REGIONAL DECARBONIZATION FRAMEWORK (October 2021 Draft)

KEY TAKEWAYS

1. Study Framework[1]

- Regional and local decarbonization policies should be informed by detailed analyses of the energy, transportation, and land use sectors, and these should be consistent with a system-wide path to decarbonization at regional, state, and national scales.
- Sectoral analyses in this report are informed by the results of energy system modeling at a state and national level that outline pathways to net-zero emissions, described in more technical detail in Appendix A.
- Technical pathway studies are valuable for identifying dead-end strategies; identifying key decision points; identifying commonalities in pathways under sensitivity analyses; and situating near-term policy targets with respect to long-term goals. ● Uncertainty necessitates an ongoing planning process, with periodic updating as new information becomes available and as progress, or lack thereof, toward goals is achieved.

2. Geospatial Analysis of Renewable Energy Production[2]

- This chapter identifies low-impact, high-quality areas for wind and solar development in San Diego and neighboring Imperial County.
- The region has sufficient available land area for wind and solar generation to approach a fully decarbonized energy system in line with the California-wide system model in Appendix A.
- However, approaching a 100% decarbonized energy system that also meets societal expectations and regulatory standards for reliability will require significant but uncertain investments in a suite of additional resources, including excess intermittent and flexible generation, storage, and demand-side management.
- The chapter informs decision-making by providing a series of site-selection scenarios that prioritize land value, ease of development, and environmental impact as well as proposing a strategy for addressing reliability.
- The significant solar and geothermal potential of neighboring Imperial County is a large potential resource for San Diego that may require upgrades to the transmission network.
- The County should coordinate with state agencies (CPUC Integrated Resource Planning team, CPUC Resource Adequacy team, CAISO Transmission Planning Process team, CAISO Local Capacity Requirements team) to ensure the reliability of the system.

3. Accelerating Deep Decarbonization in the Transportation Sector[3]

- Based on the regional policy context including SANDAG's Draft 2021 Regional Plan, the County's Electric Vehicle Roadmap, local jurisdiction policies and guiding documents, and the A2Z Gap Analysis, the County has a strong policy foundation for reducing emissions related to transportation.

- Nevertheless, projected annual emissions in 2045 and 2050 are inconsistent with the levels of reductions required by EO S-3-05, EO B-30-15, and EO-B-55-18 for carbon neutrality.
- This chapter shows where opportunity areas exist to accelerate EV adoption and VMT reduction based on existing countywide policies and patterns of vehicle ownership, travel behavior, and land use development.

4. Natural Climate Solutions and Other Land Use Considerations[4]

- Natural climate solutions are an important component of decarbonization because they involve natural sequestration and medium to long-term storage of carbon dioxide in lands, but natural climate solutions alone cannot generate enough negative emissions in the San Diego region to achieve net zero emissions.
- To reach net zero, natural and working lands need to act as stronger net sinks than they currently do, which means investment in natural climate solutions and minimizing carbon emissions from the land. In order to accurately account for net carbon land use emissions, local data need to be collected and integrated into regional carbon calculations.
- The most effective and most inexpensive natural climate solution in the San Diego region is to avoid land use change; however, this is neither feasible nor desirable because land use change will be important for other decarbonization actions, like siting renewable energy infrastructure.
- Other important regional natural climate solutions considered here are less effective and more expensive and include carbon farming, wetland protection and expansion, and urban forestry. Other solutions are large-scale habitat restoration and reforestation, which is expensive and may not be effective.
- The natural climate solutions considered here include co-benefits of ecosystem services (e.g., water and air quality improvements, ecological resilience, biodiversity protection) and economic, social, and public health benefits (e.g., energy savings and localized public health improvements from increased urban tree cover) that may help justify the cost of natural climate solutions, even in circumstances where carbon sequestration and storage may be relatively low.

5. Decarbonization of Buildings[5]

- Reducing emissions from space heating and water heating should be a primary policy focus for buildings within the Regional Decarbonization Framework.
- Policies should support increasing adoption of efficient heat pump-based space and water heating systems in both new and existing buildings, with particular focus on assistance for low-income residents and rental buildings.
- Some existing fossil fuel equipment systems will only turn over once by 2050. Near-term action is needed to guide building owners away from replacing end-of-life fossil fuel equipment with like equipment.
- Low-carbon gaseous fuels can be used for hard-to-electrify end uses, though research and piloting is required.
- Stranded cost risk is mitigated by minimizing unnecessary extensions or replacements of the gas pipeline system and by accelerating depreciation of existing utility assets.
- Improved data gathering is a low-cost, foundational action for future policy development.

6. Employment Impacts through Decarbonization for the San Diego Region[6]

- Between 2021 – 2030, the regional decarbonization pathway would generate an average of nearly 27,000 jobs per year in the San Diego region.
- Even taking into account the contraction of fossil fuel jobs, we estimate that no workers in the region's fossil fuel-based industries will have to experience job displacement before 2030.
- San Diego county and local governments should begin now to develop a viable set of just transition policies for the workers in the community who will experience job displacement between 2031 – 2050.
- 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. Under a steady transition, the proportion of workers who will retire voluntarily in any given year will be predictable, the transition process avoids having to provide support for a much larger share of workers.
- Geothermal production of the five sites identified in Imperial County would generate 1,900 jobs per year over a 10-year period.

7. Key Policy Considerations for the San Diego Region[7]

- Reduction of GHG emissions across the region is a coordination problem for cities and agencies that must act together to address region-wide emissions. The need for collective action is heightened due to conditions of uncertainty around the best course of action and implementation strategies. For solutions to achieve necessary scale will require mechanisms to incentivize sharing of information, capacity, and technology between jurisdictions.
- Each sector analyzed by the RDF has near-term actions that will be worthwhile regardless of how longer-term uncertainty resolves itself. These near-term "no-regret" or "little regret" policies should be prioritized.
- This chapter proposes region-wide institutional governance for decarbonization that incentivizes experimentation and involves those on the front lines in an evolving structure that can adapt to changing technological and political realities.
- For San Diego to have a measurable impact on global emissions it should seek to generate followership among other regions and upscale durable innovations that can be expanded and replicated.

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