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**Planning for Deployment - Recommendations for Enhancing  
California Climate Plans (Clean Air Task Force)**

*Additional submitted attachment is included below.*



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# Planning for Deployment: Recommendations for Enhancing California Climate Plans

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## Overview

The complexity of rapidly eliminating carbon emissions from every sector of California's economy creates a vital role for planning. The state has various climate studies, reports, and plans available, including SB 100. Though these documents are ambitious, CATF found that none exhibits all necessary characteristics to facilitate the decarbonization of California's economy at the pace and scale required. The Clean Air Task Force (CATF) reviewed eight of the climate-related reports and planning processes conducted by state agencies and identified their strengths and shortcomings. CATF then diagnosed gaps facing future clean energy deployment by examining California's current studies and plans against seven key attributes identified as prerequisites for a successful Plan.

We find clean energy deployment must be better integrated into existing planning efforts while incorporating current interagency coordination best practices. This conclusion is consistent with Clean Air Task Force's October 2022 report, *Growing the Grid: A Plan to Accelerate California's Clean Energy Transition*,<sup>1</sup> which identified the need for a comprehensive Clean Energy Deployment Plan spearheaded by a lead agency that creates a glidepath to meeting the state's climate goals.

## From today's plans to a Clean Energy Deployment Plan

Clean energy deployment in the Golden State will need to dramatically increase to reach its climate and clean energy goals. For example, according to the California Air Resources Board (CARB) at least five gigawatts (GW) of utility-scale solar would have to be built annually for more than 20 years to achieve economywide decarbonization in its least-cost scenario.<sup>2</sup> For perspective, an average of only two GW of utility-scale solar were added to California's grid each year from 2013 to 2017; since then, the pace has fallen by half.<sup>3</sup> The longer it takes to accelerate clean energy deployment, the steeper the climb to reach net-zero.

Fortunately, California policymakers are acutely aware of the challenge ahead, and the state's energy and clean air agencies regularly evaluate options, create plans, and address communities. California currently requires a litany of plans and reports to catalogue and address

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<sup>1</sup> Clean Air Task Force. (2022) *Growing the Grid: A Plan to Accelerate California's Clean Energy Transition*. <https://cdn.catf.us/wp-content/uploads/2022/10/11081420/growing-grid-plan-accelerate-californias-clean-energy-transition.pdf>

<sup>2</sup> California Air Resources Board. 2022. *Draft 2022 Scoping Plan Update*. Page 51. <https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf>

<sup>3</sup> California Energy Commission. *California Solar Energy Statistics and Data*. Accessed: July 2022. <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/quarterly-fuel-and-energy-report-qfer-1>

climate impacts and push progress forward. For example, to achieve the goal of carbon neutrality by 2045, the *2022 Scoping Plan for Achieving Carbon Neutrality* identified a significant amount of new solar, wind, batteries, hydrogen, clean fuels, and carbon capture and storage projects that must be delivered annually.<sup>4</sup> The rate of deployment described in the Scoping Plan is far faster than has ever been accomplished in the state. Other relevant climate mitigation plans include carbon neutrality plans, transmission-related plans, technology-specific plans, and other one-off reports.

Despite these laudable and necessary efforts, the state must take additional steps and strengthen planning efforts to avoid missing key climate targets. The *Growing the Grid* report articulated the need for a successful Clean Energy Deployment Plan to meet California's climate goals. The following attributes, which build upon the *Growing the Grid* report's recommendations, provide the specificity, accountability, comprehensiveness, and actionability needed in a successful plan. For a Clean Energy Deployment Plan to be successful, it must:

- Identify specific types, quantities, and capacities, of new zero-carbon energy projects
- Align with the state's economic growth and environmental justice priorities
- Incorporate contingencies and alternative pathways to meet climate goals
- Assign responsible agencies for planning, permitting, and siting each project in a binding manner
- Pinpoint and map the geographic needs for energy resources
- Include decarbonization needs from across the economy, not just from the power sector
- Model resource needs for accompanying infrastructure (e.g., transmission, CO<sub>2</sub> storage)

CATF evaluated eight of California's current climate planning documents against these planning criteria, summarized in the table below. Following the table are brief descriptions of each climate planning effort conducted by California state agencies, including a discussion of each plan's strengths and limitations.

While many of California's climate plans and reports have their strengths, CATF found that the fundamental lack of a coordinated planning approach focused on deployment today leaves gaps in implementation, jeopardizing the state's climate goals. Existing climate plans must be enhanced with elements of successful clean energy deployment planning to meet these ambitious targets at the speed and scale necessary. Critically, the state needs substantially more comprehensive clean energy deployment planning and development that explicitly lays out responsibility for specific tasks, incorporates feedback of stakeholders across the state, and allows for contingencies to adapt to technological and societal evolution.

As discussed in CATF's *Growing the Grid* report, a comprehensive, coordinated, multi-agency and multi-sectoral plan can be achieved by creating a new Plan or by incorporating all critical planning elements into an existing Enhanced Clean Energy Plan (e.g., SB 100 Joint Agency report or CARB Scoping Plan).

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<sup>4</sup> California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. <https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf>

## California Climate Plans and Reports

Name	Lead Agency	Connections	Purpose	Time Horizon	Plan Elements
<a href="#">SB 100 Joint Agency Report</a>	CEC, CPUC, CARB	Builds on IRP, used for Scoping Plan	Assessment of energy resources and the building rates needed to achieve 100% clean electricity (released every 4 years)	2045	
<a href="#">Scoping Plan for Achieving Carbon Neutrality</a>	CARB	Inputs from SB 100 Joint Agency Report	Identifies scenario to meet GHG emission reduction targets (released every 5 years)	25-year planning horizon; 2030 and 2045 targets	
<a href="#">Integrated Energy Policy Report (IEPR)</a>	CEC	Includes the Energy Demand Forecast	Conducts assessments and forecasts of all aspects of energy industry (released every 2 years with annual update)	10-year forecast	
<a href="#">Integrated Resource Planning Process</a>	CPUC	Summary included in IEPR; used for TPP	Part 1: analyze and adopt optimal portfolio of electricity resources. Part 2: develop PSP based on LSE IRPs	10-year outlook	
<a href="#">Transmission Planning Process (TPP)</a>	CAISO	Base case from PSP, CEC Demand Forecast	Identify transmission system limitations and needs (released annually)	10-year horizon	
<a href="#">20-Year Transmission Outlook</a>	CAISO	SB 100 needs translated to starting point scenario	Provide long-term conceptual plan of transmission grid in 20 years (refinements annually to the 20-year plan)	20-year outlook	
<a href="#">Offshore Wind Strategic Plan</a>	CEC	Inputs from IPR and IEPR; informs TPP	Evaluate and quantify maximum feasible capacity and establish planning goals for OSW (one-time)	2030 and 2045	
<a href="#">Climate Change Assessment</a>	CEC	Outside other planning processes	Translate the state of climate science into useful information for decision-makers and practitioners (released about every 5 years)	2050	
<a href="#">Clean Energy Reliability Investment Plan (Forthcoming)</a>	CEC	Supports Energy Demand Forecast	Supports programs and projects that accelerate the deployment of clean energy resources, support demand response, assist ratepayers, and increase energy reliability (one-time)	2045	



**Resource quantities:** Includes specific energy resource types and amounts



**Economic growth:** Considers and aligns with the state's economic growth



**Contingencies:** Multiple pathways and strategies if key ambitions are not met



**Legally binding:** Carries force of law and assigns relevant agencies



**Spatial component:** Identifies geographic needs for energy resources



**Scope:** Includes decarbonization needs from all aspects of the economy



**Infrastructure:** Models resource needs for transmission, storage, and/or pipes

Green = Significant coverage   Yellow = Some mention   Red = Not included

## Overview of Existing State Climate and Energy Planning Efforts

### SB 100 Joint Agency Scoping Report

**Overview:** The *SB 100 Joint Agency Scoping Report* (SB 100 Report) is a coordinated, multi-agency report compiled by the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and the California Air Resources Board (CARB). The report models zero-carbon energy types and amounts needed to decarbonize California's energy sector by 2045 and to meet the Regional Portfolio Standard (RPS) of 60% by 2030. The report considers contingency pathways, such as California only achieving 60% RPS by 2045, as well as the costs of deploying different zero-carbon energy resources in varying amounts.

**Limitations:** The report is limited to the energy sector and does not scope emissions reductions economy-wide. It also does not identify specific location needs for resource deployment, model infrastructure needs for new resources, incorporate regional energy visions, align different pathways with California's economic or environmental justice needs, or consider land use impacts of various zero-carbon resources.

**Strengths:** The report includes specific resource needs and contingent pathways to reach net-zero.

### Scoping Plan for Achieving Carbon Neutrality

**Overview:** The *Scoping Plan for Achieving Carbon Neutrality* (CARB Scoping Plan) is developed by CARB and uses the SB 100 Report as a key input. The Scoping Plan is intended as a visionary guide for state climate policy and does not delve into specifics of implementation. The CARB Scoping Plan identifies decarbonization needs across all sectors (transportation, buildings, natural and working lands, electricity generation, etc.) and models four scenarios to achieve carbon neutrality by 2045 and GHG emission reductions of 85% below 1990 levels.

**Limitations:** The CARB Scoping Plan does not consider multiple pathways or contingencies for achieving net-zero by 2045. And while the CARB Scoping Plan does identify amounts of zero-carbon energy resources required, it does not explore where those resources should be sited, quantify land-use requirements of the resources, or include a regional clean energy transition vision created by local communities. Further, the CARB Scoping Plan does not include transmission infrastructure requirements.

**Strengths:** The report is the only economy-wide approach and integrates equity principles while evaluating economic impacts.

### Integrated Energy Policy Report

**Overview:** The *Integrated Energy Policy Report* (IEPR) is developed by the CEC and conducts 10-year forecasting for energy demand, and includes the California Energy Demand forecast. The IEPR includes three energy demand cases to capture a reasonable range of possible outcomes through 2035.

**Limitations:** The IEPR is more constrained than the SB 100 Joint Agency Report and the CARB Scoping Plan, as it focuses primarily on energy demand. The report does not model pathways needed to achieve net-zero, identify the amounts or locations of energy resources required to achieve net-zero, or describe potential contingencies if net-zero is not met. The IEPR does not have a spatial component, and so does not identify specific locations for located zero-carbon resources, quantify land use requirements, or include a regional vision for siting new zero-carbon resources. The IEPR does not consider transmission infrastructure requirements for new zero-carbon energy resources.

**Strengths:** The IEPR includes multiple sectors: energy efficiency, transportation demand, and long-term energy demand. The report also covers equity and environmental justice issues along with a host of emerging topics, such as hydrogen, western electricity integration, distributed energy resources, and behind-the-meter resources.

### Integrated Resource Planning Process

**Overview:** The *Integrated Resource Planning Process* (IRPP) is conducted by the CPUC, is summarized in the IEPR, and is carried out in two parts. The first part is an analysis adopting an optimal portfolio of electricity resources as a guide for load serving entities (LSEs) to use for meeting their GHG, reliability, and cost objectives. The second part is the development of a Preferred System Portfolio (PSP) and ten-year GHG reduction target. The Integrated Resource Plan (IRP) PSP also requires LSEs to submit their study results and needs regarding transmission development to assist the Transmission Planning Process (TPP)

under CAISO.

**Limitations:** The IRPP is limited to LSEs in the electricity sector, so does not address behind-the-meter resources or decarbonization in other sectors. The IRPP also does not quantify land-use requirements for each PSP, nor does it explicitly address economic impacts of PSPs on ratepayers, or align with the state's economic growth. Finally, the IRPP is made up of the submittals of LSEs and does not directly reflect the input of local communities and their regional energy visions.

**Strengths:** The *Integrated Resource Planning Process* is robust and addresses some of the spatial and location issues not covered in other plans, as LSEs are required to submit specific portfolios and projects for actual zero-carbon resources in place. The development of a PSP is a biennial process, so the pathways and contingencies for meeting decarbonization are consistently reevaluated. Finally, the plans submitted by LSEs under the IRP are required to address impacts to underserved communities, including direct impacts.

### Climate Change Assessment

**Overview:** The *Climate Change Assessment* is a report drafted by the CEC, in consultation with many partner climate scientists, that translates the state of climate science into useful information for decision-makers and practitioners. The *Climate Change Assessment* falls outside other climate reports and focuses more on detailing climate impacts and potential resiliency responses, rather than mitigation efforts at the various sectors.

**Limitations:** The report does not consider specific zero-carbon resources, locations, modeling to meet net-zero, or contingencies.

**Strengths:** The report does include robust stakeholder engagement, environmental justice elements, and regional visioning through a workshop-style approach with local leaders and tribal governments.

### Transmission Planning Process and the 20-year Transmission Outlook

The *Transmission Planning Process* (TPP) and the *20-year Transmission Outlook* are both managed by the California Independent System Operator (CAISO). The TPP is the base case for the PSPs developed in the Integrated Resource Planning Process and is also informed by the Demand Forecast. The TPP identifies transmission system limitations and needs. As such, it is location-specific, identifies zero-carbon resource needs, considers multiple contingent pathways to achieve net-zero goals, and aligns with California's economic growth. However, the planning process is limited to the transmission sector and does not include equity considerations. The 20-year Transmission Outlook is also limited to the transmission sector and translates the SB 100 Report resource needs to a starting point scenario for a long-term conceptual plan of the transmission grid in 20 years. The 20-year Transmission Outlook does not align with California's economic growth needs, only vaguely considers equity, and does not incorporate regional energy visions developed by local communities.