gospel, and appreciate their level of effort in a robust analysis of the existing landscape and also acknowledge the uncertainty given the changing climate.
General	My specific comments would be to include more actionable policy recommendations other than "more research".
General	CARB and CalEPA Border Affairs Program recommend including a cross-border perspective into the report. With a shared airshed, cross-border pollution impacts San Diego, and cross-border efforts can be a part of the solution to climate mitigation, decarbonization and air quality improvement. In addition to being responsive to focus-group commentary, this perspective can be useful for planning purposes and future efforts with stakeholders at the regional and international levels."
General	Imperial County assumption/scenario could be problematic given approval from Imperial County is beyond San Diego's purview and authority (as well as other jurisdictions potentially wanting to utilize renewable energy from IC). In addition, potential costs for transmission infrastructure upgrades could be an issue.
2	Has an analysis been conducted to determine whether infill areas identified for potential renewable energy projects may be better suited for infill housing/commercial development? Given the housing crisis, infill land may be better suited for mixed use and TOD land uses, rather than energy generation. Perhaps a ranking system could be developed to identify infill areas that are better suited for development vs. renewable energy.
2	Wind in an infill environment could be problematic and infeasible from an NIMBY perspective (e.g., aesthetic and noise issues). Has any analysis been conducted regarding the feasibility that each of the various identified infill polygons are amenable to siting wind?
2	Recommend also evaluating for various milestone years (e.g., SB 32 horizon, SB milestone years, EO-B-55-18)
2	The assumptions for infill cost is that existing interconnection is adequate to accommodate siting of renewables. However, this may not be the case as many infill areas lack adequate or sufficient existing infrastructure, which may necessitate new or upgraded infrastructure/interconnection costs. Recommend adding in an assumption on the % of renewable infill that would require new or upgraded infrastructure/interconnection.
2	Local outreach and equity considerations should also be included as a selection criterion.
2	Recommend also indicating potential infill areas and disadvantaged communities are identified for potential renewables.
2	As previously indicated, there could be other factors that could preclude infill siting, especially in urban locations (i.e., NIMBY) that would be difficult to overcome. In addition, CEQA requires analysis of aesthetics, which could be a potential barrier to infill siting. Recommend identifying other barriers (e.g., CEQA, jurisdictional regulations/codes, NIMBY, etc.) that could preclude development.
2	Can use Priority Populations mapping which includes low-income tracts per AB 1550 (+ SB 535).
2	https://webmaps.arb.ca.gov/PriorityPopulations/
2	This assumption that City of SD ratio of total usable roof area to total developed land also applies to rest of SD county may not be accurate given the City has a larger and more dense urban core, has more City and County offices, and other types of LUs (e.g., POSD, airport, Zoo, colleges, etc.). Recommend conducting a more thorough analysis of non-City of SC.
2	Given that reliability is a major issue for renewables, additional discussion for addressing this barrier should be included. Simply stating this is unknown and unknowable does not instill confidence in success if there is no discussion in the plan for how the region plans to address and overcome this issue.
2	For example, using available battery storage technology and costs, an estimate can be provided for the number of batteries and associated cost for this option. A range of storage options could be provided to allow decision makers and the public a better idea of the true barriers, solutions, and costs associated with decarbonization
2	A negative of ground-mounted PV vs. rooftop PV is that ground-mounted would preclude development of housing (which could support some, but not as much PV as ground-mounted), which helps to address the housing crisis.
2	More focus should be on balancing rooftop PV and using available land for housing development, especially in dense and transit-rich areas.
2	Is off-shore wind an option that can be considered?
2	great to see a regional approach here. also could consider further community-determined priority neighborhoods in addition to a quantitative index approach.
3	This seems to take existing land use, vehicle ownership, and travel behavior as givens; maybe it's just the wording, but accepting existing travel behavior seems to contradict the goal of VMT reduction. Also, land use should not be taken as a given, since actions (or inaction) will profoundly effect future land use patterns and development densities.
3	Re: workforce development. Could strengthen with direct mention of partnership mechanisms such as community benefits agreements for new construction projects.
3	Table 3.6: county implementation of VMT reduction. These are good steps, but the measures appear to be focused on incentives; the use of zoning power to limit development in inappropriate locations is a missed opportunity
3	This paragraph seems to take the land use as a given; it will be necessary to evolve land use (mix, density) to make more areas amenable to non-auto modes, and to prevent the creation of new development that cannot be served by non-auto modes. This paragraph seems to take the land use as a given; it will be necessary to evolve land use (mix, density) to make more areas amenable to non-auto modes, and to prevent the creation of new development that cannot be served by non-auto modes.

Re: partnering with educational institutions on workforce development. Recommend also consulting with industry/trade groups to identify high-need occupations to gear training pathways toward. Also working with existing apprenticeship programs. Considered outreach to San Diego Gas and Electric and/or local CCAs?

AB 2127 requires the California Energy Commission to prepare this infrastructure assessment, working with CARB and the CPUC. An updated assessment is available with county-level infrastructure numbers provided out to 2035. This assessment should be considered in the evaluation of EV infrastructure need for the region. Hopefully this state assessment helped inform the A2Z gap analysis.
<https://www.energy.ca.gov/programs-and-topics/programs/electric-vehicle-charging-infrastructure-assessment-ab-2127>

It may also be useful to consider how these incentives interact with existing or future EV purchase incentives from the state, utilities, and air districts (e.g., Clean Cars 4 All will launch in the San Diego region). This is important for reducing barriers to access of the incentives particularly for priority communities -- streamlining of application processes and coordination on eligibility requirements should be considered.

A corollary is that infill redevelopment of also helps, as it minimizes conversion of NWL and helps with development of denser and transit-supportive development supportive of the State's climate goals.

Many of these co-benefits are consistent with State priorities indicated in AB 32 and SB 32. It may be useful to expand how these co-benefits help to further and localize these State priorities.

While continued protection and preservation of NWL is the simplest, most effective, and least expensive approach, this is not always occurring and is especially true in SD County, where much of the recently approved LU development has occurred outside of established growth areas (i.e., is inconsistent with the County's General Plan and requires general plan amendments). It would be very helpful to include discussion of where these inconsistencies are occurring and how this type of development is inconsistent with the County's and region's own planning documents (e.g., General Plan, SANDAG RTP/SCS, San Diego County Air Pollution Control District Clean Air Plan/State Implementation Plan), as well as State climate goals.

In addition, it would also be helpful to indicate how much carbon storage has been lost due to this development of NWL.

There appears to be a disconnect here: Table 4.1 indicates 59% of region is Scrub and Chaparral, yet the last sentence of this paragraph indicates the effects/benefits of this major component of the County is not considered in the report.

Echoing my previous comments, a major consideration that should be included is to discourage land use changes (i.e., development of NWL), rather than focusing on once there is a LU change. As part of this, infill development and redevelopment of existing disturbed lands should be prioritized and considered in the report.

GHG effects (both GHG sources and sinks) of wetland restoration should also be addressed.

This is a point that should also be discussed in further:

Siting of renewable energy should occur in areas with the lowest NWL storage and sequestration potential (while further considering the prioritization of infill areas for mixed use and TOD land uses before renewable energy is considered). It appears that some of the renewable energy locations indicated in Figures 2.7 and 2.8 are proposed in areas of the County with higher carbon stock potentials, as indicated in Figure 4.3 (aligning with carbon stock areas having values between 100-150 up to 175-200).

Other items for consideration:

Ch. 2 indicates that ag/open land is often cheaper for siting renewables, and this applies to why this land is developed for land uses. Policy recommendation here should also discuss how this also influences conversion of land for to developed uses, as well as the need for growth to occur within the areas already planned for growth, rather than outside of these areas (as I indicated in a previous comment).

This seems to be inconsistent with the following statement on pg. 85:

"While the emphasis is often on simply planting trees, the International Panel on Climate Change's most recent report highlights the scientific consensus that afforestation, or planting trees in lands like grasslands or savannas that historically did not have any or many trees, should be avoided, as it replaces native and adaptive vegetation with ill-adapted trees and is therefore more vulnerable to carbon emissions and provides fewer co-benefits."

Re: ag methane reduction. These are important aspects to consider and recommend evaluating further. Research has been conducted for opportunities within San Diego County:

<https://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?BlobID=49641>

What is the role of local jurisdictions vs. State (e.g., CA Coastal Commission)?

Can wetland preservation be used as a climate adaptation strategy?

The policy recommendations seem mostly to either protect existing carbon storage or to plan and collaborate, with little actionable or concrete solutions. Recommend identifying specific policy solutions for increasing carbon storage pools in blue carbon ecosystems.

This section seems inconsistent with Ch. 2, where a mapping-based analysis was done to evaluate potential areas for renewable energy siting. Similar analyses could be done here to identify potential areas for urban forests and the magnitude of reductions.

For example in Section 4.4, they could do county-wide private-public partnerships or set mandates/incentives for investing in healthy soils program through ZeroFoodprint/Restore programs (I wish there was more than one program to point to, but this is a model I think is really applicable on a county scale). As far as policy analysis to improve the framework, I think this model should be examined.

On specific existing research to look at, I suggest examining whole orchard recycling, since they make a big point of the impact that orchard removal has. We've done some contract work on this and also working extensively with CDFA on some white papers, but the best easy resource is UCD's page: <https://orchardrecycling.ucdavis.edu/>.

Please provide some additional context about why it's easier to reduce GHG emissions from water heating in San Diego County. Is it simply because natural gas use for water heating is more predominant than natural gas use for space heating?

Cost estimates were based on E3 cost estimates. However, E3 estimated overall cost savings for new construction due to avoided costs of gas infrastructure. Were those savings accounted for in the San Diego analysis?

Similar to the comment on page 136 above, how does this study account for avoided costs of gas infrastructure in new construction?

Consider adding in a cost comparison of heat pump water heaters to tankless gas water heaters.

What about the potential avoided gas system costs for new construction? Are those accounted for anywhere?

Can you provide more details on the annual percent rate increase/decreases assumed for this study?

space and water heating only, or are you also considering other end uses (cooking, dryer)

These two takeaways, as worded, are not necessarily compatible. Could be further clarified

Would be interesting to see how this growth share is split across single- and multi- family residences

Appreciate this breakdown, but this figure might benefit from a summary table of some kind, that shows the percent of total new square feet in the county attributed to each kind of residential building

How does this present-day saturation compare to the last RASS? Could be helpful to get a sense of the current adoption trends and how much policy support might be needed.

For these figures, might recommend grouping smaller cities within San Diego County so the scale is a little more legible. Or inverting the color/axis label convention so building types appear in one column, and breakdown by municipality is in color.

Very helpful figure. Is the percent scale with respect to each sub-sector? Could be useful to clarify that so it does not appear the gross consumption by building type is equal. Also recommend labeling bars or including a table with the amount of energy consumed in some energy unit (eg mmbtu)

How does this modeled estimate compare to CEUS data?

Are these per square foot cost estimates for commercial incremental relative to natural gas equivalent, or gross for new electric equipment only? You show gas equivalent on a per-unit basis for residential so would recommend the same here.

Did your analysis consider comparative sensitivity to future electric/gas rates as well as improvements to COP?

What are the specific policy mechanisms under consideration that underlie these potential pathways? Would be helpful to spell out a little more clearly the policy assumptions, and not only adoption trajectories, embedded in each scenario.

It could, however, illustrate the gap that policymakers need to close with standards, incentives, and other tools.

Would be interesting to explore the consequences of this timing for natural gas distribution system costs

It could be helpful to explore the limit case of a rapid contraction in fossil fuel industries.

While the net number of jobs in the industry might be balanced, I am curious whether the retirements actually match up with the specific jobs held by a contracting industry. Often the most recently hired are the first let go -- is there other research to support this claim that no fossil fuel workers will need to be re-employed?

Re: focus group feedback framework. These community listening sessions were great, and I think this looks like a good framework for engagement. However, given the keyword "implement," it's strange that implementation is lacking in the three key actions. It may just be that this is a framework to support implementation.

Re: Land Use Policies: These are good actions, but they seem to be dancing around the issue of not allowing further greenfield development.

Re: Transportation policies. This is good, but prioritizing multi-modal oriented development where assets are already present is not enough - there needs to be new assets.

Re: Power sector. As they point out, the cost of new transmission resources is huge and takes a long time. Energy efficiency beyond just shell improvements and electrification of space heating and water heating has been identified as a key action for decarbonizing the power sector. It is lacking here.

Takeaway 4: Innovation. This is true, but primarily for mid- to long-term actions. It's important to recognize the limitations of current technology in long-term planning, but I'm wary of a heavy focus on technological barriers when the technology available today is exactly what is needed for the near- and many of the mid-term actions. For example, vehicle-to-grid charging will be necessary as we get closer to 100% clean energy, but should not be seen as a barrier for action in the next 10 years.

Takeaway 4: Innovation. Heat pumps are ready and can be cost-effectively deployed. This is conflating market penetration with the state of readiness for heat pumps.

This looks like a good model, but I would also like to see some discussion of tracking implementation or actual reductions.

This seems to be heavily focused on CAPs, but there are likely other GHG reduction opportunities and approaches that may not be included in CAPs that should also be explored

It doesn't seem clear from the narrative, but will the analysis also include an analysis of local policies? It would be extremely beneficial to understand the existing regulatory environment, including barriers and opportunities.

"Analysis" should also evaluate existing laws and policies, such as zoning and approval processes that may serve as barriers and opportunities.

Looking at CAPs is a great first step, but CAPs can be problematic in that they often are not fully implementable due to lack of specificity and regulation (e.g., use of language such as "evaluate," "to the extent feasible," "if possible," etc. Recommend identifying a mechanism or process to identify areas where CAPs may be deficient or where updating or strengthening may be warranted.

It would also be important to evaluate prior CAPs to where they may have fell short, as well as evaluating the status of existing CAPs towards meeting their reduction targets.

Are other building-related emissions also addressed?

- Water supply/waste water

- Area sources

- Waste generation/disposal

8 - Construction

8 What mechanisms are in place to ensure local jurisdiction support and buy in?

Another element that should be considered is how can local jurisdiction localize, implement, and facilitate State and federal priorities?

8 Also, how will reach codes be included, as well as local actions that may be above and beyond what is occurring at the State and federal level?

8 Are the Port of San Diego and military also included?

The on-road vehicle discussion is a good example of the relationship between federal, State, and local authorities. While locals have limited direct authority, they do have indirect control via their land use authority. This is an example where locals have a role and this should be

8 included as approaches for reducing GHGs.

It would likely be useful for local jurisdictions to have a coordinated effort for their CAP planning to help ensure regional consistency in how

8 CAPs are prepared and approaches for reductions, where feasible.

8 OPR and CARB could also be resources.

This is one of the most important pieces: how is the framework be implemented/actionable, as well as were the political barriers and how were they overcome?

8 This is important: how translatable is the SD experience to other jurisdictions and regions?

Baxamusa, Murtaza

From: Schilla, Annalisa@ARB <annalisa.schilla@arb.ca.gov>
Sent: Friday, December 3, 2021 7:25 PM
To: Baxamusa, Murtaza; D'Souza, Shereen@EPA
Cc: Lueg, Zerocarbon; King, Elizabeth@EPA; Matouka, Neil@ARB; Zauscher, Melanie@ARB; Gress, Jennifer@ARB
Subject: [External] RE: Your comments due this Friday
Attachments: RDF First Draft Final1027_CARB-CalEPAComments.pdf; SD RDF Review Matrix v3.xlsx

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Murtaza,

I hope this finds you well. I'm attaching the comments we've pulled together on your report. The majority of these are included as comments in the pdf but there were a few that came through in other ways so Neil (cc'd) from my team has consolidated those (along with the other comments in the pdf) into a spreadsheet format in case that format is preferred. Here are some themes that emerge from our comments:

- Multiple commentors pointed out the need for more actionable policies. The framework lacks a clear plan for implementation.
- NWL and carbon sequestration sections are good, but don't appear to align with some of the other recommendations.
- Specifically, there is no explicit policy to stop greenfield development, currently proposed greenfield development is accepted as baseline, and renewable energy development is not compatible with the NWL goals
- Analysis is uneven between research areas. For example, renewable energy siting is done using a GIS analysis, but urban greening did not use a similar level of rigor.
- Additional research is needed on natural gas appliance penetration, natural gas costs, and future natural gas infrastructure.
- The ZEV planning sections should better take into consideration existing State and regional plans and incentives.

Thanks for the opportunity to provide input, and please let me know if you have any follow-up questions about the comments.

Annalisa



Annalisa Schilla, Ph.D.
(she/her)
Chief, Community Action
Branch
Sustainable Transportation
& Communities Division
(279) 208-7204
annalisa.schilla@arb.ca.gov

From: Baxamusa, Murtaza <Murtaza.Baxamusa@sdcounty.ca.gov>
Sent: Monday, November 29, 2021 9:53 AM
To: D'Souza, Shereen@EPA <shereen.dsouza@calepa.ca.gov>



To: Honorable Chair Fletcher and Supervisors

From: Carbon Sink Farms, San Diego

Date: November 11, 2021

RE: Climate Smart Agriculture Policy in San Diego County

Dear Mr. Fletcher,

Carbon Sink Farms is a collaboration of small farms across San Diego who are committed to reducing greenhouse gas emissions and improving climate resilience by shifting our agricultural practices. For the last few years, we have been innovating our practices and participating in training to ensure we are informed partners in the policy making process. The signatories on this letter agree that there are **three areas** where the Board of Supervisors and County staff can take **immediate action** to improve the resilience of our farms and food system.

Area One: County Climate Action Plan

It is our understanding that the CAP has restrictive requirements that limit creativity, however, we are aware that Santa Clara County and others have found a way to incorporate carbon farming into their CAP mitigation calculations and are confident that San Diego can do the same.

The State of California and US Department of Agriculture have already validated the use of two tools--Carbon Farm Plans and COMET-Planner--to calculate the specific sequestration of greenhouse gas emissions of 32 carbon farming practices. A "Carbon Farm Plan" can be utilized to document potential sequestration and monitor practice implementation. COMET-Planner can be utilized to quantify the specific sequestration of each carbon farming practice. Given the availability and verification of these tools, we recommend the following actions:

Recommendation 1: The San Diego County CAP includes a voluntary and incentivized opportunity for farmers to contribute new and additional carbon farming sequestration to mitigation targets.

Recommendation 2: San Diego County provides free technical assistance for the voluntary development of Carbon Farm Plans by individual farms to calculate GHG sequestration capacity and verify practice completion.

Recommendation 3: San Diego County validates the use of COMET-Planner as the mechanism for quantifying and verifying offset amounts.

Recommendation 4: A local study is undertaken to establish appropriate incentive amounts based on the cost of implementation in San Diego County.

Area Two: De-Carbonization Strategy

The San Diego County Board of Supervisors and County staff understand the limitations of the CAP and have launched a more comprehensive planning process to address the climate crisis. We are enthusiastic about the De-Carbonization Strategy because we see it as a strategic opportunity to:

- include the existing and ongoing contribution of San Diego farms to GHG sequestration;
- identify and compensate farmers for the existing and ongoing co-benefits and ecological services provided by our farms;
- identify projects that defend agricultural livelihoods and improve the resilience of our operations; and
- develop a pathway for new farmers to accelerate carbon farming in our County.

We were thrilled to see so many of these concerns reflected in the Draft De-Carbonization Strategy and intend to engage in the public comment process to help improve and clarify components of the plan. However, we want to make sure we lift up these broader recommendations for your consideration:

Recommendation 5: Food system components are mentioned throughout the document but are minimal in the “agricultural sector”. We recommend a unique “Food System Sector” in the De-carbonization Strategy. This will ensure a plan that maximizes local production and consumption of climate-smart, San Diego-grown products within our region.

Recommendation 6: Development of a “Carbon Drawdown Plan” that includes incentives to farmers for the ongoing sequestration and ecological services provided by San Diego farms. The inclusion of ongoing sequestration is critical to protecting agricultural lands and livelihoods and essential to maximizing the co-benefits of climate-smart farming for San Diego.

Recommendation 7: Identify opportunities to strengthen and incubate new, climate-smart farmers and local food distribution businesses and encourage public/private partnerships that can help these new businesses to thrive.

Area Three: American Rescue Plan Act Funds

We applaud the \$20 million allocation of ARPA funds to our local food system and are eager to support the implementation of exciting new projects! To ensure the best use of these funds we recommend:

Recommendation 8: The County broadens the description of fund allocation from “community gardens” to “locally-grown community food projects” to ensure that funds are available for both production and distribution of fresh produce within our most underserved neighborhoods.

Recommendation 9: The County reduces barriers and increases equitable access to ARPA funds by streamlining and simplifying the contracting process so that smaller, community-based organizations can participate.

Recommendation 10: The Board of Supervisors directs staff to prioritize purchasing produce with County funds from farms or businesses with a climate resilience component.

Recommendation 11: The County includes language in its food procurement policies that prioritizes purchases from farms with an active Carbon Farm Plan.

We sincerely appreciate your immediate action on our recommendations and look forward to continued dialogue and partnership in achieving the best economic, social and environmental outcomes possible for San Diego County.

Hernan Cavazos, Bea Alvarez, Steven Heslin
Solidarity Farm

[REDACTED]

Bianca Bonilla
Community Roots Farm

[REDACTED]

Andrew Williamson
Grow Eco Farm

[REDACTED]

Greg Reese
Sea + Soil, 1000 Tiny Farms
Cardiff Garden

[REDACTED]

Lacey Cannon
Paradise Valley Farm

[REDACTED]

Esmeralda Hummingbird, Richard Smith, Irie Sunshine Harris, Sensi Stari Harris, Haze Luna Harris, Consuelo Roon Aldaz, Marley Estrada
Garden Unidos

[REDACTED]

Sharlene Aquiler
Diwa ng lupa Farm



Betsy Rosales and Nicoli Quiroz
Sol x Soil Farm



Cristina Juarez
Pixca Farm



Cathryn Henning & Diana Saucedo
BeeWorthy Farms



Luis Gamboa
Little Bitty Farm



Jose Alcaraz
Frijoles y Fresas Farm



Ricardo Cataño, Adriana Barraza
A La Vuelta Farm



Steven Larrea
Full Send Farm



Michelle Bearmar
Black Mountain Farm



Spencer Rudolph
Sage Hill Ranch Gardens



Tina Chitura, Alex Chitura, Joyce Chitura
Hukama Farms



Norma Lopez, Ruben Lopez
Behneman Farms



Erik Hjermstad, Centehua Sage
Sweet Spot Farm





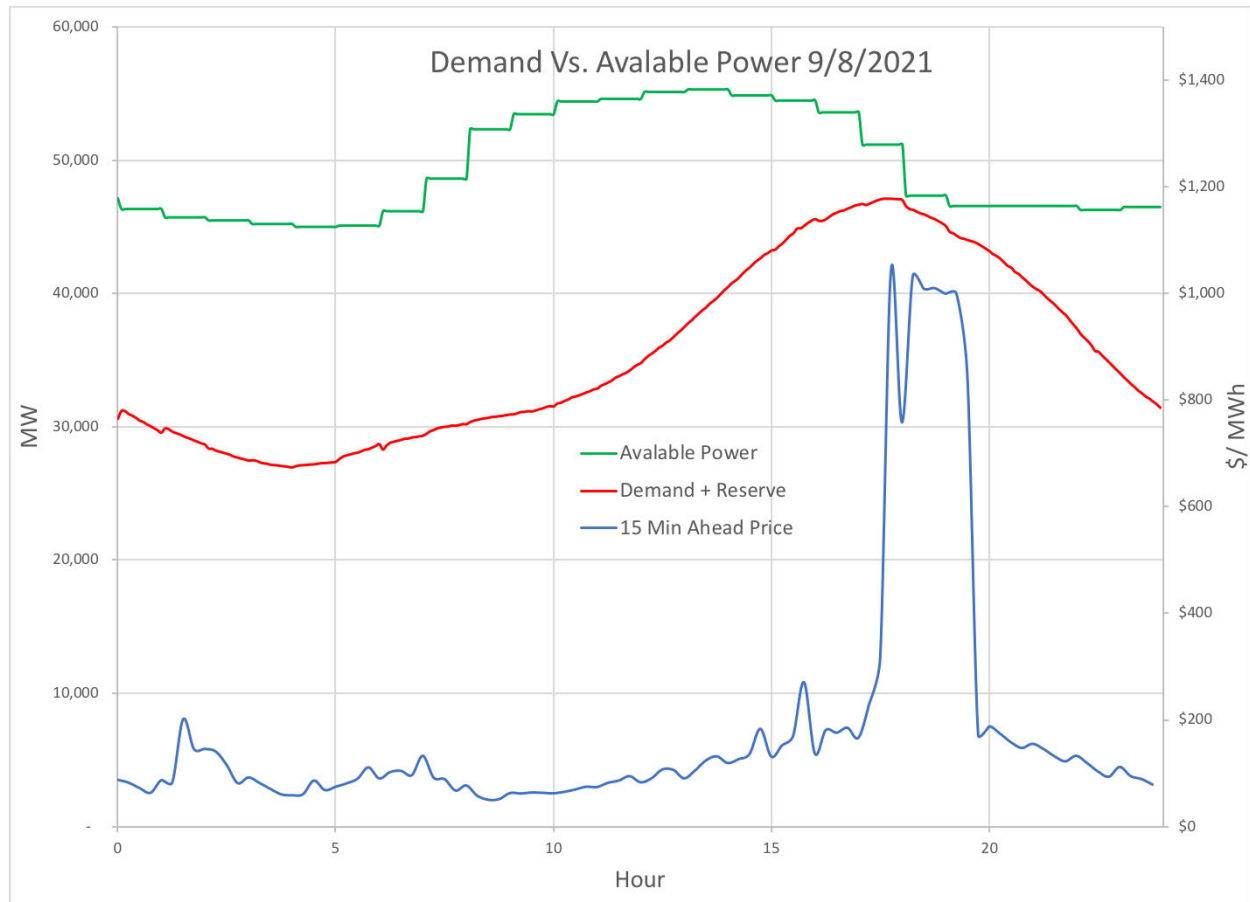
V2X as a Solution to the Duck Curve

The state of California has a goal of having 8 million zero emission vehicles on the road by 2030¹. The vast majority of these will be battery electric vehicles (EV). This could either exacerbate the problem of providing energy when the sun goes down and solar power becomes unavailable (the so-called “duck curve”), or be a major source of support for the grid if vehicles are allowed to send power from their batteries when parked at charging stations (EVSE, Electric Vehicle Service Equipment). This is variously referred to as V2G (vehicle to grid), V2H (vehicle to home), or V2X (vehicle to anything).

The Evening Power Shortfall

Whether adding EVs will help or harm grid management depends entirely on when and where they are charged and potentially discharge. The evening shortfall of power is already a major issue. The figure below shows the data from CAISO (CA Independent System Operator, the agency responsible for managing the grid) for a particularly bad day when demand almost exceeded the sum of all available power plants and caused a spike in the wholesale power market.

¹ California Air Resources Board 2020 Mobile Source Strategy



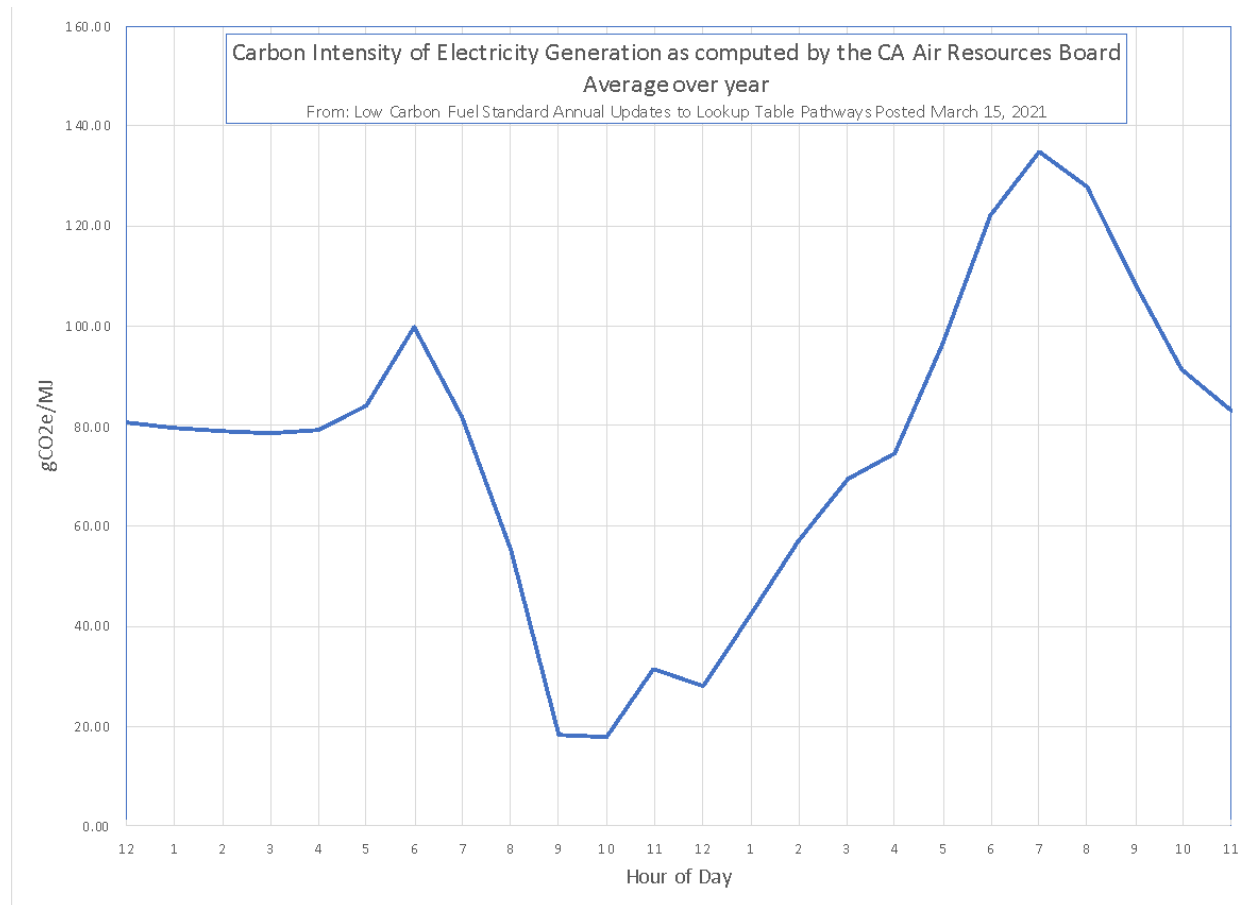
The green line represents the total available output of all power plants that could have been turned on to meet demand. The red line represents changing demand that day (plus a 20% reserve CAISO maintains in case of an emergency power). The dropoff of the green line in the evening is due to solar power plants losing power. If the red line ever crossed the green line CAISO would have to turn off power to communities to prevent a grid collapse (as happened during the heatwave of summer 2020). The shortage of power around 5:30 PM led to a spike in the wholesale cost of power that utilities buy to meet immediate shortfalls.

If all of the owners of EVs were to plug in to recharge when they got home, it would exacerbate this problem. So far, the CA Public Utility Commission's (CPUC) solution has been to create special EV rates that give owners a major discount to wait until after midnight to charge. This defers the EV charging load until a time of lower overall demand, but it is not an optimal solution from the point of view of helping the state's goal of achieving a carbon-free electricity system²

² SB 100

Daily Variation in CO² Production

The CO² production per unit of electricity produced varies enormously over the course of the day depending on what power plants are available. The next figure shows the average carbon intensity as a function of time of day as modeled by the CA Air Resources Board (CARB)³.



It is obvious that deferring EV charging from 6PM to midnight is reducing the resultant CO² emission somewhat, but a vastly greater emission reduction would be achieved if EVs were charged during the middle of the day.

CPUC Future Planning & Transportation Electrification

Currently, the issue of the future availability of power, particularly in the evening, is of great concern to the CPUC. It projects a need for 1,599 MW of new transmission infrastructure, 19,888 MW of new in-state renewable generation and 11,878 of MW battery power⁴ by 2026.

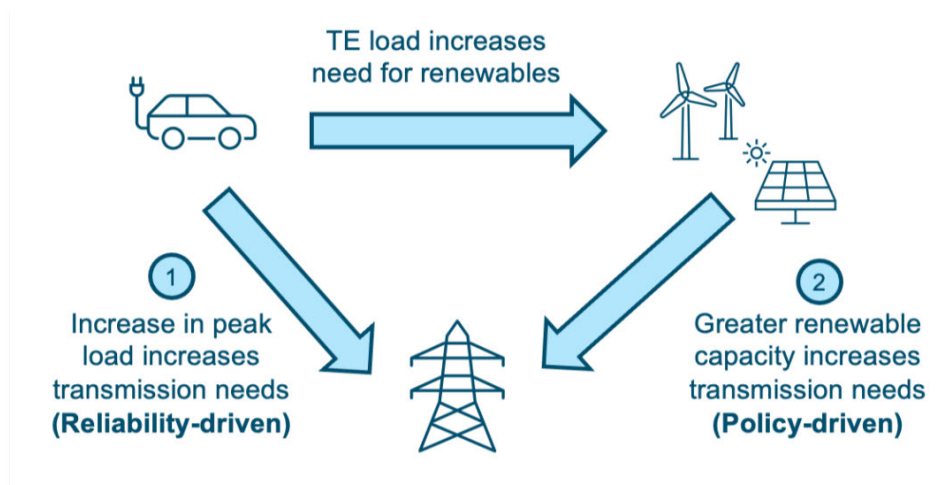
³ Low Carbon Fuel Standard Annual Updates to Lookup Table Pathways Posted March 15, 2021

⁴ ADMINISTRATIVE LAW JUDGE'S RULING SEEKING COMMENTS ON PORTFOLIOS TO BE USED IN THE 2021-22 TRANSMISSION PLANNING PROCESS Attachment 2 Descriptions of the Proposed Portfolios for the 2021-22 TPP Filed Oct 20, 2020.

This issue of power availability is of such concern to the California Energy Commission (CEC) that it has asked the CPUC to consider allowing fossil fuel plants to increase their capacity despite the increase in CO² pollution being exactly contrary to the state goals⁵.

In the view of the CPUC, transportation electrification will necessarily give rise to a large increase in transmission needs. The same document that projected the future capacity requirement explained the need for increased transmission requirements with the following figure:

Figure 7. Transportation Electrification Impacts on Transmission Needs



There is no question that transmission and distribution system upgrades of the scale contemplated will cost billions of dollars which will become part of the utility rate base and a justification for future rate increases. The question is how large these costs will be. A study by the Boston Consulting Group suggests that between \$11 billion and \$30 billion in new utility infrastructure spending for transportation electrification could be justified in CA alone⁶. The Cal Electric Transportation Coalition did a study which found that:

“between 3.8 million and 6 million charging ports will be needed to accommodate 5 million EVs in California, amounting to a cost of \$5.5 billion to \$25.4 billion for utility-side and customer-side infrastructure⁷.”

A pilot project to install 6,000 EVSE by the CA utilities cost an average of \$17,000 each. At this rate the 1.2 million public EVSE the CEC (CA Energy Commission) anticipates the state will need by 2030⁸ would cost \$20 billion, well within the range anticipated by the Boston group. Notably, this project only included local distribution system upgrades; given its scale it did not

⁵ Considering Gas Capacity Upgrades to Address Reliability Risk in Integrated Resource Planning CPUC STAFF PAPER October 2021.

⁶ <https://www.bcg.com/publications/2019/electric-vehicles-multibillion-dollar-opportunity-utilities>

⁷ <https://s3.amazonaws.com/california-energy-commission/assets/ev-infrastructure-study-white-paper-FINAL.pdf>

⁸ Alexander, Matt, Noel Crisostomo, Wendell Krell, Jeffrey Lu, and Raja Ramesh. May 2021. Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment: Analyzing Charging Needs to Support Zero-Emission Vehicles in 2030 – Revised Staff Report. California Energy Commission. Publication Number: CEC-600-2021-001-REV.

involve any transmission system upgrades. A full 1.2 million EVSE would also require transmission upgrades which would increase the cost still more.

All of this anticipated new system cost is based on the assumption that the electricity to charge the future fleet of EVs will come from remote utility-scale facilities (thus the need for new transmission infrastructure) and that V2X can play no role in serving the grid when power is most needed. Thus, the large storage requirement and the suggestion that new fossil fuel generation is needed even as California is trying to move to a CO²-free grid.

Current State Regulatory Actions

The CEC report estimating the number of EVSE needed mentioned V2G but mostly in the context of resiliency for power failures. Discussion of V2G for routine grid support was deferred for a later report. In 2019, the state legislature directed the CPUC to study V2G integration⁹. In response, the CPUC opened Rulemaking 18-12-006 and issued decision 20-12-009¹⁰. Unfortunately, the legislature gave the CPUC until 2030 to complete action of V2G integration, so the substance of the decision was to direct the investor-owned utilities to begin pilot projects that will run for 10 years.

At this point V2G does not figure as even a possible grid resource in CPUC midrange planning¹¹. In fact, V2G cannot be considered as a possible resource today because the modeling tool the CPUC uses to decide the optimal combination of generating resources to call for in future planning (the RESOLVE model) does not have V2G as one of its possible inputs¹². Further, the managed charging option is turned off in the model so planning is being done on the assumption that EVs will charge at night¹³.

The Center for Community Energy's Alternative Proposal

The Center for Community Energy (CCE) contends that this model of remote generation and expensive new infrastructure is a misallocation of resources. In our view, ***if the goal is to charge EVs during the day, then the solar arrays should be built where the cars are parked during the day.***

⁹ SB 676

¹⁰ DECISION CONCERNING IMPLEMENTATION OF SENATE BILL 676 AND VEHICLE- GRID INTEGRATION STRATEGIES Decision 20-12-029 December 17, 2020.

¹¹ DECISION REQUIRING PROCUREMENT TO ADDRESS MID-TERM RELIABILITY (2023-2026) Decision 21-06-035 June 24, 2021

¹²<https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2019-2020-irp-events-and-materials/resolve-user-guide---public-release-20191106.pdf>

¹³https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2019-2020-irp-events-and-materials/inputs--assumptions-2019-2020-cpuc-irp_20191106.pdf

We propose that to the greatest extent possible EVs should be charged while they are parked at work with power derived from solar arrays mounted over the parking lots. Further we suggest that by taking this charge home they can substantially reduce the duck curve.

We see this alternate approach synergistically solving three problems:

1. By building solar arrays over parking lots power can be delivered directly to EVSE without any modification to the transmission or distribution systems. The savings on infrastructure will more than make up for the higher cost of carport-mounted solar arrays relative to ground mounts.
2. As will be modeled below, a fleet of EVs leaving work fully charged and plugging into bidirectional EVSE at home will have more than enough capacity to support the grid in the critical evening hours, solving the notorious “duck curve” problem.
3. If chargers at worksites are common the problem of providing charging for occupants of multi-unit housing is alleviated, since the occupants can generally assume they will find a charger at work. Further, in the parking lots of multi-unit housing EVSE powered by solar carports will be less expensive than upgrading the electrical service to multi-unit housing.

Solar Carports

The concept of avoiding the cost of infrastructure upgrades by powering EVSE from local solar power is already being implemented. The Los Angeles Department of Transportation is building a 1.5 MW array to provide power for electric buses¹⁴. In this case, there needs to be a storage component since the bus fleet is necessarily working during the day. In our proposal the energy would be for private vehicles used to commute to work, so they would mostly be parked during the middle of the day and there would be minimal storage requirements. Mathematical modeling by a team from the University of Lisbon has also demonstrated the feasibility of this concept¹⁵.

That there is ample area in parking lots in California to collect enough energy to power a fleet of EVs seems very plausible. A study in Connecticut found that the sum of the parking lots in the state would accommodate enough solar arrays to generate almost 40% of the total load of the entire state¹⁶. There is every reason to believe the ratio of parking spaces to load is higher in California.

¹⁴ <https://pv-magazine-usa.com/2021/11/15/transit-agency-to-install-a-solar-storage-system-for-ev-bus-charging/>

¹⁵ Figueiredo, Raquel, et al. “The Feasibility of Solar Parking Lots for Electric Vehicles”. *Energy V 140 Part 1 P 1182-1197* Sept 7, 2017

¹⁶ <https://pv-magazine-usa.com/2021/11/11/solar-covered-parking-lots-could-offer-multiple-benefits/>

V2G

The idea of V2G energy transfer is also very well established. It was first developed by Dr. Kempton's group at the University of Delaware almost 25 years ago^{17, 18}. Since then, the topic has been widely studied¹⁹ and numerous pilot studies have been conducted in Europe and the US^{20 21}.

An order of magnitude calculation easily shows the feasibility of using V2G or V2H energy transfer to deal with the evening shortfall: Assume there are 8 million EVs in 2030 and their battery capacity is at least equal to 75 kWh, the current capacity of a Tesla model 3. The combined capacity would be 600,000 MWh, which is **12 times** the capacity of the 11,878 MW of battery capacity the CPUC called for (assuming 4-hour batteries are intended). If all 8 million EVs were plugged into Level 2 home bidirectional EVSE they would be capable of putting 60,000 MW onto the grid, **6 times** the drop off caused by the total capacity of all PV shutting down in the evening. Obviously, this represents the outside limit; owners of EVs will not want to give up more than a fraction of the charge in their batteries and not all EVs will be plugged in at once, but this order of magnitude calculation shows that EVs are a major resource that should be considered. More detailed modeling by a team from UC Berkeley arrived at the conclusion that a fleet of only 3.3 million EVs could save the state \$20 billion in capital investment²².

Model Details

Our proposed model takes advantage of the fact that private EVs have batteries much larger than is needed for everyday usage. In California, the average daily round trip commute is 40 miles²³, while the average range of EVs currently on the market is 254 miles²⁴. This means on a typical day if the average commuter were to leave work with their EV fully charged they would have enough energy to power their home over the critical evening hours and still have more than enough energy to make the morning commute.

A plausibility calculation shows that this would substantially moderate the duck curve even on a severe day. On November 8, 2021, the three-hour ramp was 15,406 MW; this is the amount by

¹⁷ [Electric vehicles as a new power source for electric utilities](#), Transportation Research Part D: Transport and Environment V2, I 3, P 157-175 1997/9/1

¹⁸ "Ahead of Their Time". University of Delaware Daily. Published March 22, 2021.

¹⁹ Bijan Bibaka, Hatice Tekiner-Moğulkoç, A comprehensive analysis of Vehicle to Grid (V2G) systems and scholarly literature on the application of such systems, Renewable Energy Focus Volume 36, March 2021, Pages 1-20

²⁰ Laura Jones, Kathryn Lucas-Healey, Björn Sturmberg, Hugo Temby and Monirul Islam The A to Z of V2G A comprehensive analysis of vehicle-to-grid technology worldwide The Australian National University January 2021

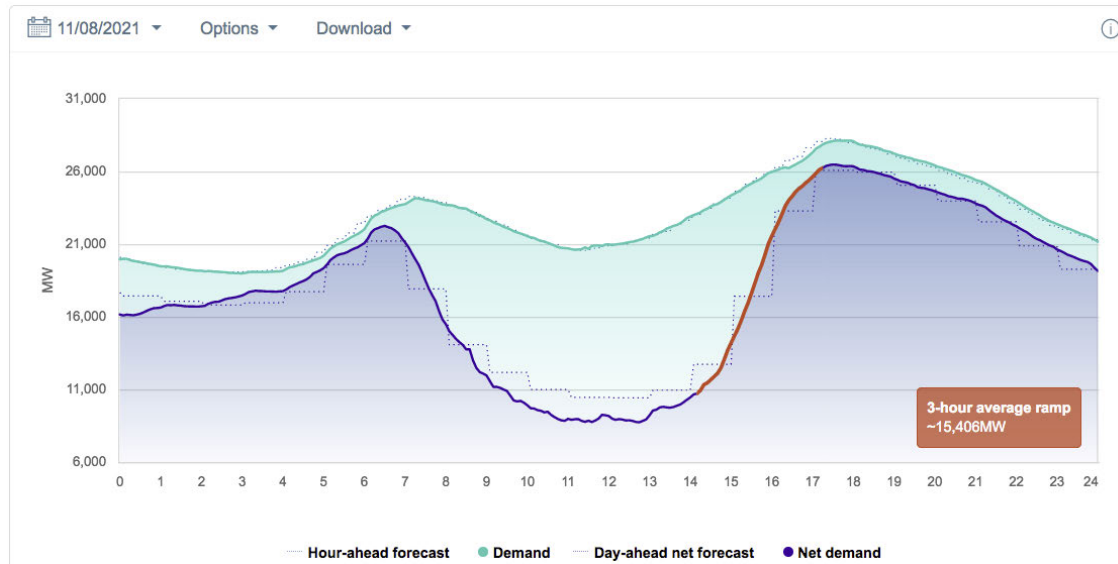
²¹ <https://nuvve.com/projects/torrance-electric-school-buses/>

²² Florian van Triel and Timothy E. Lipman Modeling the Future California Electricity Grid and Renewable Energy Integration with Electric Vehicles *Energies* **2020**, 13, 5277

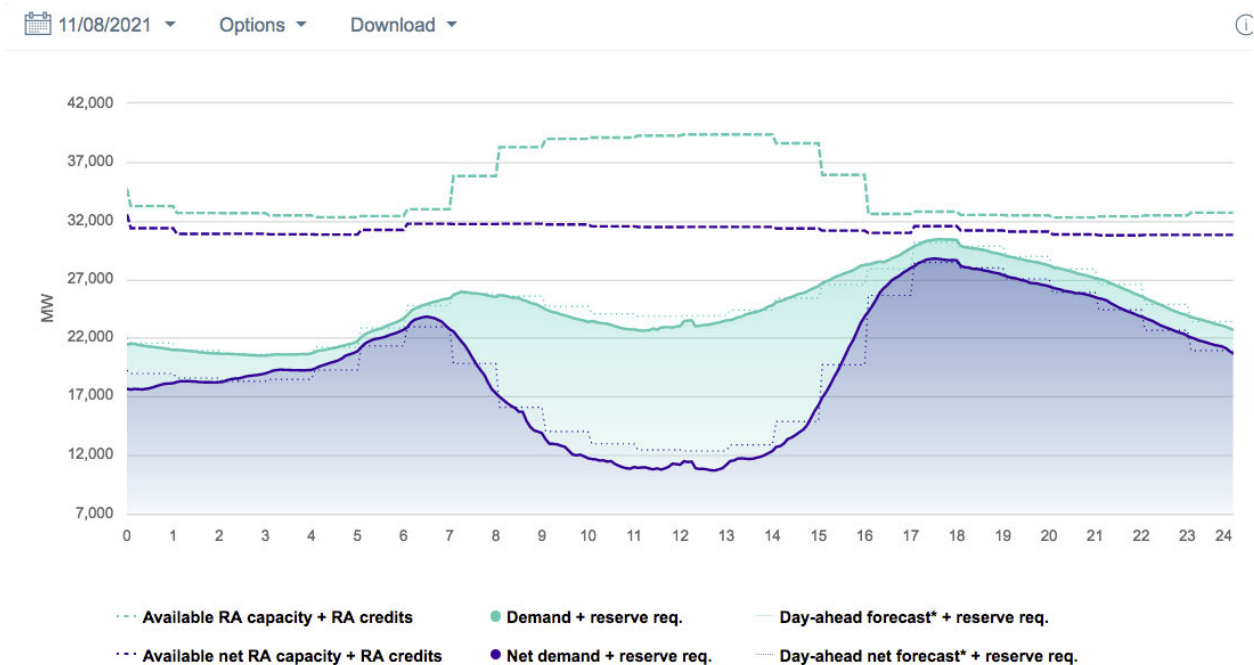
²³ <https://www.answerfinancial.com/insurance-center/which-states-have-the-longest-commute/>

²⁴ <https://docs.google.com/spreadsheets/d/1ndZTPFVDehjBBNkNm895TdCzqQSpzgeHg7tSEPLxr4A/edit#gid=735351678>

which non renewable power plants had to increase their output in three hours to meet the combination of solar plants' declining output and demand increasing in the evening²⁵.



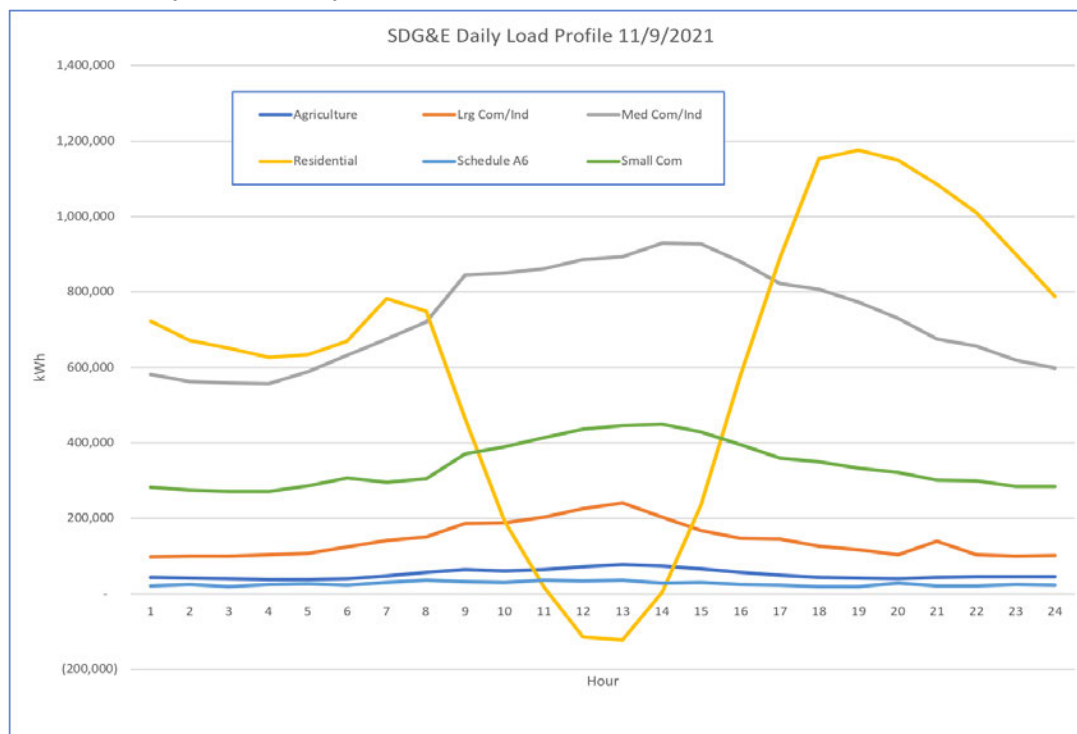
Of this, approximately half was due to an increase in evening demand and half was due to the falloff in PV generation.



The decline of the dotted green line (above) between 2 PM (14) and 4 PM (16) is the loss of generating capacity from solar plants. The rise of the solid green line in the same hours is the increase in demand.

²⁵ <http://www.caiso.com/TodaysOutlook/Pages/index.html#section-net-demand-trend>

Interestingly, this late day increase in demand is due entirely to residential customers. The daily load profile by customer type is available for SDG&E²⁶.



This shows that the entire increase in usage in the evening is due to residential customers. As expected, commercial and industrial customers often close around 5PM, but many residential customers arrive home after work and turn on home appliances. Further, since the utility meters are reading net usage, there are enough residential customers with rooftop solar arrays that in the middle of the day the sum of all residential customer usage is negative.

Since the average SDG&E residential customer uses only 4.11 kWh²⁶ during the peak hours of 4 PM to 9 PM, and the average modern EV has a battery capacity of 65 kWh²⁴, a negligible draw on the EV battery via bidirectional home EVSE would allow a home to entirely eliminate its burden on the grid during the critical evening hours. **This shows that by using only V2H a large population of EVs could substantially mitigate the duck curve.** If V2G transfer were allowed the potential grid support would be even greater. As described above, the sum of the battery capacity of 8 million EVs is many times the stationary battery capacity planned. Some EV owners have expressed concerns that using the battery in this mode might reduce the battery life, but this has been studied and the impact is in fact negligible²⁷.

In our model no new utility investment would be needed for transportation electrification. The investment would come from the owners of the EVs and the owners of

²⁶ <https://www.sdge.com/more-information/doing-business-with-us/energy-service-providers/dynamic-load-profiles>

²⁷ Heta A. Gandhi Andrew D. White City-Wide Modeling of Vehicle-to-Grid Economics to Understand Effects of Battery Performance *ACS Sustainable Chem. Eng.* 2021, 9, 44, 14975–14985 Publication Date: October 26, 2021 <https://doi.org/10.1021/acssuschemeng.1c05490>

parking lots. Rather than lots with a small number of high-speed chargers we envision lots with many inexpensive chargers where vehicles could be left parked and plugged in all day. Since most of the lot is serving people who are working in the adjacent building, the car will be in the lot for about eight hours and on average each vehicle only needs to collect enough charge to power a day's commute and one day of V2H. This means that relatively low power L2 chargers are adequate. The cost of building the carport mounted PV system and the EVSE would be an investment by the building owners and could be recovered by charging for the electricity. The PV systems could be designed to never draw enough power from the grid nor send so much power to the grid that upgrades to the building electrical system or the grid were required. This would help minimize cost.

In this model the vehicles are not only collecting enough energy to support transportation electrification but also serving as the buffer to save surplus solar energy during the day for use in the evening. Further, the vehicles are in effect acting as the transmission system because they are carrying the energy from where it is collected to the location of the evening load. This aspect of EV – the ability to move energy both in time and space – has not been sufficiently appreciated.

Multi-Unit Housing

In addition to saving cost by reducing transmission upgrades, powering EVSE with locally generated power will also save costs when providing EVSE in multi-unit housing. In general, any vehicle taken to work would best be charged there regardless of where the power comes from because of the time-of-day variation in CO₂ per kWh ratio. Similarly, future rates will probably change to reward residential charging during the day for the same reason. This will work for people who own garages where EVSE is not that hard to install, but studies have shown that EVSE will be very hard to install in multi-unit housing. The CA Air Resources Board (CARB) estimated that the additional cost over and above the EVSE to retrofit multi-unit housing is \$7-8,000 per station. Further, they project that:

“EV charging infrastructure provisions in the CALGreen Code will need to ramp up very quickly over the next two code cycles to meet 2030 climate goals.”

By generating the power via local carport-mounted solar arrays, expensive upgrades to the building electrical panel as well as to the utility transformers and grid could be avoided. This also raises the possibility of mutually beneficial financial arrangements between the landlord and tenants. The landlord could sell power during the day and buy it in the evening, including from cars that arrived from work.

Conclusion

We contend that far from requiring expensive grid upgrades, transportation electrification can be done in a way that benefits the grid at no cost to ratepayers. If the owners of parking lots are allowed to build solar arrays and sell electricity to the owners of EVs who park in their lots, then the EV owners will in effect provide both the storage and transmission capacity to bring that

energy to the locations where it is needed to overcome the shortage of power in the evening. Transportation electrification can not only be achieved without new utility owned infrastructure, but it will reduce the need for new infrastructure to support existing and future building loads.

Recommendations

We recommend that any Climate Action Plan incorporate measures to encourage local solar arrays especially over commercial parking lots. These can be a major source of energy for powering EVSE. Several measures are within the authority of local governments to enact these could include:

1. Exempting solar carports and EVSE from property tax
2. Expedited planning review
3. Reach codes requiring solar carports and EVSE in parking lots
4. Investing in solar carports and EVSE in parking lots for public buildings

Baxamusa, Murtaza

From: Derek Hofmann [REDACTED]
Sent: Monday, November 29, 2021 4:43 PM
To: Lueg, Zerocarbon
Subject: [External] RDF Draft Framework comments

Follow Up Flag: Follow up
Flag Status: Flagged

(I'm not sure if you received this through the web form, so here it is again in e-mail.)

Some of my comments below target the cities rather than the county, but I think the county and the cities should work together on decarbonizing the region.

First, to speed up adoption of EVs, prohibit internal combustion engines on managed freeway lanes. Only allow electric vehicles, and only do this on managed lanes, not HOV lanes, so it doesn't harm the poor.

Second, on congested surface streets such as Genesee Avenue and Mira Mesa Boulevard, convert one existing lane in each direction into a bus lane so buses can bypass traffic congestion, and create frequent, limited-stop bus service (BRT) to make buses faster than surrounding traffic. People won't drive when there's a faster way to get around, so this will encourage people to take the bus, lowering carbon emissions and reducing traffic congestion despite the loss of one lane. This surprising effect is called the "Downs–Thomson paradox."

Third, with fewer people driving during peak hours, give business owners complete freedom to decide how much parking to provide for their customers. As parking lots are converted into apartments and offices and stores, the reduced parking supply will further reduce VMT, and the additional apartments will help alleviate the housing crisis and bring more taxpayers and tax revenue into the city.

Derek Hofmann
[REDACTED]

December 3, 2021

Murtaza H. Baxamusa, PhD, AICP
Land Use and Environment Group
County of San Diego
San Diego, CA 92101

Re: District 1 comments on the draft Regional Decarbonization Framework

Dear Dr. Baxamusa,

On behalf of the Vice Chair's District 1 Office, thank you and the team that is working to create paths towards a Zero Carbon future. We submit the following comments on the draft Regional Decarbonization Framework (RDF) and look forward to the continued development of the RDF and the opportunities to provide input and elevating issues for District 1.

Chapter 1: Study Framework

For District 1 communities, equity is a key consideration, especially to those residents of the District considered underserved and most impacted by environmental and climate injustice. Unfortunately, District 1 suffers disproportionately and hosts the frontline communities from the impacts of climate change.

The framework should present options for how to structure and organize the various cross jurisdictional efforts towards decarbonization. The RDF should also include a section to discuss how any future recommended actions would align with the County of San Diego's other climate or environment plans.

Chapter 2: Geospatial Analysis of Renewable Energy Production

Understanding the different CPA Scenarios is valuable and we appreciate the pathways outlined. For District 1, it is extremely important to ensure that infill and rooftop solar is addressed from an environmental justice lens to ensure that the identified SB 535 Disadvantaged Communities and the County's identified Environmental Justice Communities in its Environmental Justice Element receive priority for implementation. Not only are these older communities, but they are lower income communities of color, making it a challenge for homeowners or renters to be able to finance rooftop solar, considering that for these communities, not only is the issue one of installing rooftop solar, but usually also having to do work on older roofs to ensure structural integrity, roof life/longevity, and any retrofit requirements with electrical panels. Implementation of rooftop solar as an early strategy can be implemented earlier and consideration should be made to workforce development and training programs that exist, such as Grid Alternatives. A streamline process for permitting across jurisdictions for this goal will also be key to facilitation.

Micro-grid development, together with battery storage facilities, is also another important Distributed Energy Resource that will not only provide economic and safety benefits to District 1, but should also continue to be connected to local labor and training opportunities.

The County has an opportunity to coordinate larger impact State funding requests or grant if it facilitates coordination across jurisdictions.

It would be important to understand how equity and environment/climate justice will play a role and important to develop metrics that consider ensuring adequate investments for disadvantaged communities as well as how concentrations of particular technologies will impact adjacent communities.

Finally, San Diego is a bi-national region and we would like to request consideration for analysis across other bi-national regions where alignment efforts might be presented. This is an opportunity for the San Diego-Tijuana region to also begin discussions. The current Federal Administration agenda is presenting additional support for addressing climate change. The North American Development Bank's Board of Directors recently presented a wider variety of infrastructure projects that connect to investment opportunities. San Diego is mentioned in their recent announcement on December 3, 2021 connected to energy storage. See: <https://www.nadb.org/news/nadb-to-invest-in-new-project-types-to-tackle-climate-change--promote-the-green-economy>

Vice-Chair Vargas has also commented on the need to include our military and their efforts, particular to District 1, encouraging continued collaboration and communication with the U.S. Navy on their future plans for Naval Base San Diego.

Chapter 3: Accelerating Deep Decarbonization in the Transportation Sector

This chapter presents some gaps that are not being addressed. Of concern is coordination with tribal governments and cross border traffic. The RDF should return with a scan of Federal government action or goals for addressing any cross-border opportunities. At the very least, identifying future legislative advocacy issues to be raised for San Diego as a bi-national region should be identified.

The San Diego Air Pollution Control District will be nominating the San Diego Border Communities as an AB 617 Community Air Protection Program "Implementation Community" for the development of a Community Emissions Reduction Plan in 2022. There has been research by Casa Familiar, a community non-profit organization in the San Ysidro community that collected air monitoring and vehicular cross-border wait time data that correlates air quality impacts with vehicles idling at the San Ysidro Port of Entry. This is an opportunity for the RDF to open bi-national dialogue and engagement in order to begin to identify opportunities for either reducing vehicular emissions, advocating for more efficient processing of vehicles at POEs, or identifying incentives for bi-national transportation sector proposals. Impacts from cross-border freight at Otay Mesa and the future East Otay Mesa Port of Entry are extremely important and are currently being dismissed by not including them. In 2019, SANDAG reported that at the Otay Mesa POE truck crossing, approximately 800,000 freight trucks crossed northbound at this port of entry.

(See: <https://www.sandag.org/index.asp?classid=19&projectid=451&fuseaction=projects.detail>)

There currently is no discussion of how these fleets will be addressed in order to reduce GHG emissions while the Governor's Executive Order N-79-20 is clear for all passenger, light, medium, and heavy-duty trucks sold in the State. We cannot ignore that strategies need to start to be discussed for our binational region and agree with setting and meeting aggressive (100%) fleet adoption targets. ZEV vehicle transition is important due to the significant impacts by the I-5 and I-805 freeways on District 1 communities, however, we recognize the need to advance VMT reduction efforts through significant investment in public transportation in order to make it a real option. Additionally, the SDAPCD currently co-chairs the San Diego-Tijuana Air Quality Task Force through the EPA's Border 2025 Program and this can be a space that advances bi-national collaboration.

District 1 hosts the majority of the original Blue Line Trolley and this section of the system has proven high ridership. If VMT reduction efforts are to be advanced in District 1, every effort should be made to provide improvements to the Blue Line beginning with the San Ysidro Multi-modal Transit Center in order to increase capacity and efficiency.

Chapter 4: Natural Climate Solutions and Other Land Use Considerations

We agree with the draft RDF on preventing emissions from land use change and with the blue carbon and sea level rise policy recommendations. District 1 encompasses a smaller portion of the County's Unincorporated Area and concerns revolve around the development of East Otay Mesa, and the Sweetwater community with the need for housing development and in particular affordable housing opportunities. We look forward to the RDF and the County facilitating and guiding all 18 cities in the county to set their own goals for dealing with the housing crisis and advancing land use policies that assist in meeting the housing crisis. Land use and transportation must be addressed together if the region is to avoid development in natural lands. We recommend reaching out to the Tijuana River Valley Natural Estuarine Research Reserve staff and scientists to identify any best practices, ground based input, or guidelines for restoration of wetland habitat.

Increasing urban tree canopy is important for District 1 communities. The AB 617 Portside Community Emission Reduction Plan has identified this as an important urban greening strategy. We agree with the policy recommendations and encourage the RDF to identify opportunities for state funding where the County can collaborate with cities to advance these strategies.

Chapter 5: Decarbonization of Buildings

We encourage advancing sustainable and equitable electrification policies and incentives for building decarbonization and finding solutions for local labor and training opportunities. It is a priority for District 1 to advance a just transition for labor in other trades to not be left out and this is a space that we see has strong potential for job growth.

Chapter 6: Employment Impacts

Community stakeholders have shared with District 1 that there are concerns for ensuring a just transition of the labor force and trades. Vice-Chair Vargas has requested a comprehensive and coordinated regional strategy to address the workforce needs resulting for labor-market changes related to the RDF. We look forward to receiving the report on pathways to workforce development and green jobs and what climate related jobs, investments in work force and opportunities for low-income communities will be presented.

Chapter 7: Key Policy Considerations for the San Diego Region

We agree with the RDF's framework for regional governance that will provide the structure to respond to the needs of front-line communities, regional organization, incentives and mechanisms. We would reiterate the importance of including tribal governments and a bi-national table should also be introduced.

Chapter 8 – Local Policy Opportunity

We look forward to the analysis of the aggregate review of local Climate Action Plans. We would request that the analysis include identification of any environmental justice policies within the CAPs be highlighted. This will also provide information to the County's future Office of Environmental and Climate Justice.

Chapter 9 – San Diego as a Model

We would like to recommend that there be consideration for the messaging and access to residents of the County that might not be as informed about decarbonization and what it means for their day-to-day lives. It will be necessary for all San Diegans to understand the tremendous opportunity and responsibility that the policies, strategies and investments will mean for future generations living and working in the region. It has been expressed to our office from some community stakeholders that this is a very technical document that as well intentioned as it is, poses some challenges for community members to fully understand, and eventually to have all communities' support.

Thank you for the opportunity to provide input.

A handwritten signature in black ink, appearing to read "D. Flores". The signature is fluid and cursive, with a large initial "D" and a stylized "Flores".

David Flores
Sr. Policy Advisor on Land Use and Environmental Justice
Office of Vice Chair, Supervisor Nora Vargas



September 27, 2021

County Decarbonization Planning Team ZeroCarbon@sdcounty.ca.gov.

County Climate Action Plan Update Team CAP@sdcounty.ca.gov

Via Email

**RE: Escondido Neighbors (ENU) United Measures and Strategy recommendations
Decarbonization Plan (Plan) and County Climate Action Plan (CAP)**

Dear Zero Carbon and Climate Teams:

Escondido Neighbors United (ENU) deeply appreciates the new direction of the County of San Diego. The pivot of the County toward effective and timely climate action is nothing short of a dream come true and a much-needed boost to our efforts for future human survival.

There are many experts you have heard and much that is underway toward ending the worst effects of climate change. We know there are many organizations and experts providing comment on the larger issues of transportation, energy, water conservation etc... ENU offers these comments and suggestions in the attachment below to help increase effectiveness in the County unincorporated and influence in cities as it relates to nature-based climate solutions and engaging local communities.

The areas we seek to offer comments for your consideration relate to:

1. Land use measures,
2. Promotion of urban greening infrastructure
3. Growing urban forests
4. Cultivating Urban Agriculture
5. Increasing plant-based diets and
6. Effective community engagement

ENU appreciates all the vision and work that is being directed toward solving the most existential problem of our time. Please let us know how we can help you,

Sincerely,

Board Member

Escondido Neighbors United

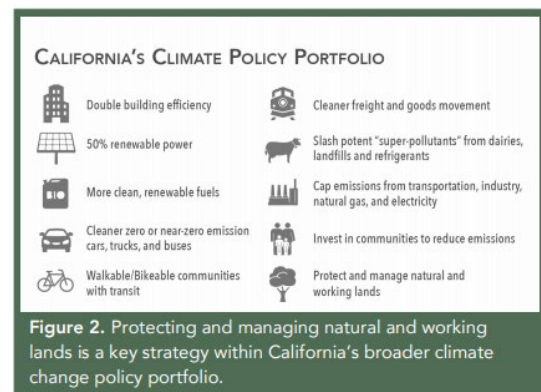
Escondido Neighbors (ENU) United Measures and Strategy recommendations Decarbonization Plan (Plan) and County Climate Action Plan (CAP)

A. Climate Protection and Decarbonization through Land Use Strategies and Measures.

Overview and potential for action to reduce or avoid GHG emissions.

Land use has a very significant impact on climate change. In the face of the climate crisis, it makes sense to ensure that we are building in areas that are already part of the urban footprint, avoiding conversion of natural areas, and restore those critical areas that can be restored. Each metric ton of GHG avoided is also the path to climate stability. Leaving native habitats can sequester 0.2 tons/acre/year. 1,100 acres will sequester 220 metric tons a year. [Luo et al Chaparral as Carbon Sink](#)

In recognition of this, the state has a priority to restore natural lands, protect agriculture lands, and reforest riparian areas and has many funding opportunities for this. It is one of the major categories of California's Climate Policy. [Ca Natural and Working Lands Climate Change Implementation Plan.](#)



Agricultural lands are also important areas to ensure we avoid conversion to other, more impactful, types of land uses.

1. Provide Permanent Conservation of Natural, Working Lands (Ag) and Open Space.

Measures to address this issue should include:

- Define and execute a comprehensive policy and plan to conserve key natural habitat areas, open space, and agricultural lands. These plans may include NCCPs, zoning, protected stream buffers and defined restoration, and collaborative agreements such as conservation easements. Conservation of specific lands and open spaces can also be achieved through direct land acquisition, management, monitoring, and restoration of degraded habitat or channelized streams.
- County takes lead on the acquisition of land to be conserved as open space or natural areas.
- County vigorously defends against open space and habitat lands targeted by sprawl development through annexation or other mechanism.
- Develop a proactive initiative with conservation partner NGOs, Natural Resource Agencies, and landowners to ensure the purchase for critical habitat and restoration of

the properties listed in the 30 x 30 comment letter of Sierra Club and other organizations.

- e. Advocate at SANDAG, or independently establish, the Regional Conservation Funding Source promised in the 90's so that adequate funds are committed for acquisition, management, and monitoring of open space and habitat lands.

2. Targeted removal of invasive grasses and improve natural carbon sinks

Measures should be adopted to follow through and adopt a proactive Native Plants ordinance and Sustainable Development Codes for Vegetation Protection Areas

<https://sustainablecitycode.org/brief/vegetation-protection-areas-8/>

Further, allowing invasive, fire-prone grasses to invade a natural habitat increases fire risks and reduces carbon sequestration success. [Invasive grasses reduce carbon storage](#). Depending on the type land conserved or restored, there are many potential co-benefits. More habitat, cleaner water, more food, more parks, more opportunities for residents to be in nature.

Identifying open spaces, natural and working lands for protection near highly impacted. Underserved neighborhoods is also a priority for the [state and funding is provided for such projects](#). See more on this point below in our urban greening recommendations.

The [Bending the Curve: 10 scalable solutions for carbon neutrality and climate stability](#), University of South California has outlined actions around Natural and Managed Ecosystem Solutions including regeneration of damaged natural ecosystem and restoration of soil organic carbon to improve natural sinks for carbon. (p 20)

This is also relevant in places like the San Pasqual Groundwater Basin, invasives plants need to be removed for ecological and water conservation reasons. Another great joint opportunity with other municipalities and partners.

3. Develop a robust program to restore riparian corridors and habitats as these can also sequester carbon, starting in urban heat-island environments.

One study demonstrates that per km of restoration over 4,000 tons of carbon is sequestered. This is equivalent to emissions from 3,400 cars or 1,400 homes. Further, the network of concreted and subjugated urban creeks and streams needs re-engineering. Certainly, we can do better for the water, planet, and people than this treatment of a small creek.

The Decarbonization plan could re-imagine this as a soft-bottom, engineered creek with modified and planted banks, surrounded by native plants and shade trees instead of ice-plant.



4. Stop building in high-risk fire zones and oppose all efforts to annex open spaces out of the County.

Measures should be added to prevent carbon losses and GHG from fires through fire prevention through prohibition of building in high fire-risk areas. It is well-known that wildfire is a huge source of carbon emissions and human activity resulting in accidental ignitions is the largest cause of wildfire.

Fighting wildfires in the United States costs billions of dollars annually. Public dialog and ongoing research have focused on increasing wildfire risk because of climate warming, overlooking the direct role that people play in accidental ignitions of wildfires. Reducing sprawl and expansion of the urban/wildlife interface can address this issue significantly.

5. Facilitate research and implementation of effective benefits of carbon farming

Carbon farming or regenerative agriculture can reverse climate change within our lifetime. Some data sources show that if implemented on a larger scale than currently practiced, regenerative agriculture — from tropical home gardens to temperate permaculture — could draw down [more than 100 billion tons of carbon into the soil](#). This purports to equal to 367 billion tons of carbon dioxide (CO₂). Climate scientists report that to reverse the disastrous course we're now on, we need to draw down an estimated 200 billion metric tons of CO₂.

Not only can carbon farming sequester great quantities of carbon currently in the atmosphere, it also offers resilience in the face of drought and flooding. Bringing carbon into soil builds soil organic matter, which improves the soil's ability to capture water. This can help prevent runoff during floods and increase water retention during times of drought. According to one source, for every 21 tons of carbon sequestered per hectare (2.5 acres), soil organic matter goes up about one percent, which in turn increases the soil's ability to hold water by 25,000 gallons.

Because it involves high levels of on-farm biodiversity, regenerative carbon farming produces lucrative combinations of food, fiber, building materials and biofuel. It also protects water resources, pollinators and wildlife habitat, and improves soil quality and productivity.

B. Promote Urban Greening Infrastructure and Growing Urban Forests

Greening our current urban footprint is key to human and ecological health and survivability of our region. An excellent effort on this front was [attempted by the Escondido Planning Commission](#) (Meeting at Item 15). Although re-buffed by a majority of the Escondido City Council, the County should take this good start and implement it in the Decarbonization and Climate Action Plans.

Like concrete infrastructure, green infrastructure needs the same kind of planning and funding. We must ensure our existing cities work for all people and are increasingly liveable and healthful places to raise a family.

A green infrastructure plan, like a network of streets or sewers, will be most effective when it is easily accessed by all who need it, is connected, well-planned and funded.

In addition to avoiding emissions and sequestering carbon, green spaces can provide important health and equity benefits to most vulnerable communities to climate change.

Parks, trails, community gardens, and other urban green spaces serve as fundamental building blocks to create health, vibrant communities. ...Park equity--fair and just access to parks and green spaces that are safe, adequately staffed, and well programmed—promotes and protects health by providing people of all ages and abilities opportunities for physical activity, time in nature, social connection, and respite. Parks and green spaces also have climate benefits: they cleanse air, remove pollution, cool temperatures, and filter stormwater.

--excerpted from <https://www.preventioninstitute.org/blog/why-we-need-park-equity>

Urban restoration of green spaces is a multi-benefit action and many effort are underway which should be supported and others initiated. In North County the San Marcos Creek project and the Escondido Creek- Reveal the Creek projects deserve support where they intersect in vulnerable communities and can address climate issues.

End Extinction San Diego, a project of the Zoo worked to elevate awareness of pollinators and Monarch butterflies by encouraging residents to plant native milkweed and other pollination friendly plants to support our insects within the city. Native plant gardens can support birds, insects, small mammals within the urban environment and contribute to resilience of the region and sequester carbon.

There are several measures that should be adopted to implement decarbonization through Urban Greening.

1. Develop and offer the expertise to cities on how they can develop their own green infrastructure plan and help them funds the planning aspects of it.
2. Support city efforts to increase tree canopy and urban forests. Assist them in planning and implementation of Tree Canopy Plan assigning highest priority to low equity residential neighborhoods and fund urban forest improvements there.
3. Provide a template planning and ordinances to facilitate street tree plantings.
4. Facilitate replacement of invasive palm and other species with more appropriate shade tree species in cities and remove them in County Parks such as was done in Felicita Park. Sample ordinances can be found here. <http://sustainablecitycode.org/brief/require-native-trees-and-removal-of-invasive-trees-4/>

C. Land Use: Cultivating Urban Agriculture and Increase Plant-Based Diets

Deployment of resources for individual and community food gardens can address many issues at once, particularly in neighborhoods that are food deserts while sequestering carbon.

1. Plan should be creative about “Urban Ag” programs.

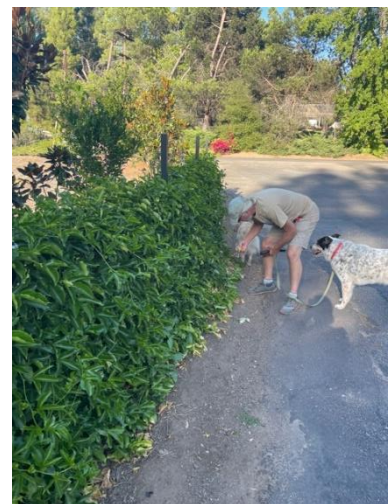
A movement to bring agriculture into the cities and already developed neighborhoods is also an action that could be promoted in the city. A great organization working on this issue is the [San Diego Food System Alliance](#). The value of urban agriculture is not just about the food. In reality, few, if any, urban agriculture projects are intended to replace traditional food retail or would claim to lead to food self-sufficiency for individuals or for cities and a measure of carbon emission reduction.

Urban farms and community gardens also have many co-benefits. They supplement household, community and municipal food security with seasonal and culturally-appropriate foods. They also build social capital, gather communities, catalyze civic engagement, and perform ecosystem services.

Another important initiative of the SDFSA is the preparation of a San Diego County [Food Vision 2030](#). This would be a fruitful effort for the County to be involved in.

Urban Garden Measures:

1. Develop a Climate Victory Garden program replicable throughout the County.
2. Develop a Local Food map or other communications program for County residents.
3. Set a goal and metric for urban agriculture activities.
4. Adopt and "Urban Agriculture Incentive Zone (UAIZ) program to offer a property tax incentive to encourage urban ag in cities.
5. Develop a program, like Good Neighbor Gardens, that gets residents growing and sharing food, in their local neighborhoods.
6. Develop neighborhood and individual ‘resilience’ recommendations.
7. Engagement in the Food Security 2030 Vision could also help focus on resiliency and future stability of our community.
8. County should create a staffed working group to evaluate resources and develop a plan to increase food security, reduce climate emissions, and improve health for the city and environs.
9. Expand community gardens on public and private lands including school campuses, City lands, and church properties.
10. Support urban tree food programs of such advocates as Tree by Tree, and the Eugene Tree Foundation (now Friends of Trees).
11. The County should encourage and fully support the local Farmer’s Markets in the region to promote more consumption of locally grown foods which have the lowest carbon footprint.



A neighborhood passionfruit vine along local byway for sharing. Plantings like this one can be expanded into every neighborhood

2. Promote Plant-Based Eating

While not always popular, the fact remains that a plant-based diet can be healthier for people and better for the planet.

Reduced Emissions and Resource Use with Plant-Based Diets

Numerous studies document the beneficial role of plant-based diets in reducing greenhouse gas emissions, resource consumption, and environmental degradation. While this area of research is evolving, studies generally find that plant-based foods (with some exceptions) require less energy to produce and generate fewer greenhouse gas emissions than animal foods. Plant-based diets result in 0.8 ton/year annual emissions reduction compared to those who frequently eat a meat in their diet. Using this number and Escondido as an example, even a modest goal of 50,000 Escondido residents reducing their meat consumption by 50% could achieve a 20,000 ton reduction annually. In addition, there are many things the County can do to increase local food security on a residential and 'uber' local level.

Create a Network of Climate Victory Gardens

As part of the WWI and WWII war efforts, the nation rallied to feed their communities at home and support troops overseas by planting Victory Gardens. To many this might seem a trivial effort. How much can a few gardeners grow? By 1944 nearly 20 million victory gardens produced 8 million tons of food, equaling about 40% of the fresh fruits and vegetables consumed in the US at the time.

We are once again in the position where we, as everyday residents, have the opportunity to use our gardens as a force for change. Instead of gardening in support of war efforts, we are called to garden to fight climate change. Shifting garden practices towards principles of regenerative agriculture can be a meaningful part of reversing climate change and sequestering carbon out of the atmosphere and back into the soil.

An effort like [Green America's Climate Victory Garden Campaign](#) is one we could amplify in neighborhoods and under-used urban lots.

Plant-Based Diet Measures

We request that the decarbonization plan and CAP include an assessment of potential actions related to reducing emissions by promotion of a more plant-based diet.

1. Develop template programs and materials on 'climate-friendly diets' for residents and the County can determine its own behavior and purchasing actions in what could be measurable and enforceable actions.
2. Climate planners pursue the recommendations contained in the report *MEAT OF THE MATTER: A Municipal Guide to Climate-Friendly Food Purchasing*, as a basis for recommendations for other entities to adopt.
3. The County should provide pathways for institutional procurement of local produce that would facilitate investment in local plant-based farms and offer farm microloans, tax-incentives, and grants.

4. Plan should propose requirements or incentives for institutional adoption of a minimum number of fully plant-based meals at government meetings, hospitals, schools, universities
5. The County Live-Well programs develop a climate and public health campaign to encourage more plant-based, whole foods eating in the region.
6. Implement a “Buy climate-friendly first” food purchasing policy for public institutions including city and county governments, schools, and hospitals
7. Develop an updated regional emergency food distribution plan that accounts for climate- and energy-based disruptions. The level of need for such a plan will be made clear by conducting a vulnerability assessment.
8. The County should encourage and fully support the local Farmer’s Markets in the region to promote more consumption of locally grown foods which have the lowest carbon footprint.
9. Climate-friendly menus (locally-sourced, plant-based) or options should be served at all County and County sponsored events with educational materials to accompany them.
10. County should include measures to create an *Eat a Climate-Friendly Diet* working group and partner with local vegan and plant-based groups, farmers, & businesses have expertise to share and offer tax-incentives to restaurants where 50% or more of the menu offerings are plant based.
11. The County should include measures to increase suitable agriculture reserve lands suitable for produce farming and create urban agricultural zones to put vacant parcels into produce food production in urban areas.
12. The County should partner with organizations that support produce farmers and help them sell locally. Groups like San Diego Food System Alliance, California Food Link, and the San Diego New Farmers Guild would be good partners.
13. The County could investigate programs to incentivize food technology industry to develop plant-based and cellular agriculture alternatives to animal products and promote as an industry sector.

D. Effective community engagement

There should be a high priority in engaging equity communities, BIPOC communities, and those living in high-impact, low-resourced areas. The Plan and the CAP should pursue the following actions.

1. Analyze action plans in terms of Procedural equity, distributional equity, and structural equity to address impacts and solutions in equity communities. A great outline of this can be found in the excellent “[Theory of Change](#)” from the [Prevention Institute](#) which describes the need and provide a roadmap to the serious progress we need.
2. Develop and fund a cadre of climate organizers throughout the County and in municipal and tribal areas where vulnerability and exposures and impacts are the most severe.
 - a. Development of a template Energy Equity Program for cities and tribes to implement and fund those cities that adopt it. An Equity Program could include:
 - b. Identifying homes and businesses in priority neighborhoods for solar, electric vehicle infrastructure, electric vehicles, and electric bike deployment.

- c. Working with homeowners and landlords, develop and fund an existing building retrofit program to significantly improve the energy efficiency and healthfulness of older housing stock.
 - d. Methodically change out natural gas appliances, particularly stoves, which pose in-home inhaled health risks.
- 3. Provide partnership grants with existing environmental and climate justice and equity organizations to assist with outreach development and assist in dissemination of information and program opportunities.
- 4. Convene regular, public listening sessions and accountability check points to develop and refine outreach program.
- 5. Focus solar & energy efficiency programs in neighborhoods that are traditionally left out of redevelopment & improvement and promote community solar projects.

Baxamusa, Murtaza

From: Tyla Soylu [REDACTED]
Sent: Friday, December 3, 2021 10:28 AM
To: Lueg, Zerocarbon
Subject: [External] Comments on Draft Framework

Follow Up Flag: Follow up
Flag Status: Flagged

Hello,

I read the chapter *Natural Climate Solutions and Other Land Use Considerations* out of interest to learn how your authors analyzed and incorporated the idea of Healthy Soils into the framework. As concluded, it's complicated. I do not have the time to develop detailed comments with reference and citations though I wanted to submit a higher level comment.

SB 1383 requires jurisdictions to procure recovered organic waste products such as compost and mulch. Several jurisdictions are already stating they will be required to procure more product than they know what to do with. To me, the obvious solution seems to be to return these products to our agricultural soils, and it can be the urban areas subsidizing the cost of this material as well as transport to the rural areas where these products can provide benefit. And not only to rural or agricultural areas, but open space, parks and recreation areas, and in restoration areas.

The logistics of moving compost and mulch to agricultural areas is simply going to be complicated due to our network of several thousands of small farms, and lots and lots of compost and mulch to be distributed to the far reaches of our County. The 2019 San Diego Compost and Mulch Markets Study concluded that we will have too much compost and mulch and not enough markets once SB 1383 is implemented. The study intentionally did not identify farms as significant potential compost and mulch buyers/users because the incredibly large lift that would be required to develop incentives, subsidies and coordinate logistics was just not seen as feasible at that time. But, if the region is serious and implementing carbon solutions, then certainly the agricultural community and our rural areas presents a huge opportunity. Also, farms need to be empowered to produce their own compost. Current zoning regulations effectively prohibit farms from composting meaningful volumes, which in turn prevents them from empowering themselves as being part of the carbon solution. A farm should not have to procure urban compost to participate, when they could be creating the compost themselves. This is especially true if there are concerns about nutrients in compost and which types of composts those nutrients are more likely to be found.

We also need to apply these products in urban areas, incorporate their use into construction BMPs, final land cover and landscaping, roadside projects and erosion control, urban soil amendments, etc. I wonder what the findings would be if such an opportunity analysis were to be completed for the urban areas, rather than assuming healthy soils is an agricultural issue.

The report covers the various healthy soils practices that result in carbon benefits. In the broader context, achieving and maintaining healthy soils will provide these carbon benefits and the report should make this more prominent. Healthy soils as a carbon strategy must become default policy for all areas of the region, which means a variety of sub-strategies dependent on the land use. City-specific CAPS have not given the attention this deserves. Unfortunately, the draft Framework also misses this opportunity. Rather, a Regional Framework should include recommendation for a Healthy Soils policy, as this is a regional issue. Such a policy will also help in our region's successful implementation of SB 1383 and support local compost and mulch markets. If funding and studies are needed in order to quantify the benefits specific to our local conditions, then please make prominent that these are necessary next steps in implementing the policy. We need the pilot programs and demonstrations to develop case studies, success stories and to normalize healthy soils practices.

As far as carbon accounting, is it being considered in the context of healthy soils, that development projects and other land disturbance projects take into consideration the pre and post project soil carbon and soil health? Thereby the post-project condition must incorporate healthy soils measures that will match or exceed the pre-project condition. Also, rather the development projects and industries buying carbon credits to benefit some forestry reserve in some other county or state, what if the carbon mitigation were required to be applied locally via restoration projects or subsidizing healthy soils practices at our farms? This could be an opportunity to support our compost and mulch markets as well.

Thanks for the opportunity to comment.

Tyla Montgomery Soylu, PE, QSD



Ekolojik, Inc.

IBEW 569 Position on

San Diego Regional Decarbonization Framework & Electrification

IBEW Local 569 represents 3,700 electricians, power professionals and working families in San Diego and Imperial Counties, and our Union has been a long-time proponent of a clean energy future - locally and statewide. We strongly support reaching zero-carbon emissions by 2035 if doing so is intertwined with the creation of good middle-class jobs and labor principles inclusive of prevailing wages, electrical state certification requirements, and employment of a skilled and trained local workforce using policy mechanisms to enforce these.

IBEW 569 RECOMMENDED DECARBONIZATION ACTION ITEMS AND POLICY PRIORITIES

The San Diego County draft Regional Decarbonization Framework should be amended to:

- Apply an emphasis throughout the report on the creation of good union jobs with family supporting wages, family healthcare, and retirement benefits.
- Include public policies that address and achieve a just transition and quality career pathways for those working in the fossil fuel industry;
- Require EVITP certifications to install and maintain EV infrastructure throughout the County;
- Require Prevailing Wages on all construction, operations, and maintenance work associated with decarbonization;
- Require use of a Skilled and Trained workforce, thereby bolstering the pipeline of apprenticeship programs;
- Require Community Benefit Agreements with local hire, community outreach, and apprenticeship;
- Require procurement of renewable energy generated within California as defined by California law in the Public Utilities Code as Category 1;
- Emphasize and prioritize communities of concern for development of mobility hubs and good decarbonization careers and training;

The San Diego County draft Regional Decarbonization Framework (RDF) states, “the costs of a just transition will be much lower if the transition is able to proceed steadily rather than through a series of episodes.” One such hurdle to achieving steady progress on decarbonization is the potential displacement of workers or loss of jobs in the fossil fuel industry. As such, IBEW 569 strongly advocates for public policies that address and achieve just transition and quality career pathways for those working in the fossil fuel industry.

The UC Berkeley Center for Labor Research and Education issued a report titled “Putting California on the High Road - Jobs and Climate Action Plan” in 2020 and it aligns well with IBEW 569 priorities and values. The Forward states:

“California can achieve greater social equity in labor market outcomes for disadvantaged workers and communities when policymakers pay attention to job quality. Identifying high-quality careers (i.e., ones that offer family-supporting wages, employer-provided benefits, worker voice, and opportunities for advancement) first, and then building pathways up and into such careers, is critical to ensuring that investments in workforce education and training meaningfully improve workers’ economic mobility.” And “deliberate policy interventions are necessary in order to advance job quality and social equity as California transitions to a carbon neutral economy.”

According to the RDF, “between 2021 – 2030, the regional decarbonization pathway would generate an average of nearly 27,000 jobs per year in the San Diego region” and we must ensure this job creation results in good union jobs for local workers with good wages and quality healthcare and retirement benefits. Additionally, decarbonization jobs policy should prioritize low- and medium-income communities of concern to offer opportunities in green careers, apprenticeship education and lifelong training. County policies and outcomes should also reduce sprawl and prioritize in-fill development in urban areas near transit and mobility hubs – thereby generating good transportation options and healthier air to breathe, while reducing traffic and shortening time workers spend away from their families commuting

from home to job sites. This would help to put the families of the San Diego region on an upward pathway to a better quality of life. Implementing actionable policies is the key to achieving this in an equitable manner.

To reach decarbonization, we must also ensure we are procuring renewable energy generated within California from solar, wind, geothermal, hydroelectric, and tidal as defined by California law in the Public Utilities Code as Category 1. Including the use of energy storage with Battery Energy Storage Systems (BESS). Building and generating renewable energy locally will create good green local jobs through the expanded use of prevailing wages and Project Labor Agreements / Community Workforce or Benefits Agreements (see [CommunityHiring.net](https://communityhiring.net) and cabuildingtrades.org/issue/project-labor-agreements for additional details on such policies and agreements). These Agreements should include local hiring for prioritized projects, programs, and actions to reduce emissions in disadvantaged communities that rank in the top 25 percent of CalEnviroScreen's ranking for San Diego regional communities.

Additionally, the further build out and construction of electric vehicle charging stations must require employment of California Certified Electricians with EVITP Certification. The A2Z Regional Gap Analysis states "existing programs such as EVITP should be continually promoted to get installers the baseline training they will need to install ZEV fueling infrastructure." We have a collective priority and mission to support High Road Jobs – and construction apprenticeship programs have a proven track record of taking the high road with excellent training and education, opportunities to earn while you learn, with professional certifications (like EVITP) and college credits that create lifelong middle-class career opportunities for apprentice graduates. The UC Berkeley report further expounds, "skill upgrades via certifications like the Electric Vehicle Infrastructure Training Program (EVITP), build upon certified electricians' foundational skills, rather than train for one specific technology as a one-off training. The EVITP curriculum was developed based on evidence of worker and public safety risk associated with the installation and maintenance of EV charging stations."

With industry partners, IBEW 569 owns and operates the San Diego and Imperial Electrical Training Centers which are State-Approved electrical apprenticeships with good wages, family healthcare, retirement benefits and college credits. Our apprenticeship and union recruit talent from the local community including high schools and veteran programs, and we have expanded our apprenticeship to serving more than 550 apprentices concurrently.

IBEW QUICK STATS IN SAN DIEGO AND IMPERIAL COUNTIES

- Constructed over 1,500 MW of solar and wind;
- Completed more than 10,000 rooftop solar installations on homes and businesses;
- Built over 550 MW of energy storage, including two of North America's largest projects;
- Installed hundreds of electric vehicle charging stations;
- Achieved 65% - 90% local hire for community residents on Imperial County renewable energy projects, thanks to Local Hire Agreements; and
- Operates largest certified electrical apprenticeship program in San Diego & Imperial Counties.

ATTACHMENT

For Item

#06

Wednesday,
November 17, 2021

PUBLIC COMMUNICATION RECEIVED BY THE
CLERK OF THE BOARD

DISTRIBUTED 11/16/2021

From: Cherry Diefenbach [REDACTED]
Sent: Tuesday, November 16, 2021 11:57 AM
To: FGG, Public Comment; Anderson, Joel; Lawson-Remer, Terra; Fletcher, Nathan (BOS); Vargas, Nora
Cc: Jeffrey Osborne; Katrina Westley; GREG CURRAN; jacari cousins; Kazmer, Gregory
Subject: [External] JCSG Comments on the draft Regional Decarbonization Framework, Agenda item 6, BOS hearing on November 17, 2021
Attachments: JCSG comments on the RDF, BOS hearing Nov. 17, 2021.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

Hi Andrew

Please ensure the attached JCSG comments on the draft regional decarbonization framework are included in the BOS board packets and that they are part of the official BOS record.

Thanks in advance for your help.

Cherry Diefenbach
Chair, JCSG
[REDACTED]

JACUMBA COMMUNITY SPONSOR GROUP (JCSG)

November 16, 2021

From: Chair, JCSG: Cherry Diefenbach [REDACTED]

To: Supervisors Anderson, Desmond, Fletcher, Lawson-Remer, and Vargas via publiccomment@sdcounty.ca.gov

Subj: Update on the Regional Decarbonization Framework (RDF), Agenda Item 6 for BOS Hearing on November 17, 2021

Dear Supervisors,

On October 11, 2021, the JCSG authorized me, as Chair, to submit initial comments on the 332-pg draft Regional Decarbonization Framework (RDF) which uses some problematic assumptions to develop five "technically and economically feasible" energy pathways that could lead to net-zero carbon emissions.

"All planned and permitted solar sites in San Diego County will be constructed and that (electrical) storage will meet intermittency demands." (pg. 46) The BOS is currently receiving pushback from communities where renewable energy facilities have been approved.

"Cost is the most important criteria for site selection." (pg. 46) When will social equity and environmental justice figure into site selection?

"Geothermal supply in Imperial County is shared with San Diego in an amount equivalent to the ratio of their combined population." (pg. 46) Are mutual agreements in place to support this?

"No offshore wind." (pg. 46) This seems to be in conflict with the RDF's recommendation on pg. 221 to *"accelerate the leasing development of offshore wind areas."* All means of renewable energy generation should be considered when seeking to attain net-carbon zero. A diverse energy portfolio that includes clean nuclear power will provide better grid reliability and will be essential to meet the electrical demands of a net zero carbon future.

"Winter climate in the populated regions of San Diego County is very moderate, so there is little need for backup heat." (pg. 132) A number of rural communities: Boulevard, Jacumba, Descanso, Campo, Julian, etc., routinely experience freezing temperatures and winter snow.

"Broadband access now extends to the most remote parts of the world and the COVID-19 crisis encourages professionals to adapt to a virtual workplace." (pg. 238) However, it is not currently available in some of our rural communities such as Boulevard, Descanso, and Guatay.

"It is taken as a given based on past modeling exercises, that CA reaching net-zero in 2045 is both possible and can be done at manageable cost..." (pg. 7) RDF Table 5.5 shows a comparative installation cost analysis for heat pump water heaters which appear to be twice as expensive as existing gas heaters. The final RDF plan should include a table which compares actual monthly heating costs of them.

"To approach 100% reliance on zero carbon resources may also depend on the willingness of end users to adapt their energy use to smooth demand peaks." (pg.24) San Diego County (and the State) already face energy shortages with during hot summer months. Will electrical power supplies become less reliable under a net-zero energy grid?

The draft RDF also includes a number of cautionary statements about its implementation.

"The right pathway for the decarbonization of the San Diego region is at this moment, impossible to know..." (pg. 7)

"Pathways are not forecasts of what will happen." (pg.8)

"Details of the modeling analyses and the implications are subject to change before the (RDF) work is finalized in February 2022." (pg. 10)

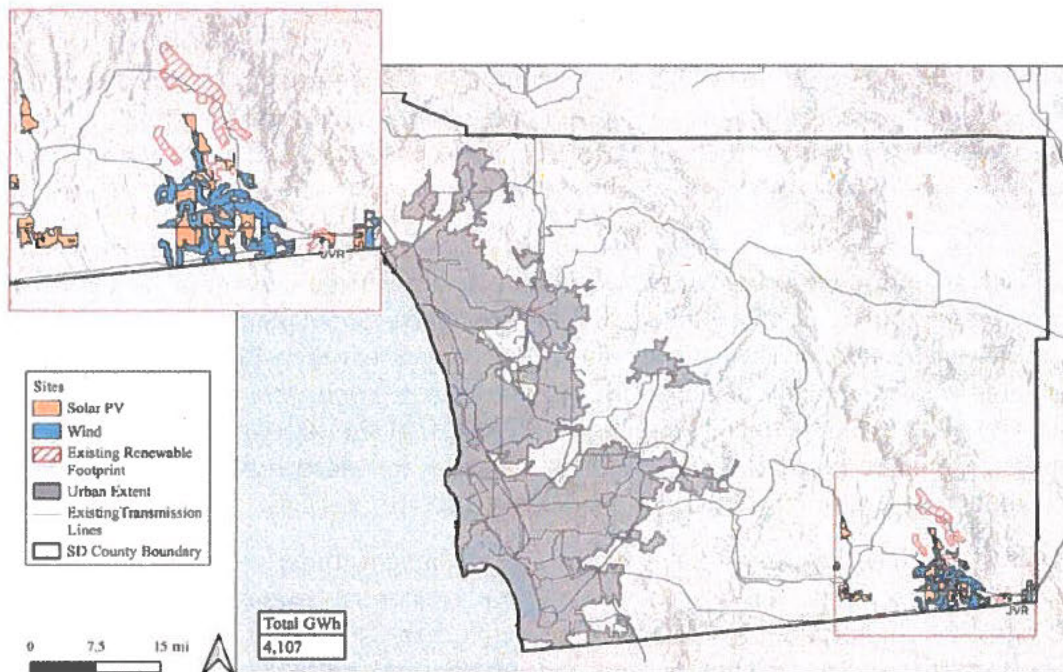
With those statements in mind, County Supervisors must "choose wisely" before rushing to direct PDS Staff to develop a multitude of ordinances that would support the Green House Gas (GHG) reduction pathways taken from a draft plan that could make our county one of the most restrictive and over-regulated counties in the State. The RDF states on pg. 222: "San Diego represents a tiny fraction of global emissions (thought to be to be less than .08 percent) and its real impact could be influencing the climate policies of other regions of the country and beyond." That premise seems to be aspirational as best. Besides, our carbon reductions are easily offset by the unregulated emissions that come from Mexico or from the carbon that is released by huge wildfires.

However, that does not mean our region should not continue to seek reasonable pathways that would support GHG reductions. However, the BOS must recognize that some of the solutions for doing so will prove to be quite expensive for local residents and businesses still trying to recover from the lingering effects of the COVID pandemic. While it may be reasonable to require that new residential and commercial building codes reflect a move away from the use of natural gas, the RDF acknowledges the electrification of existing buildings will be costly and impractical in many cases. For example, local ordinances that might restrict the use of wood-burning stoves/fireplaces, propane heaters/stoves will negatively affect poor rural residents who are living in older houses. Those residents may also be living on small fixed incomes and they are likely to be unable to afford the costs of replacing working appliances/heating systems with more expensive electrical ones, let alone installing an expensive electric vehicle (EV) charger. Additionally, older homes may not be wired to accommodate the increased power demands of an all-electrical home with an EV charger. With much of the electrical power in the unincorporated areas in East County subject to frequent power outages during "Red Flag warnings," the continued use of alternate energy sources for residential and commercial properties will remain important for both heating and cooking. Will the BOS also demand that use of gasoline-powered emergency generators be restricted? Although San Diego has some of the finest weather in the nation, solar generators are not a viable replacement. Without a backup power source, backcountry residents who are dependent on wells, will also lose their ability to pump water.

The draft RDF presents a variety of renewable energy resource scenarios that could produce 100 percent of San Diego County's electrical demand in 2045. Some of these scenarios would require transmission system upgrades to share electrical and geothermal power generated in Imperial County. To meet the necessary electrical power demand predicted for 2045, this plan projects that new six new transmission lines need to be installed and two new 100-MW power facilities located in either San Diego or Imperial counties would need to be brought on-line each year.

California Executive Order B-55-18 directs the State to become net-zero by 2045, which will be challenging enough to achieve. The BOS does not need to surpass the State mandate and negatively impact the quality of life for residents just so the County can claim to be a “decarbonization leader.” In fact, the RDF actually states that for the decarbonization to be effective, cohesive policies at the federal, state, and local government levels are necessary. However, “if the county supervisors decide to constrain the net-zero timeline to 2035, then four new 100-MW clean power plants would be needed each year.” This simply will not be feasible unless the BOS intends to eliminate appropriate CEQA reviews.

Renewable energy candidate project areas, or CPAs, are defined within the draft RDF as “low-impact, high-quality areas for wind and solar development in San Diego and neighboring Imperial County.” Using a least cost scenario, CPA criteria identifies land of “low pecuniary value and that it is developable, likely to face fewer legal and social barriers.” (Translation: land that is cheap and next to poor rural residents without the political or financial means to effectively resist its placement.) Unfortunately, within San Diego County, this plan primarily focuses on the areas of Jacumba and Boulevard as the best future industrial-scale renewable energy generation areas or CPAs. (Figure 2.13 below shows the RDF’s 2025 CPAs for wind and solar facilities.)



RDF’s maps do not even label the rural communities which will be “swallowed up” by renewable energy projects. Where is the social equity in destroying the quality of life for the low-income residents of these two disadvantaged rural communities, by essentially declaring them to be “sacrifice zones for supplying the electrical needs of the urban areas?” ***Since the private property within the Jacumba and Boulevard areas will become worthless and unlivable for residents, why not just take the land by eminent domain, and call it done?***

County leaders must stop allowing renewable energy developers to target the “low hanging fruit”—like Jacumba, Boulevard, and other rural communities for the placement of their industrial facilities. It would be refreshing and unprecedented, if going forward, the go-to-solution for green energy production in the County did not come off the backs of rural residents and the rural environment which naturally sequesters GHGs. In the interests of social equity and a genuine concern for the climate, the BOS and city mayors should instead incentive (subsidize if necessary) point-of-use rooftop solar and battery storage systems for urban residential and business properties. Elected leaders should also prioritize infill solar and energy storage facility placement near the urban centers where the power will be utilized even if purchasing that land will cost more. It is only fair that everyone, especially wealthier city residents, also have “some skin in the renewable energy market,” since most of the renewable energy will be going to them.

The RDF further states, **“that in all scenarios, such a high reliance on intermittent renewables requires a need for reliability studies to quantify how much additional long and short duration energy storage, clean dispatchable power, and demand side management may be needed.”** The shift to renewable energy and decarbonization strategies should not be a question of whether the County can convince residents (or coerce them through higher energy costs) to limit their electrical usage during the evening hours when renewable energy resources are generally diminished. Nor should the transition to a net-zero future overlook the inherent reliability of clean nuclear power plants which require a much smaller footprint than solar and wind facilities. They could provide a reliability that is currently missing from the RDF’s near total reliance on solar and wind resources. County residents will not accept a power grid that has the reliability of one found in a third-world nation. Any path forward should have as its primary goal, the provision of plentiful and reliable power for residents.

Jacumba residents moved here to get away from urban congestion, over-reaching governmental regulations, and unaffordable home prices. With diverse population made up of 40 percent Spanish speakers who have an average annual income of less than \$30K, our village should be considered as a community of concern (COC), because it is one. As a recognized COC, the BOS should not allow Jacumba to be surrounded with industrial-size renewable energy projects. Also, as a COC, Jacumba could receive economic subsidies for electrification and receive priority placement of EV charging stations identified in the draft RDF policies.

We understand that the BOS will be moving ahead toward decarbonization. However, we request that privately-operated high-rise commercial and residential properties, government-owned buildings, schools, hospitals, shopping centers, and urban parking lots are retrofitted with solar and battery storage systems before thousands of acres of land that naturally sequesters GHGs next to rural communities like Jacumba is destroyed. Urban infill in areas like Otay Mesa should also be the cornerstone of an environmentally-sound regional decarbonization plan regardless of the cost of land.

Respectfully,

Cherry Diefenbach
Chair, JCSG

Mary M Yang, Ph.D,
Solana Beach, CA 92075

December 3rd, 2021

Re: San Diego County's Regional Decarbonization Framework

Dear Honorable County Supervisors,

I serve on the Climate Action Commission of the City of Solana Beach, on the Board of Climate Action Campaign, and previously on the Steering Committee of the original 2007 [San Diego Foundation Regional Focus 2050 Study](#) of climate change related impacts in the San Diego region.

I thank you for leading the effort to develop a framework for a regional zero carbon sustainability plan. I am also grateful to UCSD's GPS team, USD's EPIC and the many other consultants for taking on this challenging and important task. Given the urgent need to combat this climate crisis, fostering collaboration among local municipalities will minimize redundancies and enable our region to be more effective at keeping global warming to a minimum. Many strategies to tackle climate (e.g. transportation, renewable energy production ..), transcend city boundaries. Furthermore, as you know, most local jurisdictions have Climate Action Plans but lack the funding and resources to implement them. A regional collaborative is a good first step to pool resources and to facilitate access to funds on state or federal levels.

I have a few comments on the draft Regional Decarbonization Framework for your consideration.

Chapter 2 attempts to inform decision-making by candidate project areas (CPAs) using site-selection scenarios. Specifically, Scenario 1 is for low environmental impact. So that decision makers can be provided with a better understanding of how extremely precious our natural environment is, and to avoid citing energy production in these fragile areas, it's important to note that "San Diego is known as a biodiversity hotspot, containing greater diversity of life than any other county in the continental United States. It is also home to the greatest number of plant and animal species threatened with extinction anywhere in the country."
<https://earthdiscovery.org/Biodiversity-Conservation>

Chapter 2 includes a section on Infill and Rooftop Solar and refers to studies by Anders & Bialek and the Clean Coalition on the potential of non-residential rooftop solar. Following this, other references to rooftop solar in the chapter are unclear on whether non-residential, residential or both are under consideration.

P.23 stresses the need for future analyses of estimated rooftop solar in 2050 and refers to urban land growth projections in the US. Chap 5 cites numbers associated with residential and commercial units in San Diego and estimates that both are growing at 0.9%/yr. Recognizing that there may be a need to convert from units to surface square footage, discourse between authors of the two chapters may be able to derive future estimated rooftop solar sooner rather than later, which would be beneficial in the decision making process.

P29 states that low environmental impact CPAs include urban infill but not rooftop solar. I am curious as to why not? Rooftop solar also places electricity generation in urban areas where it is used, thus minimizing losses due to transmission, a variable which was not considered in CPA citings. Among other variables, transmission loss increases with distance and temperature.

P25 provides a short section describing options to bridge the timing difference related to the supply/generation of renewable energy and its demand. If carbon capture and storage (CSS) and green hydrogen are to be presented as options, more cautionary information should also be provided so that a more informed assessment of whether those options are feasible and over what time period can be made. For example, according to an [October 2021 article in the NY Times](#), the world's largest direct air capture device is only capable of extracting 4k metric tons/yr at a cost of \$600 - \$800/ton. To be a viable alternative, costs must drop and capacity increase substantially.

Chapter 2 appears to be missing an Appendix 1.

Chapter 5; Decarbonization of Buildings.

P135. I question the decision not to include panel upgrades in cost estimates. Many people, including myself have had to do panel upgrades as we electrify our homes in the San Diego region. Some people have tried to follow the [Watt diet](#) outlined by Redwood Energy to avoid a panel upgrade. But the effort is not without tradeoffs. San Jose, albeit in a somewhat different climate zone, also provided rebates for panel upgrades via their [Electrify San Jose](#) program.

P140; Other than a brief mention of indoor air quality, there are no references to the harmful health effects of gas stoves or air pollution from fuel combustion in buildings. It is important to include this information to recognize that better health is a valuable co-benefit of building decarbonization and electrification. A few references are provided below.

Weiwei Lin, Bert Brunekreef, & Ulrike Gehring, Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children, *International Journal of Epidemiology*, Volume 42, Issue 6, December 2013, Pages 1724

1737, <https://doi.org/10.1093/ije/dyt150>

This 2013 study showed that children who grow up in homes with gas stoves are 42% more likely to develop asthma than children who don't.

Yifang Zhu et al., April 2020. “Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California” UCLA Fielding School of Pub Health.

<https://coeh.ph.ucla.edu/effects-residential-gas-appliances-indoor-and-outdoor-air-quality-and-public-health-california>

Brady Seals and Andee Krasner, May 2020. “Health Effects from Gas Stove Pollution”, Rocky Mountain Institute, Physicians for Social Responsibility, Mothers Out Front, and Sierra Club, May 2020, <https://rmi.org/insight/gas-stoves-pollution-health/>

Jonathan J Buonocore et al., 2021. “A decade of the U.S. energy mix transitioning away from coal: historical reconstruction of the reductions in the public health burden of energy”, Harvard T.H. Chan School of Public Health, Environ. Res. Lett. 16 054030.

<https://iopscience.iop.org/article/10.1088/1748-9326/abe74c>

Examines the effects of burning different fuels and quantifies those impacts in terms of both early deaths and monetary cost in the United States. A blog and interactive map based on the study can be found on the RMI website. <https://rmi.org/uncovering-the-deadly-toll-of-air-pollution-from-buildings/>

P142 – Hydrogen-based fuels.

Hydrogen should not be presented as an option for heating or appliances in buildings. Stating that “There are no fundamental physical limits to the amount of “green” hydrogen that can be produced, so this energy carrier holds promise to meet combustion energy needs.” is also misleading. Below are some of the reasons why.

According to the 2020 DOE Hydrogen Strategy, hydrogen production via electrolysis in the USA accounts for a mere 1%, with the other 99% coming from steam methane reforming or coal gasification. Globally, production from electrolysis is only 4%.

The IEA estimates that meeting today’s hydrogen demand through water electrolysis would require 3,600 TWh a year, or more than the EU’s entire annual electricity production. (The Future of Hydrogen, 2019)

According to a 2020 McKinsey report, 97% of the hydrogen produced in the US today is already being used for petroleum refining, fertilizer and chemical production and metals processing. In addition to these existing demands, blending or replacing gas with hydrogen for buildings will also have to compete with more difficult to abate sectors such as long-haul transport or aviation.

Building out hydrogen infrastructure to include heating and cooking in buildings is risky, will cost time and effort and the development of new technologies. Appliances with more energy efficient, clean, healthy and other beneficial properties are already readily available now.

Please consider including some of the arguments in the recent Earth Justice publication [“SOLUTIONS RECLAIMING HYDROGEN FOR A RENEWABLE FUTURE”](#) and from

Van Renssen, S. The hydrogen solution?. Nat. Clim. Change. 10, 799–801 (2020).
<https://doi.org/10.1038/s41558-020-0891-0>

Furthermore, in the debate to use hydrogen to address climate change, what is often lost is that there are two ways that hydrogen is used as an energy source; one is in fuel cells and the other via combustion. The former generates water as a by-product and the latter which represents the majority of its planned use, produces harmful nitrogen oxides (NO_x), a pollutant in its own right and precursor to fine particulate matter and ozone. A warning and recent discussion can be found in;

Lewis, Alastair, 2021, "[Optimising air quality co-benefits in a hydrogen economy: a case for hydrogen-specific standards for NO_x emissions](#)", 10.1039/D1EA00037C, Environmental Science: Atmospheres

NO_x production can also disproportionately impact the urban poor.

Alastair Lewis, 2021, "[Pollution from hydrogen fuel could widen inequality](#)", Nature | Vol 595 | 15 July 2021 | p. 353.

Also, wrt to blue hydrogen and carbon capture and sequestration, this article highlights the carbon emissions from blue hydrogen.

Howarth & Jacobsen, 2021, [How green is blue hydrogen?](#) Energy Science & Engineering, Wiley, Volume9, Issue10, Pages 1676-1687.

Chapter 5 should also point out the following:

That natural gas is a fossil fuel which is predominantly methane. It's responsible for 40% of global warming since industrial times. It's 84x more potent a greenhouse gas, but only stays in the atmosphere for about 12 years as compared to CO₂ which can hang around for hundreds of years. **Many believe that cutting methane is the single biggest and fastest strategy for slowing down this Climate Emergency.** This statement is supported by the following:

A UN Global Methane Assessment was released earlier this year where it was identified that human-caused methane emissions can be reduced by 45% this decade. Such reductions would avoid nearly 0.3°C of global warming by 2045. Stopping methane leaks is identified as the single largest lever for delaying critical effects of climate crisis.

President Biden has promoted a Global Methane Pledge at COP26. This initiative aims to cut methane emissions by 30% by 2030. So far over 100 nations have joined.

The urgency to cut methane is more crucial than ever, since researchers have again found that estimates of leakage have been grossly underestimated. Emissions from urban gas pipelines and end-use emitters – such as household appliances and furnaces, account for up to 36% of all US methane emissions from fossil gas.

Sargent, MR et al, "Majority of US urban natural gas emissions unaccounted for in inventories" PNAS November 2, 2021; <https://doi.org/10.1073/pnas.2105804118>

The figure on page 5 of the [2020 Gas Index report](#) shows San Diego as in the top 25 of 71 cities evaluated for methane leaks.

Chapter 5 presents a good discussion on Gas Utility and Rate Impacts. As communities transition from gas to renewable electricity, efforts must be made to ensure a just transition so that workers and communities are not left behind. Labor policies that support a skilled and trained workforce need to be implemented and consideration must be made for those workers who may be put out of work by the transition. In the San Diego region, the Climate Equity Index should be applied.

Of related interest is a recent report by the Building Decarbonization Coalition and Common-Spark. The study provides a proposed framework for geographically-targeted electrification that prioritizes a state's more vulnerable populations. The Flipside Report outlines considerations around alternative gas utility business models and cost recovery, rate structures to ensure affordability for both electrified and remaining gas customers, rent and displacement protections, and a just transition for the gas workforce. More information can be found here: <https://www.buildingdecarb.org/blog/webinar-the-flipside-report>

It seems appropriate to include local advances in building decarbonization. Beginning with Carlsbad and [Encinitas](#), local municipalities are passing building electrification ordinances and applying for reach codes. In Solana Beach, it has been over 2 years since my first presentation on Building Electrification to our Climate Action Commission (CAC) in November 2019. However, on Nov 10th 2021 after much hard work from the CAC, City staff & Council, pro-bono consultants and local advocates, Solana Beach City Council voted unanimously on a building electrification ordinance which among other items, includes gas restrictions on significant remodels in addition to new construction, requirements for electrical rewiring for appliances and battery storage, EV for all buildings and PV requirements for commercial buildings. A second reading of the ordinance goes before [Council on Dec 8th](#). Local reach codes are an excellent example of collaborative effort among the region's stakeholders and may serve as an example to address some of the concerns in Chapter 7.

P165 –

In closing, the chapter rightly stresses the need to take action immediately. Building electrification is the most affordable and effective tool for reducing GHGs from our region's homes and buildings. Most importantly, it is an existing solution which can produce significant results right now.

Cutting methane is the single biggest and fastest strategy for slowing down warming. Reducing it's use can bring immediate benefits. This is a critical opportunity which cannot be missed.

Sincerely,
Mary M Yang, PhD

ZeroCarbon@SDCounty - Working Group

December 14, 2021

1600 Pacific Hwy, Room 212

San Diego, CA 92101

Re: Report dated October 2021, "San Diego Regional Decarbonization Framework"

My comments address the 2050 scenario objective, "to develop the necessary renewable resources that approach 100% of electricity demand by 2045," as stated in section 2.5 CONCLUSIONS and APPENDIX 2.D "List of Key Assumptions," in the San Diego Regional Decarbonization Framework (RDF) – draft. I am commenting because I think there is an implied REQUIREMENT for energy storage, the enormity of which should not be overlooked.

Assumptions in appendix 2.D relate to capacity factor. In electric power generation, capacity factor is determined on a yearly basis. It is calculated by dividing the actual electric energy generated (MWh) over the year by the theoretical energy that could be delivered at the 100% electric power generating capacity. That is as if the generators had operated full-time (8760 hours) at the rated capacity (MW). The RDF draft explains that energy storage is combined with the daily flow of renewable electric power to avoid "intermittency." BUT it does not explain how the energy storage is included, or how much solar energy must be stored to maintain grid stability on a daily basis.

If I am interpreting the objective properly, the amount of stored energy needed is quite large because the "renewable" processes (solar & wind) convey energy only about 1/3 of the time. Processes that include energy storage do not face this limitation. From figure A3, at the end of the RDF draft, about 2/3 of the present total installed electric power generating processes in California have an inherent "stored energy" capability. Energy flow from these sources is controlled in balance with the energy delivered to electric power users to maintain stable electric power. It appears that natural gas systems provide the major portion of this. Although the renewable capacity shown in fig. A3 is a much larger percentage by 2045, I do not see any proof of this being possible. Also, aren't there regions where solar expansion is curtailed until energy storage is provided? I've heard that was the case in Hawaii and it may be an impending problem in the Phoenix region.

I understand using a solar capacity factor of 100% in the RDF draft study model. But, I think it obscures the fact that facilities are needed to store excess solar energy and provide controlled transmission of electric power between storage and the grid. This is because renewable processes are not full-time, and because the availability of electric power is a full-time requirement. Without inclusion of storage, the plan of adding 200 MW of solar at an assumed 100% capacity factor each year until 2045 is ambiguous and veils the true cost of the plan.

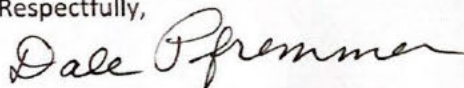
A method for renewable energy storage which is called pumped-hydro was reported recently in the San Diego Union Tribune (*City Seeking Partner to Build Hydro Energy Project, September 22, 2021*). I presume the Union Tribune is talking about the San Vicente project mentioned in the RDF. The

plan would be to use the San Vicente Reservoir for the purpose of storing energy. The stored energy is in the form of a second reservoir, at an elevation well above the current level of the reservoir. Although not specifically stated in the article this elevation can easily be determined from other information in the article to be five to six hundred feet. The estimated cost of this facility is \$1.5 billion. This facility could store energy from solar collectors during daily periods of excess solar energy availability.

The Union Tribune stated that the San Vicente facility was planned for operation in 2030. One would guess that for the region to be at full use of its planned expansion of solar capacity, the San Vicente facility would be needed much sooner. This facility could store about 2/3 of the daily solar energy supply after a four-year expansion of capacity at the planned rate (to 2026), and it would provide electricity during non-solar periods and allow grid stability management throughout the day. However, duplication of this strategy through to 2045 seems far-fetched and could make the concept of totally renewable electricity a "dead-end strategy." The RDF states that one of the purposes of the study is to eliminate dead-end strategies. If the energy storage required for renewable electricity were supplemented by high energy conventional sources, a better strategy for energy supply and grid stability could be achieved. Of the "zero-CO₂ emitting" energy sources mentioned in the RDF, it is likely that only nuclear could provide enough conventional stored energy at the power levels needed. The San Onofre Nuclear Generating Station (SONGS) demonstrated electric power generation from the massive energy storage capacity of nuclear fuel. I consider that experience quite applicable to the basic objective here.

In summary, I think renewable energy storage facilities and conventional stored energy will be required to support this decarbonization plan for the region's electricity.

Respectfully,



Dale Pfremmer

Encinitas, CA



Page	Chapter Number	Comment
15	Chapter 2	On page 15 there is an equation for solar output, but the assumptions that go into it are not explicit at the same location in a table. People who model solar power use the more common performance indicator of “KWh/KW” or “MWh/MW” to show the productivity assumption you are making.
49-78	Chapter 3	Overall, I agree with the approach of focusing on fuel switching (electrification) and VMT reductions for the majority of over-the-road vehicles to decrease GHGs. That said, as San Diego includes a variety of goods movement operations (Port of San Diego), distribution hubs in Otay Mesa, and over-the-border freight movement, there should also be discussion regarding this. I think there should be reference to CARB’s 2020 mobile source strategy (https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy) which outlines the State’s approach to reducing emissions from all mobile sources (both on-road and off-road).
57	Chapter 3	Text reads: <i>“For Heavy-Duty Trucks and Vehicles, emissions are forecasted to remain the same from 2025 onward.”</i> This does not seem to align with upcoming CARB regulations (nor future market trends). CARB is advancing important regulations focusing on goods movement and medium- to heavy-duty vehicles. These should be included in the analysis to showcase the downward trend in emissions from these vehicles. For example, the Advanced Clean Truck regulation (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks) was approved by CARB in 2020 focusing on manufacturer requirements to sell zero emissions vehicles in the medium- through heavy-duty sector. Furthermore, CARB is advancing the Advanced Clean Fleet regulation (https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets) which will require the conversion to zero emission vehicles for medium- to heavy-duty vehicles.
54 Table 3.2	Chapter 3	Support the incorporation of table 3.2 outlining the many goals and actions of the various cities with the county to reduce GHG emissions from transportation. The Port of San Diego recently approved a Maritime Clean Air Strategy outlining over 34 goals and objectives to reduce emissions from maritime-related operations and activities. Of significance are goals to achieve 100% zero emission heavy-duty truck trips to the marine cargo terminals by 2030; 100% conversion of the Port’s internal fleet of vehicles (not including all emergency vehicles) to zero emissions by 2030; 100% zero emission cargo handling equipment by 2030; increase use of shorepower for visiting ocean-going vessels; conversion of some vessel craft including some tug vessels, ferries, and excursion vessels to zero emissions throughout the decade as well. Although not officially published yet, this is important information that should at least be referenced to showcase the commitment to reduce emissions and promote Health Equity for All.
49-78	Chapter 3	Although passenger vehicles and other forms of on-road vehicles make up the largest sources of GHG emissions from transportation, there are other mobile sources that contribute to emissions of GHGs in the region which should be considered. For example, there are vessel craft such as ocean-going vessels, harbor craft, and pleasure craft that exist in San Diego that should be included in the analysis. There is also off-road mobile equipment which should be accounted for as well. For example, at the Port there is a variety of cargo handling equipment. There are a variety of strategies for decarbonization for these categories similar to what is presented in Chapter 3—such as fuel switching to zero emission tailpipe solutions. However, biogenic fuels should also be considered as these have low to negative carbon intensities (verified by CARB) such as renewable natural gas, renewable diesel, etc.

Page	Chapter Number	Comment
79	Chapter 4	Bullet 3 – if avoiding land use change is the most effective and inexpensive natural climate solution, then avoiding land use change should be feasible and desirable, specifically when land use changes could result in land carbon emissions that surpass the value of renewable energy infrastructure. This point contradicts paragraph 2 on page 80 and the first policy recommendation on page 95. Recommend prioritizing the siting of renewable energy infrastructure in areas that are already developed or currently provide little carbon storage/sequestration value.
80	Chapter 4	Under “Important Solutions” consider adding: create and restore both eelgrass and wetlands habitat, create kelp and shellfish habitats support aquaculture to create the shellfish and kelp habitat. Utilize nature-based solutions including reef structures to create shellfish, kelp and tidepool habitats. These habitats have multiple co-benefits. Additional working lands to include private residences – educate/ incentivize homeowners to plant plants to assist with sequestration.
84	Chapter 4	The draft framework highlights that the major habitat type in SD County is scrub and chapparral (Table 4.1) but global, national, and state mitigation efforts primarily focus on forest management and reforestation. The report says this warrants further consideration but doesn’t go into detail. This seems misaligned to consider reforestation in ecosystems that are not suited for reforestation. Similarly, Section 4 – page 88 – paragraph 2 – discusses how preventing land use change is highly effective and less costly compared to reforestation, especially since reforestation is inappropriate in most of the San Diego region. Scrub/chapparral restoration is not mentioned but is an appropriate restoration method that should be considered. This point is further supported by the total carbon storage and sequestration of scrub habitat in Table 4.2.
90	Chapter 4	The draft framework states that, per hectare, coastal wetlands store the most carbon of any ecosystem. Considering the storage potential of wetlands and the loss of wetlands habitats statewide over the past century (roughly 94% statewide) and in San Diego (31%, mentioned on page 100), wetland restoration and enhancement, specifically to prevent disturbance and degradation that can convert wetlands into net carbon sources, should be considered and/or prioritized as an important natural climate solution. It’s also not clear/easy to see the black polygons in Figure 4.4 that represent carbon sources and the map resolution isn’t high enough to see detail zoomed in. Consider an insert map of these specific areas.
Pages 91-93 Table 4.2 Figures 4.3 – 4.4	Chapter 4	The table and maps don’t include seagrass habitats and it’s mentioned on page 94 this is due to a lack of data. The Port can provide bay-wide acreage of eelgrass and estimates for carbon storage and sequestration calculated from carbon stock and sequestration estimates assessed in Newport and Mission Bay. The Port is currently collecting bay-wide eelgrass biomass and sediment samples to more accurately calculate carbon storage. The report will be completed in July 2022. The Port and Navy are also organizations supporting local research, specifically on blue carbon.
95	Chapter 4	Recommend supporting the evaluation and valuation of co-benefits, or ecosystem services, in natural climate solutions.
100	Chapter 4	This paragraph states that wetland acreage is likely to decrease into the future and is expensive to restore. It mentions the importance of preventing loss of wetlands but implies it’s not financially beneficial to restore wetland habitat because of high costs. This paragraph oversimplifies the value of carbon stored in degraded

Page	Chapter Number	Comment
		wetlands that could benefit from restoration. Also, estimates of blue carbon storage in the San Diego region lacks in situ data to accurately assess storage and sequestration. There are also significant and unique co-benefits associated with wetlands. It seems premature to recommend the region apply restoration funds to other natural climate solutions instead of wetlands based on cost and sequestration rates alone.
103	Chapter 4	One solution to loss of wetlands is to raise the elevations of the wetlands by adding sediment.
103-104	Chapter 4	Investment in other natural climate solutions to offset anticipated losses of blue carbon ecosystems should caveat the loss of unique ecosystem services/co-benefits that blue carbon ecosystems provide. These cannot be replaced by other natural climate solutions.
104	Chapter 4	The Port's Bay-wide Eelgrass Blue Carbon Study will also model sea level rise impacts to carbon storage. The report will be completed in July 2022.
207	Chapter 7	The text states "...the fragmentation within the region can facilitate competitive pressure that increases the likelihood of policy innovation among the many cities. ⁹ For example, the City of San Diego was the first city in the region to develop a Climate Action Plan in 2015." I believe the City of Chula Vista developed a climate action plan in the early 2000's. The Port of San Diego developed its climate action plan in 2013.
221	Chapter 7	Carbon Capture and Storage (CCS) is mentioned as a key pillar and/or policy for decarbonization; however, CCS is not discussed in this framework beyond natural carbon sequestration. Is there a role for CCS in San Diego? Should it be further analyzed in this report—especially if there is a goal to decarbonize by 2035?
215-216	Chapter 7	The San Diego regional Climate Collaborative (SDRCC) seems to be missing from the discussion on regional coordination. Arguably, SDRCC has been the leading force in the region for public agencies, academic institutions, utilities, and non-profit groups to coordinate on climate change for over 10 years. I do believe that coordination regarding climate change has been strong in our region and should be acknowledged in this report. As such, it is recommended that SDRCC serve as one of the case studies presented in Section 7.3.
215-216	Chapter 7	There are perhaps other regional coordination models that could be discussed and compared. For example, the regional stormwater co-permittees have been working together for 20 years or more in the region to implement regional stormwater and water quality monitoring programs. There are perhaps important lessons from this model that should be considered when evaluating a regional approach to climate change.
N/A	N/A	There is not much discussed in this framework regarding industrial uses or processes which may require high heat through natural gas combustion or other difficult to decarbonize industrial applications. Should there be?
N/A	N/A	Overall Comment: May be useful to identify the strategies that will achieve decarbonization by 2035 compared to those strategies that achieve carbon neutrality by 2045. I imagine that these pathways include a different mix of strategies. The 2035 scenario may focus more on CCS than the latter.

Comments from SANDAG on the Draft Regional Decarbonization Framework (October 2021)

General Comments

- Regarding the 2021 Regional Plan – pending Board action on December 10, 2021, references to the Draft Regional Plan should be replaced with references to the final 2021 Regional Plan and final EIR.
- While this is a County-led effort, more perspectives are needed to truly make this a regional document. The Technical Working Group should include more of the key agencies and stakeholders that would be responsible for implementation (cities, tribes, community-based organizations, military, universities, Mexico, agriculture, SD Community Power)
- The Framework should address broader social impacts, including social equity, how to influence behavior change and counteract opposition to decarbonization strategies, and how to fund the necessary investments

3. Accelerating Deep Decarbonization in the Transportation Sector

- General comment throughout chapter 3:
 - The acronym for vehicle miles travelled is VMT. Replace any reference to a plural “VMTs” with VMT.
- Page 50, first paragraph.
 - Recommend correcting sentence that reads, “AB 2127, signed in 2018, requires the California Energy Commission, working with CARB and the Public Utilities Commission (PUC) to prepare a statewide assessment of EV charging infrastructure needed to support levels of EV adoption required to meet the goals of EO-B-48-18.”
 - The AB2127 legislation lists the CEC as the lead agency.
- Page 50, section 3.2, 2nd paragraph on “SANDAG’s Draft 2021 Regional Plan and 5 Big Moves”
 - Update heading to remove “Draft”. SANDAG’s 2021 Regional Plan is to be adopted on 12/10/2021.
 - Recommend stating that SANDAG is the MPO for the San Diego region and that the 2021 Regional Plan serves as our Regional Transportation Plan and Sustainable Communities Strategy
 - Alternatively, the edit can be made on page 49, Section 3.1 where the report refers to MPOs and RTP/SCS but does not connect that information to SANDAG and the Regional Plan.
- Page 50, Update the EV and charger figures in the last sentence of paragraph 1. Currently reads, “The 2021 Regional Plan identifies a 2030 target of 450,000 EVs on the road in San Diego County, supported by 40,000 chargers.”
 - The Regional Plan has been updated to be consistent with A2Z EV Gap Analysis numbers so the correct figures should be: 771,000 EVs in 2030 and 155,200 chargers. (Or, you can use the same more detailed figures in first paragraph of p52, final sentence listing all Gap Analysis numbers for 2030.)
 - Update the corresponding Footnote #1 to year 2021 and link: https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-b---implementation-actions.pdf?sfvrsn=f4c1fd65_2.
- Page 51, final paragraph, heading “Accelerate to Zero’s Electric Vehicle Gap Analysis (2021)”

- Recommend retitling heading to Accelerate to Zero Emissions Electric Vehicle Gap Analysis (2021).
- Page 51, section 3, Mobility Hubs: Please clarify that the regional network are “mobility hub areas” to distinguish from mobility hubs that are more closely tied to individual transit stations.
- Page 51, section 3, Next OS: Next OS also includes ITS strategies that can reduce VMT, such as syncing of traffic signals, expansion of broadband to enable remote work/services, and apps to enable payment for mobility services
- Page 54, Table 3.2 general comment: Recommend adding 2 agencies, County APCD and Port of San Diego to the list. For APCD, identify Community Emissions Reduction Plans (Portside Communities CERP completed, future CERPs will occur for border region, etc.) and various incentive programs like Moyer program funding bus, truck, locomotive, marine, etc. transition to cleaner vehicles. For Port, mention Marine Clean Air Strategy (MCAS) which calls for only zero-emission trucks at Port by 2030. (See MCAS for actual goals.)
- Page 54, Table 3.2 SANDAG section: Additional relevant goals, targets, and actions include:
 - SANDAG climate planning services for local jurisdictions, including the Regional Climate Action Planning (ReCAP) Framework and preparation of ReCAP Snapshots to assist local jurisdiction in monitoring CAP implementation
 - Smart Growth Incentive Program, Active Transportation Grant Program, and (newly launched) Housing Acceleration Program
 - iCommute programs, including employer services, Go By Bike education, outreach, and mini grants
 - If DCF report to be published after SANDAG 2021 Regional Plan adoption, then update bullets to following:
 - Adopted Regional EV Readiness Plan in 2014 and launched Plug-in San Diego in 2015.
 - Committed \$2B for transportation electrification programs through 2050 including:
 - \$45M through 2025 to support build-out of Level 2 charger network through San Diego County.
 - \$52M through 2025 to a new regional zero-emission vehicle incentive program.
 - \$100M through 2025 for zero-emission buses, zero-emission trucks, and associated infrastructure.
 - Identified additional electrification and mode-shift opportunities through the 2021 Regional Plan.
 - SOURCE at bottom of table to be updated to SANDAG 2021 Regional Plan instead of Draft Regional Plan. Direct source is Page B-31 here: https://sdforward.com/docs/default-source/final-2021-regional-plan/appendix-b---implementation-actions.pdf?sfvrsn=f4c1fd65_2
- Page 54, Table 3.2, MTS section, update 2nd bullet, “Acquired thirteen ~~eight~~ battery electric buses by 2021 and total of 25 by end of 2022.”
- Page 57: “Together, these five key strategies for mobility aim to deliver an efficient and equitable transportation system that meets regional per capita GHG reduction targets assigned by the California Air Resources Board ~~state climate targets and local Climate Action Plan goals.~~”

- Page 57, EIR references: please note that the Final EIR is now available
- Page 58, Figure 3.1. should be updated with table from Final 2021 Regional Plan.
- Page 59, Figure 3.2 data has been updated between draft and Final EIR. Please update.
- Page 60, First paragraph bullets:
 - Establishes programs incentives to incorporate EVs into Flexible Fleets and Transit Leap
 - Includes incentive programs that could increase the number of EVs and charging stations throughout the region and within Mobility Hubs areas as part of the Complete Corridor strategy
 - ● ~~Centers Mobility Hubs around EV charging infrastructure~~
 - ● ~~Incorporates transitioning into a zero-emission fleet for the Flexible Fleet strategy~~
- Page 60, second paragraph: “While Complete Corridors’ main goal is to promote a switch from support alternatives to single occupancy driving to modes such as transit, shared rides, and active transportation, the initiative and would help the San Diego region reach its 2030 electrification goals. The 2021 Regional Plan supports electrification of the region’s transit buses and the state’s Innovative Clean Transit regulation. The plan does not lay out a timeline for how the Transit Leap strategy will aid electrification, but it does promote the idea that new and existing services can switch to alternative fuel sources and electric power. Per the plan documentation, it is likely that future high-speed rail projects will be powered by a combination of both diesel and electricity. In order to accelerate electrification through this strategy, SANDAG would need to adopt an aggressive implementation timeline for Complete Corridors and Transit Leap, focusing on implementation in the parts of the County where transit will be most viable and well-utilized.
- Page 61, recommend deleting references to SANDAG in paragraph titled “Downscaled Geographic EV Adoption Targets,” as the point is now moot. Data in SANDAG’s draft Regional Plan was updated for the final Regional Plan to use the A2Z Gap Analysis figures.

Downscaled Geographic EV Adoption Targets: The A2Z Gap Analysis identifies an EV population target of 771,000 across San Diego by 2030. ~~This target is substantially higher than SANDAG’s reported target in the Draft 2021 Regional Plan, but provides an upper limit estimate of San Diego’s regional share of the state-wide target.~~ For the purposes of downscaling to local jurisdictions in San Diego County, Fehr & Peers has used the A2Z target numbers ~~rather than the SANDAG targets.~~
- Page 61+ regarding downscaled geographic numbers: recommend keeping in mind that the 771,000 vehicle number for 2030 is inclusive of light-duty through heavy-duty vehicles. You may want to use exclude the bus and truck numbers from this—unless figures are strictly for discussion purposes.
- Page 67, Table 3.5:
 - Regarding “Set-Aside Public Parking Spots for Clean Vehicles” section, please elaborate on what this means (in or outside of table). Do you mean “Clean Air Vehicles” as defined by Calgreen (which include non-EV carpools and vanpools, hybrids, PHEVs, etc.) or do you mean only zero emission vehicles? I would think in near-term be consistent with CalGreen but become more aggressive over time.
 - Regarding “Require New Development to be “EVReady” section, do you mean stricter requirements than existing Calgreen code for new developments? Please clarify.

- Regarding “Offer Consumer Incentives to Purchase EVs” section, include APCD in addition to SANDAG since they’ll have a Clean Cars 4 All program that we (SANDAG) plan to coordinate/collaborate with.
- Regarding “Provide Readily Accessible Information to Property Owners and Vehicle Owners” section, I think other local governments, SDG&E, CCAs, and community groups could be interested in partnering here---so A2Z could be a way to capture everyone.
- Regarding “Train Workforce to Support EV Ecosystem” section, you could add coordination with SANDAG here as we are funding facilitation of workforce training on EVITP, and have a workforce development component of our MD/HD EV Blueprint strategy to address goods movement and transit. The County may want to add coordination with labor groups/associations too.
- Page 68, first paragraph, last sentence edit: “To meet the targets, single occupancy vehicle trips need to be replaced with biking, walking, transit, and shared rides. The Draft 2021 Regional Plan articulates the following strategies to reduce VMT:”
- Page 68, bullets after first paragraph:
 - Complete Corridors support a greater variety of transportation options, and the initiative promises investments in infrastructure to make alternative transportation more attractive. Complete Corridors also explore ~~employ~~ congestion pricing as a tool for reducing demand and VMT during peak times.
 - Flexible Fleets are to provide convenient and affordable alternatives to driving alone.
 - Mobility Hubs: replace each reference of “Mobility Hubs” with “Mobility Hub areas.”
 - Mobility Hubs areas are communities with a high concentration of people, destinations, and travel choices. Higher density Mobility Hubs areas have a supportive mix of land uses that can help to encourage ridership and usage of the Transit Leap system. ~~However, Mobility Hubs areas with lower densities in less dense areas may rely on more on flexible fleets motorized services in order to connect residents to transit and not reach the same VMT reductions.~~
- Page 69, Table 3.6:
 - Could include policy strategies related to school-related trips
 - Section on “Expand modal options including a wide range of e-bikes, e-scooters,...” could include coordination with SANDAG on e-bike incentive program(s)/expansion of County Pedal Ahead program. Also revise mobility hubs to mobility hub areas.
- Page 70, Table 3.6, section on “Expand broadband in places where it is weak.” Suggest revising County approach to include coordination with SANDAG and recognize that a broadband gap analysis and digital equity action plan were completed in 2021, which the County was part of. (For more details, see the Regional Digital Equity Strategy and Action Plan information here: <https://www.sandag.org/index.asp?classid=13&projectid=614&fuseaction=projects.detail>).
- Page 70, Table 3.6, section on “Restructure distribution centers to enable more efficient delivery patterns that enable short-haul electrified freight vehicles and AV delivery.” Regarding a County freight study, suggest coordinating with SANDAG and Port on Regional MD/HD EV Blueprint development for goods movement and transit, SANDAG’s Sustainable Freight Implementation Strategy with Imperial County and Port’s Marine Clean Air Strategy.

- Page 70-72, Geographic Opportunity Areas: It may be helpful to show mobility hub areas and/or some of the definitions from State law such as SB 743 (TPAs) and SB10 (High quality transit) to see how they compare to the areas identified by the County.
- Pages 73+, Summary of Key Actions. Please incorporate above edits into the Summary of Key Actions.
- Page 74, section on “Additional Challenges & Remaining Gaps Not Addressed in this Chapter” should include military/local military bases, though they are proactive on clean energy and transportation electrification.

4. Natural Climate Solutions and Other Land Use Considerations

- General comments:
 - This chapter should include consideration of tribal nations and opportunities for partnership and coordination
 - SANDAG has conducted a similar carbon sequestration analysis using the TerraCount tool and has produced differing results (238 MMT CO₂e for 2016). The numbers in Table 4.2 for the “Barren” category is 0 versus 2.6 MMT CO₂e in the TerraCount analysis.
 - This chapter should consider change in carbon storage over time. SANDAG’s analysis shows that due to changes in land use, carbon storage has declined by about 16 MMT CO₂e from 2001 to 2016)
- Page 82, Figure 4.1: Please cite the year for this data
- Page 83, Table 4.1: Please cite the year for this data
- Page 91, Table 4.2: For carbon sequestration metric (MMT CO₂e yr⁻¹), why not just say (MMT CO₂e per year)?
 - Please cite the year for this data, since this changes with land use changes. For example, the TerraCount analysis showed change in carbon storage between 2001 and 2016.
- Page 94: The caveats and drawbacks to the analysis should be mentioned briefly at the beginning of this chapter
- Page 95, under Policy Recommendations: “Support SANDAG’s urban growth plans that promote densification.”
 - Recommended revision: “Support SANDAG’s Sustainable Communities Strategy that promotes growth in existing developed areas.”
- Page 107, Section 4.7 Regional Natural Climate Solutions Policy Recommendations and Conclusions: please add a recommendation for regional and local governments to partner with tribal nations.

7. Key Policy Considerations for the San Diego Region

- Page 207: The City of Chula Vista developed a CO₂ reduction plan in the 1990s. City of San Diego CAP in 2015 was not the first.
- Page 208, The Regional Players in San Diego:
 - MPO = Metropolitan Planning Organization
 - Please remove public health stakeholders group and regional housing working group (no longer active groups). Recommend keeping this discussion more general about SANDAG working groups since there are others that would be relevant (Social Equity, Tribal,

Traffic Engineers, Active Transportation, Cities/County Transportation Advisory Committee).

- Page 214, Takeaway 2: Recommend adding reference to the Regional Plan as this is an iterative planning document that is updated every four years to account for changes over time, new policies, new information, etc.



HAMMOND
CLIMATE SOLUTIONS
Dynamic Action for a Sustainable Planet



SAN DIEGO
GREEN
BUILDING
COUNCIL



GRID
ALTERNATIVES
San Diego



December 2, 2021

Board of Supervisors
County of San Diego
1600 Pacific Highway
San Diego, CA 92101
Via Email

Re: Recommendations for the County Regional Decarbonization Framework (RDF)

Dear Chair Fletcher, Vice Chair Vargas, and Supervisors,

On behalf of the undersigned organizations, please accept the following feedback to ensure the County RDF is as strong as possible to address the scale and scope of the climate emergency, and to achieve climate justice and equity throughout the region.

We appreciate the County's work on this plan, promoting science-based solutions and taking the first step in looking at policy solutions to address the crisis. We understand that this is the beginning of the process and we look forward to engaging with you as the framework is developed. It is critical that the County moves swiftly to coordinate with cities and other agencies to ensure that they take the bold measures needed. We are already feeling the consequences of the climate emergency, and it will only worsen if we do not implement the necessary proactive solutions swiftly.

Equity and a Just Transition Must Be Central to the RDF

Environmental Justice Communities face disproportionate effects of the climate crisis in San Diego and worldwide. While equity is mentioned in the Regional Decarbonization framework, there must be a plan with concrete, measurable steps to achieve it. We look forward to the workforce analysis and a strategy for the equitable transition of any workers who are at risk of being displaced in the decarbonized economy. Also, of utmost importance is to create a pathway for good union jobs in Environmental Justice Communities. This must be a key focus of the framework.

Eliminate Emissions Through Building Electrification

As our cities work to achieve 100% clean electricity, natural gas remains one of the most significant sources of emissions in our region, so to fully transition away from fossil fuels, we must reduce and ultimately eliminate natural gas consumption. We recommend requiring all newly constructed or renovated buildings to be all electric, paired with solar power and energy storage, as well as providing incentives and streamlining to electrify existing buildings. We also recommend centering equity and public health in any building electrification plan to protect communities of concern from being stranded with the increasing costs and the dangers associated with the gas infrastructure.

Decarbonizing buildings must be all electric rather than encouraging impractical and expensive “low-carbon” fuels. The “partial electrification” model should be removed from the framework, and instead multiple scenarios to achieve “high electrification” should be provided. Additionally, the County and the cities should prioritize decarbonizing municipal buildings as soon as possible.

Transportation and Land Use

We are pleased that the RDF recognizes the centrality of reducing transportation-related emissions to achieve regional climate goals. In order to achieve these, policies must be adopted that reduce vehicle miles traveled (VMT), build out transit, end sprawl development, develop affordable housing near transit and have more options for those without access to a car. Sprawl development only increases VMT and greenhouse gases and makes housing less affordable and equitable. We are happy that the Framework recognizes the SANDAG “mobility hubs” model for concentrating density.

Building affordable housing near transit and job centers is a key equity strategy to reduce vehicle miles travelled (VMT), slash transportation emissions and solve the housing crisis. To create inclusive and sustainable communities the County must advance the development of ample affordable housing near current and future transit centers and high-frequency bus lines, in alignment with SANDAG’s 2021 Regional Plan.

We are disappointed to see the extensive focus on electric vehicles and hydrogen-powered vehicles rather than on public transportation and active transportation (walking and biking). The

RDF needs to have safe and effective transportation solutions that support getting cars off the road and prioritizing transit equity.

Clean and Renewable Electricity

Community Choice Aggregation (CCA) is making progress in the development of 100% renewable electricity and storage, both statewide and locally. The framework identifies the desert areas as optimal for industrial-scale PV solar installations as it is the most cost effective (less expensive per megawatt hour, as noted in the report). The development of solar farms in the desert over the next decade will enable CCAs to meet regulatory obligations to secure two-thirds of its renewable electricity and storage through long-term contracts. Industrial solar supports good union jobs as well.

Yet, prioritizing rooftop solar in urban areas has significant regional job and economic benefits, particularly in the identified Communities of Concern. A major step in this direction will be undertaken by San Diego Community Power in 2022, which is funding the development of a “Community Power Plan” to assess the needs and identify the benefits of local infill solar that prioritize community benefits. It is imperative that other factors beyond cost be considered and that the cost of transmission lines and fire dangers be factored into the assessment of where to place solar installations. Although PV solar will be the primary renewable electricity developed regionally, it is notable that the framework also considers other renewable electricity resources, such as wind and geothermal as potential solutions to moving away from our dependence on fossil fuels.

Implement Education and Infrastructure Programs that Support Individuals to Make Sustainable Choices

This framework should include educating the public and advocating for policies that make it easier for individuals to make sustainable choices around the foods they eat, the cars they drive, home equipment they buy and the transportation options they use. The framework should encourage people and businesses to eat healthier plant-based foods, waste less food, electrify their homes, and take transit.

Carbon Capture

The climate crisis is here and there is limited time to reduce our greenhouse gas emissions. The inclusion of carbon capture has no place in the RDF. Carbon capture, like “renewable natural gas” and hydrogen technologies, is an expensive technology unproven at scale that has not produced the results needed to be considered a viable decarbonization pathway for the region. The RDF must focus on real reductions in the use of fossil fuels and resources should be allocated towards real solutions.

Implement the Framework and Partner with Cities and Agencies at SANDAG

We appreciate the County providing critical funding and resources to identify concrete decarbonization pathways, and hope the RDF will do more than sit on a shelf. We encourage the County to work with other local governments and agencies in partnership at SANDAG to coordinate a truly regional approach to decarbonization and climate justice. The County must include an implementation plan, identify funding sources, and keep the momentum going at SANDAG.

Conclusion

Thank you for the opportunity to weigh in on the development of this critically important document. We urge you to consider this feedback as you revise the plan.

Sincerely,

Jim Miller
American Federation of Teachers, Local 1931 VP
and Chair of **San Diego Labor, Environmental, and Community Coalition**

Terry Bunting
Labor Representative
California Nurses Association

Kyra Greene, PhD
Executive Director
Center for Policy initiatives

Tama Becker-Varano
Founder and Leader
Change Begins With ME (Indivisible)

Suzanne Hume
Educational Director and Founder
CleanEarth4Kids.org

Mathew Vasilakis
Co-Director of Policy
Climate Action Campaign

Danielle Wilkerson
East County BIPOC Coalition

Pam Heatherington
Board of Directors
Environmental Center of San Diego

Cathy Gere
Steering Committee
Green New Deal at UCSD.

Clovis Honoré
Senior Outreach Coordinator
GRID Alternatives San Diego

Tara Hammond
Founder & CEO
Hammond Climate Solutions

Joyce Lane
Board Vice-President
SanDiego350

Courtney Ransom
Director of Membership
San Diego Democrats for Environmental Action

Colleen FitzSimons
Executive Director
San Diego Green Building Council

Maleeka Marsden
Chair
San Diego Green New Deal Alliance

J.P. Bruner
Climate Change Committee Lead
Surfrider Foundation

Moses Cuevas
Regional Manager
United Domestic Workers of America

Rick Bates
Lead Research and Policy Analyst
UNITEHERE! Local 30



December 2, 2021

Re: San Diego Regional Decarbonization Framework

Dear Honorable San Diego County Supervisors,

The [San Diego Building Electrification Coalition](#) (SDBEC) is an alliance of community, business, faith, justice, and environmental organizations coming together to accelerate electrification in residential and commercial buildings.

Our coalition would like to thank the County of San Diego for its recent leadership on environmental issues by crafting the Regional Decarbonization Framework (RDF) study. We are particularly pleased that the RDF includes many strategies that focus on building decarbonization and specifically building electrification. However, we feel that the framework can and should go further to gain additional positive impacts. We recommend that the RDF include the following:

- Decarbonizing buildings needs to be all-electric rather than the dead-end strategy of impractical and expensive “low-carbon” fuels like biomethane and hydrogen.
- The “Partial Electrification” model should be removed from the framework, and instead multiple scenarios to achieve “High Electrification” should be provided. If you leave the “Partial Electrification” model in, it needs much more analysis on all the impacts and uncertainties around “low-carbon” fuels.
- The Decarbonization Framework should specifically recommend that new construction be all-electric immediately and that municipal buildings be decarbonized as soon as possible (no-regret policies).
- Indoor air pollution (e.g., nitrogen oxides, PM2.5, carbon monoxide) due to the combustion of methane gas in buildings needs to be addressed and eliminated by mandating all-electric appliances including cooktops.
 - “Natural gas” is a clever marketing term for methane gas, a very potent greenhouse gas. Burning methane gas in cooktops results in increased incidence of respiratory and cardiovascular diseases, and is particularly dangerous for children and pregnant women.
- Equity and a just transition must be central to building decarbonization
- This framework should include educating the public and advocating for policies that make it easier for individuals and businesses to electrify their buildings

As you are well aware of the UN’s recent IPCC report¹ reveals that we are in a “Code Red” for humanity and for our planet. The world must stop using fossil fuels and decarbonize as soon as possible. In fact, building electrification is the most affordable and effective tool for decarbonizing California’s homes and buildings. Most importantly, it is an existing solution

¹ <https://www.ipcc.ch/assessment-report/ar6/>



which can produce significant results right now. We urge you to adopt the recommendations above and mandate in the RDF that San Diego's built environment be all-electric. It is the just and equitable thing to do.

Sincerely,

 <p>Ann Feeney Strategy Committee Chair San Diego Building Electrification Coalition</p>	 <p>Colleen FitzSimons Executive Director San Diego Green Building Council</p>	 <p>HAMMOND CLIMATE SOLUTIONS <i>Dynamic Action for a Sustainable Planet</i></p> <p>Tara Hammond Founder & CEO Hammond Climate Solutions</p>
 <p>Susan Wayo Board Member & Secretary Center for Community Energy</p>	 <p>Oliver Curley Sustainability Coordinator Leading Edge Consulting Services, LLC</p>	 <p>Matthew Vasilakis Co-Director of Policy Climate Action Campaign</p>
 <p>Jim Miller Vice President AFT 1931</p>	 <p>Kelly Lyndon Co-chair Building Electrification San Diego 350</p>	 <p>Marian Sedio Board Member North County Climate Change Alliance</p>



 <p>Suzanne Hume Educational Director & Founder CleanEarth4Kids.org</p>	 <p>Tyson Siegle Energy Analyst The Protect Our Communities Foundation</p>	 <p>Lucero Sanchez Community Policy Coordinator San Diego Coastkeeper</p>
 <p>Peter Zahn, CEO Futures Unbound</p>	 <p>Alex Kaufman PE CEM Founder Solutions in Sustainability</p>	 <p>American Institute of Architects San Diego</p>
 <p>Rhea and Armin Kuhlman Co-Chair, Climate Justice Team First Unitarian Universalist Church of San Diego</p>	 <p>Luke Stroth Green New Deal at UCSD</p>	 <p>Sean Armstrong Managing Principal Redwood Energy</p>
 <p>Wilder Zeiser Climate Campaigner Stand.Earth</p>	 <p>Peg Engel Council Secretary STAY COOL for Grandkids</p>	 <p>Adam Cooper Political Action Team Leader Sunrise Movement San Diego</p>





San Diego County Bicycle Coalition
300 15th St,
San Diego, CA 92101

03 December 2021

County of San Diego, LUEG
Attention: Murtaza Baxamusa
1600 Pacific Hwy., Room 212
San Diego, CA 92101

Subject: San Diego Regionalization Decarbonization Framework

Dear Mr. Baxamusa:

The San Diego County Bicycle Coalition (SDCBC) advocates for and protects the rights of all people who ride bicycles. SDCBC promotes bicycling as a mainstream, safe, and enjoyable form of transportation and recreation. Since 1987, the organization has acted as the voice for bicyclists and as such, has advocated for safer streets and hundreds of miles of bike paths, lanes, and trails across the San Diego region. SDCBC actively conducts educational programs, promotes awareness of bicyclists and bicycling issues, reviews infrastructure improvements, and acts as a liaison between bicyclists and government officials.

SDCBC commends the County of San Diego for undertaking this ambitious regional decarbonization framework, and deeply appreciates the County supervisors, advocates, and county staff members who have spearheaded this campaign. We are very happy with the initiative that the framework is showing in decarbonizing the transportation sector, but we want to provide several comments to ensure that this document appropriately emphasizes the indispensable role of active transportation in creating a carbon-neutral transportation system.

Accelerating Decarbonization in the Transportation Sector

While we support all three strategies that the report proposes for decarbonizing the transportation sector, we are concerned that the report overemphasizes the importance of vehicle electrification, and understates the importance of moving towards dense, walkable land uses where active transportation and public transit can serve the majority of trips.

All of the recommendations that the report proposes for decreasing Vehicle Miles Traveled are excellent, and are in line with the strategies that we consistently advocate for. Striving for infill



development, increased transit service, pedestrian friendly road designs, and expanded bicycle infrastructure are the key factors in creating a transportation system that is carbon neutral, safe, healthy, and enjoyable for all users.

Our concern is that while each one of these strategies receives one bullet point in the report, vehicle electrification-- which is no more important than any one of those strategies-- is granted several pages of analysis. We want to emphasize that vehicle electrification should only be a small part of the County's decarbonization strategy, and that the main goal should be reducing car use as much as possible.

While some form of single-occupancy vehicle use will always be necessary for trips to remote locations, a transportation network that relies on cars for the majority of trips will never be socially or environmentally sustainable.

Although most electric vehicles (EVs) emit fewer net greenhouse gases than traditional internal combustion engine vehicles (ICEs), they still have an enormously higher carbon footprint than active transportation and public transit, and contribute to a host of other environmental issues as well.

When considering a transportation mode's carbon emission, it is important to account for embodied carbon in a vehicle's manufacturing as well as its operating emissions. While EV's generally beat ICEs overall, the recent trend towards electric SUVs and pickup trucks has challenged that trend, with recent electric pickups emitting more through their lifespans than small cars.¹

More importantly, continued reliance on cars of any kind systematically hinders the progress of active transportation and public transit. Mass car use demands the maintenance of a huge network of wide roads, and forces a large amount of valuable urban space to be devoted to parking. These demands create sprawling, unwalkable cities that make active transportation dangerous and unpleasant for most people. Furthermore, all of this infrastructure for cars is tremendously expensive to build and maintain, draining the funding that could make effective transit and active transportation infrastructure possible.

We strongly recommend that County staff adjust this section of the decarbonization framework to reflect the fact that vehicle electrification can only be a small part of the transition to a carbon neutral transportation grid. The sections on infill development, walkable communities, and bike infrastructure should be expanded to the same level of detail, to make it clear that each of these strategies is equally important.

¹ <https://www.treehugger.com/life-cycle-analysis-epickups-worse-than-small-cars-5188550>



Conclusion

Again, we are very excited to see this effort taking place, and thank everyone who has been involved in pushing it forward. We thank the County of San Diego for providing this opportunity for public comment, and look forward to engaging with county staff on future revisions of the framework.

Sincerely,

William Rhatigan
Advocacy Manager, San Diego County Bike Coalition

Baxamusa, Murtaza

From: Elly Brown [REDACTED]
Sent: Friday, December 3, 2021 12:21 PM
To: Lueg, Zerocarbon
Subject: [External] Decarbonization Framework Comments

Follow Up Flag: Follow up
Flag Status: Flagged

I just tried to submit but not sure if it went through so wanted to forward to this email:

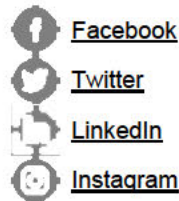
The San Diego Food System Alliance is encouraged by County of San Diego's bold actions to develop a regional framework to address the climate crisis. The chapter around land use, elevating San Diego County's agriculture and working lands as a potential carbon sink and the reference to the Batra report, was very much appreciated. We have a few specific recommendations: 1) Given the significant global GHGs (21-37% according to the UN) the industrialized food system itself accounts for, we would like to see "Food System" being elevated as its own chapter including changes in consumption behavior, agricultural practices, localized aggregation/ distribution, and minimizing waste. 2) Specifically related to carbon farming, explicitly calling out "voluntary incentives" well as engaging with farmers around a long-term "carbon drawdown plan" for ongoing incentive support

Elly Brown

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Elly Brown (she/her/hers)
Co-Executive Director
San Diego Food System Alliance
[REDACTED]



The San Diego Food System Alliance acknowledges, honors, and offers our gratitude to the Kumeyaay, Luiseño/Payómkawichum, Cahuilla, and Cupeño/Kuupangaxwicheem people and land.

Join the [San Diego County Food Vision 2030](#) movement!





Elly Brown (she/her/hers)
Co-Executive Director
San Diego Food System Alliance
919-328-0046 | elly@sdfsa.org



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[Instagram](#)

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Join the [San Diego County Food Vision 2030](#) movement!





Dallin Young
Public Affairs Manager
8330 Century Park Court, CP31D
San Diego, CA 92123
dyoung1@sdge.com

December 3, 2021

San Diego County
1600 Pacific Coast Highway
San Diego, CA 92101

RE: San Diego County Draft Regional Decarbonization Framework

Dear Dr. Baxamusa, Director McCord, and Project Team,

At San Diego Gas & Electric (SDG&E), we would like to extend our gratitude and compliments to the County for developing this comprehensive *Draft Regional Decarbonization Framework* (RDF) and would like to thank you for the opportunity to convey SDG&E's position.

SDG&E shares the County's ambitions for achieving meaningful reductions in greenhouse gas (GHG) emissions and we remain committed to helping you achieve the long-term goals outlined in the Regional Decarbonization Framework. We've built our business model on encouraging climate reducing technologies – and this body of work is demonstrated in SDG&E's first-ever company-wide sustainability strategy, *Building A Better Future: SDG&E's Commitment to Sustainability*.

Through SDG&E's sustainability plan, we have developed a series of actionable and long-term goals aligned with California's ambitious climate agenda. The plan calls for regional cooperation and partnerships and will likely evolve over time to reflect stakeholder feedback, regulatory changes and technological breakthroughs. We have tried to build on our strengths, focusing on the areas of environmental stewardship, clean transportation, grid modernization, community engagement, and company operations to help support economy-wide carbon neutrality. The full report is available at sdge.com/sustainability.

Together with the RDF, we foresee tremendous opportunities for immediate and long-term collaboration between SDG&E, the County, and the municipalities within our service territory to successfully meet our shared goals.

SDG&E also recently announced a commitment to achieve net zero GHG emissions by 2045. Our climate pledge to achieve net zero emissions covers all emissions, not only our own direct emissions, but also those generated by customers, not something typically contemplated in pledges like this. To begin to accomplish the lofty goal of a 100% clean energy future, SDG&E has already advanced a number of hydrogen, energy storage and electric vehicle charging infrastructure projects.

Additionally, we are conducting an economy wide GHG study that will include pathways to get us to net zero emissions with electrification and new technologies like hydrogen. We will share that work broadly once complete, which we estimate to be in early 2022.

As presented in the draft RDF, the transportation sector continues to be the largest contributor of GHGs in our region, which is why the SDG&E team continues to create innovative clean transportation programs (passenger, municipal fleet and mass transit) to encourage and enable the transition to driving electric. We are also excited and energized about the Governor's recent executive order requiring sales of all new passenger vehicles to be zero-emission by 2035, that will further accelerate the transition to driving electric. Efforts such as the Accelerate to Zero (A2Z) Emissions Collaborative cited in the draft RDF is a strong example of SDG&E's dedication to this goal and our collaborative spirit. While we are proud of our work to date to reduce our carbon footprint through delivering some of the cleanest energy in the nation, enabling rooftop solar and expanding clean transportation options; we look forward to continuing our partnership with the County in its ongoing work to achieve our collective climate goals.

In closing, we recognize the urgency to address climate change and its impacts, and we support California's clean energy goals. Our desire is that the County will look to SDG&E as a dedicated partner in the implementation of the sustainability strategy in the areas of environmental stewardship, clean transportation, grid modernization, community engagement and company operations. Collectively, we can work together on solutions that result in meaningful GHG reductions.

Best Regards,

A handwritten signature in black ink, appearing to read 'Dallin Young', is positioned above a thin yellow horizontal line.

Dallin Young
Public Affairs Manager
San Diego Gas & Electric

CC:

Chair Nathan Fletcher
Vice Chair Nora Vargas
Supervisor Joel Anderson
Supervisor Terra Lawson Remer
Supervisor Jim Desmond



San Diego and Imperial Counties Labor Council

December 3, 2021

Dr. Murtaza Baxamusa PhD, AICP
Program Manager for Regional Sustainability
Land Use and Environment Group
County of San Diego

Re: Regional Decarbonization Framework

Dear Dr. Baxamusa:

The San Diego & Imperial Counties Labor Council (SDICLC) would like to thank you for the opportunity to provide feedback on the draft Regional Decarbonization Framework. The SDICLC represents over 200,000 working families from over 130 labor organizations across the region. The unions we represent are from diverse industries and sectors and while we understand that there is an urgent need to act to address the climate crisis, we firmly believe it must be addressed with workers present through every step of the process of our regions transition to clean energy. We recognize that the RDF does not include workforce development pathways that will address the labor market changes related to a carbon-neutral economy so we have taken the liberty to outline some high-level solutions to what we believe will not only help ensure a just transition for all impacted worker but create accessible pathways to highroad careers in a new green economy.

Creating Local Jobs that Provide Family-Sustaining Wages and Benefits

According to the RDF, the regional decarbonization pathway would generate an average of nearly 27,000 jobs per year in the San Diego region; to ensure those jobs are good jobs any and all jobs in the emerging clean energy markets should be tied to strong labor provisions - including prevailing wage, local hire, and joint labor-management apprenticeship programs and labor standards. Prevailing wage should not be limited to construction and building trades jobs but should also be applied to maintenance and operations jobs across industries and sectors that will see investment in the greening of existing jobs including but not limited to custodial, housekeeping and transportation jobs. Public investment funds should be used to incentivize the greening of existing jobs by providing training to workers on the importance and implementation of green practices. And Labor Peace Agreements should be established (where none exists) with any employer who receives Public Investment Funds regardless of the purpose and intention of the funds.

Public investment funds should also be used to develop pathways to highroad union careers and increase the quality of jobs for traditionally marginalized communities including Communities of Concern and Environmental Justice Communities.

Infrastructure

Investment of public investment funds should prioritize the upgrading of hospitals, municipal, schools and other government entities to meet an agreed standard of energy and resource efficiency. The investment

of public funds should be attached to requisites including the requirement of Project Labor Agreements (PLAs) and Community Benefit Agreements (CBAs). Job training funding should be built into the infrastructure planning to support existing apprenticeship programs and complement the state's investment pre-apprenticeship. Any residential, commercial, and industrial energy and resource efficient upgrades using public investment funds should require job quality standards including requirements for a skilled and trained workforce (See Appendix B) and any project out for bid should have responsible contracting standards along with compliance monitoring. A strategy to move jobs to America should be adopted with a heavy emphasis on procuring supplies, equipment, transit buses and fleet vehicles from manufacturers who meet labor peace and other labor standards.

Just Transition

While many new jobs will be created as our region transitions to a green economy, it cannot be ignored that many jobs primarily in the fossil fuels industries will be lost in the process. Many of these jobs are high-quality union jobs with family-sustaining wages and benefits that require years of training through apprenticeship and journeyman training. It is often assumed that a just transition into a new green economy consists of providing training in new sectors to workers in sectors that are transitioning out, however this assumption is a misconception. A just transition should be viewed as a holistic process that requires the continuous engagement of impacted workers and community members. A just transition creates pathways to good unions jobs while also advancing environmental justice in traditionally marginalized communities that often feel the greatest impacts of the climate crisis. It also secures guaranteed pensions and provides bridges for retirement for older workers.

An Office of Just Transition should be established to facilitate, monitor, and regularly report the outcomes of the regions transition from a fossil fuel economy. The Office of Just Transition would also be responsible for working with impacted stakeholders to understand what is needed to be made whole and set clear policy metrics with guidelines for the development of new career pathways and would lead the advanced planning for facility closures including establishing a fund to that would create and help implement a plan of action that will transition impacted workers to jobs with compensation and benefits that are better or on par with the jobs that will be lost including the training opportunities that provide opportunities for advancement. It would also establish a wage insurance fund for workers who elect to not be retrained in these new fields.

It must be stated that many of the clean energy jobs will not directly translate for some of the existing fossil fuel jobs. For example, many of the members of the United Association of Plumbers and Steamfitters & HVAC/R would be out of work with the termination of the use of natural gas, and geothermal opportunities in the Imperial Valley as discussed in the RDF would not necessarily create a place to land for the displaced workers. Onsite water reuse provided by licensed plumbers is an example of how to green these existing job skillsets and would be a direct clean energy translation for the work that would be lost; however, it's not clear that onsite water reuse would provide the numbers of jobs needed to make up for the losses. We believe further analysis is needed in how to expand its potential.

We are also calling for an analysis into Waste to Energy, an emerging clean technology that would not only potentially address the region's growing refuse problem, but it would create a significant number of jobs many of which would serve as direct replacement for the number and types of jobs that would be lost. Currently the world's largest green hydrogen project is being launched in Lancaster, CA and it includes a PLA creating more than 600 construction jobs and over 30 permanent jobs upon completion (See Appendix B).

Thank you again for the opportunity to provide feedback on the Regional Decarbonization Framework.

We truly believe that the Climate Crisis must be addressed with a sense of urgency, however we believe it is possible to do so while ensuring the transition to a new green economy is equitable and just for those who will be impacted by the shift from fossil fuels. We are hopeful that our suggestions will be incorporated into the framework that will outline the development of workforce pathways.

In Solidarity,

A handwritten signature in blue ink, appearing to read 'Satomi J. Rash-Zeigler', with a stylized flourish at the end.

Satomi J. Rash-Zeigler
Managing Director
San Diego & Imperial Counties Labor Council

Enclosure: 3

Enclosure 1

American Federation of Teachers Local 1931

AFT 1931 is supportive of the County's decarbonization framework vision as it is imperative that we move with great urgency to address the climate crisis which will adversely impact all workers with poor communities of color bearing the highest burden. We also strongly believe that, as the plan comes to fruition, that labor be at the table in a constructive manner helping to shape a bold, pro-worker regional transition to a sustainable economy that leaves no one behind. Simply saying no is not an option. It is centrally important to create a pathway for good union jobs in Environmental Justice Communities. We agree that, as others in labor have suggested directly to the board, that all of this should be housed in an Office of Just Transition with sufficient staff to ensure that these strategies are developed with labor and community stakeholders and implemented efficiently, effectively, and equitably.

UNITE HERE Local 30

We would like to see the plan create strategies for "greening" existing jobs, pathways for the equitable transition of any workers who are at risk of being displaced in the decarbonized economy, and a process that routinely analyzes the effectiveness of emerging technologies in the energy market. Any jobs in the emerging clean energy markets should be tied to strong labor provisions - including prevailing wage, local hire, and joint labor-management apprenticeship programs. Also, of utmost importance is to create a pathway for good union jobs in Environmental Justice Communities. All of this should be housed in an Office of Just Transition with sufficient staff to ensure that these strategies are developed with labor and community stakeholders and implemented efficiently, effectively, and equitably.

United Domestic Workers, American Federation of State County and Municipal Employees Local 3930

My concern was that this would not address environmental racism enough, but while they didn't call out racism by name, they did emphasize a lot on environmental justice and brought up communities in which are most impacted.

The next big thing I would want to see addressed simply isn't covered by this, which the email below says "It also does not include the workforce development pathways that will address the labor market changes related to a carbon-neutral economy."

I think one major role we can and should play in this moving forward is ensuring as "dirty" jobs are eliminated, the role of labor should be to ensure new, union job are available and that city and state funding is in place to help those workers survive while they are waiting for and or getting placed in those jobs.

Enclosure 2

IBEW 569 Position on San Diego Regional Decarbonization Framework & Electrification

IBEW Local 569 represents 3,700 electricians, power professionals and working families in San Diego and Imperial Counties, and our Union has been a long-time proponent of a clean energy future - locally and statewide. We strongly support reaching zero-carbon emissions by 2035 if doing so is intertwined with the creation of good middle-class jobs and labor principles inclusive of prevailing wages, electrical state certification requirements, and employment of a skilled and trained local workforce using policy mechanisms to enforce these.

IBEW 569 RECOMMENDED DECARBONIZATION ACTION ITEMS AND POLICY PRIORITIES

The San Diego County draft Regional Decarbonization Framework should be amended to:

- Apply an emphasis throughout the report on the creation of good union jobs with family supporting wages, family healthcare, and retirement benefits.
- Include public policies that address and achieve a just transition and quality career pathways for those working in the fossil fuel industry;
- Require EVITP certifications to install and maintain EV infrastructure throughout the County;
- Require Prevailing Wages on all construction, operations, and maintenance work associated with decarbonization;
- Require use of a Skilled and Trained workforce, thereby bolstering the pipeline of apprenticeship programs;
- Require Community Benefit Agreements with local hire, community outreach, and apprenticeship;
- Require procurement of renewable energy generated within California as defined by California law in the Public Utilities Code as Category 1;
- Emphasize and prioritize communities of concern for development of mobility hubs and good decarbonization careers and training;

The San Diego County draft Regional Decarbonization Framework (RDF) states, “the costs of a just transition will be much lower if the transition is able to proceed steadily rather than through a series of episodes.” One such hurdle to achieving steady progress on decarbonization is the potential displacement of workers or loss of jobs in the fossil fuel industry. As such, IBEW 569 strongly advocates for public policies that address and achieve just transition and quality career pathways for those working in the fossil fuel industry. The UC Berkeley Center for Labor Research and Education issued a report titled “Putting California on the High Road - Jobs and Climate Action Plan” in 2020 and it aligns well with IBEW 569 priorities and values. The Forward states:

“California can achieve greater social equity in labor market outcomes for disadvantaged workers and communities when policymakers pay attention to job quality. Identifying high-quality careers (i.e., ones that offer family-supporting wages, employer-provided benefits, worker voice, and opportunities for advancement) first, and then building pathways up and into such careers, is critical to ensuring that investments in workforce education and training meaningfully improve workers’ economic mobility.” And “deliberate policy interventions are necessary in order to advance job quality and social equity as California transitions to a carbon neutral economy.”

According to the RDF, “between 2021 – 2030, the regional decarbonization pathway would generate an average of nearly 27,000 jobs per year in the San Diego region” and we must ensure this job creation results in good union jobs for local workers with good wages and quality healthcare and retirement benefits. Additionally, decarbonization jobs policy should prioritize low- and medium-income communities of concern to offer opportunities in green careers, apprenticeship education and lifelong training. County policies and outcomes should also reduce sprawl and prioritize in-fill development in urban areas near transit and mobility hubs – thereby generating good transportation options and healthier air to breathe, while reducing traffic and shortening time workers spend away from their families commuting from home to job sites. This would help to put the families of the San Diego region on an upward pathway to a better quality of life. Implementing actionable policies is the key to achieving this in an equitable manner.

To reach decarbonization, we must also ensure we are procuring renewable energy generated within California from solar, wind, geothermal, hydroelectric, and tidal as defined by California law in the Public Utilities Code as Category 1. Including the use of energy storage with Battery Energy Storage Systems (BESS). Building and generating renewable energy locally will create good green local jobs through the expanded use of prevailing wages and Project Labor Agreements / Community Workforce or Benefits Agreements (see CommunityHiring.net and cabuildingtrades.org/issue/project-labor-agreements for additional details on such policies and agreements). These Agreements should include local hiring for prioritized projects, programs, and actions to reduce emissions in disadvantaged communities that rank in the top 25 percent of CalEnviroScreen’s ranking for San Diego regional communities.

Additionally, the further build out and construction of electric vehicle charging stations must require employment of California Certified Electricians with EVITP Certification. The A2Z Regional Gap Analysis states “existing programs such as EVITP should be continually promoted to get installers the baseline training they will need to install ZEV fueling infrastructure.” We have a collective priority and mission to support High Road Jobs – and construction apprenticeship programs have a proven track record of taking the high road with excellent training and education, opportunities to earn while you learn, with professional certifications (like EVITP) and college credits that create lifelong middle-class career opportunities for apprentice graduates. The UC Berkeley report further expounds, “skill upgrades via certifications like the Electric Vehicle Infrastructure Training Program (EVITP), build upon certified electricians’ foundational skills, rather than train for one

specific technology as a one-off training. The EVITP curriculum was developed based on evidence of worker and public safety risk associated with the installation and maintenance of EV charging stations.”

With industry partners, IBEW 569 owns and operates the San Diego and Imperial Electrical Training Centers which are State-Approved electrical apprenticeships with good wages, family healthcare, retirement benefits and college credits. Our apprenticeship and union recruit talent from the local community including high schools and veteran programs, and we have expanded our apprenticeship to serving more than 550 apprentices concurrently.

IBEW QUICK STATS IN SAN DIEGO AND IMPERIAL COUNTIES

- Constructed over 1,500 MW of solar and wind;
- Completed more than 10,000 rooftop solar installations on homes and businesses;
- Built over 550 MW of energy storage, including two of North America’s largest projects;
- Installed hundreds of electric vehicle charging stations;
- Achieved 65% - 90% local hire for community residents on Imperial County renewable energy projects, thanks to Local Hire Agreements: and
- Operates largest certified electrical apprenticeship program in San Diego & Imperial Counties.

Enclosure 3

Below you will find support for what UA Local 230 is pushing to better help the efforts to fight climate change. San Diego's approach to decarbonization must be comprehensive, nimble, and achievable. Achieving carbon neutrality by the 2035 goal will depend on adopting:

1. Waste to Energy to produce a circular economy
 - a. From Governor Newsom's Bill
 - i. The package also includes \$270 million to support a circular economy that advances sustainability and helps reduce short-lived climate pollutants from the waste sector, and \$150 million that will support urban waterfront parks, with a focus on underserved communities.
 - ii. <https://www.gov.ca.gov/2021/09/23/governor-newsom-signs-climate-action-bills-outlines-historic-15-billion-package-to-tackle-the-climate-crisis-and-protect-vulnerable-communities/>
 - b. AB 881 (Lorena Gonzalez) Plastic Waste Exports
 - i. <https://www.cawrecycles.org/ab881>
 - ii. Solution- keep waste here, process locally sourced waste to energy
 - c. Current project under PLA negotiations with California State Building Trades- World's Largest Green Hydrogen Project to Launch in California (Lancaster, CA)
 - i. <https://www.sgh2energy.com/worlds-largest-green-hydrogen-project-to-launch-in-california>
 - ii. Jobs on this project- The project will create 35 permanent jobs upon completion and more than 600 positions during the construction phase.
 - iii. Cost Comparison
 1. <https://www.sgh2energy.com/economics/#econheader>
 - d. Heavy Duty Transportation technologies- Planes, trains, trucks, and other transport vehicles emit 19% of the global black carbon. The cleaner technologies emerging here, including natural gas and hydrogen will have a tremendous impact on California and global decarbonization.
 - i. Assembly Bill 118
 1. The Clean Transportation Program, also known as the Alternative and Renewable Fuels and Vehicle Technology Program (ARFVTP) was established by Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), which took effect

January 1, 2008. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) extended the program through January 1, 2024. Using funds collected from vehicle and vessel registration, vehicle identification plates, and smog abatement fees, the program:

2. Expedites development of conveniently located fueling and charging infrastructure for low- and zero-emission vehicles.
3. Accelerates advancement and adoption of alternative fuel and advanced technology vehicles, including low- and zero-emission medium- and heavy-duty vehicles.
4. Expands in-state production of alternative, low-carbon renewable fuel.
5. Supports manufacturing and workforce training to help meet the needs of the state's growing clean transportation and fuels market.
 - a. <https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program>
- e. Waste to Energy- all waste shall be diverted from landfills, recycling efforts shall and utilized as energy. Renewable energy, processes waste, converts it to energy- electricity, hydrogen, renewable fuels.
<https://www.eia.gov/energyexplained/biomass/waste-to-energy.php>
- f. What is a Circular Economy? What is a circular economy and why is it important?
 - i. <https://www.epa.gov/recyclingstrategy/what-circular-economy>
 - ii. Circular Economy for Energy Materials
 1. <https://www.nrel.gov/about/circular-economy.html>
- g. San Francisco airport turning waste to sustainable aviation fuel
 - i. <https://www.flysfo.com/environment/sustainable-aviation-fuel>
 - ii. Neste Sustainable Aviation Fuel Explained
<https://www.youtube.com/watch?v=0mJtJI-a7tg>
- h. Dallas Fort Worth
 - i. <https://www.airport-technology.com/news/dallas-fort-worth-airport-saf/>
- i. Oakland, CA
 - i. <https://www.renewableenergymagazine.com/biofuels/neste-and-the-city-of-oakland-partner-20190424>
- j. FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation

- i. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/>
- k. Department of Energy Sustainable Aviation fuels
 - i. <https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels>
- l. Renewable Fuels
 - i. <https://www.nrel.gov/bioenergy/net-zero-emission-biofuels.html>
- m. Renewable Natural Gas (RNG): derived from animal and landfill waste, RNG harnesses methane, which is a naturally occurring, but potent and dangerous greenhouse gas (GHG). RNG projects capture this methane from existing food waste, animal manure, wastewater sludge and garbage, and redirect it away from the environment, repurposing it as a clean, green energy source.
 - i. Greenhouse gas reduction, landfill waste diversion, high-paying union jobs
 1. RNG will bring many quality union jobs- a recent study by Capitol Matrix Consulting shows that jobs from sources like RNG pay 30%-45% more than other so-called “green jobs.” The experts believe RNG will produce tens of thousands of union jobs in the next two decades.
 2. Animal waste into RNG- Cattle are the No. 1 agricultural source of GHG worldwide. Each year, a single cow produces about 220 pounds of methane. Methane from cattle is shorter lived than carbon dioxide but 28 times more potent. RNG from manure removes a noxious source to produce electricity, heat homes, or fuel vehicles.
 3. State waste reduction goals boost RNG development- SB 1383 (2016) set comprehensive requirements for organics diversion and established methane emissions reduction targets. RNG production from landfill sources is a key to the success of SB 1383’s goals of diverting waste and lowering GHG emissions from landfills.
 4. RNG production removes sources of pollution- in addition to stopping methane emissions from animal waste and landfills, RNG prevents manure runoff into rivers and water supplies. It also provides an alternative disposal option for sewage sludge and municipal solid wastes.
 5. RNG costs are declining- RNG has been more expensive to produce than other sources. But like solar a decade ago, public

policy like SB 1383 and legislative decarbonization policies promise to reset the marketplace, speeding up RNG as the next frontier in green energy.

6. Reuters: California's renewable natural gas vehicles turn carbon negative in 2020

- a. https://www.reuters.com/business/autos-transportation/californias-renewable-natural-gas-vehicles-turn-carbon-negative-2020-2021-06-02/?fbclid=IwAR1Qjaj5IwEkdjrUCW8eLFgLf-9aH2-yScGX_HmD80nIOq_1GYkN5axlko

2. Hydrogen

- a. Hydrogen is light, storable, energy-dense, and produces no direct emissions. Its use in sectors with currently limited alternative energy options, most significantly the transportation, building, and power generation sectors, would be a massive gain in the battle against climate change.
- b. From Governor Newsom's bill
 - i. \$3.9 Billion Zero-Emission Vehicle Package
 - ii. The California Comeback Plan supports California's nation-leading climate agenda with a \$3.9 billion investment to hit fast forward on the state's Zero-Emission Vehicle goals and lead the transition to ZEVs on a global scale. The package includes funding to put 1,000 zero-emission drayage trucks, 1,000 zero-emission school buses and 1,000 transit buses, and the necessary infrastructure, on California roads – prioritizing projects that benefit disadvantaged communities. Helping drive consumer adoption, the package funds consumer rebates for new ZEV purchases and incentives for low-income Californians to replace their old car with a new or used advanced technology car.
- c. Department of Energy Hydrogen Shot program:
 - i. If the Hydrogen Shot goals are achieved, scenarios show the opportunity for at least a 5-fold increase in clean hydrogen use. A U.S. industry estimate shows the potential for 16% carbon dioxide emission reduction by 2050 as well as \$140 billion in revenues and 700,000 jobs by 2030.
 - ii. Hydrogen Shot would catalyze innovation in any hydrogen pathway with potential for meeting the targets—such as renewables, nuclear, and thermal conversion—providing incentives to diverse regions across the country.
 1. <https://www.energy.gov/eere/fuelcells/hydrogen-shot>

- d. PORT OF LOS ANGELES ROLLS OUT HYDROGEN FUEL CELL ELECTRIC FREIGHT DEMONSTRATION 'Shore-to-Store' Advances Zero-Emissions Transit Across Supply Chain
 - i. https://www.portoflosangeles.org/references/2021-news-releases/news_060721_zanzeff
- e. Seattle City Light Explores Renewable Hydrogen Fuel at the Port with Department of Energy Awards
 - i. <https://www.portseattle.org/news/seattle-city-light-explores-renewable-hydrogen-fuel-port-department-energy-awards>
- f. Hydrogen Fuel Cell Applications in Ports: Feasibility Study at Multiple U.S. Ports
 - i. <https://www.energy.gov/sites/prod/files/2019/10/f68/fcto-h2-at-ports-workshop-2019-viii3-steele.pdf>
- g. The Hydrogen Stream: Three more ports want to become hydrogen hubs
 - i. <https://www.pv-magazine.com/2021/11/09/the-hydrogen-stream-three-more-ports-want-to-become-hydrogen-hubs/>

*Note- Port of San Diego should perform a cost comparison between lithium batteries and hydrogen- both are zero emission however lithium has continuous degradation meaning these vehicles and back up battery power walls will only maintain 100% capacity for the first few years and will degrade continuously over time and will be rendered inefficient after 3-10 years. Hydrogen will maintain full capacity for the life of operations.

3. Carbon Capture

- a. Carbon Capture & Sequestration (CCS)- CCS is the process of capturing carbon dioxide (CO₂) formed during power generation and industrial processes and storing it so that it is not emitted into the atmosphere. CCS technologies have significant potential to reduce CO₂ emissions in energy systems.
 - i. Roadmap for Carbon Capture and storage in California
<https://earth.stanford.edu/news/roadmap-carbon-capture-and-storage-california#gs.gp9izv>
 - ii. Carbon Capture in California: part of a statewide net-zero strategy
<https://www.energypolicy.columbia.edu/events-calendar/carbon-capture-california-part-statewide-net-zero-strategy>
 - iii. Department of Energy Launches Carbon Negative Earth shots
<https://www.energy.gov/fecm/carbon-negative-shot>

4. Geothermal and Long duration pump storage-

- a. Investing in and developing large scale GHG- free baseload power like geothermal and long duration storage is a powerful approach to green energy and carbon reduction. Costs to produce these sources have dropped as technology advances and will continue to fall as investment is increased.

5. Onsite Water Reuse shall be performed by licensed plumbers

a. Onsite Non-Potable Water Reuse Research

- i. <https://www.epa.gov/water-research/onsite-non-potable-water-reuse-research#:~:text=Onsite%20Non-Potable%20Water%20Reuse%20Research%201%20Risk-Based%20Modeling,.3%20Life%20Cycle%20Assessment.%20...%204%20Collaboration.%20>

Senate Bill 100

- Officially titled “The 100 Percent Clean Energy Act of 2018,” Senate Bill 100 (SB 100, De León):
 - Sets a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources — those such as solar and wind energy that do not emit climate-altering greenhouse gases.
 - Updates the state’s Renewables Portfolio Standard to ensure that by 2030 at least 60 percent of California’s electricity is renewable.
 - Requires the Energy Commission, Public Utilities Commission and Air Resources Board to use programs under existing laws to achieve 100 percent clean electricity and issue a joint policy report on SB 100 by 2021 and every four years thereafter.
 - <https://www.energy.ca.gov/sb100>

SAN DIEGO REGIONAL DECARBONIZATION FRAMEWORK TECHNICAL WORKING GROUP COMMENTS

The following document is a compilation of comments from the San Diego Regional Policy & Innovation Center (SDRPIC) team and partners. Our feedback is divided into two sections. The first section provides general high-level feedback on the entire report. The second section includes specific comments and suggestions organized by chapter.

GENERAL FEEDBACK

Overall, this report would benefit from the addition of a more comprehensive executive summary. The study framework section provides helpful context for the chapters that follow, but it is difficult to identify the common assumptions and caveats across all of the sector-specific analyses in the report and to get a big picture view of key findings from all chapters. We suggest adding more detail on the following topics up front to guide readers across the four main technical chapters of the report:

- Clarify the definition of net-zero or zero-emissions up front in the report (e.g., a 5% reduction in annual emissions within the region from a 2020 baseline, offsetting residual emissions in part between now and 2035, after which all residual emissions will be offset annually).
- Add more information about the baseline or Business-As-Usual (BAU) case for all chapters. Consider including one or more BAU graphics, ideally broken out by sector, in the introduction/ executive summary to help the reader contextualize the relative impact of the decarbonization pathways in the full report. State clearly up-front if the baseline assumptions for the different sectors vary based on available data and the modeling detailed in Appendix A and provide guidance for the reader on how to compare pathways with different modeled baselines and/or assumptions. Also call out assumptions about projected emissions growth.
- At the beginning of Chapter 7, the authors state that “the scientific modeling of the Regional Decarbonization Framework (RDF) offers least-cost technically feasible pathways and near-term strategies to lower emissions and set the region on a path to decarbonization.” This is a helpful anchor that should also appear up-front in the report with clear definitions and/or thresholds for how the terms “least-cost” and “technically feasible” are used throughout the report to allow for better comparability across the four main technical chapters.
- In multiple sections of the report, the chapter authors include caveats about how technical feasibility of a pathway or raw resource potential does not necessarily correspond to economic feasibility of individual projects or to clear jurisdictional authority over emissions reductions activities. Consolidate and clearly state these caveats up front as well and indicate what is outside the scope of the report entirely.

- Add more context around the likely role, need, and procurement strategies for carbon offsets in achieving emissions reductions targets. At several points in the report, chapter authors note that given San Diego’s geography and natural assets achieving dramatic emissions reductions by 2035 will require either offsets or other negative emissions technology solutions. Consider adding a consolidated discussion on the role of offsets in one of the concluding chapters and cross-referencing this section consistently across all four sectoral chapters.

CHAPTER COMMENTS

Geospatial Analysis of Renewable Energy Production

- This section does a good job of describing the methodology for identifying viable space for renewable energy generation; assessing the technical potential of on-shore wind, solar, and geothermal resources; and applying scenarios for candidate project area (CPA) identification.
- One major question is why the authors chose to rely on RETI 2009 transmission data and assumptions rather than using the more recent [2017 RETI 2.0 report](#) and related material.
 - Based on the RETI 2.0 study updates, we strongly suggest the authors consider adjusting their analysis to take into account the more recent and pragmatic assessment of long-distance and high-voltage (HVDC) transmission options and constraints particularly in and around the Imperial Valley.
 - Given that energy imports from across county lines are being considered as part of this chapter, for example in the case of geothermal imports from Imperial County, it also seems logical to extend the discussion to other import options. At a minimum, the chapter should clearly define the scope for assessing the geographic extent of energy imports or state that the assumption is that all renewable energy will be generated within San Diego and Imperial Counties.
- Similar to the transmission capacity source cited, it appears the rooftop solar estimates are based on assessments dating back to 2003. Clarify why no more recent sources were used.
- If possible, the authors should consider adding a calculation of how much CO₂ would be released through the development of CPAs in the various scenarios. Chapter 4 references these types of land use change related emissions, so it would be helpful to have a cross-referenced discussion and/or estimates of how much CO₂ is currently stored in soils and in plant life would be released under the various renewables expansion scenarios in this chapter.
- Although the authors are clear that the scope of the analysis in this chapter does not include any novel technologies, like off-shore or floating wind platforms or green hydrogen, and the chapter dedicates only one sentence to battery storage, adding more context or discussion of how these complementary technologies could impact the supply and economics of renewable energy is strongly encouraged.

Accelerating Deep Decarbonization in the Transportation Sector

- This chapter is well organized and gives the reader a clear and current picture of what decarbonization activities are already part of ongoing plans (SANDAG's 5 Big Moves) and where there are opportunities for accelerating decarbonization through faster adoption of Electric Vehicles (EVs) and more rapid reductions of vehicle miles traveled (VMT).
- Although emissions projections and emissions reduction estimates from SANDAG are provided, there are no additional calculations of the emissions reductions benefits of the actions/measures proposed to accelerate EV uptake and VMT reductions. Make this explicit and clarify how the model comparison in Table 3.7 connects to specific calculations.
- It would also be helpful to have some baseline information about how VMT relates to current emissions and projected emissions growth before jumping to the discussion of new transportation plans and goals. For example, the extensive list of reduction levers and policy tools offered to reduce VMT does not include any estimates or ranges of the decarbonization impacts or associated costs of each that allow the reader to make effective comparisons or trade-offs. Consider adding additional detail, where possible, to enable prioritization.
- Similarly, given that the emissions reductions associated with EV adoption are heavily dependent on emissions associated with regional electricity generation, it would be helpful to have direct cross-references between Chapters 2 and 3 and additional baseline information and details on the emissions reductions implications of the timing of EV adoption relative to electricity sector decarbonization activities.
- There are two topics that also seem to be significant omissions from the chapter as whole:
 - The first is the difficulty of building out an effective network of EV charging infrastructure. Impacts on the transmission grid and its reliability as well as cost related to its deployment will have substantial impacts on the successful rollout of electric vehicles. We strongly recommend adding a discussion of these issues and more information on costs (i.e., unit cost, installation, operations, maintenance, replacement cost, transformer and substation upgrade costs, permitting, etc.).
 - The second gap is around the role of alternative fuel sources. Early in the chapter the authors note that investment in alternative fuel sources and the technologies to support them will be key to any decarbonization; however, any deeper discussion is lacking. Consider adding more on the potential of alternative fuels and the linkages between consumer vehicles and other elements of the regional transportation system, including shipping, long-haul trucking, and aviation.
- Throughout the chapter expanding uptake of EVs and reducing VMTs are treated as parallel and equally important decarbonization pathways. A final question associated with this chapter is whether the authors have any specific recommendations on prioritizing investments in VMT reductions over EV adoption or vice versa based on decarbonization potential, technical feasibility, timing of related investments or other criteria.

Natural Climate Solutions and Other Land Use Considerations

- This chapter does an excellent job of directly stating assumptions about land use change up front and explicitly linking the discussion to activities proposed in other chapters, such as land use change for new renewable energy generation.
- Two areas to consider adding additional detail:
 - What are the implications of wildfire on the sequestration potential of natural and working lands? How are fire impacts factored into sequestration baseline estimate and forecasted sequestration potential calculations over time? Similarly, how are flood impacts and flood related erosion taken into account?
 - Are there any regional estimates of the emissions reductions value of urban tree cover through reduced urban heat island effects and lower summer cooling demand? Consider cross-referencing with the electricity sector chapter and aligning baseline assumptions and forecasted demand growth.

Decarbonization of Buildings

- This chapter makes a clear case for focusing on natural gas use in the building sector as a high-priority direct decarbonization pathway; however, lack of discussion around increasing cooling demand in the region and the lack of differentiation between existing building stock and new construction make it difficult to assess the feasibility of the recommended technologies, fuels, and policy measures proposed.
- This chapter would benefit (like the others) from a clear statement up front about what percentage of regional emissions are attributable to the building sector, what assumptions are being used for forecasting growth/change, and from breaking out Scope 1 and Scope 2 emissions for residential and commercial buildings.
- Just as the authors separate residential from commercial buildings in the discussion, it is essential to explicitly differentiate analysis of and recommendations for retrofitting existing building stock versus setting standards for new construction to provide any clear sense of technical feasibility and cost effectiveness.
- Typical mitigation hierarchies also explicitly focus on demand reduction before transition to renewable or alternative fuel sources. If this approach is being applied in this chapter, that should be clearly stated up front and the authors should define what the options are for demand reduction for electricity and natural gas and why they are less significant than the pathways proposed. Where relevant, it would be helpful to indicate how demand reductions through building stock improvements impact solar, wind, and DER needs and projections (capital and land requirements) in Chapter 2. If not, the reason for omitting efficiency improvements and demand side emissions reductions options should be clearly stated.

- The graphics 5.2 (page 124) and 5.7 (page 129) should be updated to show the year-on-year difference and not the aggregated totals. The axes should also be normalized to make it clear which cities are contributing most to both commercial and residential emissions. Additionally, emissions should be broken out on a per capita basis.
- The discussion of low-carbon fuels on pages 141-142 is a helpful addition to the report overall. It is unclear why this appears only in the building sector chapter. Consider cross-referencing with Chapter 2 and adding more detail on wastewater treatment plants, landfills, manure, and other biogenic sources of fuel, along with more on the economics of hydrogen production and use in lieu of natural gas in buildings and more broadly in the electric sector.

Employment Impacts through Decarbonization for the San Diego Region

There are several issues of real concern in this particular chapter of the report, particularly with how race and income breakdowns are treated in the analysis in sections 6.4 and 6.5.

- Combining all non-white minorities into a single BIPOC group in this analysis does not provide a constructive picture of our regional workforce or a helpful starting point from which to assess equity or income inequality issues and set workforce transition priorities.
- Table 6.8 on page 186 displays the average wage within the fossil fuel industry as upwards of \$200k per year. In another table, the authors note that BIPOC workers make up the majority of the fossil fuel industry workforce, where ~60% of the workforce is non-white. Because the average wages for BIPOC workers are not disaggregated in any of the data tables, this creates the impression that average wages of \$200k per year are reflective of the industry-wide majority-minority workforce and there are no significant pay disparities when in fact, the types of fossil fuel jobs available in the San Diego region are typically professional service positions, which are not representative of the industry as a whole (see Table 6.11a). We recommend breaking out salaries by job type and being clear about where other gender and race differences exist (e.g., lack of health insurance and/or lower “quality” jobs).
- It is unclear why this chapter is the only chapter that incorporates data from 5 neighboring counties in its analyses. Clarify the assumptions behind this decision and add a breakdown of differences in race, income, etc. at the San Diego county level in a separate table or appendix.
- Table 6.15 on page 195 does not appear to differentiate between (early) retirements and job losses. Clarify the assumptions behind this table and add more detail on the implications of job losses by race and gender across the pay-scale.

Overall, the authors of this chapter need to reevaluate how best to disaggregate and present the results of their analyses to enable decision-makers to anticipate disproportionate impacts of industrial transitions on BIPOC workers and inform the design and implementation of equitable workforce transition programs to areas of new employment opportunity.



SIERRA CLUB

SAN DIEGO CHAPTER

Dec. 3rd 2021

County of San Diego
1600 Pacific Hwy.,
Room 212, San Diego, CA 92101

Re: County of San Diego's Draft Release of the Regional Decarbonization Framework

Decarbonization is the key to a successful Climate Action Plan and the prevention of Climate Change. The County's Regional Decarbonization Framework is our first attempt at envisioning Deep Decarbonization. This is a vitally important aspect of our climate action efforts, and Sierra Club San Diego applauds the effort. Deep Decarbonization requires serious introspection, and deep analysis. It casts aside our previous efforts to guess at cutting emissions, measuring again, and soon realizing that those projected measures were never anywhere near enough. In a failed intention of brevity, we've focused on constructive criticism and have skipped platitudes below, but please understand that we value this document and the work behind it.

Energy

Despite this excellent effort, Sierra Club believes that revisions are needed. Beginning with the subject of renewable energy prospects in the county, we find significant flaws with the argument that Levelized Cost of Energy is an appropriate factor in determining the best siting for solar. This assumption ignores the cost to consumers of transmission lines and energy losses which traditionally have been added to power bills as an unavoidable infrastructure cost. Infill solar avoids the creation of new power line infrastructure. Infill solar also has the potential of democratizing solar profits, as each installation placed on a property owner's roof represents an investment and future energy cost savings when compared to private desert development of utility solar. If equity is a goal of this framework, then minimizing privatization of new resources by a small subset of developers is surely also a worthy outcome. The assumption that cost is the most important criteria for site selection is invalid, especially with the RDF's understanding that natural landscapes make the best carbon sinks.

The report needs better maps. The current maps of solar and wind potential in SD County are very difficult to read properly so it would be very helpful if a future version has improved maps that include landmarks like town and highway names. We were still able to determine that the recommendations excluded utility-scale renewable energy development potential from most or all natural federal public lands, which is good to see; however, the concentration of the development potential on top of rural communities like Borrego Springs, Boulevard, Chihuahu Valley, Jacumba Hot Springs, and even Julian is not a good choice, in our opinion. This is not a

viable strategy due to expected enormous community impacts but also because transmission infrastructure can't be improved across nearby preserve lands to deliver the energy to the coast, especially in the case of Borrego Springs that is surrounded by Anza-Borrego Desert State Park.

Our region now benefits from two growing Community Choice Aggregators, the SDCP and the CEA. Each of the CCAs represents the potential to manage micro-investments by consumers through an on-bill system to finance the new creation of local infill solar. Parking lots could be covered with CCA managed solar that is cooperatively owned by those customers/investors. \$5 or \$10 contributions, when money is available, could be invested by bill payers to lower their bills with solar share ownership, creating a constant pipeline of new investment dollars by the community to build out local renewables. It would represent an investment opportunity to all, resulting over time in a small source of investment income, something many community members are rarely incentivized to do. This funding of CCA owned, locally constructed, electricity sources could counterbalance any solar rooftop declines we see if Net Metering changes result in declining single-family-home solar adoption and bolster our solar installation industry with high wage, union jobs.

Diversification of power sources is needed. San Diego and California are already too heavily weighted towards solar in our power procurement. In addition to focusing on solar, this framework should describe the need to diversify our renewable sources to include wind and geothermal because they represent power at different times and are not seasonally dependent, as solar is. It is not appropriate to just list them as possible alternatives with cost comparisons. If the onshore wind source available areas are not adequate, let us describe the need to build offshore wind, or land based wind elsewhere in adjoining spaces outside the county. Going too heavy on solar will require a much higher need for electric storage. Despite current predictions that lithium batteries are a cheap easy solution, relying heavily on those will actually create strong competition for battery resources with transportation, so we'll need to focus also on pumped hydro storage. In a theoretical 100% solar grid, 50% of our solar would be overproduced in the summer in order to have enough solar production during the shorter solar winter day. The RDF must address that. In a free market economy, an overbuilt regional solar program will result in curtailed solar power (unused half the year) and that will represent unprofitable solar development. That represents a critical pain point in completing a renewable grid based too heavily on solar, as there will be no incentive to build the final stages when they will not be profitable if only contracted to sell power during half of the year. An assumption in the report was made that solar is a priority, and that is a bad assumption. An assumption was also made that offshore wind is not appropriate and that too is a bad assumption.

A predominantly solar renewable strategy is not consistent with nighttime EV charging, as it will require daytime storage of solar generated electricity at the utility level, and then later releasing from utility storage to EV batteries at night, all the while incurring additional energy losses (10-20%). A careful appraisal of our heavily biased existing Time Of Use EV plan at \$.09/kWh sold by SDG&E, exposes the fact that all of our EVs are being powered by natural gas sourced electricity at night, as wind and geothermal currently represent a small portion of our state wide grid source mix from midnight to 6am.

Regarding the Carbon Capture and Storage of combustion, that technology has been tried and has failed in the production setting for many years. We recommend that the RDF does not include it as a strategy for Deep Decarbonization.¹

Transportation

The biggest source of greenhouse gas is transportation. We appreciate the acknowledgment that the current Regional Plan as proposed falls far short of our necessary transportation emissions reductions for Deep Decarbonization or even compliance the executive orders at the state level. Transportation is a challenging place for our governments to address decarbonization, because they have few levers to dictate how people move. But where the RDF acknowledges that the transit, active transportation, and smart growth plans are not enough, it then fails to acknowledge that we must go back and address why that is so. If current estimates that transit adoption will account for too small of a shift away from single occupancy cars, we must not accept that as fate, but instead plan to make transit a much bigger part of the future in San Diego. The same goes with active transportation such as walking and cycling. We have made this argument to SANDAG as well.

We disagree with the RDF's statement, *"In order to accelerate electrification through this strategy, SANDAG would need to adopt an aggressive implementation timeline for Complete Corridors and Transit Leap, focusing on implementation in the parts of the County where transit will be most viable and well-utilized."* We disagree, not because electrification of transit and use of active transportation is not important. We disagree with it, because it makes the same mistake that SANDAG does, of prioritizing the expansion of these measures ***"in parts of the County where transit will be most viable and well-utilized."*** SANDAG referred to this as propensity mapping. This is a self fulfilling prophecy. If we only build and improve in places where we believe people are willing to take, or must take transit, we do not create the opportunity and necessary infrastructure for the ENTIRE community of San Diego County to shift to sustainable means, including the most efficient, most effective and longest lasting type, which is electric rail.²

¹ Jacobson, Mark Z. (2019). *The health and climate impacts of carbon capture and direct air capture*. *Energy & Environmental Science*, 12(12), 3567–3574. doi:10.1039/c9ee02709b

<https://sci-hubtw.hkvisa.net/10.1039/c9ee02709b>

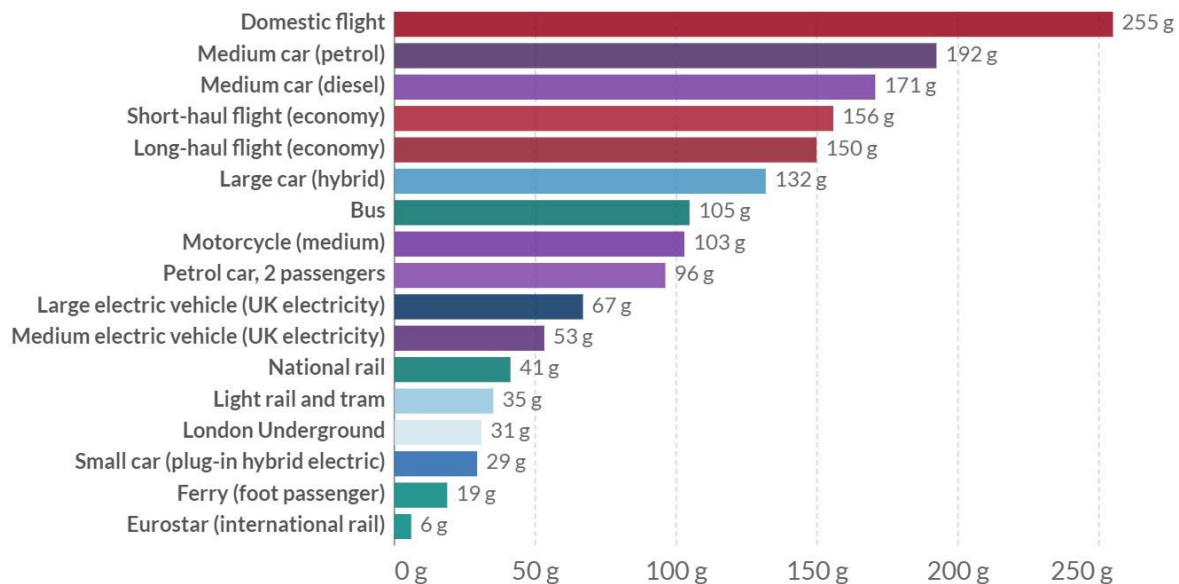
² <https://ourworldindata.org/travel-carbon-footprint>
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/901692/conversion-factors-2020-methodology.pdf

Carbon footprint of travel per kilometer, 2018

The carbon footprint of travel is measured in grams of carbon dioxide equivalents per passenger kilometer. This includes carbon dioxide, but also other greenhouse gases, and increased warming from aviation emissions at altitude.

Our World
in Data

[+ Add travel mode](#)



Source: UK Department for Business, Energy & Industrial Strategy. Greenhouse gas reporting: conversion factors 2019.

CC BY

Note: Data is based on official conversion factors used in UK reporting. These factors may vary slightly depending on the country, and assumed occupancy of public transport such as buses and trains.

Electric rail also has a much lower operator to passenger ratio than Bus Rapid Transit, which the Regional Plan relies too heavily on. Bus Rapid Transit would rely on very costly battery electric buses, and would require appreciably more maintenance, and corralling for high intensity charging as MTS has been doing already in a singular depot for their small fleet. Unlike autonomous cars, which are always 10 years away from being viable, autonomous electric rail, when grade separated, is a very strong possibility and has existed since the 1980s in certain settings.

Unfortunately, the RDF relies heavily on electric vehicles to address deficiencies in the SANDAG plan. We should not accept this narrative as the right long term, deep decarbonization approach. The most efficient methods of personal travel are the bicycle, walking, and electrified mass transit. The least efficient is the single occupant personal car, truck, or SUV. Adopting regional rail travel is entirely reasonable and will allow us to operate transportation reliably, indefinitely with occasional maintenance with the same infrastructure once built. Most places in the world accept transit as their primary means of traveling longer distances, and we used to do so here too.

It is far less wise to build too much of our new future on electric cars, trucks, and SUVs, which will require a massive shift in manufacturing, require rapid mass adoption, create industrial emissions associated with mining and transportation of raw materials, and require a constant

fabrication of new vehicles and batteries, indefinitely. That is not sustainable. Constant manufacturing of disposable (even durable disposable) goods is not consistent with Deep Decarbonization. All modern passenger cars are subject to complete writeoff when they are damaged in accidents because of crumple zones, and as such, EVs are failing to meet the false promise of cars that last forever, or even appreciably longer than ICE cars have.

We are also seeing that EVs, like their gasoline forefathers, are bloating to enormous proportions, negating much of the emissions wins they had once claimed. Just as the construction and architecture industry is finally addressing embodied carbon emissions involved with the full life cycle of a building, the EV industry is finally having to admit that the size of the vehicle and the battery are limiting factors in a vehicle's label of Zero Emissions. Estimates vary wildly regarding the embedded carbon in light duty EV vehicles, but with the rise of the Ford F150 Lightning and Hummer EV tipping the scales at 6,500 and 9,000 lbs. respectively, and offering batteries of 150 kWh and 200 kWh size, we cannot hold EVs up as a solution to Deep Decarbonization. At least not without a magical shift in how EVs and their batteries are mined and manufactured. The RDF should explicitly address the embodied carbon problem of personal vehicles, ICE or EV, and that the trajectory of large EV preferences is already casting serious doubt on EVs ability to be viable under Deep Decarbonization. The section on transportation admitted that "*Vehicle production emissions*" were not considered, but they should be in determining the sustainability of EVs.³ We recognize that questioning EV's validity in fighting the Climate Crisis sounds like an extremist point of view. The fact is, Deep Decarbonization doesn't just require marginal or incremental changes coupled with short term thinking. Instead it forces us to use Seventh Generation planning..

Regarding EV charging, the need for massive amounts of public charging infrastructure is a mistaken path for EVs. Unless we reverse the trend of 250+ mile range EVs, people will not be charging at the other end of their regional destinations. They will charge almost exclusively at home after work, as they do today. Unfortunately, that is inconsistent with a predominantly solar renewable energy strategy and conflicts with peak demand, as mentioned earlier.

Daytime EV charging at work destinations could be the strategy for those with no dedicated parking space at home or simply because daytime charging is the only efficient way of sustaining a large EV ecosystem. If that's the case, the RDF must carefully describe this significant charge time regional policy shift. Employee workplace charging has been subsidized by businesses thus far, but to scale workplace charging, a different billing paradigm will likely be needed, and predicting how many chargers are needed and who gets to use them will be problematic. On a separate matter, Level 3 DC rapid charging leads to far too unpredictable loads on the local grid, and should only be seen as a solution for long distance travelers at freeway rest stops or select locations in towns and cities.

The RDF focuses on lowering VMT as is appropriate. Vehicle Miles Traveled are lowered when people move together or use active transportation and micromobility. A strategy that leans heavily on the shift from ICE powered cars to EVs is doomed to NOT lower VMT, as the

³ <https://techcrunch.com/2021/08/22/the-tough-calculus-of-emissions-and-the-future-of-evs/>

Regional Plan EIR analysis has demonstrated. When we use mass transit we trade VMT for Passenger Miles Traveled, converting a single vehicle's propulsion to be more effective because those passengers are grouped. This is fundamental in Deep Decarbonization, and the RDF should explicitly describe that relationship. We have plenty in the community who are not yet digesting that need. Describing lowering VMT as a necessary agenda will be interpreted in one of two ways:

1) You are limiting my ability to move

2) I have to move together with others, and my VMT is lowered automatically without forfeiting my ability to move.

So it is imperative that we frame the narrative of HOW a society can best lower VMT without limiting movement.

Because e-bikes represent a transformational opportunity in our communities to replace car trips, we agree with policy that enhances bicycle infrastructure throughout the region, and feel this should be a focus in all communities, not just in urban core areas. In 2020, e-bikes outsold electric cars in the US 2 to 1. San Diego could lead the nation in bicycle mode-share, but we do not, because we lag in safe cycling infrastructure. Other cities have proven that young and old and even people with disabilities can use this infrastructure to move with truly sustainable impact. E-bikes deliver much more quick and equitable adoption of electric personal travel than electric cars, trucks, and SUVs do, and the regional, national, and international sales figures for e-bike vs. EVs proves this. Additionally the resources needed to build, and operate e-bikes compared to EVs can be as high as 200 to 1 or even higher, with the advantage to the lightweight bike. Most e-bikes use 550 Watt-hours of battery compared to EVs with anywhere between 50,000-150,000+ Watt-hours, again referencing forthcoming EV pickup trucks.

Natural Climate Solutions & Land Use

We found the recommendations to allow natural lands to remain undisturbed to be excellent. We would remind the authors of the energy section to heed this recommendation and not choose to site solar installations either in natural habitats where they disturb natural landscape, or where they require major transmission lines and service roads which cause similar disturbance. This is why solar infill deserves so much stronger consideration than the Nature Conservancy report recommendations offer. We also agree with recommendations to reinforce smart growth with infill development and mixed use buildings near transit. Walkable/bikeable cities are a constant evolution, but we must start better planning with this in mind immediately. Quick build bicycle infrastructure, while seemingly involving only transportation impacts, also reinforces the concept of keeping people local and encourages hyperlocal commerce, creating benefits to more dense living. ADUs can be an important segment of low cost housing, and we should work to ensure that they are used as such and not merely as vacation rentals.

Building Electrification

The statement, *“Given San Diego’s mild winters and prevalence of air conditioning, we do not expect electric panel upgrades to be required to adapt efficient electric space or water heating in typical homes,”* may be shortsighted. Many older homes in San Diego do not have central air conditioning nor electric water heaters, and many have small circuit panels. We support Air Source Heat Pumps and Heat Pump Water Heaters, but want to clarify that point, and perhaps further research into this matter will be insightful.

While we appreciate the workers of SDG&E who keep our utility working well, the section which details how to best keep SDG&E financially viable is not particularly relevant to Deep Decarbonization, particularly because they also have the electricity franchise and their customers will shift in fuel use, not population. The utility currently collects healthy profits, and if decarbonization will cause financial penalties because of stranded assets, they have had plenty of time to prepare financially for the transition.

The arguments about the economics of stranded assets is helpful to understand that as a possibility. It should not be described as a foregone conclusion, because this is uncharted territory, and price increases, even regarding the cost of infrastructure per ratepayer, are subject to CPUC ruling. That said, the discussion about building electrification is comprehensive, well written, and should lead readers to the conclusion that we must electrify as quickly as possible.

One point that could help is to show how building electrification, if accelerated, is low hanging fruit in terms of demonstrable decarbonization that is possible, especially when compared to municipalities' relative inability to regulate transportation choices. Regulations, such as burnout policy, curtailment of new sales of gas appliances, replacement of gas appliances during sale of homes/buildings, mandating proof of all-electric ready by a target date, creating mandated business plans for decarbonization of commercial buildings by deadline, or creating schedules for neighborhoods shutting off gas lines, should be enumerated and discussed in this framework as viable triggers, to paint a picture to the community how we might enforce the necessary transition. It's inadequate to presume incentives will make the transition happen under free market choice. Heat pumps have been available for many years and adoption even with significant incentives has never been appreciable. San Diego's new Climate Action Plan is signaling building electrification of existing buildings with targeted milestones. We should be having the discussion about the methods we can use to guarantee the transition on a timeline.

Policy Considerations

*“San Diego’s contribution to global carbon emissions is .08%, a proportion that will only decrease as efforts to decarbonize continue and emissions in other regions rise. The prepandemic carbon dioxide equivalent emissions from the San Diego region were approximately 35 million metric tons (MMTCO₂e). Pre-pandemic emissions were roughly 425 MMTCO₂e in California, 26,558 MMTCO₂e in the US, and 43,100 MMTCO₂e globally. **Therefore, for San Diego to have a meaningful impact on atmospheric carbon, it must***

demonstrate successful innovations that generate local benefits and engage other regions to follow its lead. If from the start, San Diego focuses on the diffusion of technologies and policies to other regions, the region can be a leader that generates followership among the many other regions struggling with similar challenges in the effort to decarbonize.”

While the sentiment seems admirable, this statement is presumptuous, and should be removed. The San Diego region has failed in many ways to embrace the need for, and the strategies to decarbonize, so far. As one section points out, we are among the most populous counties in the nation, and we are just now trying to tackle this issue in a comprehensive way.

In the work we do at the Sierra Club to challenge our community and our leaders to do better, we very often hear the argument that our efforts would be for naught because other gross polluting countries like China and India won't do their part, so the situation is hopeless. The statement quoted above feeds into that false narrative that San Diego's contribution to emissions and the reduction of those emissions are too small to matter. Of course that type of thinking expressed around the world in each community would lead to complete inaction. Instead, we urge that this framework be continuously refined, and if its techniques and guidance are exemplary, others will see that it is useful, and they may choose to learn from it. If the County can find a way through the RDF to create a local solar panel manufacturing industry, a wind turbine industry, build R744 heat pump water heaters, build a world class transit system, increase active transportation mode share to the highest in the Western Hemisphere, and become the first county in the nation to radically decarbonize, then we can offer to coach others and share our innovations. Still we applaud this effort and will always be grateful that it started our challenging conversation about deep decarbonization.

In closing, we would suggest that regulation be described as an important lever in quickly decarbonizing the region in each section. We did not incentivize catalytic converters on the exhaust systems of cars. We regulated them. We did not incentivize the elimination of lead in gas. We regulated it. We did not incentivize the elimination of two-stroke engines in motorcycles and watercraft. We regulated them. We did not incentivize the retirement of incandescent light bulbs. We regulated them. In each of those cases we did what must be done for lesser reasons than the fate of the world. We must remain steadfast in our commitment to create change, not wish for it to happen eventually with incentives.

Sincerely,
Karl Aldinger
Conservation Organizer - Sierra Club San Diego



Southwest Wetlands Interpretive Association
PO Box 575
Imperial Beach, CA 91933

16 November 2021

County of San Diego, LUEG
Attention: Murtaza Baxamusa
1600 Pacific Hwy., Room 212
San Diego, CA 92101

(submitted 16 November 2021 via email to ZeroCarbon@SDCounty.ca.gov)

Subject: San Diego Regionalization Decarbonization Framework - Draft

Dear Mr. Baxamusa:

The Southwest Wetlands Interpretive Association (SWIA) is a non-profit organization dedicated to helping preserve and enhance wetlands throughout southern California – and particularly in the Tijuana River watershed and South San Diego Bay. Historical losses of Bay wetlands (particularly vegetated and shallow-subtidal types) have occurred from development, and climate change and sea level rise represent significant additional threats to natural resources and infrastructure/developments in and around San Diego Bay.

SWIA supports many elements and approaches in the Regional Decarbonization Framework. We look forward to participating in the revision/refinement process to create a vision that our region can use as the local governments, businesses, and public choose how to effectively and quickly reduce our carbon emissions to net zero. Our specific comments are provided below.

Study Framework

We support a countywide overview of how the system-wide approach and the use of modeling and pathways can be used to identify the most potentially viable means (i.e., multiple pathways) to achieve the plan's goals of decarbonization by 2045. Equally important are the identification of potential dead-end or nonviable "opportunities," key decision points, and opportunities for synergies among the key sectors: energy, transportation, and land use. That said, the next version of the document should provide more discussion regarding how the "pathways" approach integrates with the realities that this

region has already initiated a host of planning decisions and plans. For example, as referenced later in the document, SANDAG has identified a specific set of “pathways” – the 5 Big Moves – that would put the region onto a set of fairly clearly delineated pathways for reducing greenhouse gas emissions. That would not necessarily preclude other “transportation sector pathways,” and the document should clarify how the multiple pathways approach accommodates existing planning efforts and where there potentially serious impediments to or conflicts with more effective pathways.

An additional comment is that because the approach utilizes a “high-level” view of the existing and future conditions, which can miss crucial issues or even locational concerns, we believe that some refinements to the assumptions or modeling parameters may be necessary. A too-broad analysis may fail to appropriately address lower-level, but important concerns. Where relevant, we provide examples in our subsequent comments.

Geospatial Analysis of Renewable Energy Production

Implicit in the statement on Page 12 of the document, “Decarbonization of the electric sector in San Diego County will require substantial deployment of new renewable resources,” is that significant new clean energy is essential to achieve the region’s zero carbon goal. The analysis of potential utility-scale production clearly identifies how that could be achieved by 2045. However, the screening process for siting renewable facilities applies a too coarse-grained method by treating each of the primary screening criteria (e.g., low environmental impact, high pecuniary value, high carbon sequestration, developable) as independent decision choices. The evaluation of a theoretical countywide renewable “project” pathway should utilize all of these criteria, with some level of “within criterion” (low-to-high constraint) rating to assess the least constrained – or most optimized – alternative pathway(s) that could meet the project objectives. Even under the rubric of a generalized “pathways,” the analysis should not disregard how the County and local jurisdictions must (and do) use integrated planning processes – and CEQA – when doing large-scale planning. The reality is that all of those criteria should be part of a comprehensive, integrated screening process.

It isn’t clear why the pathway analysis did not examine out-of-San Diego/Imperial counties options for obtaining renewable power. San Diego obtains a large part of its current renewable energy via the larger CALISO and Western States power grid systems, and other areas will be investing in/building solar, wind and other renewable facilities. The next version of the document should address “outside” renewable energy supply options, even if that is concluded to be a lesser or “dead-end” pathway.

An example of the problem is the application of the screening criteria as independent assessment variables in the LCOE-based selection analysis. The “low environmental impact” criterion is so broadly applied as depicted in Figure 2.9 – essentially all of San Diego County except within the urban zone – that it precludes a reasoned examination of possible facility siting. Conversely, except when constrained by low environmental impacts (as defined in the document and analyzed in CPA Scenario 1), all of the analyses would direct significant new production into the Jacumba Hot Springs east area (in both the

San Diego only and San Diego/ Imperial siting assumptions) and Borrego Springs area (San Diego facility siting only). The Jacumba focus area appears to encompass a critical wildlife movement corridor/area for the federal endangered Peninsular bighorn sheep population that moves to/from the Sierra Juarez Mountains just south of the international border up and into the Anza-Borrego Desert and mountains. A recent study of the populations of bighorn sheep in the area (Michael R. Buchalski, et al. 2015. Genetic population structure of Peninsular bighorn sheep (*Ovis canadensis nelsoni*) indicates substantial gene flow across US–Mexico border. *Biological Conservation* (184): 218-228) concluded that “construction of a US–Mexico border fence or wind energy infrastructure would disrupt connectivity of the metapopulation. Future conservation efforts should focus on identifying dispersal corridors and maintaining functional connectivity to facilitate recolonization of unoccupied habitat.” Prioritizing this area for utility-scale renewable (solar and wind) facilities appears to pose a serious threat to the only known, viable wildlife connection for this endangered subspecies between California and Baja California.

The discussion of transmission line upgrades/improvements doesn’t address if the Borrego Springs site (or those listed in the document) would require new transmission rights-of-way. While the siting of utility-scale facilities has its own problems, getting new/expanded transmission lines approved appears to have much greater resistance (<https://www.theatlantic.com/science/archive/2021/07/america-is-bad-at-building-power-lines-lets-fix-that-transmission-climate/619591/>).

The wide range of potential rooftop solar installation as a percentage of supply (5-30%) warrants revisiting in the next version of the document. Improving the pace and extent of rooftop solar could significantly reduce the reliance on utility-scale facilities that consume/disturb natural and working lands (which sequester carbon, as discussed later in the document and our comments). What pathways are feasible to put the region on track to achieve the higher end estimate? Does the passage of the federal infrastructure bill clarify some of the pathway uncertainties that are identified in the current document?

We raise these issues because the document states as one of its objectives/outcomes, to identify and avoid potential dead-end opportunities, thereby preventing wasteful efforts and expenditures that would slow the achievement of full decarbonization by 2045. These are only two concerns and many others will certainly be raised about how successful the pathway approach is and where revisions and improvements should be made in the next version.

Accelerating Deep Decarbonization in the Transportation Sector

We agree that the currently proposed 2021 RTP/SCS provides a strong foundation for meeting legislatively mandated near-and-midterm GHG emission reduction targets and that it is insufficient to put the region on a pathway to achieve longer-term targets/goals (i.e., reduce emissions by 40% by 2030 and reach decarbonization by 2045). While there are numerous opportunities to encourage EV adoption, and the down-scaled analysis by jurisdiction is useful to show how significant that adoption would have to be, it would be helpful to place some kind of weighting on the opportunities and constraints relative to the EV adoption pathway.

The emphasis on increasing the number of EVs above the RTP projection as a primary pathway to accelerate reductions in transportation-generated GHG emissions also identified that “SANDAG would need to adopt an aggressive implementation timeline for Complete Corridors and Transit Leap, focusing on implementation in the parts of the County where transit will be most viable and well-utilized.” We agree, but the document does not provide sufficient analysis of opportunities and constraints associated with those crucial/concurrent needs (consider revising Figure 3.4, which could integrate a relative scaling of value to meeting the objective). Advancing the pace of mode share shifts to transit is one of the most problematic concerns that many transportation advocates have with the RTP. The RDF should provide a more refined assessment (“pathway analysis”?) of the relationship and interdependence between an (electrified) transit leap and greatly increased entry of EVs into the transportation system, which also has ramifications to VMT.

We concur that the geographic opportunity (i.e., infill or VMT-efficient) areas are likely the most effective locations for implementing many of the VMT reduction strategies in Table 3.6. Similar to our concern in the previous comments, the document does not present sufficient guidance (or identify cautionary “dead-ends”) regarding the pathways to link those strategies to current and projected VMT efficient areas (which are also more amenable to active transportation options).

Natural Climate Solutions and Other Land Use Considerations

In general, we concur with the primary conclusion that natural lands play a significant role in reducing GHG emissions and should, to the maximum extent feasible, be conserved. In particular, forests, woodlands, riparian/bog, and shrublands provide the bulk of carbon storage and have relatively higher sequestration-to-carbon storage ratios. In any “pathway” blueprint, those vegetation community types should be priorities for conservation and management (to retain their ecological services for carbon as well as biological values). However, climate change presents a real threat to the extent (and location) of vegetation communities and a forward-looking decarbonization effort must consider how climate change may impact the long-term capacity for these vegetation communities to continue to provide those levels of carbon storage and sequestration. Even so, it seems apparent that the region should be placing further limitations on development and disturbance of natural lands. That approach is consistent with this document’s findings/recommendations that reducing development outside of VMT efficient/infill areas would improve GHG emission reductions and reduce VMT in the region.

The blue carbon (coastal wetlands, including seaweeds/seagrasses) discussion is particularly disheartening in light of projected sea level rise impacts – absent an aggressive commitment to implement significant coastal wetlands restoration and creation. The likely net loss of carbon storage and reduced sequestration argues for a “new pathway” that does more than slow the losses. In line with the document’s policy recommendations, we strongly recommend the coastal jurisdictions and agencies (e.g., Port of San Diego) that control land uses along the shoreline/public tidelands should immediately identify and plan for shoreline retreat and coastline adaptation that will slow or reverse current and historical losses of coastal wetlands.

According to the document (Figure 4.2 and as stated on Page 92), agriculture is generally a net GHG emitting land use. But this region is reported as a net negative land use/cover (Table 4.2). [The description of this agriculture's status of a net emitting or net reduction sector is confounded by the estimate that the decades-long removal of tree crops increased (one-time) emissions and has reduced agriculture's carbon storage significantly.] We support the retention of working/agricultural lands, particularly if the crops and management practices can increase carbon storage while maintaining economic viability. Where agricultural production cannot be reasonably sustained, those lands should be prioritized for restoration to their natural vegetation community types – all of which are effective at carbon storage and sequestration.

We are in general agreement with the document's conclusions and policy recommendations regarding urban trees. In particular, there is a need for more urban trees, the species of trees should be compatible with our arid climate, and the importance of co-benefits – particularly for urban areas that are tree-poor (i.e., poor and disadvantaged communities) and where climate change effects (urban heat impacts) will be most distressing – throughout the region.

Decarbonization of Buildings

We concur that a transition to electrification of buildings should be a priority that is pursued quickly and aggressively, as described in the key actions. One issue that is not discussed in this section is the likelihood that one of more Community Choice Aggregation (CCA) entities may replace SDG&E in part or wholly. How would that affect the "pathway" assessment?

Employment Impacts through Decarbonization for the San Diego Region

We have no specific comments but support the recommendation that a steady transition of the energy-associated workforce is preferable to attempting a series of episodic efforts.

Key Policy Considerations for the San Diego Region

We concur that the current efforts to reduce GHG emissions is fragmented and that an overarching framework to achieve decarbonization would be more effectively coordinated through a single entity. What is not so clear is whether that should be the County of San Diego, SANDAG, a new joint powers agency, or another form of coordinating entity. Most of the GHG emissions are produced within the 18 cities, which is where most of the reductions should also be focused. But as demonstrated in the energy supply section of the document, the majority of new renewable energy facilities will be located within the unincorporated county or outside of San Diego County.

Though the document's statement and reasoning that "The government of San Diego County is a natural coordinating body in the San Diego region" (Page 207) has merit, it isn't clear why SANDAG wouldn't be able to serve as a coordinating entity – even if that required a legislative change to its authority.

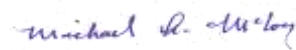
SANDAG, which is a singular entity with all 18 cities and the County of San Diego as voting members (and advisory members representing other major governmental entities), is responsible for planning the regional transportation system and for regional comprehensive planning. And while neither SANDAG nor the County has land use authority over the cities or independent government entities, SANDAG can significantly influence land use decisions through its transportation planning and funding decisions.

Regardless of which entity is selected as the coordinating entity, we fully agree that there is an imminent need for more integrated climate planning across the county is needed. The City of San Diego recently announced that it intends to achieve decarbonization by 2035 (<https://www.kpbs.org/news/local/2021/10/27/san-diego-aims-net-zero-carbon-emissions-2035>), but that necessitates other regional (San Diego County) planning and implementation – as well as state and federal support – to succeed. For example, the tremendous GHG emission reductions that will be required of its transportation sector are dependent upon a restructured and advanced regional transportation system and infrastructure buildout, access to timely and affordable renewable energy, and cooperation from the other jurisdictions. Absent a regional coordinating entity/agreement, it is not clear how the city will realistically achieve its laudable goal.

In summary, SWIA supports the planning approach and many of the pathway findings and policy recommendations. Certain improvements in the methodology are needed and we look forward to working with the County of San Diego and all the jurisdictions as the next version of the document is prepared.

Please contact Bill Tippetts [REDACTED] regarding any discussion of our comments.

Sincerely,



Mike McCoy
President



Bill Tippetts
Board Member

Cc: SWIA Board

Waste To Energy

California has remained one of the top states for waste exports and the leading state for energy imports. In 2019, 42.2 million tons of material from California were disposed in out-of-state and in-state landfills ([CalRecycle](#)). About 20 percent of the methane emissions in California come from landfills and the remaining methane is from dairies and livestock, oil and natural gas extraction and pipelines, wastewater, agriculture, and other sources (California Air Resource Board). California was the largest net importer of electricity, receiving an average of 89 million MWh annually- 25% of the state's total power ([Source: U.S. Energy Information Administration](#)). These may seem like large tasks to address, but the technology is available, and something can be done about it.

I would like to explore the idea of having a feasibility study done in San Diego County or in our region regarding Waste to Energy. One study's example is [King County and Port of Seattle to Study Waste-to-Fuel Feasibility](#). The waste we're currently collecting- meaning municipal solid waste, sewage waste, animal waste, food waste, greases, non-recyclable plastic, hazardous medical waste, used car tires, virtually any waste in the region can be cleaned and converted into energy. Energy in terms of Hydrogen, synthetic gas, renewable natural gas, sustainable aviation fuel, renewable diesel, and as feedstock for renewable gasoline. Please click here to see [gasification explained](#). For further explanation of waste utilized please refer to waste streams 1.3.1 from the link. I know there are a few other waste to energy incineration plants throughout California but what I'd like to focus on is [Plasma Enhanced Gasification](#). With plasma enhanced gasification, there is no tar in syngas, no char, no ash, no residual carbon and is compliant with EPA New Source emissions standards for nitrogen oxide (NOx), sulfur oxide (SOx) particulates, etc. [Assembly Bill 881](#) can also be utilized during this study; we should keep all the waste here in California and process it for energy.

The Hydrogen produced can be used through fuel cells to power the grid, utilized as fuel throughout the Port of San Diego, for Hydrogen big rigs, transportation vehicles, tugboats etc. that would greatly decrease the GHG, urban pollution, fossil fuels, and reduced noise pollution throughout our communities. Hydrogen also gives us the option of long duration energy storage and it can be blended into the existing gas lines. The synthetic gas created could be utilized as sustainable aviation fuel throughout San Diego County's 8 airports. There are endless uses for plasma enhanced gasification within the energy sector that will hopefully drive the cost of clean energy down. This can be one way to shift away from fossil fuels, decrease GHG, and smoothly transition into the end users' daily lives without the end user having to make any major changes to achieve.

Regional Deep Decarbonization

Below you will find support for what UA Local 230 is pushing to better help the efforts to fight climate change. San Diego's approach to decarbonization must be comprehensive, nimble and achievable.

Achieving carbon neutrality by the 2035 goal will depend on adopting:

1. Waste to Energy to produce a circular economy
 - a. From Governor Newsom's Bill
 - i. The package also includes \$270 million to support a circular economy that advances sustainability and helps reduce short-lived climate pollutants from the waste sector, and \$150 million that will support urban waterfront parks, with a focus on underserved communities.
 - ii. <https://www.gov.ca.gov/2021/09/23/governor-newsom-signs-climate-action-bills-outlines-historic-15-billion-package-to-tackle-the-climate-crisis-and-protect-vulnerable-communities/>
 - b. Current project under PLA negotiations with California State Building Trades- World's Largest Green Hydrogen Project to Launch in California (Lancaster, CA)
 - i. <https://www.sgh2energy.com/worlds-largest-green-hydrogen-project-to-launch-in-california>
 - ii. Jobs on this project- The project will create 35 permanent jobs upon completion and more than 600 positions during the construction phase.
 - iii. Cost Comparison
 1. <https://www.sgh2energy.com/economics/#econheader>
 - c. Heavy Duty Transportation technologies- Planes, trains, trucks, and other transport vehicles emit 19% of the global black carbon. The cleaner technologies emerging here, including natural gas and hydrogen will have a tremendous impact on California and global decarbonization.
 - i. Assembly Bill 118
 1. The Clean Transportation Program, also known as the Alternative and Renewable Fuels and Vehicle Technology Program (ARFVTP) was established by Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007), which took effect January 1, 2008. Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013) extended the program through January 1, 2024. Using funds collected from vehicle and vessel registration, vehicle identification plates, and smog abatement fees, the program:
 2. Expedites development of conveniently located fueling and charging infrastructure for low- and zero-emission vehicles.
 3. Accelerates advancement and adoption of alternative fuel and advanced technology vehicles, including low- and zero-emission medium- and heavy-duty vehicles.
 4. Expands in-state production of alternative, low-carbon renewable fuel.
 5. Supports manufacturing and workforce training to help meet the needs of the state's growing clean transportation and fuels market.
 - a. <https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program>

- d. Waste to Energy- all waste shall be diverted from landfills, recycling efforts shall and utilized as energy. Renewable energy, processes waste, converts it to energy- electricity, hydrogen, renewable fuels. <https://www.eia.gov/energyexplained/biomass/waste-to-energy.php>
- e. What is a Circular Economy? What is a circular economy and why is it important?
 - i. <https://www.epa.gov/recyclingstrategy/what-circular-economy>
 - ii. Circular Economy for Energy Materials
 - 1. <https://www.nrel.gov/about/circular-economy.html>
- f. San Francisco airport turning waste to sustainable aviation fuel
 - i. <https://www.flysfo.com/environment/sustainable-aviation-fuel>
 - ii. Neste Sustainable Aviation Fuel Explained
<https://www.youtube.com/watch?v=0mJtJI-a7tg>
- g. Dallas Fort Worth
 - i. <https://www.airport-technology.com/news/dallas-fort-worth-airport-saf/>
- h. Oakland, CA
 - i. <https://www.renewableenergymagazine.com/biofuels/neste-and-the-city-of-oakland-partner-20190424>
- i. Climate Change: Jet fuel from waste “dramatically lowers” emissions
 - i. <https://www.bbc.com/news/science-environment-56408603>
- j. FACT SHEET: Biden Administration Advances the Future of Sustainable Fuels in American Aviation
 - i. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/09/fact-sheet-biden-administration-advances-the-future-of-sustainable-fuels-in-american-aviation/>
- k. Department of Energy Sustainable Aviation fuels
 - i. <https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels>
- l. Renewable Fuels
 - i. <https://www.nrel.gov/bioenergy/net-zero-emission-biofuels.html>
- m. Renewable Natural Gas (RNG): derived from animal and landfill waste, RNG harnesses methane, which is a naturally occurring, but potent and dangerous greenhouse gas (GHG). RNG projects capture this methane from existing food waste, animal manure, wastewater sludge and garbage, and redirect it away from the environment, repurposing it as a clean, green energy source.
 - i. Greenhouse gas reduction, landfill waste diversion, high-paying union jobs
 - 1. RNG will bring many quality union jobs- a recent study by Capitol Matrix Consulting shows that jobs from sources like RNG pay 30%-45% more than other so-called “green jobs.” The experts believe RNG will produce tens of thousands of union jobs in the next two decades.
 - 2. Animal waste into RNG- Cattle are the No. 1 agricultural source of GHG worldwide. Each year, a single cow produces about 220 pounds of methane. Methane from cattle is shorter lived than carbon dioxide but 28 times more potent. RNG from manure removes a noxious source to produce electricity, heat homes, or fuel vehicles.

3. State waste reduction goals boost RNG development- SB 1383 (2016) set comprehensive requirements for organics diversion and established methane emissions reduction targets. RNG production from landfill sources is a key to the success of SB 1383's goals of diverting waste and lowering GHG emissions from landfills.
4. RNG production removes sources of pollution- in addition to stopping methane emissions from animal waste and landfills, RNG prevents manure runoff into rivers and water supplies. It also provides an alternative disposal option for sewage sludge and municipal solid wastes.
5. RNG costs are declining- RNG has been more expensive to produce than other sources. But like solar a decade ago, public policy like SB 1383 and legislative decarbonization policies promise to reset the marketplace, speeding up RNG as the next frontier in green energy.
6. Reuters: California's renewable natural gas vehicles turn carbon negative in 2020
 - a. https://www.reuters.com/business/autos-transportation/californias-renewable-natural-gas-vehicles-turn-carbon-negative-2020-2021-06-02/?fbclid=IwAR1Qi_aj5lwEkdjrUCW8eLFgLf-9aH2-yScGX_HmD80nIQ_1GYkN5axlko

2. Hydrogen

- a. Hydrogen is light, storable, energy-dense, and produces no direct emissions. Its use in sectors with currently limited alternative energy options, most significantly the transportation, building, and power generation sectors, would be a massive gain in the battle against climate change.
- b. From Governor Newsom's bill
 - i. \$3.9 Billion Zero-Emission Vehicle Package
 - ii. The California Comeback Plan supports California's nation-leading climate agenda with a \$3.9 billion investment to hit fast forward on the state's Zero-Emission Vehicle goals and lead the transition to ZEVs on a global scale. The package includes funding to put 1,000 zero-emission drayage trucks, 1,000 zero-emission school buses and 1,000 transit buses, and the necessary infrastructure, on California roads – prioritizing projects that benefit disadvantaged communities. Helping drive consumer adoption, the package funds consumer rebates for new ZEV purchases and incentives for low-income Californians to replace their old car with a new or used advanced technology car.
- c. Department of Energy Hydrogen Shot program:
 - i. If the Hydrogen Shot goals are achieved, scenarios show the opportunity for at least a 5-fold increase in clean hydrogen use. A U.S. industry estimate shows the potential for 16% carbon dioxide emission reduction by 2050 as well as \$140 billion in revenues and 700,000 jobs by 2030.

- ii. Hydrogen Shot would catalyze innovation in any hydrogen pathway with potential for meeting the targets—such as renewables, nuclear, and thermal conversion—providing incentives to diverse regions across the country.
 - 1. <https://www.energy.gov/eere/fuelcells/hydrogen-shot>
- d. PORT OF LOS ANGELES ROLLS OUT HYDROGEN FUEL CELL ELECTRIC FREIGHT DEMONSTRATION ‘Shore-to-Store’ Advances Zero-Emissions Transit Across Supply Chain
 - i. https://www.portoflosangeles.org/references/2021-news-releases/news_060721_zanzeff
- e. Seattle City Light Explores Renewable Hydrogen Fuel at the Port with Department of Energy Awards
 - i. <https://www.portseattle.org/news/seattle-city-light-explores-renewable-hydrogen-fuel-port-department-energy-awards>
- f. Hydrogen Fuel Cell Applications in Ports: Feasibility Study at Multiple U.S. Ports
 - i. <https://www.energy.gov/sites/prod/files/2019/10/f68/fcto-h2-at-ports-workshop-2019-viii3-steele.pdf>
- g. The Hydrogen Stream: Three more ports want to become hydrogen hubs
 - i. <https://www.pv-magazine.com/2021/11/09/the-hydrogen-stream-three-more-ports-want-to-become-hydrogen-hubs/>

*Note- Port of San Diego should perform a cost comparison between lithium batteries and hydrogen- both are zero emission however lithium has continuous degradation meaning these vehicles and back up battery power walls will only maintain 100% capacity for the first few years and will degrade continuously over time and will be rendered inefficient after 3-10 years. Hydrogen will maintain full capacity for the life of operations. [Photovoltaic Degradation- NREL](#)

3. Carbon Capture

- a. Carbon Capture & Sequestration (CCS)- CCS is the process of capturing carbon dioxide (CO₂) formed during power generation and industrial processes and storing it so that it is not emitted into the atmosphere. CCS technologies have significant potential to reduce CO₂ emissions in energy systems.
 - i. Roadmap for Carbon Capture and storage in California
<https://earth.stanford.edu/news/roadmap-carbon-capture-and-storage-california#gs.gp9izv>
 - ii. Carbon Capture in California: part of a statewide net-zero strategy
<https://www.energypolicy.columbia.edu/events-calendar/carbon-capture-california-part-statewide-net-zero-strategy>
 - iii. Department of Energy Launches Carbon Negative Earth shots
<https://www.energy.gov/fecm/carbon-negative-shot>

4. Geothermal and Long duration pump storage-

- a. Investing in and developing large scale GHG- free baseload power like geothermal and long duration storage is a powerful approach to green energy and carbon reduction. Costs to produce these sources have dropped as technology advances and will continue to fall as investment is increased.

5. Onsite Water Reuse shall be performed by licensed plumbers

- a. Onsite Non-Potable Water Reuse Research

- i. <https://www.epa.gov/water-research/onsite-non-potable-water-reuse-research#:~:text=Onsite%20Non-Potable%20Water%20Reuse%20Research%201%20Risk-Based%20Modeling,3%20Life%20Cycle%20Assessment.%20...%204%20Collaboration.%20>

Senate Bill 100

- Officially titled “The 100 Percent Clean Energy Act of 2018,” Senate Bill 100 (SB 100, De León):
 - Sets a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources — those such as solar and wind energy that do not emit climate-altering greenhouse gases.
 - Updates the state’s Renewables Portfolio Standard to ensure that by 2030 at least 60 percent of California’s electricity is renewable.
 - Requires the Energy Commission, Public Utilities Commission and Air Resources Board to use programs under existing laws to achieve 100 percent clean electricity and issue a joint policy report on SB 100 by 2021 and every four years thereafter.
 - <https://www.energy.ca.gov/sb100>

Comments on San Diego Regional Decarbonization Framework

UC San Diego
THE DESIGN LAB



Thank you for accepting our comments on the Regional Decarbonization Framework (RDF). We have included summative suggestions to the RDF. We also introduce an initiative by UTWSD and UC San Diego Design Lab to offer an equity-first flexible fleet solution, motivated and described in attached reports and documents. Please do not hesitate to contact our team comments or questions:

Mikail Hussein, President UTWSD [REDACTED]

Peter Zschiesche, Board Member UTWSD [REDACTED]

Dr. Lilly Irani, UC San Diego Design Lab & Communication,
Co-Director Just Transitions Initiative [REDACTED]

Decarbonization with equity

On February 12, 2021, the SANDAG Board of Directors adopted an equity statement. The equity statement asserts:

“We firmly uphold equity and inclusion for every person in the San Diego region. This includes historically underserved, systemically marginalized groups impacted by actions and inactions at all levels of our government and society. We have an obligation to eliminate disparities and ensure that safe, healthy, accessible, and inclusive opportunities are available to everyone.”

The study framework of the Regional Decarbonization Framework draft does not mention equity, fair wages, or social justice as part of the decarbonization process. Section 3 of the framework, which focuses on transportation, also makes no mention of equity, despite the fact that the transportation sector serves and employs thousands of San Diego residents from “historically underserved, systematically marginalized groups.”

By neglecting to consider equity for transit riders and workers as part of the decarbonization framework, SANDAG pursues decarbonization as an exclusively technical process. This runs counter to the equity statement SANDAG adopted, which affirms that “actions and inactions at all levels of our government and society” are responsible for marginalization and exclusion. We urge SANDAG to make the decarbonization plan consistent with the agency’s adopted equity statement by thoughtfully examining how decarbonization can advance equity goals for transit riders and workers.

Flexible fleets: analyzing alternative pathways

Section 3 flags Flexible Fleets, one of SANDAG’s 5 Big Moves, as part of the regional approach to decarbonization. The details around Flexible Fleets, in both the 2021 Regional Plan and the decarbonization draft, are thin. The decarbonization plan says that Flexible

Fleets “relies on public-private partnership and assumes many of the new modes introduced would be electric-powered.” The plan also specifies that public-private partnerships for Flexible Fleets should provide “convenient and affordable alternatives to driving alone.”

The assumption of electric powered fleet neither holds nor seems likely for major rideshare companies that will likely offer their services as flexible fleets. In San Diego, studies of airport taxi data show that only 15% of TNC vehicles are hybrid, lower emissions vehicles. By contrast, 90% of San Diego’s taxis are hybrid.¹ UTWSD compiled and presented this data as a contribution to the MTS Elevate 2020 campaign. The Elevate 2020 campaign sought to address “first mile last mile” transit connections as well as a wide range of other transit infrastructure needs through a ballot tax initiative. The campaign was cut short with the onset of the COVID-19 pandemic, but the need and community will for a solution remains.

PPPs used to provide flexible fleets have very different emissions impacts. Previous research on transportation network companies (TNCs) like Uber and Lyft has shown that convenience and affordability alone are not adequate metrics for selecting private sector partners.

Research shows that TNCs have adverse impacts on emissions. As required by Senate Bill 1014 (SB 1014, California Clean Miles Standard), California Air Resources Board (CARB) released an emissions report comparing TNCs in California with the statewide passenger fleet for the calendar year 2018.²[1] The report estimates that TNCs produced approximately 50% more grams of CO₂ per passenger-mile traveled (gCO₂/PMT) compared to the average California passenger vehicle. This estimate, while offering a good baseline comparison, is conservative. It fails to take into account the mix of vehicles in the statewide passenger fleet. The Union of Concerned Scientists (UCS) offers an important analysis.³ In dense urban areas where ride hailing use is high, passengers often have low carbon alternatives like mass transit, walking and biking. The UCS report estimates the impact of TNCs on emissions by calculating the difference between the modes of transportation TNC rides have replaced. They use as reference data a survey of ride-hailing users across California that asked riders

¹ Public records request of 2018 data from San Diego Airport and MTS by Employee Rights Center.

² California Air Resources Board, “2018 Base-year Emissions Inventory Report,” https://ww2.arb.ca.gov/sites/default/files/2019-12/SB%201014%20-%20Base%20year%20Emissions%20Inventory_December_2019.pdf.

³ Union of Concerned Scientists, “Ride-Hailing's Climate Risks: Steering a Growing Industry toward a Clean Transportation Future,” <https://www.ucsusa.org/sites/default/files/2020-02/Ride-Hailing%27s-Climate-Risks.pdf>.

what they would have done if they had not taken a ride-hailing vehicle.⁴ The survey reports that 24% of non-pooled rides and 36% of pooled rides replaced lower carbon alternatives like mass transit, walking and biking. On average, ride hailing comes out to be 69% worse at carbon emissions than the trips it displaces.

TNC champions commonly argue that TNC trips should be compared to personal car trips. Even in that favored scenario, TNCs incur the added overhead of deadheading -- the practice of driving alone without paying passengers on board. As a result, non-pooled TNC trips produce 47% more emissions on average. Pooled TNC trips only break even. Estimates of pooled rides, sourced from the CARB report, suggest pooled rides only account for 20% of all rides.

While TNCs are thinly regulated by the California Public Utilities Commission, San Diego County taxis are regulated locally through the Metropolitan Transit System (MTS). This creates an opportunity for the Regional Decarbonization Framework to employ local regulations and promotions to hasten the electrification of our County's taxi fleet. The San Diego Airport Authority, for example, used regional clean energy subsidies to rapidly convert local taxis from gas engines to hybrid vehicles several years ago. Taxis had to convert to access the airport.⁵ This kind of electrification effort would compliment other County efforts to convert large fleets of gas-driven vehicles to EVs. EV taxis would connect to our public mass transit at first mile/ last mile connections to reduce emissions and attract more public transit use at the same time.

We caution that electric fleet solutions have their own equity drawbacks but are optimistic that they can be managed through ethical sourcing and resource management. The lithium required for electric vehicles often comes with the destruction of water sources indigenous communities' rely on.⁶ US electrification may produce inequity beyond our nation's borders, depending on how it is carried out. Publicly regulated fleets such as taxis can be managed to reduce the quantities of such rare earth minerals required. By contrast, Uber and Lyft minimize consumer wait time and set drivers in competition with another to reduce costs by allowing for excessive numbers of vehicles on the road.

⁴ Giovanni Circella et al., "Panel Study of Emerging Transportation Technologies and Trends in California: Phase 2 Data Collection," 2019, <https://escholarship.org/uc/item/35x894mg>.

⁵ Center for Sustainable Energy. <https://energycenter.org/program/san-diego-international-airport-clean-vehicle-conversion-program>

⁶ <https://www.washingtonpost.com/graphics/business/batteries/tossed-aside-in-the-lithium-rush/>

Designing flexible fleets with equity and climate in mind

United Taxi Workers of San Diego and the University of California San Diego's Design Lab have been working with MTS for the last two years to build on their initial concepts of first mile/last mile transportation options as described in their 2019 Elevate 2020 Campaign Plan, which become dormant with the onset of COVID-19. MTS expanded its understanding and support of first mile/last mile concepts in its summary for our National Science Foundation grant submission in 2020, which though highly-rated did not get funded. We continue to work with MTS staff to design and implement a pilot first mile/last mile pilot that would demonstrate how taxis could be integrated into our public mass transit system. This pilot could demonstrate and further develop SANDAG's own Flexible Fleet concepts which are described in broad strokes up to this point.

Samantha Leslie, Staff Attorney – Regulatory Compliance
San Diego Metropolitan Transit System
6/12/2020 - Notes Re Grant Application / Pilot Program

Purpose of Grant: Receiving funding for a pilot of software to connect the mid-coast trolley riders to taxi connections to their final destinations

MTS Goal: MTS goal is to provide safe, reliable public transit service and to ensure a positive experience for customers. MTS is always looking for ways to improve the customer experience. We want to attract customers to use MTS services as a way to get to their final destination, even if it means using MTS services for only part of a customer's trip. This includes first/last mile. If there is a way to seamlessly connect passengers with MTS for part of their trip, and a taxi for the last mile of their trip, it would be a beneficial partnership for both MTS and taxicabs in increasing business.

Background - MTS: The San Diego Metropolitan Transit System service area encompasses approximately 3 million people residing in a 570 square mile area of San Diego County, including the cities of Chula Vista, Coronado, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, Santee, San Diego and the unincorporated area of the County of San Diego. MTS provides bus and light rail service.

MTS operates and maintains a fleet of 798 buses. In fiscal year (FY) 2021, MTS bus services will operate over 100 fixed routes, including traditional urban shuttle-type routes, express routes and bus rapid transit routes, plus paratransit services. These bus services will log over 2.2 million revenue hours while traveling 26.7 million revenue miles across San Diego County. FY21 ridership for all MTS routes is projected at approximately 26.9 million passengers, a sharp decline from prior years as projected due to the COVID-19 pandemic.

MTS Rail Operations (SDTI) operate and maintain a fleet of 164 light rail vehicles (LRVs). The entire system encompasses 54.3 total miles (107.6 total track miles) of light rail transit (LRT) to 53 transit centers. Regular LRT service is provided virtually around the clock with a 22-hour service window with 511 daily scheduled train trips (and many more during special events). FY21 ridership for the MTS rail system is projected at approximately 21 million passengers.

Background – MTS Taxicab Administration: The MTS Taxicab Administration licenses and regulates for-hire vehicles by contract for the cities of Chula Vista, El Cajon, Imperial Beach, La Mesa, Lemon Grove, National City, Poway, San Diego and Santee. For-hire vehicles include: taxicabs, jitneys, charter vehicles, low speed vehicles, non-emergency medical transportation vehicles, and sightseeing vehicles.

The purpose for MTS's regulation of for-hire vehicles is to ensure public safety. MTS Taxicab Administration responsibilities include: determining permit eligibility, inspecting vehicles, permit holder background checks, monitoring compliance with administrative and operational safety regulations, setting minimum insurance standards, requiring driver training programs, and investigating passenger complaints.

Background- Taxicab Industry in San Diego: Unlike Transportation Network Companies (TNCs), taxis have meters to calculate fares and may not charge more than a certain maximum rate of fare, calculated by MTS. Unlike TNCs which provide only prearranged trips, taxis may provide on demand transportation at

the curb (i.e. street hail), at designated taxicab stands throughout the southern San Diego region and MTS Transit Centers, or prearranged through a dispatch service. As of June 10, 2020, MTS Taxicab has 302 active taxicab permits, 850 taxicab vehicles and 928 taxicab drivers.

Background – California Public Utilities Commission: California Public Utilities Commission regulates TNCs.

Background – TNC - TNCs provide prearranged transportation services for compensation using an online-enabled application or platform (such as smart phone apps) to connect drivers using their personal vehicles with passengers.

Current landscape:

MTS and COVID-19: MTS buses are carrying fewer than a third of the usual ridership and the trolley is carrying 60% fewer riders than usual. The pandemic also led to a postponement of MTS plans for a November ballot measure to fund an expansion of transit projects. Plans for placing a half-cent sales tax on the November 2020 ballot to fund expanded transit service and a wide range of other projects were shelved.

MTS and Mid-Coast extension: The Mid-Coast light rail extension will extend Trolley service from Old Town to University City, serving nine new stations along the way. Mid-Coast Trolley construction began in fall 2016 and service is anticipated to begin around November 2021. This new service will enhance direct public access to other regional activity centers and improve travel options to employment, education, medical, and retail centers for corridor residents, commuters, and visitors.

MTS and new fare collection system: The new fare collection system will replace the existing Compass Card system utilized by MTS and the North County Transit District (NCTD), the two public transit operators in the San Diego region. The new account-based fare system, called “Pronto” is targeted for a May 2021 roll-out. The new system will enable customers to pay fares with their contactless transit (closed-loop) card onboard buses and at rail stations. It will also provide customers with the ability to manage their accounts online via a mobile friendly website and mobile ticketing application. The account-based fare system is based on an open architecture, capable of accepting open payments via NFC or through contactless cards. These features will help the San Diego region remain nimble as technology changes, increasing customer convenience and ease of use. The system will support intermodal travel chains, deliver best price options (i.e. fare capping) and facilitate a customer-oriented mix of distribution channels, for instance mobile and web applications, walk-in retail outlets (400+) and call center facilities, and ticket vending machines (TVMs). The new terminals and readers will accept payments from customers using various payment technologies such as EMV, contactless cards, and NFC-enabled devices with credit card emulation. The system will leverage a cloud hosting environment designed with PCI compliance.

Taxicab and COVID-19: Due to COVID-19, there has been a 64% loss (i.e. permit surrendered) in active taxicab permits.

Taxicab Generally: Taxicab industry also has been struggling to compete against TNCs. Dispatch via phone or street hail originating trips have been decreasing and use of mobile applications, such as with TNCs, have dramatically increased in popularity. TNCs are seen by the public as having a quicker response time, cheaper fares, and ease of payment when compared to taxi.

TNC Generally: The TNC industry may be going through significant changes to its business structure, as the CPUC has just ruled drivers are employees, not independent contractors. Unlike Taxicabs, TNCs are not subject to maximum rates of fares, and may charge any fare based on passenger demand and TNC vehicle availability. This process is known as surge charging.

Planning Trips on MTS, taxis and TNCs: Right now, you can go on Google or MTS's app/webstie to determine the price to take public transit. "Rideyellow" is the only taxicab app in San Diego that provides up-front fare prices. Taxicabs must subscribe to Yellow Dispatch service in order to be part of the RideYellow app. You can also download a TNC application and/or a combination of the three apps/websites to separately determine total price of a trip if using a combination of taxis, TNC and MTS for your door to door trip.

Why this is a problem: There is a disconnect between all these transportation modes. Their separate mobile applications/websites are not attractive to riders, doesn't encourage use of public transit for part of a trip and does not encourage the use of multiple modes in one trip. Transfers are generally not preferred. People want a quick and easy way to get from Point A to Point B, preferably door to door service. Public transit stops are at major point of interests and on major streets/highways, and not necessarily to your door step.

Question to be answered: How can we encourage people to use public transit for the majority of their trip and for-hire vehicles for the first/last mile of their trip? How can we provide first/last mile service to close the gap between bus stops or train stations and the traveler's origin and/or final destination?

Proposed solution: An app that would partner public transit with a for-hire mode together and make transitions seamless. This app would allow you to plan your trip door to door. You can buy both your public transit pass and your taxi fare in one app. The app would also allow you to schedule your trip, seeing when the next trolley leaves and arrives and when the taxi will meet you at the trolley station.

Why our vision is right: why partner with taxi and not TNC?

Certain taxis are required by MTS to meet California air resources board criteria for zero emission vehicle or low emission vehicle. TNCs do not have such a requirement.

Per federal law, taxi service cannot discriminate against individuals with disabilities by refusing to provide service to individuals with disabilities who can use taxi vehicles and/or use service animals, refusing to assist with the stowing of mobility devices that can be stowed in the taxicab, or charging higher fares or fees for carrying individuals with disabilities and their equipment than are charged to other persons.

Taxis may be safer (fingerprint background check required of drivers, more comprehensive and frequent vehicle inspections, field regulatory oversight). TNCs only do a national background check without fingerprinting, minimal vehicle inspection and no in the field oversight.

TNCs may not be as amenable to sharing data with MTS regarding service levels, number of vehicles, response time etc.

There are a limited number of taxicabs that are wheelchair accessible. If this mobile application is successful with passengers using wheelchairs, market demand will incentive taxicab owners in procuring wheelchair accessible taxicabs. This will benefit individuals with disabilities generally as allowing more options for accessible transportation.

MTS, as a regulator of taxicab, sets a maximum rate of fare to prevent fare gouging, ensures a fair price to customers and to provide predictability in the amount customers will be charged. TNCs allow for price surging.

MTS develops and provides taxicab driver training. MTS would customize training program for this project.



Technical Memorandum

TO: Denis Desmond (MTS)
FROM: Russ Chisholm and Melissa Sather (TMD)
DATE: February 4, 2019
SUBJECT: MTS Transit Ballot Measure Planning:
Draft Program of Projects

Introduction

In preparation for a potential ballot measure, MTS has evaluated proposed projects in the Transit Optimization Plan (TOP), 2019 SANDAG Regional Transportation Plan (RTP), *San Diego Forward*, numerous other planning documents, as well as independent analyses to compile a draft program of projects. This technical memorandum provides a brief overview of each project, its importance to the MTS network, and its appeal to voters. Based on the polling and focus group results, MTS Board guidance, and the projected revenue from the potential sales and use tax increase, the draft program of projects will be further refined into a final program of projects.

List of Potential Projects:

Trolley Improvements

- Frequency and Span Improvements
- Infrastructure
- New Trolley Lines

Downtown/Airport Connection

Bus Rapid Transit

✓ **First/Last Mile**

Local Route Frequency and Span Improvements

✓ **Mobility on Demand**

Capital Improvements

- Safety and Security
- Electrify Fleet
- Passenger Amenities
- Operating and Maintenance Facility

First/Last Mile

Generally, commute travel represents only around one-fifth of total daily trip making, but it is consistently the primary trip purpose for people riding transit. Commute trips are the most regular trips people make, and they are often the longest. For long, repetitive trips, many riders are looking for convenient alternatives to driving that will save them both cost and time. MTS operates a number of services aimed at commuters, a group that will also grow with the expansion of the *Rapid* network.

One of the most common obstacles commuting transit riders face is getting from a transit station to their final destination. Employment centers such as University City and Sorrento Valley are served by rail lines, but these job centers are so dispersed that many jobs lie farther than a mile away from the rail stations. First/last mile solutions address this problem by providing a way for riders to access their final destination. These connecting services can range from fixed-route transit (much like the Coaster Connection operated by MTS and partially funded by NCTD), to an employer-agency vanpool program, to third-party mobility options (e.g., Uber/Lyft, dockless bikes, dockless scooters, etc.). Fixed-route first/last mile transit solutions are generally unsuccessful due to limited and varied demand. With vanpool programs, companies can place several vans in designated parking spaces at rail hubs, and employees can coordinate trips to and from the station to work. In the afternoon, the employees drive the vans back to the rail station where they will wait until the following morning. These flexible programs are able to provide first/last mile solutions to riders at a low cost to MTS. Finally, a partnership with a third-party operator would integrate additional modes with the travel experience, providing seamless connections for riders. The operating cost of any of these services will depend on whether partnerships are formed with third parties or whether MTS operates such services itself.

Transit centers in Kearny Mesa, University City, Sorrento Mesa, Rancho Bernardo, Sabre Springs, and Mira Mesa all warrant additional investment in first/last mile connections to increase transit access and use.

Mobility on Demand (MOD)

Transit agencies have often struggled to find cost-effective ways to provide public mobility in low-demand areas that do not generate ridership volumes sufficient to support fixed-route transit. The emergence of shared mobility platforms and Transportation Network Companies (e.g., Uber and Lyft) over the last decade has introduced new technology that can address these unmet mobility needs that are difficult to serve with fixed-route transit. Riders, through the use of a mobile application, request a ride when they want to travel and are paired with a driver who will take them to their destination. Unlike fixed-route transit, these trips are generated “on-demand” – they do not follow a fixed schedule or a fixed route.

“Mobility on Demand” is an all-encompassing term that refers to on-demand use of any shared vehicle - electric scooter, bicycle, private car, or transit van. The greatest application for a transit agency is to replace a low-performing fixed-route service with a Mobility on Demand program. Riders benefit from shorter wait times and service that is point-to-point and takes them all the way to their final destination. Transit agencies benefit by saving operating costs; they only pay for drivers when there is demand for a trip rather than paying drivers to drive around neighborhoods in empty buses. These programs could operate as two kinds of service models:

1. **Agency-Operated:** In this scenario, the transit agency operates the Mobility on Demand program. The agency uses its own drivers and own vehicles and manages the software/technology required to request and deliver trips. This is a more expensive model for the agency because it incurs labor, vehicle, and overhead costs.
2. **Agency-Subsidized:** In this scenario, the transit agency partners with a Transportation Network Company (TNC) or taxi company to subsidize trips that meet certain criteria. For example, an agency may give riders \$5.00 off an Uber or Lyft ride that connects a rider to a major transit station so they can connect into the transit network. This is a more cost-effective model for the agency because its only costs are reimbursing the TNC for the trips provided.

The type of trip that receives a subsidy and the amount of subsidy is completely at the discretion of the transit agency. Pilot programs across the country differ greatly in their approach. For the type of trip that is subsidized, some agencies allow any trip starting and ending anywhere within a specified zone while others only allow trips that start or end at a designated transit station. Some subsidies pay a certain portion of the ride, by dollar amount or percent, while others cover the full cost of the ride.

There are some challenges to implementation of Mobility on Demand programs that require the attention of an agency before moving forward:

- MOD programs must meet Title VI requirements. Most TNCs work through mobile applications that require access to a smartphone and a credit card. Transit agencies must provide alternative payment and reservation options to riders who do not have a smartphone or credit card.

Attachment 1 to Att. B (AI 6)

- MOD programs must meet Americans with Disabilities Act (ADA) requirements. Most TNC vehicles are not equipped to carry wheelchairs and most drivers are not trained to assist riders requiring special accommodations. Compliance with ADA regulations requires that persons needing a wheelchair-equipped vehicle receive comparable service to those who do not. This means that if someone can request an Uber trip and receive a ride in 10 minutes, someone requiring a wheelchair-accessible vehicle cannot be required to make a reservation 24 hours in advance. Agencies must therefore also partner with a third-party that can guarantee a wheelchair-accessible trip within a specified amount of time.
- Transit agencies are often required to satisfy certain criteria in order to use federal funds for specific projects. This includes subjecting drivers to drug and alcohol screening, providing liability and occupational safety training, and thoroughly inspecting vehicles. There is an on-going push to heighten the restrictions around vehicles and drivers participating in TNC programs, but it is unlikely a transit agency would be able to use federal funds to cover the cost of subsidizing trips provided by TNCs.
- TNCs, as private companies, do not have an obligation to guarantee everyone a ride. While unlikely, drivers could discriminate against riders or against specific geographic areas, limiting access to quality service.

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Title

Transportation for Smart and Equitable Cities: Integrating Taxis and Mass Transit for Access, Emissions Reduction, and Planning

Permalink

<https://escholarship.org/uc/item/06w4d22x>

Authors

Irani, Lilly
Hussein, Mikail
Zschiesche, Peter
et al.

Publication Date

2021-08-19

DOI

10.5281/zenodo.5225091

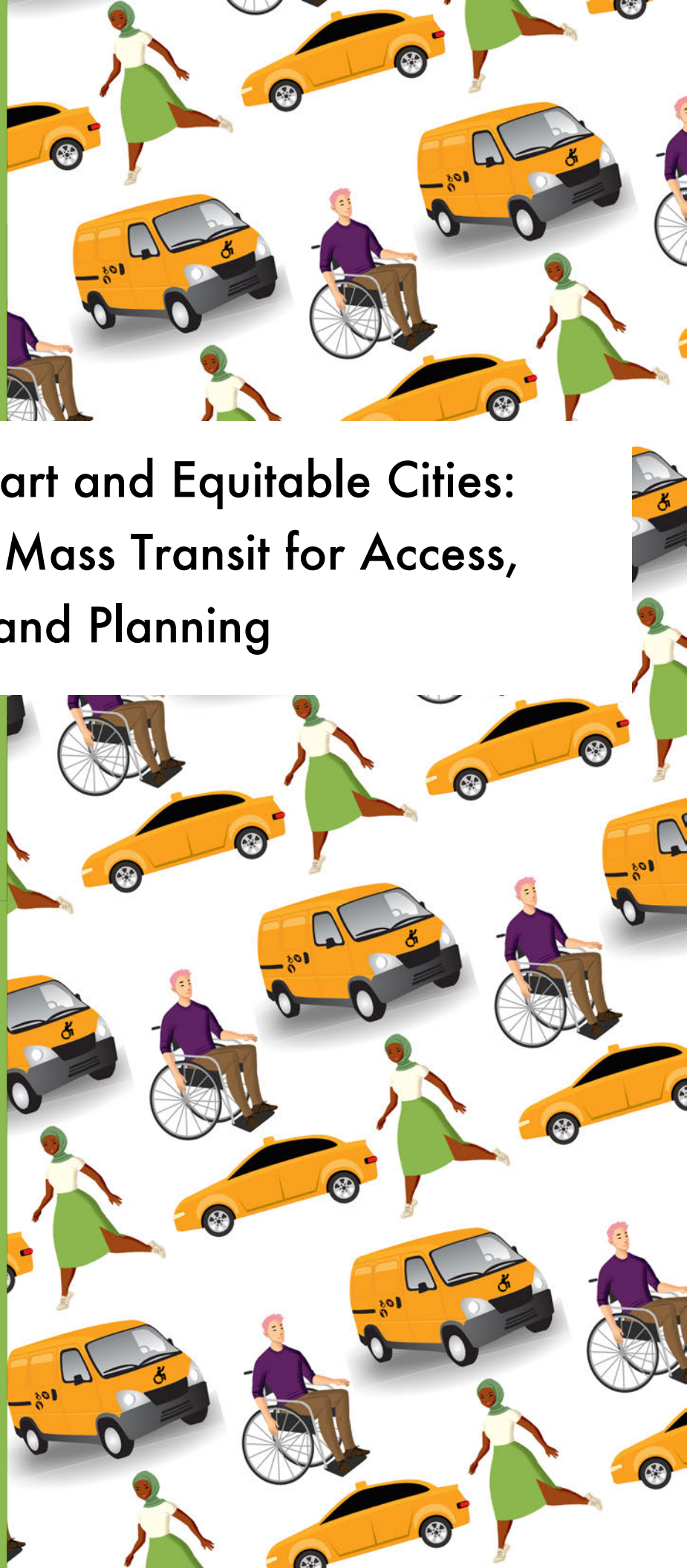
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Peer reviewed

Transportation for Smart and Equitable Cities: Integrating Taxis and Mass Transit for Access, Emissions Reduction, and Planning

UC San Diego
THE DESIGN LAB



About this Report

This report was produced by the Design Lab at UC San Diego and United Taxi Workers San Diego (UTWSD). Dr. Lilly Irani, Associate Professor in the Design Lab, led the creation of the report from UC San Diego. Mikaiil Hussein and Peter Zschiesche of United Taxi Workers San Diego contributed to the report. The UC San Diego report research team included (in alphabetical order) Enrique Arcilla (Urban Studies and Planning), Montana Goldsmith (Anthropology), Dr. Louise Hickman (London School of Economics), Dr. Vera Khovanskaya (Communication), Simrandeep Singh (Computer Science), and Udayan Tandon (Computer Science).

This report was funded in part by the Yankelovich Center for Social Science Research at UC San Diego.

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Table of Contents

About this Report.....	2
Table of Contents.....	3
Introduction: Achieving Transit and Climate Equity.....	4
The limits of TNCs	7
Many riders with disabilities lack access to the network	7
TNCs increase road congestion	8
TNCs diminish air quality over private cars and taxis	9
TNCs can incentivize hazardous driving.....	10
Price volatility can harm consumers.....	11
TNCs take wealth out of the San Diego community	11
TNCs hoard data, hindering planning.....	12
TNC policies fail to provide drivers a living wage	12
Taxis in transition: barriers and opportunities	13
A public option: taxis as flexible fleet solutions.....	14
Conclusion: Supporting community-driven solutions	17

Introduction: Achieving Transit and Climate Equity

How can San Diego transit connect a sprawling county, achieving climate goals while improving equity? This report synthesizes independent research on transportation and technology, both to understand the impacts of existing solutions and to offer promising alternative pathways to meet policy goals.

SANDAG's "5 Big Moves" creates a guiding vision for the future of transportation in San Diego. This is a vision where public transportation plays a central role in an equitable, connected, and sustainable region. As part of this vision, SANDAG has established that "Flexible Fleets" of scooters, bikes, and on-demand vehicles will extend the reach of the network into areas less connected by mass transit. Transportation Network Companies (TNCs) such as Uber and Lyft currently dominate brand awareness and market share for on-demand rides in San Diego. Extensive research on these solutions a decade in, however, reveals the limits and harms of TNCs. These limits include resistance to public regulation, increases in traffic accidents and fatalities, refusals to share valuable planning data, volatile pricing, and failure to offer drivers a livable wage. We also find that venture-capital funded models of digital platforms siphon wealth from the region while competing with public transit options.

San Diego has a chance to innovate in the public interest, creating transportation infrastructures that are safe, equitable, and sustainable. UC San Diego's Design Lab has partnered with United Taxi Workers San Diego to envision cutting-edge, equitably organized gig platforms to transform "first mile last mile" transportation while providing green economy transportation jobs. This vision can reduce vehicular miles traveled (VMT), reduce commute burden by public transit, and improve access for San Diegans with disabilities.¹ Public support for flexible taxi fleets can also improve social equity for immigrant communities and competitive pricing for riders. This vision, recently awarded a grant by the California Employment Training Panel (ETP) and the Kauffman Foundation, outlines the potential of taxis as a publicly regulated, more inclusive alternative to private rideshare that can extend the reach of San Diego's expanding public transit system. In the face of the problems of unaccountable tech companies, San Diego has a chance to lead in community driven innovation.

¹ The City of San Diego 2019 Climate Equity Index measures the "access to public transit" indicator as the population weighted average distance to the nearest transit stop. The "Commute burden" indicator measures the percent of population with a commute time over regional average.

This vision also aligns with San Diego’s commitments to climate and racial equity. In 2020, the San Diego City Council committed to end racial disparities in economic opportunity, in environmental justice, and criminal justice. The County Board of Supervisors made parallel efforts. Several initiatives signal these commitments: efforts to improve the County’s Climate Action Plan², the creation of a City of San Diego Climate Equity Index tracking disparities in green economy opportunities,³ and the creation of the City of San Diego Office of Race and Equity to move City operations towards bias mitigation and fair distribution of resources and opportunity.⁴

The next step is for elected representatives to commit to “first mile last mile” transportation in the public interest with equity as its goal.

This report is organized by the following sections:

- **“The limits of TNCs”** explains the limitations of Uber and Lyft as a solution to San Diego’s transportation needs based on a synthesis of independent studies. These limitations include increased congestion, price volatility, dangerous driving, lack of disability access, data hoarding, and loss of local wealth. These problems put TNCs in direct conflict with policy goals: greenhouse gas emissions and VMT reduction,⁵ as well as an end to traffic fatalities and injuries.⁶
- **“Taxis in transition: barriers and opportunities”** explains shifts in the organization of San Diego’s taxi industry. As drivers have gained more rights to independent taxi operation, they have also increased their associational capacity through community organizing and involvement in public governance. We argue that a democratically

² Deborah Sullivan Brennan, “Can San Diego County get ahead of the climate change curve?” *San Diego Union Tribune*. July 14, 2021.

<https://www.sandiegouniontribune.com/news/politics/story/2021-07-14/climate-action-plan>; see also <https://www.sandiegocounty.gov/content/sdc/sustainability/climateactionplan/>

³ <https://www.sandiego.gov/sustainability/social-equity-and-job-creation>

⁴ <https://www.sandiego.gov/sites/default/files/cd4-ore-factsheet200615.pdf>

⁵ California’s SB-743 mandates regions to reduce private vehicular transportation miles in response to climate change. SB 150, passed in 2017, requires regions to align greenhouse emissions targets with state targets and creates accountability mechanisms for greenhouse gas emissions, mobility and congestion measures, and other greenhouse gas indicators. San Diego Forward, the draft 2021 Regional Transit Plan, argues that greenhouse gas emissions cannot be reduced without reducing passenger car and truck vehicular miles traveled.

⁶ <https://www.sandiego.gov/vision-zero>

organized taxi industry is an asset to the region's transportation network. This shift brings the taxi industry into greater alignment with San Diego's climate equity goals. It also improves driver capacity to align with transportation planning policy goals.

- **“A public option: taxis as flexible fleet solutions”** explains the benefits of integrating taxis into San Diego's public transit system as a “first mile last mile” solution. Taxis are an existing, publicly regulated part of San Diego's transit ecology. The region can cultivate this as an asset, benefiting from existing regulatory infrastructures. We find taxis better aligned with state and regional policy goals as compared to TNCs, including the creation of climate jobs for “communities of concern,”⁷ competitive pricing with TNCs, and expanded transportation access for riders with disabilities.

⁷ <https://www.sandiego.gov/sustainability/social-equity-and-job-creation>

The limits of TNCs

The San Diego Association of Governments (SANDAG) has established a “Transit Leap” to a “complete network of fast, convenient, and reliable transit services” as one of the region’s 5 Big Moves for a more sustainable, equitable, and integrated transit system (SANDAG Draft 2021 RTP). Use of mass transit such as light rail or bus rapid transit is a key part of this move. However, San Diego is a sprawling region where the first and last mile from public transportation to home or work can be miles – too far for many to walk or bike (Elevate 2020 Tech Memo).

To ensure that the San Diego region’s residents have first- and last-mile connections available, SANDAG has established that Flexible Fleets of bikes, scooters, and shuttles are another one of the region’s 5 Big Moves. In its 2021 Draft RTP, rideshare services are briefly referenced as a part of Flexible Fleets. One of the dominant forms of rideshare in San Diego are transportation network companies (TNCs), such as Uber and Lyft.

Policy makers should approach the promise of TNCs with caution. TNCs promise reduced car ownership, coverage for gaps in public transportation, and even innovations such as self-driving cars and automated ride pooling. However, after years of hyping investments in self-driving cars, Lyft and Uber both sold off their investments in these technologies in mid-2021.⁸ As TNCs pitch themselves to cities as partners to public transit, they also report to investors that they see public transit as competitors to be displaced.⁹ TNCs also fall short on public safety, equity, and climate action needs. Below, we analyze TNC impacts on disability access, road congestion, air quality, hazardous driving, and community wealth.

Many riders with disabilities lack access to the network

SANDAG’s 2020 Coordinated Plan finds that TNCs are “plagued with many accessibility challenges,” including higher charges for accessible services, lack of ADA-accessible vehicles, and software inaccessible to screenreaders.¹⁰ Many of these limitations are caused by the TNC employment model. Because TNCs maintain drivers as independent contractors, they cannot require drivers to have specialized training or equipment; to require these would

⁸ Meghan McCarty Carino. “Lyft, Uber back away from autonomous cars.” *Marketplace Morning Report*. May 4, 2021. <https://www.marketplace.org/2021/05/04/lyft-uber-back-away-from-autonomous-cars/>

⁹ Matt McFarland. “Uber wants to compete with public transit.” *CNN.com*. 25 Apr. 2019, <https://www.cnn.com/2019/04/25/tech/uber-public-transportation/index.html>

¹⁰ SANDAG. “*The 2020 Coordinated Plan*,” July 17, 2020, <https://www.sandag.org/index.asp?projectid=318&fuseaction=projects.detail>

make it clear that drivers are employees rather than independent contractors.¹¹ TNCs cannot require drivers to, for example, train to assist disabled passengers, accommodate service animals, or obtain larger cars that can fit non-foldable wheelchairs. Disabled plaintiffs have brought at least five lawsuits against TNCs citing their failures to provide equal services to disabled and able-bodied riders.¹² Uber is currently piloting wheelchair accessible service programs in several US cities including Chicago, DC, New York City, and Philadelphia.¹³ These services, however, rely on volunteer drivers who invest in their own wheelchair accessible vehicles. Public entities contracting with Uber and Lyft should consider whether they would be in compliance with the Americans with Disabilities Act (ADA).

TNCs increase road congestion

Several studies have established that TNC companies have increased congestion on the road. A 2019 study published in *Science Advances* compared traffic conditions in San Francisco across 2010 and 2016.¹⁴ The study controlled for other factors that might have led to increase in vehicle congestion to isolate the impact of TNCs. They controlled for socio-economic factors such as rise in population, as well as rise in employment. The study concluded that compared to the 2010 baseline, three crucial factors that measure congestion went up significantly in 2016. Vehicle Miles Travelled (VMT) – a measure of miles travelled for all vehicles in a geographic region – increased by 13% where it would have only gone up 7% without TNCs. Vehicle Hours Travelled (VHT), calculated using VMT and average speed to measure the efficiency of roads, went up by 30%. It would have only gone up 12% without TNCs. Vehicle Hours of Delay (VHD), defined as the delay between congested travel time and travel time under free flow conditions, increased by 63% where it would have only gone up 22% without TNCs. A public-sector commissioned report

¹¹ Bryan Casey. "Uber's Dilemma: How the ADA May End the On-Demand Economy." U. Mass. L. Rev. 12 (2017): 124.

¹² Access Living v. Uber <https://www.leagle.com/decision/infdc020181217d07>,
Equal Rights Center v. Uber <https://techcrunch.com/2017/06/28/equal-rights-center-sues-uber-for-denying-equal-access-to-people-who-use-wheelchairs/>,
Lowell v. Lyft <https://www.law360.com/cases/59960a85ce25bd216c000001>,
Crawford v. Uber <https://www.courthousenews.com/judge-advances-mens-ada-complaint-against-uber/>,
Namisnak v. Uber <https://www.leagle.com/decision/infdc020180718881>

¹³ <https://www.uber.com/us/en/ride/uberwav/>

¹⁴ Gregory D. Erhardt et al., "Do Transportation Network Companies Decrease or Increase Congestion?," *Science Advances* 5, no. 5 (May 1, 2019): eaau2670, <https://doi.org/10.1126/sciadv.aau2670>.

published in 2017 showed a similar impact of TNCs in New York City, but only measuring VMT.¹⁵

TNCs, primarily Uber and Lyft, have worked to dispute their negative impact on traffic congestion, but a closer look at the data confirms their congestion impact. In their most recent attempt, Uber and Lyft hired a transportation consultancy to produce a report on congestion. The analysis looks at Boston, Chicago, Los Angeles, San Francisco, Seattle, and Washington, DC with data from the month of September 2018. On the surface, findings show that Uber and Lyft account for just 1-3% of the VMT.¹⁶ But those numbers are for the regional area, including the surrounding towns and suburbs. When the report drills down into the “core” county those numbers spike up significantly. In San Francisco County, for example, Uber and Lyft make up as much as 13.4% of all vehicle miles. In Boston, their share is 8 percent; in Washington, DC, it is 7.2%. This finding is in line with rideshare platform design that promotes vehicles to go to high demand areas. The report also measures how much of Uber’s and Lyft’s VMT carried passengers. On average across cities, 38% to 46% of the VMT occurred with no passengers in the backseat – also called deadheading.

Congestion is a product of TNC business models. “Rideshare companies often subsidize drivers to stay on the road,” Economist John Barrios explains, “even when utilization is low, to ensure that supply is quickly available”.¹⁷ The cost of convenience is an oversupply of drivers who are only paid when they have passengers, and the congestion and pollution that these drivers produce for others in the region. TNCs have not taken steps to combat their traffic congestion.

TNCs diminish air quality over private cars and taxis

Alongside congestion, several studies estimate TNCs’ adverse impact on emissions. As required by Senate Bill 1014 (SB 1014, California Clean Miles Standard), California Air Resources Board (CARB) released an emissions report comparing TNCs in California with the statewide passenger fleet for the calendar year 2018.¹⁸ The report estimates that TNCs

¹⁵ Bruce Schaller. “Unsustainable? The Growth of App-Based Ride Services and Traffic, Travel and the Future of New York City,” 27 Feb. 2017, <http://www.schallerconsult.com/rideservices/unsustainable.pdf>.

¹⁶ “What are TNCs’ Share of VMT? - Fehr & Peers.” <https://www.fehrandpeers.com/what-are-TNCs-share-of-vmt/>.

¹⁷ Angie Schmitt. “Study: Uber and Lyft are Increasing Traffic Deaths.” *StreetsBlogUSA*. 24 Oct. 2018, <https://usa.streetsblog.org/2018/10/24/study-uber-and-lyft-are-increasing-traffic-deaths/>.

¹⁸ California Air Resources Board, “2018 Base-year Emissions Inventory Report,” https://ww2.arb.ca.gov/sites/default/files/2019-12/SB%201014%20-%20Base%20year%20Emissions%20Inventory_December_2019.pdf.

produced approximately 50% more grams of CO₂ per passenger-mile traveled (gCO₂/PMT) compared to the average California passenger vehicle. This estimate, while offering a good baseline comparison, is conservative. It fails to take into account the mix of vehicles in the statewide passenger fleet. A better analysis is offered in a report by the Union of Concerned Scientists (UCS).¹⁹ In dense urban areas where ride hailing use is high, passengers often have low carbon alternatives like mass transit, walking and biking. The UCS report estimates the impact of TNCs on emissions by calculating the difference between the modes of transportation TNC rides have replaced. They use as reference data a survey of ride-hailing users across California that asked riders what they would have done if they had not taken a ride-hailing vehicle.²⁰ The survey reports that 24% of non-pooled rides and 36% of pooled rides replaced lower carbon alternatives like mass transit, walking and biking. On average, ride hailing comes out to be 69% worse at carbon emissions than the trips it displaces. TNC champions commonly argue that TNC trips should be compared to personal car trips. Even in that favored scenario, TNCs incur the added overhead of deadheading. As a result, non-pooled TNC trips produce 47% more emissions on average. Pooled TNC trips only break even. Estimates of pooled rides, sourced from the CARB report, suggest pooled rides only account for 20% of all rides.

In San Diego, studies of airport taxi data show that only 15% of TNC vehicles are hybrid, lower emissions vehicles. By contrast, 90% of San Diego's taxis are hybrid.²¹ UTWSD compiled and presented this data as a contribution to the MTS Elevate 2020 campaign. The Elevate 2020 campaign sought to address "first mile last mile" transit connections as well as a wide range of other transit infrastructure needs through a ballot tax initiative. The campaign was cut short with the onset of the COVID-19 pandemic, but the need and community will for a solution remains.

TNCs can incentivize hazardous driving

While rideshare was initially sold as a way of taking hazardous drivers (e.g. drunk drivers) off the road, a 2019 University of Chicago study compared traffic accidents before and after the introduction of TNCs, controlling for contextual factors. The study found that the introduction of rideshare services in U.S. cities to be associated with an increase of 3% in

¹⁹ Union of Concerned Scientists, "Ride-Hailing's Climate Risks: Steering a Growing Industry toward a Clean Transportation Future," <https://www.ucsusa.org/sites/default/files/2020-02/Ride-Hailing%27s-Climate-Risks.pdf>.

²⁰ Giovanni Circella et al., "Panel Study of Emerging Transportation Technologies and Trends in California: Phase 2 Data Collection," 2019, <https://escholarship.org/uc/item/35x894mg>.

²¹ Public records request of 2018 data from San Diego Airport and MTS by Employee Rights Center.

the number of motor vehicle fatalities and fatal accidents.²² The study notes many possible reasons for this. First, TNCs employ less experienced drivers. However, even for those with experience, TNCs encourage drivers to make choices that keep passenger wait times low. TNCs draw on techniques from the science of behavior change, including bonuses, competitions, to manipulate driver behavior. This changes when, where, and how much drivers choose to drive. These techniques can encourage exhausted driving or dangerous speeding to a high-demand zone.²³

Price volatility can harm consumers

Uber and Lyft unilaterally set the price paid by consumers.²⁴ The company uses surge pricing to generate more profit amidst high demand. Surge pricing runs against legal norms prohibiting price discrimination in commodities, but these legal prohibitions on price discrimination do not cover services.²⁵ Volatile pricing, however, causes significant problems for public policy that seeks equity in transportation access across income levels.

TNCs take wealth out of the San Diego community

TNCs channel profits away from the San Diego community. The venture capital investors who fuel and control TNCs prioritize business models that maximize profit for the company or make the company attractive for sale to another company or investors. This means that profits generated from San Diego drivers and passengers do not remain in the San Diego community. They are instead invested in stock dividends, speculative technology research, or costly lobbying and legal actions to ensure or expand TNC market dominance.

²² John M. Barrios, Yael Hochberg, and Hanyi Yi, “The Cost of Convenience: Ridehailing and Traffic Fatalities,” Working Paper, Working Paper Series (National Bureau of Economic Research, February 2020), <https://doi.org/10.3386/w26783>.

²³ “How Uber Uses Psychological Tricks to Push Its Drivers' Buttons,” 2 Apr. 2017, <https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html>. Accessed 11 Apr. 2020.

²⁴ Sanjukta M. Paul, “Uber as For-Profit Hiring Hall: A Price-Fixing Paradox and Its Implications,” *Berkeley Journal of Employment and Labor Law* 38, no. 2 (2017): 233–63.

²⁵ Keyawna Griffith, “The Uber Loophole That Protects Surge Pricing,” *Virginia Journal of Social Policy & the Law* 26 (2019): 34.

TNCs hoard data, hindering planning

Municipal planners, regulators, and researchers in many cities report that Uber and Lyft refuse to share their trip data, hindering planning and auditing for public welfare.²⁶ In a recent transit planning briefing, SANDAG planners told our team that because they cannot get TNC data for planning purposes, they rely instead on a one-time California Air Resources Board (CARB) study. San Diego Airport's Ground Transportation Manager reports similar challenges acquiring planning data from TNCs. This has made it difficult for municipalities to plan and coordinate transportation services. It also makes it difficult to independently evaluate and refine transit programs that include a TNC component.²⁷

TNC policies fail to provide drivers a living wage

TNCs like Uber and Lyft typically do not provide their drivers with a livable wage. The UC Berkeley Labor Center reports that Proposition 22 only guarantees a \$5.64 per hour wage for TNC drivers, with \$1.22 per hour of that in a healthcare stipend.²⁸ Working 40 hours per week in San Diego at \$5.64 per hour results in a monthly take-home pay of \$766 after taxes.²⁹ This leaves essential transportation workers short of what Housing and Urban Development (HUD) considers fair market rent in San Diego County. The National Low-Income Housing Coalition (NLIHC) reports that in San Diego County, fair market rent for a single-bedroom apartment is \$1,566 per month.³⁰ This rent is not affordable even to people making full minimum wage: the NLIHC reports that at minimum wage of \$13 per hour, a rent of \$676 would be affordable. However, the situation for post-Proposition 22 TNC drivers is even worse as they are estimated to take home below minimum wage.

²⁶ Torin Monahan, "Monopolizing Mobilities: The Data Politics of Ride-Hailing Platforms in US Cities," *Telematics and Informatics* 55 (December 1, 2020): 101436, <https://doi.org/10.1016/j.tele.2020.101436>.

Laura Bliss, "How 3 Cities Are Measuring the 'Uber Effect,'" *Bloomberg.Com*, January 12, 2018, <https://www.bloomberg.com/news/articles/2018-01-12/uber-and-lyft-s-effects-in-san-francisco-boston-and-chicago>.

²⁷ "The Future of Transit Isn't a \$5 Discount on Uber Trips," *TransitCenter*, 3 Jul. 2019, <https://transitcenter.org/the-future-of-transit-isnt-a-5-discount-on-uber-trips-2/>.

²⁸ Ken Jacobs and Michael Reich, "The Uber/Lyft Ballot Initiative Guarantees Only \$5.64 an Hour," *UC Berkeley Labor Center* 31 (2019). <https://laborcenter.berkeley.edu/the-uber-lyft-ballot-initiative-guarantees-only-5-64-an-hour-2/>

²⁹ Federal Paycheck Calculator. <https://smartasset.com/taxes/paycheck-calculator#uBySnQE3WH>

³⁰ "Out of Reach 2020: California." *National Low Income Housing Coalition*. <https://reports.nlihc.org/oor/california>

Taxis in transition: barriers and opportunities

With the growth of TNCs, the taxi industry is in transition. In this transition, San Diego has an opportunity to support the re-organization of the industry around equity, public welfare, and sustainability.

The taxi industry in San Diego has transformed over the last decade to give drivers a more democratic role in determining working conditions and regulations, with United Taxi Workers San Diego (UTWSD) playing a key role. For decades, San Diego's taxicab industry was regulated in ways that left drivers with low wages and little flexibility. Prior to 2014 the majority of taxi drivers were lease drivers because San Diego city policy restricted the number of taxi permits. These lease drivers paid high weekly fees to permit holders and suffered from low net incomes, long hours of work, and no labor protections. Even drivers with their own cars and medallions faced pages of intersecting and intrusive regulations that denied them the kind of control over equipment and managerial decisions that are a hallmark of independent contractor status.³¹ In 2009, immigrant-led drivers went on strike to protest their poor working conditions. Negotiations followed. A core of strikers decided to create a new organization in 2011: United Taxi Workers San Diego. They did this with help from the Employee Rights Center. UTWSD successfully advocated for secret ballot elections for taxi driver representation on the MTS Taxi Advisory Committee, advocated for committee membership for lease drivers, mediated better relations with City and Harbor police, partnered with UCSD School of Medicine to train drivers on occupational health and safety, and participated in a six-month process to reform airport taxi regulations. In 2014, UTWSD lobbied for and won open permitting of taxis for local cities. They won the same for the airport in 2020. Following the 2014 victory, hundreds of drivers prepared to enter the taxi industry and UTWSD created its own United Dispatch to serve them.

Just as drivers opened the taxi permitting process in 2014, TNCs put unpermitted drivers on the road. Taxi permits declined from about 1,300 at that time to about 550 as of June 2021. Taxi drivers cannot afford to stay in business without new markets. As taxis are regulated in the public interest, we propose that the public sector has an interest in sustaining this modality of transportation.

In November 2019, UC San Diego Design Lab and UTWSD held a workshop with taxi drivers. Workshop participants highlighted the uneven playing field between TNCs and the taxi industry – an imbalance unaddressed by regulators. An experienced driver raised the

³¹ Jill Esbenshade and Elizabeta Shifrin, "The Leased Among Us: Precarious Work, Local Regulation, and the Taxi Industry," *Labor Studies Journal*, April 12, 2018, 0160449X1876804, <https://doi.org/10.1177/0160449X18768047>.

marketing and lobbying practices of TNCs as an example of this imbalance. Drivers voiced frustration with lobbying by Lyft and Uber to get preferential treatment at San Diego airport. Lyft and Uber use venture capital to aggressively market partnerships with public agencies to capture markets, despite the many problems of the industry. These practices siphon riders away from both public transportation and taxis alike.

A public option: taxis as flexible fleet solutions

A high dependence on private rideshare presents risks for any city. TNCs have a business model that cannot ensure ADA accessibility, incentivizes hazardous driving, keeps valuable data from the public sector, and brings externalities including diminished air quality and price volatility. As San Diego moves towards high density transit hubs, TNCs are a problematic solution to take riders the first or last miles from hub to work or home. This section discusses the potential of using taxis as a demand-responsive, publicly regulated first last mile solution, integrated into comprehensive, public transit apps such as the new MTS Pronto system or the ADA-compliant One Bus Away.³² With this concept, we offer San Diego a chance to strengthen public transit to address the climate crisis and lead in innovation for public good.

Imagine a work-bound transit rider pulls up their MTS transit app. The app offers them several transit options, including a trolley to a high-density transit hub followed by a taxi to transport them the last three miles to the job. The rider clicks to accept the route. The app notifies them that a cab will be waiting at the transit hub for them when they arrive. Near the end of the workday, the rider can use the app to schedule a taxi that gets them to their trolley on time. The payments are even handled through the app.

Fueled by the rapid rise of rideshare, many people have grown accustomed to accessing transportation through apps. This envisioned app offers riders mixed-mode transportation, while offering public agencies the chance to experiment with design and pricing models and collect data to plan for better transit outcomes.

MTS San Diego has already taken the first step by building smartphone apps for their public transit riders. The Go MTS app, soon to be transitioned to Pronto, offers a single portal to

³² One Bus Away (OBA) is an open source, ADA-compliant transit planning platform maintained by the Open Transit Software Foundation. It is in use in New York City, San Diego, Seattle, and other cities. MTS directs riders to OBA as the preferred transit planning app. OBA encourages developers to extend the functionality of the software, not only for the individual city but for all cities using the software. San Diego's innovations to One Bus Away could lead the way for other cities.

plan trips across bus, trolley, and regional rail lines. The app also includes safety features such as ride tracking and contact with MTS security. However, commuters still may need help making connections to first or final stops in their journeys. MTS captured this concept as "first mile last mile" in their Elevate 2020 Campaign plan.³³ By making taxis available on-demand to commuters through the MTS app, the city can directly tackle problems of frequency, connectivity to transit hubs, and time.

Building a demand responsive option governed by the city can offer many benefits.

A strengthened public option for transportation

For public agencies, a successful public transit system requires enormous amounts of planning and coordination focused on public interests such as convenience, affordability, efficiency, environmental goals, and social equity. Private sector players such as TNCs have business models in tension with these public interests. TNCs' recent interactions with public agencies, the legislature, and their own drivers show them ready to assert their economic power to challenge public policies that they oppose, as seen in the struggle over Proposition 22. TNCs and their drivers, have no local regulation, no local driver safety checks, no guarantee that they pay local business fees, and a business model that resists regulation by the public sector. By contrast, taxis are regulated in the public interest by MTS and pay yearly permit fees to MTS to help cover the costs of that regulation. Taxi drivers pay local business license fees as independent contractors and submit to the Sheriff's safe driver regulations. Taxis are well-poised to serve as a better regulated, ADA-compliant alternative to TNCs. To streamline the relationship between public agencies and taxis, taxis can be organized under a cooperative model. Cooperatives offer a structure for democratic design making among taxi drivers while offering public agencies a single point of contact and negotiation for contracting with taxi drivers. As a cooperative, taxis can coordinate training and agreements with public agencies while allowing drivers a voice in work conditions.

- **More equitable distribution of transportation resources**

In their pursuit of profit, private ridesharing companies tend to distribute the benefits of a demand responsive option suboptimally for public purposes. They incentivize drivers to flood dense urban areas already well connected by public transportation, increasing congestion and pollution. An alternative run by the city can spread those benefits more equitably to riders who need it the most. The city can utilize taxi or private rideshare services in areas not well serviced by existing public transportation services, eliminate inefficient routes that can be served by a subsidized taxi, or route taxis to provide extra service to transit hubs during peak hours. Taxi drivers have also voiced interest in

³³ Metropolitan Transit System. "Elevate SD 2020." <https://elevatesd2020.com/>

helping to expand access to Flexible Fleets by being stationed at mobility hubs.

- **Sustainable access for riders with disabilities**

The accessibility of public transportation increased nationwide following the Americans With Disabilities Act (ADA) in 1990. Interpreting the 1990 Americans with Disabilities Act (ADA), the U.S. Department of Transportation (DOT) requires that “public entities operating fixed-route transportation service available for the general public also provide complementary paratransit services to persons unable to use the fixed-route system.”³⁴

Cities have looked at a number of ways to provide paratransit services that meet or exceed requirements of the ADA, from dedicated vans to contracting services out to taxi cab providers. While paratransit operators offer pre-planned service, wheelchair accessible vehicles (WAVs) and taxis can potentially serve more spontaneous needs.³⁵ One recent study found taxis in case study cities added transportation flexibility for riders while, in 50% of cities, per ride costs were lower compared to complementary paratransit vans, shuttles, and buses.³⁶ San Diego faces challenges in providing wheelchair accessible transportation. SuperShuttle, one of only two providers of paratransit rides to the airport, closed their operation in San Diego, unable to overcome competition from TNCs.³⁷ Further, San Diego only has three permitted wheelchair accessible vehicle taxis.³⁸ Though SANDAG and, more recently, the California Public Utilities Commission provide grants to support accessible transit operators, the design of incentives, funding, and organizations that can sustain affordable, point-to-point, and flexible paratransit remain a challenge. By partnering with San Diego taxi drivers to upgrade vehicles for wheelchair accessibility, the public sector can create a publicly regulated pathway to wheelchair accessible transit.

³⁴ "Transportation for Individuals With Disabilities - Federal Register." 27 Feb. 2006, <https://www.federalregister.gov/documents/2006/02/27/06-1658/transportation-for-individuals-with-disabilities>.

³⁵ Stephen Nessen, “Commuters With Disabilities Dreading Cap On ‘Unlimited Ride Experiment,’” *Gothamist*, 24 February 2020. <https://gothamist.com/news/commuters-disabilities-dreading-cap-unlimited-ride-experiment>

³⁶ Jon Burkhardt, John Doherty, Joseph Rubino, and Joohee Yum. "A Survey on the Use of Taxis in Paratransit Programs | NADTC," (2008), <https://www.nadtc.org/resources-publications/a-survey-on-the-use-of-taxis-in-paratransit-programs/>.

³⁷ Lori Weisberg, “SuperShuttle leaving San Diego airport at end of year amid steep drop in business,” *San Diego Union Tribune*, 19 Dec. 2019, <https://www.sandiegouniontribune.com/business/story/2019-12-19/super-shuttle-leaving-san-diego-airport-at-end-of-year-amid-steep-drop-in-business>.

³⁸ Leonardo Fewell (MTS). Personal communication, August 3, 2021.

- **Equity for immigrant communities**

Currently over 350 San Diego taxi permit holders are African immigrants seeking entry to the local economy through driving. For decades these have been desirable gateway jobs for recent immigrants who are willing to work hard for long hours to create their own first ladder to economic well-being. Taxis, drivers tell us, promise flexibility and a path into the workforce sometimes blocked by numerous barriers common to many immigrant workers. The integration of taxis into public transit networks creates a steady flow of work for these citizens. This program creates jobs with decent pay for diverse communities while making sure the cut that would be taken by TNCs goes to drivers and to cover program costs.

- **Competitive pricing with TNCs**

Currently, taxis in San Diego can charge a maximum rate near \$2.80 per mile (or they can charge less). TNC pricing varies from about \$2 per mile to enormous surge pricing during high demand times like weekend nights. Drivers in our workshops expressed interest in offering discounted rates to be more competitive with TNCs. A working partnership with public agencies could promote discounting to effectively compete with TNCs for first- and last-mile connections. Because drivers of taxis take a larger cut of the fare than TNCs would allow, they can afford to be flexible on pricing.

- **Innovation and leadership in public software**

By deploying best-in-class multi-model public transit applications, San Diego can lead in sustainable, scalable, and effective civic innovation. This can act as a magnet for civic-minded tech talent. Moreover, public software gives city agencies the ability to experiment with dispatch models, pricing, and design for the public good. For example, designers can design the app to encourage users to less carbon-intensive routes. Public agencies also might subsidize taxi rides for commuters who take mass transit for part of the route. MTS could offer subscription passes that allow a fixed amount of taxi rides in addition to bus rides to attract users to their app platform. These possibilities allow mass transit agencies to effectively compete for riders being lured away by TNCs by maintaining door-to-door, on-demand services for those who need for reasons of ability, geography, or life contingency.

Conclusion: Supporting community-driven solutions

SANDAG's 5 Big Moves create a guiding vision for the future of transportation in San Diego. In the vision, public transportation plays a central role in an equitable, connected,

and sustainable region. As part of this vision, SANDAG has established that Flexible Fleets of scooters, bikes, and on-demand vehicles will help to extend the reach of the network into areas less connected by mass transit. TNCs such as Uber and Lyft currently dominate brand awareness and market share for on-demand rides in San Diego. The extensive research presented here, however, demonstrates the limits and harms of TNCs as a public solution. Dominant TNC companies have resisted public regulation, increased traffic accidents and fatalities, refused to share valuable data, unilaterally set and changed prices, and have not paid their workers a livable wage, among other problems. Without the strategic intervention of public agencies, San Diego commuters may be left with Uber and Lyft as their primary options, entrenching the problems of TNCs into San Diego's transit system.

San Diego has an opportunity to innovate in the public interest, creating a public option for "first mile last mile" transport in a market dominated by Silicon Valley visions and tactics. This report outlines the potential of taxis as a publicly regulated alternative to TNCs, integrated into the San Diego transit system as a public option for the Flexible Fleets strategy's offering of rideshare. A partnership between taxi drivers and MTS could address San Diego's sprawling "first mile last mile" challenges. The taxi fleet is more environment friendly than the TNC fleet. Taxis are regulated under the ADA. Finally, the public sector has an interest in the software and data, both to access planning data and to make sure systems are designed to encourage safe driving. A partnership between taxis and the public sector could provide living wages to immigrant communities and reduce commute burden in Communities of Concern, advancing our region toward climate equity on the path to achieving city and County Climate Action Plans. The next step is for elected representatives to commit to "first mile last mile" transportation in the public interest.

December 3, 2021

Chairperson Nathan Fletcher & Board Members
Board of Supervisors
1600 Pacific Highway
San Diego, CA 92101
RE: Comments on San Diego Regional Decarbonization Framework

Dear Chairperson Fletcher and Board Members:

2851 Camino Del Rio South
Suite 200, Dept. A
San Diego, California
92108

Thank you for this opportunity to provide these comments on the Draft San Diego Regional Decarbonization Framework. There was a lot to digest in the document, so rather than provide very detailed input in a lengthy letter, I have attempted here to raise issues which should be addressed before adopting the Framework. Some matters are existential, that is, the Framework makes assumptions that need to come true for key program elements to succeed.

In some fundamental ways, reality is colliding with aspiration, e.g. "we need lots of affordable housing" or "we need to approve two 100-MW solar projects per year". Current land use policies do not align well with meeting Framework objectives, and will need to be reconciled. To do that, the Board will also need to grapple with how to pay for what will cost billions of dollars.

Overall, UCSD did do a good job writing the Plan, and do properly note the uncertainties. It is a much more in depth and sophisticated analysis than previous efforts.

Policy Questions/Issues:

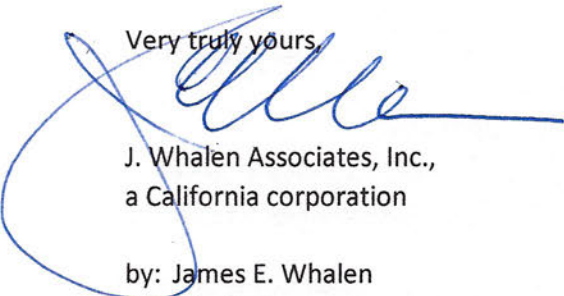
- 1) In a fairly bracing statement, the Framework report notes that the County (and/or the region) will need to approve two 100-MW solar plants every year to meet energy demand and decarbonize by 2050. Even more challenging, the County would have to approve four 100-MW a year to do it by 2035;
- 2) What is the intended role for Imperial County? Up until recently, the entirety of the County's efforts to pursue renewable energy was meant to be 100% within San Diego County. That policy has already not been followed by San Diego Community Power when it buys power outside of the region. Also, our experience in Imperial County suggests that geothermal will be prioritized over solar (with its loss of farmland), so it may be challenging to make up the solar production deficit in San Diego County;

- 3) Pricey upgrades to both the SDG&E Distribution and Transmission grids will be needed to accommodate the large increase of renewable power both from rooftop and commercial-scale solar—on top of that, almost no one supports new power lines. It cannot be certain that SDG&E or its shareholders could or would shoulder any of these new costs, which can be in the billions of dollars for some system improvements. It would be wise to coordinate with both SDG&E and CAISO so that the County has an accurate picture of what it will take to generate/transmit power;
- 4) Citrus groves in northern Borrego Springs are going away due to groundwater overdraft. An obvious exit strategy is to convert the groves to solar (about 750MW in capacity). However, there are mixed opinions in the community on solar—therefore, caution is urged on assumptions of local support for conversion of citrus to solar, especially given lack of available transmission. That said, if this option is chosen, there could be collocation opportunities with a possible County Water Authority pipeline planned to traverse the Borrego Valley;
- 5) There is a need for much more EV charging than is currently planned to meet Plan objectives. SDG&E has been aggressively pursuing increasing the penetration of that infrastructure. It would be good for the County to coordinate with SDG&E to optimize that effort in the unincorporated area. Notwithstanding SB743, electric cars suit the County's development patterns, are the fastest to implement and the most accepted mechanism to reduce the most greenhouse gases, and should be a greater emphasis;
- 6) Congestion pricing is an inherent part of plan to reduce VMT and there is almost no known support for it locally. The County itself would not likely have occasion to use it because the County doesn't really have traffic congestion. The feasibility of this option needs to be tested;
- 7) The Framework Plan is overtly discouraging all rural-area development, which will surprise and draw strong opposition from rural townspeople and businesses, who are already struggling. Using Uber partnerships to reduce VMT is an approach that is difficult to envision. There has to be a way (amend SB 743) to allow for electric cars as VMT mitigation in areas with no transit options;
- 8) The document evinces a limited understanding of MSCP and how the preserve is assembled through public acquisitions and private dedications generated by development projects. Both tools are needed. Proposed VMT regulations/mitigation costs will curtail rural development, thus impacting preserve assembly. The report only features one reference source on MSCP, and that source is controversial in some quarters, so the credibility of the analysis may come into question. A better source(s) of institutional MSCP knowledge is needed;
- 9) Is there a solution for the 43% of marshes that will be lost by 2030 (with a 1- foot sea-level rise) given that there is no place identified to replace them;

- 10) Dramatic changes to the gas utility business would need to occur (see section 5.4), but this would be extremely complex and expensive. Having SDG&E *not* have to pay for the decommissioning of the gas piping may be an incentive, but the strong union opposition to ending the use of natural gas is a very significant added constraint. Fossil fuels workers get paid a lot more than renewables workers, and the Framework glosses over the significance of cutting average pay by 65%; A partial solution may be targeted retraining and placement of laborers;
- 11) Heat pumps are great energy savers but too expensive for the temperate local climate—San Diego doesn't have the heating needs to justify the expense. Recommend a substitute that would be more affordable;
- 12) The implication throughout the Framework is that the County would be the implementation lead. In reality, the County isn't the "boss" this report says it needs to be. What about SANDAG? They're supposed to be the regional coordinator. Significant governance questions need to be resolved unless the County is willing to pay costs of the Framework, and even then, there is a major coordination effort indicated; and
- 13) Table 7.1 is a handy summary of what the Plan wants the County to do, recommend placing it in a more prominent location.

Thank you for this opportunity, I look forward to working with you all. For the worthy goals of the Decarbonization Framework to be realized, it will take concerted collaboration between the stakeholders. To that end, we pledge our support.

Very truly yours,



J. Whalen Associates, Inc.,
a California corporation

by: James E. Whalen
President

Cc: Sarah Aghassi (County of San Diego)
Dahvia Lynch (County of San Diego)
Murtaza Baxamusa (County of San Diego)