F1.1 General Information

Agency or State Entity Name:	California Air Resources Board
Organization Code:	3900
Proposal Name:	CARL Redesign
Proposal Description:	The California Air Resource Board, Mobile Source Control Division (MSCD), proposes to upgrade the Clean Air Reporting Log (CARL) database in order to improve current functionality and sustainability of the system. Improvements will provide Program with ability to eliminate manual processing of projects not currently supported by CARL, more efficient processing of applications, location based emission reduction projects, less reliance on programming changes to make regular annual updates, add Greenhouse Gas (GHG) functionality, and provide a technology refresh so that the new system is more secure, less prone to breakdown, and more supportable by programming staff.
When do you want to start this project?	8/3/2022
Department of Technology Project Number:	0000-000 3900-073

1.2 Submittal Information

Contact Information:

Contact First Name	Contact Last Name
Arman	Lal

Contact Email	Contact Phone Number
Arman.Lal@arb.ca.gov	(916) 322-4346

Submission Date:	
Version Number:	1

Project Approval Executive Transmittal

Attachment: Include the Project Approval Executive Transmittal as an attachment to your email submission.

1.3 Business Sponsorship

Executive Sponsors

Title	First Name	Last Name	Business Program Area
Division Chief	Jack	Kitowski	Mobile Source Control Division
Assistant Division Chief	Sydney	Vergis	Mobile Source Control Division

Select + to add additional Executive Sponsors

Business Owners

Title	First Name	Last Name	Business Program Area
Branch Chief	Scott	Rowland	Incentives and Technology Advancement Branch
Section Manager	Radhika	Majhail	Incentives Oversight Section

Select + to add additional Business Owners

Program Background and Context

The Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) provides incentives for cleaner-than-required by regulation(s), engine and equipment. Up to, 35 air districts throughout California

administer these grants, and determine the type of projects to fund. California Air Resources Board (CARB) works collaboratively with the air districts, and other stakeholders to set Guidelines, and ensure the Program reduces air pollution throughout California.

The Clean Air Reporting Log (CARL) application, developed in 2009 is an on-line project-tracking tool for the Moyer Program. Air districts are **required** to use CARL to report project related information and verify the data is **complete, correct, and supported** by documentation. This centralized database allows air districts, stakeholders, and CARB staff to view, modify, and share project information in **real-time**. The primary function of CARL is to establish **accurate and compliant methods** with the Moyer Program Guidelines and the California Air Pollution Control Laws to calculate:

- Emission reductions - Reductions achieved from a project to ensure proper State Implementation Plan (SIP) accounting.
- Cost effectiveness - Measure of the dollars provided to a project for each ton of covered emission reductions.
- Maximum grant amounts – Maximum amount of money a grantee is eligible to receive for a cost-effective Moyer Program project.

The Carl Moyer program is expanding significantly. The passage of Assembly Bill 134 in 2017, and SB 856 in 2018 designated substantial new funds to implement Moyer Program projects. The new lays require significant changes in CARL in order to:

- Calculate project benefits at specific locations
- Broaden Moyer Program project types
- Include toxics and greenhouse gases (GHGs) in CARL
- Include Greenhouse Gas Reduction Funds (GGRF) incentive funding pools

In addition, there are a variety of **security concerns** with CARL, and the tools available to CARB staff. According to CVE Details analysis software since 2009, 91 security vulnerabilities were detected on the PHP server and 35 security vulnerabilities were detected on the Apache sever. Furthermore, the **manual reporting process** for progress tracking and data validation has resulted in staff generating over hundreds excel spreadsheets annually to meet legislative and executive office requests. With existing and additional expectations placed on CARL, the need to modernize the application is critical. The CARL team and Office of Information Services (OIS) share concerns about the instability of the existing CARL application.

1.4 Stakeholders

Key Stakeholders

Org. Name	Name
Chief Information Officer	Steve Grogan
Internal or External?	☒ Internal ☐ External
When is the Stakeholder impacted?	

Input to Business Process	During the Business Process	Output of the Business Process
☒	☐	☐

How are Stakeholders impacted?

OIS allocates resources to support budget, time, and scope of the CARL+ redesign. OIS also provides non-functional requirements and technology standards in the areas of system software, architecture, quality, security, and others.

How will the Stakeholders participate in the project?

OIS will provide a project manager, business analyst, and technical staff to support the CARL+ project.

Select + to add additional Stakeholders

1.5 Business Program

Org. Name	Name
California Air Resources Board	Mobile Source Control Divison

When is the unit impacted?

Input to the Business Process	During the Business Process	Output of the Business Process
☒	☒	☒

How is the business program unit impacted?

Mobile Source Control Division (MSCD) staff will test and provided the necessary resources during planning, testing and implementaion phases of the project.

How will the business program participate in the project?

Mobile Source Control Division (MSCD) staff provide program requirements and validate if the system is built per specification for the duration of the project.

Select + to add additional Business Programs

1.6 Business Alignment

Business Driver(s)

Financial Benefit

Increased Revenue	Cost Savings	Cost Avoidance	Cost Recovery
☐	☐	☒	☐

Mandate(s)

State		Federal	
☒		☐	

Improvement

Better Services to Citizens	Efficiencies to Program Operations	Improved Health and/or Human Safety	Technology Refresh
☒	☒	☐	☒

Security

Improved Information Security	Improved Business Continuity	Improved Technology Recovery	Technology End of Life
☒	☐	☒	☒

Strategic Business Alignment

Strategic Plan Last Updated?	Date Picker
Strategic Business Goal	Alignment

Select + to add additional Business Goals and Alignment

Executive Summary of the Business Problem or Opportunity

The technical restrictions and weaknesses inherent in legacy CARL hinder Program's ability to meet its mission to reduce air pollutants while recognizing and considering the effects on the economy of the state. ARB is specifically hampered in meeting the following mandates of law and policy to expand protection, services, and reporting of air quality measures under its administration.

Key changes to Program obligations require significant new automated support that:
- Calculates project benefits at specific locations
- Addition of new Moyer Program project types
- Adds toxics and greenhouse gases (GHGs) in CARL+
- Meets requirements to support administration of new funds planned in subsequent years
- Tracking of GGRF funds for planned Program expansions

CARL+ will also meet the needs for efficiencies to Program operations:
- Improve online report generation capability and speed
- Reduce time and effort for routine annual updates to Program
- Reduce time to modify application forms
- Provide staff with application supported workflows to simplify work processes

CARL+ will also meet the need for a software technology refresh replacing old and in some cases unsupported software with industry standard software that:
- Replace the existing CARL application to adopt up-to-date coding standards
- Is compliant with State and ARB security standards
- Replace CARL software that is out-of-date and no longer supported.

Business Problem or Opportunity and Objectives Table

Problem ID	Problems/Opportunities
1	**Better Services to Californians:**
	The current CARL system does not support regulatory requirements that have been put in place since the system was developed in 2009. Additionally, improvements emmisssion detection technologies are significanly advanced since the system was built. Program is hampared in its ability to address regulatory changes already in place or which are slated to become active in the next years.
Objective ID	1.1
Objectives	Calculate project benefits at specific locations.
	The current CARL does not provide functionality to establish location based emission reduction targets. This limitation hampers Program's ability to set specific targets for high priority locations including high risk regions, low income and vulnerable populations, and others.
	The CARL Moyer program calculates the benefits of the projects it funds in terms of lower emissions of particulate matter, greenhouse gases, nitrogen dioxide and nitric oxide (NOx), reactive organic gases (ROG), and others. The benefits are

	determined through complex calculations. Currently benefits are calculated using statewide tables. Statewide calculators do not provide precision necessary to fully fulfill the requirements of law and regulations on a location basis.
Metric	Reports listing benefits by location within 12 months of completion of CARL+
Baseline	Not supported
Target	Application and database support for entry of project information for calculation of the benefits according to the proposed project locaton.
Measurement Method	Reports that that include location benefits.
Objective ID	1.2
Objectives	Include application for grants that currently are not supported by CARL but must be manually processed. This objective will be achieved by addition of new Project types to the system.
Metric	Development of 10 new project types.
Baseline	26 project types and sub-types
Target	Entry of projects utilizing the new project types as required to meet State mandates and ARB regulations within 12 months of system implementation.
Measurement Method	Increase in project types from current 26 to 36 total.
Objective ID	1.3
Objectives	Ability to manage very large new investments planned for 2020 and years following in the areas of toxics and greenhouse gases (GHGs) in CARL+ for tracking and management of upwards to $100 milion+ projects to be funded by new GGRF funds.
Metric	Application support for the GHG Program receive, review, and approve/disaprove applications for GHG projects, track, report, update, and liquidate projects. The application will also provide workflow, data entry, rules processing, calculation results, and administration capacity to manage, budget, track, invoice, and award incentives to eligible applicants.
Baseline	Not currently supported
Target	Entry of grant requests to achieve GHG benefits utilizing the new CARL forms as required to meet State mandates and ARB regulations within 12 months of system implementation.
Measurement Method	Implementation of new system which is found to meet detailed requirements and user acceptance tests.
Objective ID	1.4
Objectives	Support Program staff administraion of new GGRF funding to allow for more efficient project management by reducing manual processes. . Changes in law and regulation will greatly increase the number of projects as well as their sizes. CARL+ will provide automation to reduce the effort to manage projects and grants so that the new workload will be manageable.
Metric	Ability to absorb Program changes using existing staff.
Baseline	Existing staff are currently fully utilized supporting current program volumes.
Target	CARL+ support of automated workflow inluding the following areas: • Project initiation, application, reviews, approval and closing • Tracking and notification

	• Budgeting • Invoicing • Correspondence • Reporting
Measurement Method	Existing staff efficiently processes the increased volume of work expected from new Program and project expansions of new project.

Select + to add additional Objectives

Select + to add additional Objectives

2	Efficiencies to Program Operations. The Carl Moyer Program is seeking Improvements in the ability of administrators, and application users to efficiently change/add calculation formulas, create reports, and update projects in order to improve the timeliness, relevancy, and configurability of online report requests.
Objective ID	2.1
Objectives	Improve project reporting and transparency by providing staff the ability to produce online reports that include the data they need to more efficiently manage of projects assigned to them.
Metric	Expanded CARL+ online reporting system to include 60 query fields.
Baseline	Current reports access 33 query fields.
Target	Ability to query 60 fields from the CARL database.
Measurement Method	Implementation of new system which is found to meet detailed requirements and user acceptance tests for online report generation.
Objective ID	2.2
Objectives	Provide CARL Program administrators the ability to efficiently complete annual changes to reference (static) data used to perform calculations, determine eligibility, produce reports, and other administrative tasks. The aim is to reduce the time it takes to make updates, and the current expense of programming staff currently required to complete changes.
Metric	Development of configuration tables so that after implementation administrators are able to make updates without the need for programming changes.
Baseline	Programing staff need to program changes static data used in the system.
Target	Ability to update static data used by the system
Measurement Method	After system implementation administrators are able to use configurable tables and forms to change static data without the need for programming staff.
Objective ID	2.3
Objectives	Reduce the average length of time of modifying of CARL forms.
Metric	Average length of time to modify a form.
Baseline	20 hours for modification
Target	10 hours for modification
Measurement Method	Developer timesheets
Objective ID	2.4
Objectives	Develop application suppported workflows that break down business processes into logical steps in the following functional areas : • Project initiation, application, reviews, approval and closing

	• Tracking and notification • Budgeting • Invoicing • Correspondence • Reporting
Metric	Reduce the average length of time of to approve/disapprove and manage projects by 50 percent within 1 year of system implementation through support of automated workflows including project assignment, staff/unit assignment lists, approval/disapproval processes, workflow between staff, project reporting, update and closure processes.
Baseline	4 weeks
Target	2 weeks
Measurement Method	Reports of the number and average time managing CARL projects. Reports will include number of projects assigned, time
Select + to add additional Objectives	
3	**Technology Refresh:** Replace outdated programming language and system software with industry standard software that will improve security, reliability, extensibility, maintainability, and least costly.
Objective ID	3.1
Objectives	Replace existing not-compliant CARL system with CARL+ to meet ARB, CDT, and SIMM 5300 Information Security standards and practices
Metric	Use approved software from the ARB/OIS Enterprise Architecture (OIS)
Baseline	Non standard code and incomplete security implementation in the areas of Internet security, system and datga backup and recovery, disaster recovery, and recoverability.
Target	Development of CARL+ using secure coding standards, adhering to the principle of least privilege, validating input, providing for defense in depth, and use effective quality assurance techniques, as well as of standards that include, but are not limited to: • In-line comments and documentation • Readable and efficient code • Strict limitations on hard-coded variables • Comprehensive test cases for all logical paths • Use of APIs for data interfaces/exchange • Pair programming/code review
Measurement Method	Technical approval of detail design; senior technical lead and peer code reviews; unit, system, and integration tests; system documentation.
Objective ID	3.2
Objectives	Improved Information Security: Incentives and Technology Advancement Branch maintains the CARL database to comply with ARB security standards by replacing legacy CARL with a new application meeting State and ARB secure architecture and coding practices.
Metric	Security Scan (OIS)
Baseline	Security Scan (Failed) (See Attachment 1 Improved Information Security)

Target	Security Scan (Pass)
Measurement Method	Security Scan (OIS)
Select + to add additional Objectives	
Objective ID	3.3
Objectives	Technology End of Life: Develop application meeting SIMM 5100 IT Standards in the areas of: • 5160.1 Open Data Policy Requirements • 5160.3 Operating Software- Utilities and Programming Aids • 5190 - Website Standards
Metric	Use of approved software from the ARB/OIS Enterprise Architecture (OIS)
Baseline	Software review (Failed)
Target	Software reviw (Pass)
Measurement Method	Software review (OIS)
Select + to add additional Objectives	.

Select + to add additional Problems

Project Approval Lifecycle Completion and Project Execution Capacity Assessment

1. Does the proposal development or project execution anticipate sharing resources (state staff, vendors, consultants or financial) with other priorities within the Agency/state entity (projects, PALs, or programmatic/technology workload)?

⊙ Yes   ⦿ No   ⦾ Clear

2. Does the Agency/ state entity anticipate this proposal will result in the creation of new business processes or changes to existing business processes?

⦿ No   ⦾ New Processes   ⦾ Existing Processes   ⦾ Both New and Existing   ⦾ Clear

1.7 Project Management

Project Management Risk Score:	0.7
Attach completed Statewide Information Management Manual (SIMM) Section 45 Appendix A:	Include the completed SIMM 45 Appendix A (Project Management Risk Score) as an attachment to your email submission.

Existing Data Governance and Data

1. Does the Agency/state entity have an established data governance body with well-defined roles and responsibilities to support data governance activities? If an existing data governance org chart is used, please attach.	⦾ Unknown ⦿ Yes ⦾ No ⦾ Clear	If applicable, include the data governance org chart as an attachment to your email submission.
2. Does the Agency/state entity have data governance policies (data policies, data standards, etc.) formally defined, documented, and implemented? If yes, please attach the existing data governance plan, policies or IT standards used.	⦾ Unknown ⦿ Yes ⦾ No ⦾ Clear	If applicable, include the data governance policies as an attachment to your email submission.

3. Does the Agency/state entity have data security policies, standards, controls, and procedures formally defined, documented, and implemented? If yes, please attach the existing documented security policies, standards, and controls used.	○ Unknown ◉ Yes ○ No ○ Clear	If applicable, include the documented security policies, standards, and controls as an attachment to your email submission.
4. Does the Agency/state entity have user accessibility policies, standards, controls, and procedures formally defined, documented, and implemented? If yes, please attach the existing documented policies, accessibility governance plan, and standards used, or provide additional information below.	○ Unknown ◉ Yes ○ No ○ Clear	If applicable, include the documented accessibility policies, standards, and controls as an attachment to your email submission.
5. Do you have existing data that you are going to want to access in your new solution?	○ Unknown ◉ Yes ○ No ○ Clear	If applicable, include the data migration plan as an attachment to your email submission.
6. If data migration is required, please rate the quality of the data.		Some issues identified with the existing data

1.8 Criticality Assessment

Business Criticality

Legislative Mandates:	N/A ☐	
Bill Number(s)/Code(s):		Health and Safety Code 44283, 44286, 44291, 44295
Language that includes system relevant requirements:		44286(a) "The responsibility of the state board include management of program funds and program oversight. The state board is responsible for producing guidelines, protocols, and criteria for covered vehicles projects and developing mythologies for evaluating project cost-effectiveness in accordance this chapter. The state board shall have primary responsibility for the reporting aspect of the program." A functional, maintainable, extensible application is required In order to meet with the responsibilities set forth in the HSC codes. The application must have the follow capabilities: • Calculate project benefits at specific locations • Broaden Moyer Program project types • Support program requirements related to toxics and greenhouse gases (GHGs) • Meet requirements to support administration of new funds planned in subsequent years

		• Support tracking of funding to the Moyer Program for planned Program expansions • Improve data query capability and speed • Reduced time to develop for tools outside of CARL+ • Reduced time to develop input forms • Project initiation • Completed staff work and project approvals • Project tracking, update, and closeout • Project administration These system capabilities will also meet the business requirements set forth in 44286(b) "The responsibilities of a district include local administration of project funds, monitoring funded projects, and reporting results to the state board in accordance with this chapter."
Business Complexity Score	1.3	Include the completed SIMM 45 Appendix C as an attachment to your email submission.

Noncompliance Issues

Indicate if your current operations include noncompliance issues and provide a narrative explaining the how the business process is noncompliant.

Programmatic Regulations	HIPPA/CJIS/FTI/PII/PCI	Security	ADA	Other	N/A
☒	☒	☒	☐	☐	☐

1. What is the proposed project start date?	8/3/2022
2. Is this proposal anticipated to have high public visibility?	⚬ Yes ⦿ No ⚬ Clear

If "Yes," please identify the dynamics of the anticipated high visibility below:

3. If there is an existing Privacy Information Assessment, include as an attachment to your email submission.

4. Does this proposal affect business program staff located in multiple geographic locations?	⚬ Yes ⦿ No ⚬ Clear

If "Yes," provide an overview of the geographic dynamics below and enter the specific information in the space provided.

City	State	Number of Locations	Approximate Number of Staff

Select + to add Locations

1.9 Funding

1. Does the Agency/state entity anticipate requesting additional resources through a budget action to complete the project approval lifecycle?	⦿ Yes ⚬ No ⚬ Clear
2. Will the state possibly incur a financial sanction or penalty if this proposal is not implemented? If yes, please identify the financial impact to the state below:	⚬ Yes ⦿ No ⚬ Clear

3. Has the funding source(s) been identified for this proposal?		⊙ Yes ○ No ○ Clear

FUNDING SOURCE		FUND AVAILABILITY DATE
General Fund	☐	Date Picker
Special Fund	☒	Fiscal Year 2020-21 and 2021-22
Federal Fund	☐	Date Picker
Reimbursement	☐	Date Picker
Bond Fund	☐	Date Picker
Other Fund	☐	Date Picker
If "Other Fund" is checked, specify the funding:		

1.10 Reportability Assessment

1. Does the Agency/state entity's IT activity meet the definition of an IT Project found in the State administrative Manual (SAM) Section 4819.2? If "No," this initiative is not an IT project and is not required to complete the Project Approval Lifecycle.	⊙ Yes ○ No ○ Clear
2. Does the activity meet the definition of Maintenance or Operations found in SAM Section 4819.2? If "Yes," this initiative is not required to complete the Project Approval Lifecycle. Please report this workload on the Agency Portfolio Report. And provide an explanation below.	○ Yes ⊙ No ○ Clear
3. Has the project/effort been previously approved and considered an ongoing IT activity identified in SAM Section 4819.2, 4819.40? If "Yes," this initiative is not required to complete the Project Approval Lifecycle. Please report this workload on the Agency Portfolio Report.	○ Yes ⊙ No ○ Clear

4. Is the project directly associated with any of the following as defined by SAM Section 4812.32? Single-function process-control systems; analog data collection devices, or telemetry systems; telecommunications equipment used exclusively for voice communications; Voice Over Internet Protocol (VOIP) phone systems; acquisition of printers, scanners and copiers. If "Yes," this initiative is not required to complete the Project Approval Lifecycle. Please report this workload on the Agency Portfolio Report.	○ Yes ● No ○ Clear
5. Is the primary objective of the project to acquire desktop and mobile computing commodities as defined by SAM Section 4819.34, 4989? If "Yes," this initiative is a non-reportable project. Approval of the Project Approval Lifecycle is delegated to the head of the state entity. Submit a copy of the completed, approved Stage 1 Business Analysis to the CDT and track the initiative on the Agency Portfolio Report.	○ Yes ● No ○ Clear
6. Does the project meet all of the criteria for Commercial-off-the-Shelf (COTS) Software and Cloud Software-as-a-Services (SaaS) delegation as defined in SAM 4819.34, 4989.2 and SIMM 22 If "Yes," this initiative is a non-reportable project. Approval of the Project Approval Lifecycle is delegated to the head of the state entity; however, submit an approved SIMM Section 22 form to CDT.	○ Yes ● No ○ Clear
7. Will the project require a Budget Action to be completed?	● Yes ○ No ○ Clear
8. Is it anticipated that the project will exceed the delegated cost threshold assigned by CDT as identified in SIMM 10?	● Yes ○ No ○ Clear
9. Are there any previously imposed conditions place on the state entity or this project by the CDT (e.g., Corrective Action Plan)? If "Yes," provide the details regarding the conditions below.	○ Yes ○ No ● Clear
10. Is the system specifically mandated by legislation?	○ Yes ● No ○ Clear

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Form Status	Completed	
Form Status Date	2/24/2020	
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Form Disposition Date	2/24/2020	