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

Fiscal Year	Business Unit	Department	Priority No.
2022-23	0540; 3480	California Natural Resources Agency; Department of Conservation	

Budget Request Name	Program	Subprogram
0540-039-BCP-2022-MR; 3480-077-BCP-2022-MR	0320-Administration of Natural Resources Agency; 9900100-Administration	

Budget Request Description
California Climate Information System (CalCIS)

Budget Request Summary
The California Natural Resources Agency requests $18,331,000 General Fund in 2022-23 and 1.0 permanent position for planning and development of Phase 1 of the new California Climate Information System. In addition, the Department of Conservation requests an augmentation of $370,000 in reimbursement authority and 2.0 permanent positions in 2022-23 and $347,000 in 2023-24 and ongoing to support the project. CalCIS will be a cloud-based system that can store and manage big data, and the data products produced by the CalCIS team will provide information that departments can use for decision making, planning, and management.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed
☐ Yes ☒ No	

Does this BCP contain information technology (IT) components? ☒ Yes ☐ No *If yes, departmental Chief Information Officer must sign.*	Department CIO Tim Garza	Date 5/13/2022

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. 0540-015 **Project Approval Document:** S1BA

Approval Date: 2/22/2022

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	Date	Reviewed By	Date
Mark Gold	5/13/2022	Becca Moore	5/13/2022
Department Director	**Date**	**Agency Secretary**	**Date**
		Bryan Cash	5/13/2022

Department of Finance Use Only

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

PPBA	Date submitted to the Legislature
Krystal Acierto	5/13/2022

A. Budget Request Summary

The California Natural Resources Agency (CNRA) requests $18,331,000 General Fund in 2022-23 and 1.0 permanent position for planning and development of Phase 1 of the new California Climate Information System (CalCIS). In addition, the Department of Conservation (DOC) requests an augmentation of $370,000 in reimbursement authority and 2.0 permanent positions in 2022-23 and $347,000 in 2023-24 and ongoing to support the project. CalCIS will be a cloud-based system that can store and manage big data, and the data products produced by the CalCIS team will provide information that departments can use for decision making, planning and management.

B. Background/History

Climate change and its effects are accelerating. Record wildfires, extreme droughts, dynamic and depleting water supplies, and extreme heat in the state of California are now the norm. Additional impacts to life, property, economy and biodiversity from sea level rise, marine heat waves, ocean acidification and hypoxia will only increase over time and continue to challenge today's way of life. The successful management of California's resources in the face of climate change will require timely, integrated, data products with high information content for stakeholders and decision-makers.

In 2020, CNRA, CalEPA, and the California Department of Food and Agriculture entered into an MOU with the National Aeronautics and Space Administration (NASA)/Jet Propulsion Labs (JPL) to share environmental data and collaborate more closely on resource management and pollution prevention priorities. The MOU identified a need for a more consistent, unified collaborative approach to developing data products to help decision makers and utilizing state of the art spaceborne and airborne remote sensing data across all state agencies working on environmental and climate issues. Immediately after the MOU was signed, NASA/JPL started meeting with state agency scientists to discuss their remote sensing and data product development capabilities, and state agency scientists provided JPL with their most critical and vexing environmental and climate questions. Through this effort, the Administration found that climate and remote sensing data was managed in department silos with little integration of datasets across agencies. Additionally, there is tremendous variability in department access to and utilization of remote sensing data, and data management capabilities. The state currently struggles to keep up with, let alone manage and analyze, the exponentially increasing amount of environmental and climate data readily available from NASA and other sources.

CNRA started working closely with JPL on a proposal to directly take on the data management and climate monitoring needs for California to better tackle the climate crisis through the creation of CalCIS, which will provide state agencies with state of the art, close to real time climate data and data management products to make better climate mitigation, resilience and adaptation decisions. DOC will be the primary manager of the system, with support from CNRA.

C. State Level Consideration

Climate mitigation, adaptation, and resilience are top priorities the state and the three signatories to the MOU with NASA/JPL. Also, biodiversity protection is another top priority of the Administration. CalCIS will provide critical data resources and data management products so the state can better achieve climate and biodiversity goals. For example, remote sensing data is available that can be used for vegetation and habitat mapping and structure, vegetation moisture content, and evapotranspiration estimates that can be used for 30x30 efforts, forecast of wildfire risk and behavior, drought impact assessment and other critical issues. CalCIS will be a cloud-based system that can store and manage big data, and the data products produced by the CalCIS team will provide analyzed information that departments will be able to use for decision making, planning and management. To address this, the proposal includes funding to train pertinent department personnel on how to use the big data and data products from CalcIS to advance the state's climate objectives within their authorized missions.

D. Justification

Building climate resilience in California requires the integration and analysis of the most current climate monitoring data to provide information and decision-making tools for state agencies working on adapting to and stemming the climate crisis. Currently, state agencies gather and manage climate data in a siloed manner with some departments utilizing climate data that is ten years or older to inform management decisions, while others are using the latest remote sensing data. CalCIS can improve inter-agency collaboration while allowing state agencies to continue developing products and leverage the infrastructure to advance their climate objectives. With the growing climate crisis, it is absolutely critical to use the latest climate monitoring data, and to continually refresh the data, in order to make effective natural resource management and climate mitigation decisions. For example, the OPC is currently relying on 10 to15 year-old mapping data for some portions of the California coast which makes accurate habitat sea level rise vulnerability assessments challenging. The state needs current and updated data to better assess impacts of drought and wildfire on water resources and different habitats.

The strategy for development of CalCIS leverages existing technical and scientific expertise; experience within the federal and international climate communities; and innovations in product development, analysis, and utilization. The expertise within partner state agencies and JPL will allow development of CalCIS focused on the following climate resilience theme areas:

1. Wildfire management (pre-fire assessment, risk mitigation planning and implementation, emergency response, post-fire restoration and recovery, and monitoring)
2. Drought response, water resource management and infrastructure risk analysis
3. Biodiversity conservation (integrated terrestrial, coastal, and aquatic)
4. Carbon accounting and management

DOC will serve as the project manager for CalCIS because the department has strong technical and data management experience and has operated closely with nearly every agency working on climate issues (as well as NASA/JPL and ESRI). The proposal includes two additional positions for DOC to manage the new effort and one staff member for CNRA IT for technical support needs.

Key Goals of CalCIS

- Provide timely, frequently updated, observations and support projections of future conditions for wildfire, drought, carbon management, biodiversity and other climate change challenges
- Deliver these data and information products with faster refresh to stay current with changing conditions
- Address the needs of stakeholders, decision makers, and users, transforming scientific and technological discovery into actionable information tuned to real-world problems
- Leverage cutting edge algorithms and science methodologies developed by NASA and partners to generate new information from upcoming and existing data sources
- Link new data to widely used tools such as ESRI, AWS, Google Earth Engine etc. to speed adoption and acceptance
- Cloud-based for seamless, cost-effective, statewide access

E. Outcomes and Accountability

The requested funding will provide support for the planning and pilot implementation of CalCIS. The Phase 1 stakeholder engagement plan will ensure all relevant state agency stakeholders participate in defining the requirements for CalCIS. The engagement plan will inform the design, development, and operationalization approach for CalCIS so that the

delivered system addresses state climate information priorities and user expectations upon system delivery.

Eight work elements that are necessary for a successful CalCIS program will be completed as part of Phase 1:

- Assess the state's current climate data management systems and future needs to define/confirm CalCIS requirements (Months 1-2);
- Define the state governance model/process for state agencies prioritizing information products (Months 1-2);
- Develop requirements for each of the priority climate information products including calibration and validation plans (Months 1-4);
- Define the interfaces between related state and federal information systems and cost savings that can be realized through integration (Months 2-3);
- Develop the CalCIS information system architecture and its software components, from data pipelines to end user tools (Months 1-4);
- Create the detailed work plans for development of each of the prioritized information products (Months 3-12);
- Develop the training and transition plans so that CalCIS will be successfully delivered to the state for future operations (Months 5-9);
- Prototype an implementation pipeline based on selected climate information products to demonstrate the functionality and utility of CalCIS. This will include a Climate Dashboard (Months 3-12).

F. Analysis of All Feasible Alternatives

Alternative 1: Fund as requested. Provide $18,331,000 General Fund to CNRA in 2022-23 and $370,000 increased reimbursement authority to DOC in 2022-23 ($347,000 ongoing), plus 3.0 permanent positions (1.0 Information Specialist II (ITS II) at CNRA and 1.0 Research Data Supervisor II and 1.0 Research Data Specialist III at DOC).

Pros: Seeds a critical IT project that will move California into the 21st century of climate science and provide access to open climate data. This data will improve monitoring of existing climate investments, as well as improve decision making for future climate investments.

Cons: Increased expenditures from the General Fund.

Alternative 2: Fund partial request. Provide $1.4 million General Fund in 2022-23 and $370,000 Reimbursement to DOC in 2022-23 ($347,000 ongoing), plus 1.0 ITS II at CNRA and 1.0 Research Data Supervisor II and 1.0 Research Data Specialist III at DOC. This alternative will fund most deliverables but would not fund prototyping an implementation pipeline/Climate Dashboard and developing the CalCIS information system architecture/software components.

Pros: Begins a critical IT project that will move California into the 21st century of climate science and provide access to open climate data. Provides initial funding with a smaller impact to the General Fund.

Cons: Falls short of the investment desired to secure JPL partnership for the full project and only slightly reduces costs to the General Fund.

Alternative 3: Do not provide resources for CalCIS.

Pros: No new expenditures from the General Fund.

Cons: Fails to seed a critical IT project that will move California into the 21st century of climate science. California will continue to struggle with the impacts of climate change without additional tools to make limited investments go further.

G. Implementation Plan

Upon approval, CNRA and DOC will begin recruitment of the requested positions. In addition, CNRA will initiate MOU/contract negotiations with JPL to secure their assistance with the project.

H. Supplemental Information

This request includes the following provisional language:

Of the funds appropriated in this item, up to $16.4 million is allocated for the support of the California Climate Information System (CalCIS) project and is authorized for expenditure upon the Department of Technology's project approval of CalCIS project planning and strategy documents. Any necessary Project Approval Lifecycle documents must be approved by the Department of Technology. The amount appropriated in this item shall be available for encumbrance or expenditure until June 30, 2024.

I. Recommendation

CNRA and DOC recommend Alternative 1.

BCP Fiscal Detail Sheet

BCP Title: California Climate Information System (CalCIS) Systems Analysis

BR Name: 0540-039-BCP-2022-MR

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Positions - Permanent	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	**0.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Earnings - Permanent	0	108	0	0	0	0
Total Salaries and Wages	**$0**	**$108**	**$0**	**$0**	**$0**	**$0**
Total Staff Benefits	0	46	0	0	0	0
Total Personal Services	**$0**	**$154**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	2	0	0	0	0
5302 - Printing	0	1	0	0	0	0
5304 - Communications	0	1	0	0	0	0
5320 - Travel: In-State	0	2	0	0	0	0
5322 - Training	0	1	0	0	0	0
5340 - Consulting and Professional Services - Interdepartmental	0	370	0	0	0	0
5340 - Consulting and Professional Services - External	0	17,800	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$18,177**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$18,331**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	18,331	0	0	0	0
Total State Operations Expenditures	**$0**	**$18,331**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$18,331**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
0320 - Administration of Natural Resources Agency	0	18,331	0	0	0	0
Total All Programs	**$0**	**$18,331**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Positions

Positions	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
1414 - Info Tech Spec II	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	**0.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
1414 - Info Tech Spec II	0	108	108	108	108	108
Total Salaries and Wages	**$0**	**$108**	**$108**	**$108**	**$108**	**$108**

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150350 - Health Insurance	0	11	0	0	0	0
5150450 - Medicare Taxation	0	2	0	0	0	0
5150500 - OASDI	0	5	0	0	0	0
5150600 - Retirement - General	0	28	0	0	0	0
Total Staff Benefits	**$0**	**$46**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$154**	**$108**	**$108**	**$108**	**$108**

BCP Fiscal Detail Sheet

BCP Title: California Climate Information System (CalCIS)

BR Name: 3480-077-BCP-2022-MR

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Positions - Permanent	0.0	2.0	2.0	2.0	2.0	2.0
Total Positions	**0.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
Salaries and Wages Earnings - Permanent	0	191	191	191	191	191
Total Salaries and Wages	**$0**	**$191**	**$191**	**$191**	**$191**	**$191**
Total Staff Benefits	0	96	96	96	96	96
Total Personal Services	**$0**	**$287**	**$287**	**$287**	**$287**	**$287**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	26	6	6	6	6
5304 - Communications	0	3	3	3	3	3
5320 - Travel: In-State	0	4	4	4	4	4
5322 - Training	0	10	10	10	10	10
5324 - Facilities Operation	0	26	26	26	26	26
5346 - Information Technology	0	12	9	9	9	9
539X - Other	0	2	2	2	2	2
Total Operating Expenses and Equipment	**$0**	**$83**	**$60**	**$60**	**$60**	**$60**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$370**	**$347**	**$347**	**$347**	**$347**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
0995 - Reimbursements	0	370	347	347	347	347
Total State Operations Expenditures	**$0**	**$370**	**$347**	**$347**	**$347**	**$347**
Total All Funds	**$0**	**$370**	**$347**	**$347**	**$347**	**$347**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
9900100 - Administration	0	370	347	347	347	347
Total All Programs	**$0**	**$370**	**$347**	**$347**	**$347**	**$347**

Personal Services Details

Positions

Positions	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5737 - Research Data Supvr II (Eff. 07-01-2022)	0.0	1.0	1.0	1.0	1.0	1.0
5770 - Research Data Spec III (Eff. 07-01-2022)	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	**0.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5737 - Research Data Supvr II (Eff. 07-01-2022)	0	95	95	95	95	95
5770 - Research Data Spec III (Eff. 07-01-2022)	0	96	96	96	96	96
Total Salaries and Wages	**$0**	**$191**	**$191**	**$191**	**$191**	**$191**

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150900 - Staff Benefits - Other	0	96	96	96	96	96
Total Staff Benefits	**$0**	**$96**	**$96**	**$96**	**$96**	**$96**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$287**	**$287**	**$287**	**$287**	**$287**