

STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
 DF-46 (REV 10/20)

Fiscal Year 2022-23	Business Unit Various	Department Various	Priority No. Click or tap here to enter text.
-------------------------------	---------------------------------	------------------------------	---

Budget Request Name Various	Program Various	Subprogram Various
---------------------------------------	---------------------------	------------------------------

Budget Request Description
 Energy Reliability, Relief and Clean Energy Investments

Budget Request Summary

The Administration requests \$8.050 billion General Fund over five years to support the state's clean energy transition and electricity reliability, and provide relief to the state's utility ratepayers.

Requires Legislation <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Code Section(s) to be Added/Amended/Repealed Various
--	--

Does this BCP contain information technology (IT) components? <input type="checkbox"/> Yes <input type="checkbox"/> NO <i>If yes, departmental Chief Information Officer must sign.</i>	Department CIO Click or tap here to enter text.	Date Click or tap to enter a date.
---	---	--

For IT requests, specify the project number, the most recent project approval document (FSR, SPR, S1BA, S2AA, S3SD, S4PRA), and the approval date.

Project No. Click or tap here to enter text.

Project Approval Document: Click or tap here to enter text.

Approval Date: Click or tap to enter a date.

If proposal affects another department, does other department concur with proposal? Yes No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By Click or tap here to enter text.	Date Click or tap to enter a date.	Reviewed By Click or tap here to enter text.	Date Click or tap to enter a date.
Department Director Click or tap here to enter text.	Date Click or tap to enter a date.	Agency Secretary Click or tap here to enter text.	Date Click or tap to enter a date.

Department of Finance Use Only

Additional Review: Capital Outlay ITCU FSCU OSAE Dept. of Technology

PPBA Click or tap here to enter text.	Date submitted to the Legislature Click or tap to enter a date.
---	---

A. Budget Request Summary

The Administration requests \$8.050 billion General Fund over five years to support the state's clean energy transition and electricity reliability, and provide relief to the state's utility ratepayers.

This proposal includes:

- \$1.2 billion for the utility ratepayer relief through the California Arrearage Payment Program.
- \$6.7 billion to support energy reliability in the state, broken out as follows:
 - \$4.25 billion for Investments in Strategic Reliability Assets
 - \$970 million for Residential Solar & Storage
 - \$950 million for Distributed Electricity Backup Assets & Utility-Scale Assets that will participate in the Strategic Reliability Reserve
 - \$295 million for Demand Side Grid Support; and
 - \$250 million for Transmission & Energy Financing
- \$100 million to improve the efficiency, effectiveness, costs, emissions reductions, and environmental performance of direct air capture technology.
- \$5 million for CEC to expand analysis of customer-level energy utilization data.

B. Background/History

Climate change is here and real, and California is on the frontline of its impacts, which are occurring sooner and with more intensity and frequency than anticipated, in ways that are difficult to predict. These climate change-driven conditions, which include increases in extreme heat, wildfires and drought, are impacting the energy grid and changing both demand and supply. Our communities of concern are often hit the hardest by extreme events.

California has experienced back-to-back years of energy reliability challenges, including a multi-day extreme heat event across the western United States that resulted in rotating outages in August 2020. In 2021, heat waves in June prompted a Grid Warning and the onset of emergency conditions and the Bootleg Fire in July caused the loss of three transmission lines in southern Oregon reducing import capability by 4,000 megawatts.

These energy reliability challenges have demonstrated that:

- Climate change can impact load and supply conditions beyond traditional forecasting and planning assumptions.
- Balancing supply and demand is most challenging during the early evening net peak, not the mid-day gross peak.
- Wildfires across the western region can have significant operational impacts on availability of supply and regional transfers.
- Regional retirements and changes in load patterns during west wide heat events can constrain availability of imports.
- Sufficient new resources need to be online and meeting operational needs before retirement of existing resources occurs.

As a result, planning and operation require a stronger focus on additional resource capacity that can reliably produce in the evening hours when solar projects produce little or no energy.

Meanwhile, residential electric utility ratepayers have experienced increases in average monthly bills, with some customers experiencing an average increase of between \$40 and \$50 per month.

California's energy transition requires that the growth in the electricity system is clean, reliable and affordable.

The Governor's Budget included \$2 billion for a Clean Energy Investment Plan to support innovation and deployment of clean energy technologies in the energy system. This proposal will further increase the state's energy system's resilience, increase reliability and affordability, and accelerate the deployment of the resources needed to achieve California's clean energy transition, and provide debt relief to California households impacted by the COVID-19 Pandemic.

While the state is making bold efforts to aggressively reduce carbon emissions, more must be done. The draft 2022 California Air Resources Board Scoping Plan indicates that to achieve carbon neutrality, mechanical carbon dioxide removal will need to be deployed. Direct air capture (DAC) is one available option that is under development today. It could be widely deployed and help achieve carbon neutrality by removing atmospheric carbon dioxide associated with historic emissions. However, government or other financial support is needed to overcome technology and market barriers, including using state funds to leverage federal and private funding.

C. State Level Consideration

In response to climate change, California has been leading, and will continue to lead the way, in the affordable and equitable transition to a clean reliable energy system and economy. However, the impacts of climate change are occurring sooner and with more intensity and frequency than previously anticipated.

Extreme weather events from climate change – including heat waves, wildfires, and the impact of drought on hydropower capacity – combined with other factors such as supply-chain disruptions – are jeopardizing California's ability to build out the electric infrastructure needed to maintain affordability and reliability.

Additionally, the state is committed to helping households that have struggled to pay their energy bills and are in danger of service disconnection. Electric reliability is ensured through electric utility resource adequacy and integrated resource planning and paid by ratepayers. Normal planning tools require energy providers to plan based on historic trends, calculating probabilities on occurrences over the last 10 years. Climate change requires adjustments to this approach to plan for a future that does not look like the past and to account for wider ranges of extreme weather—both colder and hotter than in the past, combined with more frequent and larger wildfires and persistent drought. In the face of this uncertain reality, the state needs to invest strategically to ensure electricity reliability, so that all Californians can be protected during extreme weather events without creating additional upward pressure on electric rates.

SB 100 (2018) sets the policy of 100 percent of retail sales and state loads to be supplied by renewable energy and zero-carbon resources by December 31, 2045. The 2021 SB 100 Joint Agency report found in order to meet the SB 100 goal of meeting 100 percent of retail sales with renewable and zero-carbon resources while electrifying large parts of the rest of the economy that renewable, zero-carbon and storage resources will need to be deployed at an average rate of 8 GW per year until 2045, totaling nearly 70 GW of new utility-scale solar and nearly 50 GW of battery storage. The report also noted that zero-carbon firm resources can significantly reduce the cost of achieving SB 100 and the total solar and storage capacity required.

In September 2021, the joint energy agencies and CAISO issued the Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy in response to a Proclamation of a State of Emergency issued by Governor Gavin Newsom on July 30, 2021.

The report outlines recommendations to the key challenges to reaching the SB 100 goals, including statutory changes to recognize the urgency of clean energy permitting, creating financing mechanisms to address affordability, enhancing modeling to reflect climate change impacts, advance long lead time resources and to maximize demand response and demand flexibility.

California's electric grid will go through substantial changes as the state transitions to 100 percent clean energy. Solar and wind build rates need to nearly triple and battery storage build rates need to increase by nearly eightfold. This proposal will support the state's clean energy transition and electricity reliability, and provide relief to the state's utility ratepayers

D. Justification

The requested funding is displayed in the below chart:

Energy Reliability, Relief and Clean Energy Investments
(Dollars in Millions)

Investment Category	Program	Agency	2021-22	2022-23	Multiyear Total
Ratepayer Relief	California Arrearage Payment Program	CSD	\$0	\$1,200	\$1,200
	Capacity Building Grants	CPUC	\$0	\$30	\$30
Reliability	Investments in Strategic Reliability Assets	DWR	\$1,500	\$445	\$4,250
	Distributed Electricity Backup Assets	CEC	\$550	\$0	\$950
	Residential Solar & Storage	CPUC	\$0	\$70	\$970
	Transmission & Energy Financing	IBank	\$0	\$250	\$250
	Demand Side Grid Support	CEC	\$200	\$0	\$295
Clean Energy	Carbon Removal Innovation	CEC	\$0	\$50	\$100
	Energy Data Infrastructure & Analysis	CEC	\$0	\$5	\$5
Total Package			\$2,250	\$2,050	\$8,050

Utility Ratepayer Relief - California Arrearage Payment Program

The economic impacts of the COVID-19 Pandemic caused many households to struggle paying their energy bills. Millions of Californians continue to remain behind on their energy bills and may be at risk of service disconnection.

While the 2021-2022 implementation of the California Arrearage Payment Program (CAPP) provided significant relief for energy arrearages accrued between March 4, 2020 and June 15, 2021, not all of those arrearages could be covered by the original program. Additionally, a recent survey of energy utilities conducted by the Department of Community Services and Development (CSD) indicates that customers continued to amass energy debt after June 15, 2021, as households continued to be economically impacted by the COVID-19 Pandemic. CSD surveyed the 44 energy utilities participating in CAPP, asking them to report estimates of remaining arrearages through Dec. 31, 2021. With 38 of these 44 utilities having responded, the estimate of remaining customer arrearages was \$1,838,018,280. Of this total estimate, \$1,260,362,941 were residential arrearages and \$577,655,339 were commercial arrearages.

Given the ongoing severity of energy utility debt and the potential consequences households are exposed to by the inability to repay this debt, additional energy utility assistance debt relief is greatly needed. Additional state budget funds are required to mobilize a stronger response to the energy utility debt customers are carrying and struggling to repay.

Based on the remaining need for energy utility assistance debt relief identified above, CSD is requesting \$1.2 billion to provide energy utility bill relief to residential customers with eligible arrearages.

It is also requested that corresponding statutory changes and provisional language authorizing the transfer of funds between local assistance and administrative cost, and making the funding available for encumbrance, expenditure, or liquidation until June 30, 2025 be added to support the implementation of CAPP.

Utility Ratepayer Relief – Capacity Building Grants

Many non-profit, community-based organizations (CBOs) serving disadvantaged communities and underserved populations in California are not aware of how to engage effectively in PUC processes to represent themselves and their communities even when the PUC's regulatory responsibility to ensure safe, clean and affordable utility service and infrastructure clearly connects with their mission. At the same time, many CBOs are under-resourced and understaffed, forcing them to limit their engagement in governmental processes that may be very time consuming. There are significant technical barriers that prevent disadvantaged communities, Tribes and low-income Californians from participating in PUC proceedings and accessing customer clean energy programs, despite substantial interest and demonstrated need for the electric service reliability and public health benefits these programs create.

To fill the need for dedicated technical assistance and capacity-building resources available for implementation of programs increasing equity and resilience in these communities, the PUC proposes to develop a grant program for CBOs based on successful existing models such as the PUC's telecommunications Tribal Technical Assistance Grant Program. The PUC proposes to establish the new capacity-building grant program to provide technical assistance and capacity-building resources to eligible applicants seeking to participate in PUC proceedings and utilize incentives for clean energy technologies that improve electric service reliability and resilience for disadvantaged communities, Tribal communities, and low-income Californians, partnering with Tribal and local governments or CBOs, as appropriate.

The new capacity building grant program would enable smaller CBOs and entities that serve disadvantaged communities and underserved populations to build capacity and expertise in areas of PUC oversight as well as engage in and inform PUC policymaking processes and regulatory functions. It will also support CBOs located throughout California in delivering program information through in-person outreach, provision of informational materials, and through offering dedicated, targeted assistance with customer clean energy program application processes.

Utility Ratepayer Relief

Until recently, California electric investor-owned utility (IOU) rate increases tracked the rate of inflation. However, these electric rates are now projected to sharply outpace inflation over the rest of this decade. Additionally, while California electric IOU rates have historically been among the highest in the nation, California energy bills for individual customers have been in the "middle of the pack" compared with the rest of the country. This is largely because of stringent energy efficiency standards and investments, and the states historically mild climate. With the increasing stress of climate change on our electrical system, this will likely no longer be the case.

Current statute limits the CPUC from designing rates in a manner that fully adheres to traditional ratemaking principles (Bonbright Principles)¹. Electric rates that deviate from these

¹ Articulated in CPUC Decisions D.15-07-001 and D.17-01-006.

principles lead to cost-shifts between and within customer rate classes (e.g., residential, commercial, and industrial) and distorts economic price signals sent to customers that may lead to over- or under-consumption of electricity without any reflection of the actual costs of providing electric service. Without further improvements to the electric rate structure, cost burden inequalities will persist, and timely and accurate economic price signals that are needed to manage electricity consumption as we integrate clean energy resources into the state's electric system, will be misaligned and ineffective. Electric IOU residential rates must evolve in order to deliver safe, affordable, reliable, and environmentally responsible electric service into the 21st century.

To fairly allocate fixed costs to residential customers and help reduce the potential volatility in residential electric rate increases year-over-year, the CPUC proposes the removal of the statutory cap on fixed charges. The removal of this arbitrary cap on fixed charges would provide the CPUC with the flexibility to assess a surcharge that more accurately reflects the fixed costs of providing residential customer's electric service. The proposal also allows the CPUC to explore the imposition of a fixed charge based on customer income so that lower-income customers are not disproportionately impacted.

Reliability - Investments in Strategic Reliability Assets

As California transitions to a clean energy future and contends with climate impacts and other reliability challenges, sufficient capacity of new and existing generation assets will be required to maintain reliability during extreme events. Investments in Strategic Reliability Assets will support the grid's reliability, with a focus on cost, availability, and meeting the operational needs of the grid. The Reserve will incorporate up to 5,000 MW of capacity and will seek to make the following categories of investments:

- 1) Investments in new energy capacity that can be called upon by grid operators when needed to support the grid in emergencies. Assets in this category are expected to be similar in cost to the State Power Augmentation Program that was implemented in 2021 and brought 120 MW of new capacity online to support the grid.
- 2) Extend the life of existing power generation capacity by renewing expiring operating permits and providing capital capacity payments for efficiency upgrades and operations and maintenance costs for more reliable operation.
- 3) Power purchase agreements to augment energy resources in and into California.

Investment in new energy projects is focused to support grid reliability and includes procurement and may include installation of additional temporary generators and energy storage systems in FY 22-23. These systems will be in addition to the temporary generators procured during FY 21-22. The estimated investment for new capacity is based on the cost of installing 120 MW of new generation capacity to support the electric grid in 2021.

Extending the life of existing operating facilities will maintain capacity for grid operators to ensure continued reliability during extreme events that challenge the electricity grid. Some potential projects in this asset class are currently scheduled to go offline in 2024 or 2025. Others may be operating in the market without long term contracts. Existing plant capacity will be preserved by extending expiring permits and providing capacity payments to existing project owners. Preserving the existing plant capacity represents the largest portion of the Strategic Reliability Assets investment estimate.

Finally, power purchase agreements would bring additional energy and resource adequacy in and into California at a pre specified schedule and delivery point. The agreements will be

focused on procuring energy resources during peak demand periods when energy is needed most by grid operators.

The investments in the Strategic Reliability Assets program will be administered by 25 new DWR staff required to develop, execute, and implement complex agreements covering power generation, operation and maintenance, fuel management, site leases, power settlements, invoice verification, billing and other associated items. The DWR team will be supported by external service agreements for specialized expertise. DWR will consult with CEC, CPUC, the California ISO and CARB in administering the Strategic Reliability Reserve.

Reliability - Distributed Electricity Backup Assets & Utility-Scale Assets

This section of the proposal includes a combined total of \$950 million of investments towards distributed scale assets and utility scale assets that will provide grid reliability and will contribute toward the development of the strategic reserve of up to 5000 MWs. There are more than 40,000 fossil backup generation systems totaling approximately 14,000 MWs in the state. The CEC, in close coordination with the CARB, proposes to provide incentives to reduce emissions from backup generation systems and to incentivize deployment of zero or low emission backup generation technologies.

The CARB, in coordination with CEC, will consult with Air Districts to determine which best available technologies and equipment would qualify for incentives for backup generation under this program. Executive level approval of the Distributed Electricity Backup Assets program from CARB will be required before it is finalized by the CEC.

The Distributed Electricity Backup Assets program would consist of two components:

(1) Incentives to deploy new zero or low emission technologies, including fuel cells, at existing or new facilities, and as replacements or to substantially improve the environmental performance of existing backup generators. The CEC would provide incentives to deploy these upgrades or replacements for diesel backup generators. Deployment would occur throughout the state and for different end uses, such as in fire prone areas, for data centers, and to provide clean alternatives for critical infrastructure such as hospitals, clinics, water facilities and fire stations. Owners of the back-up generators that receive funding from the state would be required to operate their equipment to support the grid during emergencies and will be dispatched as a part of the strategic reserve.

(2) Incentives for air emission reduction technologies to be installed on large fossil back-up generators (those that are greater than 1MW). In exchange, owners of the back-up generators would be required to operate their equipment to support the grid during emergencies. Under some conditions they would be eligible for additional incentive payments through the complementary Demand-Side Grid Support program.

In support of utility scale assets, the CEC, in consultation with CARB, will invest up to \$200M in efficiency upgrades, maintenance, and incremental capacity additions at existing power generators that do not otherwise have contracts from any other source that would fund those upgrades. These projects could include onsite project modifications such as inlet chillers, hot gas path upgrades, emissions control, and cooling system upgrades. Funding could be provided for projects that would improve system hardening and resiliency during earthquakes and extreme weather events including wildfires and floods (mudslides from excessive rains).

Reliability – Residential Solar & Storage

This proposal aims to increase grid reliability by addressing the accessibility and deployment of behind-the-meter (BTM) battery energy storage systems paired with solar photovoltaic (PV) systems (solar PV + storage) and standalone energy storage systems, by adding \$970 million to the Public Utilities Commission (PUC) Self-Generation Incentive Program (SGIP). Seventy percent of these funds would target residential low-income, Tribal, and disadvantaged communities. The remaining thirty percent of funds would be available for general market

incentives for battery storage system deployment. The deployment of these systems has the potential to improve electric service reliability and resiliency for low-income residential customers who may experience power outages caused by wildfires or other events; contribute to grid reliability and resiliency during grid stress events and during peak and net-peak hours; reduce electric sector greenhouse gas (GHG) emissions; create new, clean energy jobs; reduce low-income residential customers' electric bills; and create new avenues for Tribes and underrepresented communities to access and benefit from clean energy resources.

The SGIP currently offers incentives for installing distributed energy resources at both residential and non-residential facilities. This program is primarily focused on the installation of BTM battery energy storage systems but provides funding for a wide range of other technologies, including fuel cells, wind turbines, and linear electric generators. The primary goals of the SGIP are to reduce GHG emissions and improve customer reliability and resiliency. More recently, the PUC allocated funding of almost \$1 billion in 2020 through 2024 for SGIP to support resiliency in communities at risk of power outages due to wildfires or public safety power shutoff (PSPS) events. The funding prioritizes communities living in high fire-threat areas, communities that have experienced two or more PSPS events, as well as low-income and medically vulnerable customers. This component of SGIP is fully subscribed and on wait list status for qualifying customers seeking to assess the incentive payments, which means these customers can no longer access the program other than through a waitlist.

To address the demand for incentives and capture the benefits noted above, this proposal will enable the PUC to expand the program, so that more low-income and disadvantaged customers may gain access to solar PV + storage systems. In addition, this proposal provides an infusion of funding into the battery energy storage system market to maximize the grid reliability and customer resiliency benefits of these systems for all customers including those that have an existing solar PV system or who plan to install a new solar PV system.

Clean Energy Financing

This proposal seeks to jump-start needed transmission and reduce the long-term cost impacts on rate payers of the movement to a 100 percent carbon free grid by reducing the financing costs of new transmission.

Chapter 312, Statutes of 2018, (SB 100) sets an ambitious target of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources by 2045. Two key priorities as the state works to meet the SB 100 goals are to maintain system reliability and to increase affordability. California is moving toward a 100 percent clean energy electrical system, with increased electrification of all aspects of the economy – transportation, buildings, ports, and more. Clean electricity developers are innovating and expanding, fueling the economy and creating good jobs for California residents. Flexible, firm, clean power projects, capable of delivering power to the grid, are increasingly important for reliability. The 2021 Joint Agency SB 100 report found that California will need to sustain its expansion of clean electricity generation capacity at a record-breaking rate for the foreseeable future, and will ultimately triple the amount of the state's electric generating capacity. The California Independent System Operator's (CAISO) recent 20-year Transmission Outlook identified the need for multiple additional high-voltage transmission lines and substations to support the state's transition to a 100 percent clean energy.

Once the need for a transmission project has been identified and approved through the CAISO process, the project is financed by electric utility transmission owners with the costs recovered from ratepayers as a capital project that earns a rate of return for utility shareholders. Some transmission projects are developed through a competitive process resulting in an independent developer financing the project that also earns a rate of return comparable to the regulated transmission owners. The costs for transmission projects,

approved by the Federal Energy Regulatory Commission, have been steadily rising and are a significant component of current ratepayer pressures. Balancing authorities outside the CAISO may have different transmission development and cost recovery processes where transmission costs are paid by generators and recovered through power purchase agreements with off-takers for the electricity.

This proposal includes \$225 million one-time General Funds and associated statutory changes for IBank, within the Governor's Office of Business and Economic Development, for a financing program dedicated to supporting the development of strategic transmission projects that will assist the state in meeting its reliability, affordability and climate goals. Projects will be identified according to eligibility criteria and in coordination with the CPUC and the CEC, and in consultation with the CAISO, as appropriate. IBank will deploy these funds, and utilize the full range of financing tools available under its existing financing programs, including direct lending, bridge loans, and credit supports (loan guarantees, loan loss reserves, and bond guarantees/reserves) to extend capital to public or private borrowers. To the extent possible, IBank will seek to maximize the involvement of third-party capital, including from the federal government and private sector, to increase the impact of these state-provided funds. Once "revolved" and returned to IBank, these funds will be segregated and reserved for the next priority projects, as identified by both the CPUC and CEC.

The initial priority is to support the development of new transmission to deliver to the CAISO system, clean, firm electricity from new resources located in the Salton Sea region. This investment is consistent with and will support the development of new resources required by the CPUC's Integrated Resource Planning Mid-Term Reliability procurement Decision 21-06-035, and will support the state's goals for development of the Lithium Valley vision in Imperial County.

Subsequent priority projects will be identified by the both the CPUC and CEC, which will establish the eligibility criteria for IBank's public financing plan for the electricity infrastructure sector. Candidates for strategic transmission investment are illustrated in the California ISO's 20-year transmission outlook, indicating that there are at least \$30 billion of projects that need to be advanced to meet California's renewable energy goals and provide reliability.

California Collaboration with U.S. Department of Energy Loan Program Office

The U.S. Department of Energy Loan Program Office's (LPO) Title XVII Renewable Energy and Efficient Energy program is a loan guarantee program and the use of a guarantee requires a source of capital to issue the loan to be guaranteed. A Typical LPO financing transaction is for projects \$100 million or more. A LPO Title XVII guarantee is restricted to a single location project, with an exemption for distributed energy projects that has a single controlling entity or other qualifying nexus.

The Administration and the LPO have been in discussions regarding how to financially support clean energy projects using LPO's loan guarantee program. Historically, the loan guarantee program has been limited to innovative technology projects. The federal Infrastructure Investment and Jobs Act amended that requirement to allow loan guarantees for clean energy projects using proven technologies, provided that those projects include a state financing partner.

This proposal includes \$25 million one-time General Fund and associated statutory changes for IBank to support clean energy projects that are financed with the Loan Program Office's guarantee program, once this new loan guarantee authority can be used.

Reliability – Demand-Side Grid Support

This proposal includes \$295 million to develop the demand-side grid support program. Building on the California State Emergency Program (CSEP) established last year, demand response and flexibility efforts will help reduce energy demand during times of peak grid stress. Demand

response and demand flexibility are low-cost and low-carbon resources that can be deployed to support reliability more quickly than many physical generation resources.

Through this program, the CEC will provide financial incentives such as up-front payments for load reduction commitments and pay-for-performance incentives per unit of electricity demand reduced. Customers may participate in the program directly or through demand flexibility aggregators, who design programs and platforms to maximize customer impact, engagement, and satisfaction. Publicly owned utilities that run demand response programs may also act as aggregators.

Back-up generators that do have emissions and are not permitted to provide grid support during energy emergencies will be allowed to participate under emergency conditions. The CEC, in coordination with CAISO and CARB, will develop guidelines so that the cleanest resources are called upon first, minimizing local pollution in all communities, particularly AB 617 communities, and minimizing greenhouse gas emissions. Upon the issuance of an Emergency Proclamation, the California Air Resources Board, in consultation with the CEC, shall determine the funding amount needed to fully mitigate impacts from operations of back-up generators participating in this program during the applicable emergency. The California Energy Commission shall transfer those funds to California Air Resources Board, to be used in the Climate Heat Impact Response Program.

Load-serving entities relying on the program will repay the CAISO market value of demand reductions back into the fund, allowing the investment to support demand-side grid support resources beyond the initial allocation.

Clean Energy – Carbon Removal

Direct air capture is a process of withdrawing carbon dioxide (“carbon removal”) from the atmosphere. It is an important, emerging complement to the state's existing portfolio of climate change mitigation measures – including continued aggressive action to expand clean energy, preserve natural and working lands, and transition away from fossil fuels. According to the draft 2022 California Air Resources Board Scoping Plan, an estimated 95 million metric tons of annual carbon dioxide removal will be needed by 2045 in its Proposed Scenario which balances carbon stock outcomes, GHG emission reductions, costs and economic impacts and other factors.

The 2021 Infrastructure Investment and Jobs Act (IIJA) includes \$3.5 billion for direct air capture hubs. Targeted state funding in the 2022-23 budget can leverage this very significant opportunity to support California innovators in successfully competing for these federal funds. As federal government funding generally requires match funding, the state can play a pivotal role by providing funding to federal grant applicants and supplementing private funding such as Bill Gates’ Breakthrough Energy Catalyst Fund. By leveraging multiple funding sources, California can accelerate the advancement of direct air capture projects.

Separately, the Biden Administration has prioritized direct air capture through its new “Carbon Negative Shot” program, one of its three flagship initiatives modeled after the JFK-era Moonshot Program. It aims to remove carbon dioxide from the atmosphere and durably store it for less than \$100 per ton of net CO₂-equivalent in under a decade.

This proposal includes \$100 million to advance technologies for direct air capture of atmospheric carbon and leverage available federal and private funds. This state funding supports applied research and development, prototype and pilot research, and technology demonstrations.

This proposal will help advance technology development and jumpstart commercial projects. The potential for multiple funding sources enables projects that are larger in scope and scale than any single funder may be willing to support. Though there are several California-based startups and other companies working in the field, there are currently no commercial direct air

capture projects in operation in the state. Using the proposed state funds could strengthen and further diversify California's portfolio of climate solutions and support the necessary entrepreneurial ecosystem for a thriving in-state direct air capture industry, with potential for significant global impact.

The categories of investments are:

Carbon Removal Innovation
(Dollars in Millions)

Program	Total
Applied Research and Development Grants	\$25
Prototype and Pilot Research Center(s)	\$40
Technology Demonstration Grants	\$35

This proposal focuses on advancing capture processes. These state funds would not focus on the development of subsurface storage sites, though paired federal or private funds or other state funds dedicated to storage may support those activities.

The following are proposed workstreams to support cost share for federal and private funding and advance direct air capture consistent with the National Academy of Sciences report recommendations on negative emissions technology research needs.

Applied Research & Development Grants

- Simulate, synthesize, test new materials at a lab-scale to improve performance, lower costs, reduce energy use, and advance water harvesting and use reduction
- Design, model, and analyze novel components and systems, and integration with clean energy resources or the electric grid.
- Assess the environmental impacts of novel materials, including waste disposal and life cycle environmental analysis
- Create forums for communities, environmental organizations, labor groups, and technology developers to collaborate and facilitate stakeholder engagement

Prototype & Pilot Research Center(s)

- Manufacture and test prototypes to scale promising lab-scale technologies to pilot-scale
- Design and develop manufacturing equipment necessary for pilot-scale tests
- Evaluate energy usage and environmental performance of pilots
- Provide startups with entrepreneurial assistance
- Advance partnerships with developers, industry, government, academia, national labs, community based organizations, environmental groups and financial entities
- Conduct technology transfer and public education and outreach

Technology Demonstration Grants

- Advance engineering and design work for direct air capture facilities and infrastructure
- Develop a public database for operational data of supported demonstration projects
- Conduct community engagement and outreach in close partnership with local communities

State funding will help support the continued development of California's entrepreneurial ecosystem focused on direct air capture and carbon capture, utilization, and storage, which already includes over 20 startups. With new state funding to leverage federal and private investment, this ecosystem will grow, with potential to create thousands of jobs.

Clean Energy – Energy Data and Modeling

The CEC recently completed collection of more than three years of customer-level hourly interval meter data for over 95 percent of electric and gas customers in the state, which includes more than a trillion records. This resource is the result of a multi-year effort beginning in 2015 with the updating of CEC's data collection authority and regulations, followed by persistent work by CEC staff to overcome multiple institutional and technical barriers.

The use of this data resource will enable an immense range of analyses critical to support California's climate and energy goals, including localized reliability assessments, forecasting tools, distribution system planning, and the targeting of building decarbonization and load flexibility programs for maximum equity and emissions reduction. This proposal includes \$5 million one-time for computing resources and analytical support to allow CEC to fully operationalize this data resource.

Opt-in Permitting

This proposal includes the creation of a new process to allow certain sites and facilities to opt-in to an exclusive one-stop-shop certification process at the California Energy Commission. The certification process would be efficient, prioritize reliability, maximize public input, apply rigorous environmental review, and strive to ensure that local governments, workers, and communities reap the benefits of renewable and zero-carbon resource development. In choosing to utilize this new process, an applicant would be obligated to meet requirements to ensure overall net positive economic benefit to the local government that would have otherwise had permitting authority over the site and related facility, enter into one or more legally binding and enforceable community benefits agreements, and adhere to labor standards that ensure fairness and benefits for workers.

Updated Planning Reserve Margin

This proposal requires the CEC to set a planning reserve margin for non-CPUC jurisdictional entities that are part of the California Independent System Operator balancing authority to ensure each entity is adequately accounting for their contribution to reliability. These entities would then be required to utilize the adopted planning reserve margin.

Offshore Wind Lessee Engagement

The Administration proposes the establishment of the Voluntary Offshore Wind and Coastal Resources Protection Fund to support the state's approach to offshore wind energy development. The Fund will support state agency and other entities capacity needs (e.g. tribal governments, fishing industry, and local communities) following areas in federal ocean waters being leased by the federal Bureau of Ocean Energy Management (BOEM) for wind energy development. The California Coastal Commission's review of and conditional concurrence with the Bureau of Ocean Energy Management's consistency determination for issuing leases within the Humboldt Wind Energy Area establishes a framework and lays out a direction for the state's approach for the review of wind development in federal waters off California.² As required by the federal Coastal Zone Management Act, the California Coastal Commission will review future Bureau of Ocean Energy Management consistency determinations for other proposed lease sales in federal waters, as well as consistency certifications for proposed wind development projects, to determine if those activities are consistent with the California Coastal Management Program.

² https://documents.coastal.ca.gov/assets/upcoming-projects/offshore-wind/CD-0001-22_Concurrence%20Letter.pdf

Funding would help accelerate the ability of state agencies to coordinate, conduct needed studies, and otherwise prepare for future permitting and review activities related to offshore wind development, including ancillary permitting, such as port and waterfront facility upgrades and other associated infrastructure. Funding would also support workforce readiness, supply chain investments, and infrastructure deployment.

The fund would be able to receive contributions from public and private sources, including from lessees of federal ocean waters, and for purposes of financial commitments made to fulfill a lessee's bidding credits in a bureau lease sale auction.

E. Outcomes and Accountability

These proposals will:

- Create a statewide resource capable of providing up to 5,000 megawatts available when the grid is stressed, and increase the state's ability to withstand extreme and coincident climate events.
- Increase the accessibility and deployment of behind-the-meter battery energy storage systems paired with solar photovoltaic systems and standalone energy storage systems.
- Promote electricity reliability by ensuring that all load serving entities that are members of the CAISO adequately plan for reliability in their planning reserve margins.
- Further increase the state's energy system's resilience, increase reliability and affordability, and accelerate the deployment of the resources needed to achieve California's clean energy transition, and provide debt relief to California households impacted by the COVID-19 Pandemic.
- Provide relief to California households by addressing energy arrearages.
- Support the development of strategic transmission projects that will assist the state in meeting its reliability, affordability and climate goals.
- Advance carbon removal technologies in California, helping the state to reduce GHG emissions and meet its climate neutrality goals by mid-century.

F. Analysis of All Feasible Alternatives

Alternative 1: Approve \$8.050 billion General Fund over five years to support the state's clean energy transition and electricity reliability, and provide relief to the state's utility ratepayers.

Advantages:

- Accelerates progress on the state's clean energy and climate goals.
- Supports innovation and deployment of clean energy technologies in the energy system.
- Further increases the resilience, reliability, and affordability of the state energy system.
- Supports the qualified development of direct air capture and support technologies.
- Provides financial assistance to reduce or eliminate energy debts of Californians.

Disadvantages:

- Requires an appropriation of \$8.050 billion General Fund.

Alternative 2: Approve partial funding for the proposal.

Advantages:

- Provides some of the benefits of the proposed package.
- Allows some of the proposed funding to be invested in other priorities.

Disadvantages:

- Reduces the impact that the full package could provide to Californians.
- A lower authorization will decrease the ability to leverage federal funding to advance state priorities.

Alternative 3: Do not approve funding.

Advantages:

- Allows the proposed funding to be invested in other priorities.

Disadvantages:

- Does not provide any of the benefits of the proposed package.

G. Implementation Plan

Departments have started planning for implementation of the funds so that they can be used as soon as possible.

H. Recommendation

Alternative 1: Approve \$8.050 billion General Fund over five years to support the state's clean energy transition and electricity reliability, and provide relief to the state's utility ratepayers.

