Stage 2 Preliminary Assessment

2.1 General Information

Agency or State Entity Name:

Air Resources Board

Organization Code:

3900

Proposal Name:

Integrated Inventory Database System

Department of Technology Project Number:

3900-069

2.2 Preliminary Submittal Information

Contact Information:

Contact First Name:	Contact Last Name:
Stephen	Zelinka

Contact Email:	Contact Phone Number:
steve.zelinka@arb.ca.gov	(916) 445-2199

Preliminary Submission Date:

Preliminary Project Approval Executive Transmittal:

📎 File Attachment

2.3 Stage 2 Preliminary Assessment

2.3.1 Impact Assessment

	Yes	No
1. Has the Agency/state entity identified and committed subject matter experts from all business sponsors and key stakeholders?	●	○
2. Are all current baseline systems that will be impacted by this proposal documented and current (e.g., data classification and data exchange agreements, privacy impact assessments, design documents, data flow diagram, data dictionary, application code, architecture descriptions)?	●	○
3. Does the Agency/state entity anticipate needing support from the Department of Technology's Statewide Technology Procurement Division to conduct market research for this proposal (Market Survey, Request for Information)?	○	●
4. Does the Agency/state entity anticipate submitting a budget request to support the procurement activities of this proposal?	○	●
5. Could this proposal involve the development and/or purchase of systems to support activities included in Financial Information System for California (FI$CAL) (e.g., financial accounting, asset management, human resources, procurement/ordering, inventory management, facilities management)?	○	●

6. Does the Agency/state entity have a designated Chief Architect or Enterprise Architect to lead the development of baseline and alternative solutions architecture descriptions? ◉ ○

7. Will the Agency/state entity's Information Security Officer be involved in the development and review of any security related requirements? ◉ ○

8. Does the Agency/state anticipate performing a business-based procurement to have vendors propose a solution? ○ ◉

2.3.2 Business Complexity Assessment

Business Complexity: [1.5]   Business Complexity Zone: ○ High   ○ Medium   ◉ Low

Stage 2 Alternative Analysis

2.4 Submittal Information

Contact Information: (Use Contact Information from Preliminary Submittal Information ☐)

Contact First Name:
Stephen

Contact Last Name:
Zelinka

Contact Email:
steve.zelinka@arb.ca.gov

Contact Phone Number:
(916) 445-2199

Submission Date:

Submission Type:

◉ New Submission

○ Updated Submission (PostApproval)

○ Updated Submission (Pre-Approval)

○ Withdraw Submission

Project Approval Executive Transmittal: 📎 File Attachment

Condition(s) from Previous Stage(s):

2.5 Baseline Processes and Systems

2.5.1 Description

The emission inventory is the foundation for all programs at the California Air Resources Board (CARB). CARB maintains emissions inventories for criteria pollutants, air toxics and greenhouse gases (GHGs). Each of the inventories is uniquely designed to meet the needs of the programs that it supports. The criteria pollutant emission inventory supports regional air quality planning; the air toxics emissions inventory informs the AB 2588 Hot Spots program; and the GHG inventory tracks the progress toward meeting ARB's AB 32 goals.

Historically, the criteria pollutant inventory was developed in 1960s at ARB to support regional air planning initiatives by the air districts and implement the standards set by the Federal Clean Air Act. In the late 1980s, the passing of AB 2588 led to the development of the toxic air contaminant emission inventory. In 2006, the passing of AB 32 required the development of a statewide GHG inventory as well as establishment of a mandatory reporting program for the largest GHG emitters in the state. Because the inventories were developed for different mandates and over the course of time at CARB there are many differences between the reporting requirements.

Criteria pollutant and air toxic contaminant reporting are facilitated by the air districts, who then transmit data to CARB. At CARB, the California Emission Inventory Development and Reporting System (CEIDARS) was designed to collect and store these emissions data. CEIDARS currently houses criteria pollutant and toxic air contaminant data submitted by the air districts. This database contains emissions information for over 20,000 facilities within the state. CEIDARS emissions data submitted by the air districts is augmented by CARB staff who calculate the additional mobile and area-wide source emissions.

The GHG databases designed to support mandatory reporting and the statewide AB 32 GHG inventory are separate from CEIDARS and fundamentally different in their design features. GHG emission data have different source identifiers, process categorization schema, geographic disaggregation, and temporal characterization. These design differences are a result of the unique program needs they support, Cap and Trade and tracking AB 32 progress, respectively.

In recent years, CARB has made an effort to evaluate the potential criteria pollutant and toxic air contaminant emission reductions associated with GHG regulatory measures. However, the database structures, information collected for each program and disparity between each of the programs has made this task difficult to complete. In 2016, AB 197 codified CARB's cobenefit analysis by requiring an integration of criteria pollutant, toxic air contaminant and GHG emissions across all programs and inventories.

Furthermore, AB 617 advances CARB's role in storing and collecting criteria pollutant and toxic air contaminant emissions data, a task traditionally performed by air districts for use in community-level emission reduction strategies. In order to develop these strategies and measure progress, the emission inventory data must be closely tied to air quality monitoring and available control technology datasets. Thus, AB 617 dramatically increases need for data integration and effective communication between these three database systems in order to support community-level emission analyses.

2.5.2 Business Process Workflow

PDF

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ocess_WorkFlow_IMPEI.pdf
Adobe Acrobat Document
471 KB

2.5.3 Current Architecture Information

Business Function/Process(es)

Emissions reporting and storage (Criteria and Toxics)

Application, System or Component:	CEIDARS
COTS, MOTS or Custom:	Custom Application
Name/Primary Technology:	Oracle, Php

Runtime Environment

Cloud Computing Used?	● Yes ○ No
	If "Yes", Specify: Platform as a Service (PaaS)
Server/Device Function:	Database
Hardware:	Dell
Operating System:	Linux (Red Hat)
System Software:	Oracle 11g

	Apache v2.4
	PHP v5.3.3
System Interfaces:	Oracle SQL Query Analyzer, Custom web interface
Data Center Location:	State Data Center Operated by Department of Technology

Security

Access: (check all that apply)	☑ Public ☑ Internal State Staff ☐ External State Staff ☑ Other, specify: Air District Staff
Type of Information: (check all that apply)	☐ Personal ☐ Health ☐ Tax ☐ Financial ☐ Legal ☑ Confidential ☑ Other, specify: air emissions (public), process rates (CBI)
Protective Measures: (check all that apply)	☑ Technical Security ☑ Identity Authorization and Authentication ☑ Physical Security ☑ Backup and Recovery ☐ Other, specify:

Data Management

Data Owner	**Name:**	Sylvia Vanderspek
	Title:	AR Sup II
	Business Program:	Air Quality Planning Branch
Data Custodian	**Name:**	Skip Campbell
	Title:	DPM IV
	Business Program:	Systems Development and Support Branch

Business Function/Process(es)

Emissions reporting and storage (Greenhouse Gases)

Application, System or Component:	GHG Emission Inventory
COTS, MOTS or Custom:	Custom Application
Name/Primary Technology:	MySQL

Runtime Environment

Cloud Computing Used?	◉ Yes ○ No If "Yes", Specify: Platform as a Service (PaaS)
Server/Device Function:	Database
Hardware:	Dell
Operating System:	Linux (Red Hat)
System Software:	MySQL v5.5.14 / MS Access 2016
	Apache v2.4
	PHP v5.3.3
System Interfaces:	MySQL Workbench, Custom web application
Data Center Location:	State Data Center Operated by Department of Technology

Security

Access:	☑ Public ☑ Internal State Staff ☐ External State Staff

(check all that apply)	☐ Other, specify:		
Type of Information: (check all that apply)	☐ Personal ☐ Health ☐ Tax ☐ Financial ☐ Legal ☐ Confidential		
	☑ Other, specify: Greenhouse Gas Emissions		
Protective Measures: (check all that apply)	☐ Technical Security	☐ Identity Authorization and Authentication	
	☐ Physical Security	☐ Backup and Recovery	
	☐ Other, specify:		

Data Management

Data Owner	**Name:**	David Edwards
	Title:	AR Sup II
	Business Program:	Greenhouse Gas and Toxics Emission Inventory Branch
Data Custodian	**Name:**	Skip Campbell
	Title:	DPM IV
	Business Program:	Systems Development and Support Branch

2.5.4 Current Architecture Diagram

PDF

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nt_Architecture_Diagram_IMP
EI.pdf
Adobe Acrobat Document
274 KB

2.5.5 Security Categorization Impact Table

PDF

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ategorization_IMPEI.pdf
Adobe Acrobat Document
325 KB

SECURITY CATEGORIZATION IMPACT TABLE SUMMARY			
SECURITY OBJECTIVE	**LOW**	**MODERATE**	**HIGH**
Confidentiality	◉	○	○
Integrity	○	◉	○
Availability	○	◉	○

2.6 Mid-Level Solution Requirements

X

3900_CARB_IMPEI_Mid_Level
_Solution_Requirements.xlsm
Microsoft Excel Macro-
Enabled Worksheet
279 KB

Requirements:

2.7 Assumptions and Constraints

Assumptions/Constraints	Description/Potential Impact
Assumption: Program staff will be available.	There will be adequate staff available from the Air Quality Planning and Science Division to define the vision/scope, requirements, and design; and to support the development, testing, and deployment of the application. Inadequate staffing will impact schedule and quality.
Assumption: Office of Information Services staff will be available	There will be adequate Server and Networking staff available to provide services as required. Unavailability will impact schedule.
Assumption: Dedicated staff will remain in their current roles.	Staff assigned to the project will remain in their current roles. Reassignment of staff will impact schedule.
Assumption: Project funding will be approved and available.	The project budget has been approved and will remain available throughout the project lifecycle. Funding non-availability will impact quality, schedule, and resources.
Assumption: Current system will remain available.	The current system will remain in production and maintained until the replacement system is brought into production. Failure to do so will impact CARB's ability to provide emission inventories in support of multiple state and federal mandates.
Assumption: All base hardware/software requirements will be met with existing CARB infrastructure.	All base hardware/software requirements will be met with existing CARB infrastructure.
Constraint: Legacy data will be converted to a format usable by the new system.	The legacy system data may not be in a usable format. A method for converting the legacy data into a format usable by the new system will be determined prior to execution of the project. Failure to do so will impact legacy data availability, schedule, and quality.
Assumption: Training	Program will provide personnel for "Train the trainer" sessions and will the provide training to program staff.
Constraint: Scope.	The scope of the project is constrained to the Air Quality Planning and Science Division. Expanding scope will impact schedule and budget.
Assumption: contracted work.	It is assumed that services will be procured to develop and implement the chosen solution as required. Migration of legacy data and any required training is also included in this assumption. It is anticipated that a Request for Offer (RFO) will be released for prospective service providers to bid on.
Constraint: Hard deadline to procure services	Vendor services must be procured before May 31, 2018 due to funding restrictions.

2.8 Dependencies

Element	Description
Resource Expertise	Dependent on Program SME and technical experts being available
Project Approval	Dependent on Department of Technology approval through PAL process
Import of legacy data into new system.	The legacy data from existing CEIDARS and GHG Inventory systems must be prepared for import into the new system.

2.9 Market Research

2.9.1 Market Research Methodologies/Timeframes

Methodologies used to perform market research (check all that apply):

- ☐ Request for Information (RFI)
- ☑ Internet Research
- ☑ Vendor Forums/Presentation
- ☐ Collaboration with other Agencies/state entities or governmental entities
- ☑ Trade shows
- ☑ Published Literature
- ☐ Leveraged Agreements
- ☐ Other, specify:

Time spent conducting market research:	3 months
Date market research was started:	9/15/2017
Date all market research was completed:	12/15/2017

2.9.2 Results of Market Research

Due to the highly expedited timeframe set by AB 617 and AB 197 and requirements for encumbering the funding already authorized by AB109 (Ting, Budget Act of 2017), a formal Request for Information process was not possible. However, several vendors are well-known to CARB and other stakeholders as having expertise in developing emission inventory-related components through past projects. Through vendor demos and high-level discussions, it was determined that these vendors could meet some or all of requirements for developing a CARB emission inventory.

As part of market research, an assessment was also performed of available commercial off-the-shelf (COTS) solutions. While existing software is commercially available to address some aspects of emission inventory development, these tend to address only very specific and isolated functionality for the overall process CARB must maintain. It was concluded through this market research that using COTS solutions would require extensive customization and integration of multiple software components jeopardizing the project schedule and level of quality needed for the implemented solution, with a custom solution from a vendor being the best approach.

CARB's needs are unique. In addition to supporting many decades of innovative and well-developed air pollution control policy, CARB's emission inventory must now support additional reporting and analysis resulting from recent legislation. Market research has confirmed that no commercially available software product currently exists which can effectively meet the unique emission inventory needs of CARB. Attempted utilization of COTS or MOTS solutions would require integration and extensive modification of several disparate software components exceeding the level of time and effort needed to implement a custom solution.

A custom solution from a vendor will result in a system designed specifically to meet CARBs unique emission inventory program needs. Market research including discussions with potential vendors has determined that a

vendor pool with sufficient expertise for constructing such a system does exist. CARB plans to proceed with its solution development by preparing a Request for Offer (RFO) to a list of several known vendors.

** Please see the Market Research Report attached to this form in Section 2.11.1 for more details

2.10 Alternative Solutions

2.10.1 Solution Type

◉ Recommended   ○ Alternative

2.10.2 Name

Custom Developed Replacement Solution - Vendor

2.10.3 Description

Engage an external vendor to develop and implement a custom solution to 1) fully replace the existing CEIDARS and Greenhouse Gas (GHG) emission inventory systems to integrate criteria, toxic, and greenhouse gas emissions in a consistent structure including interfacing with other systems for exchanging data and reporting); 2) add functionality to allow industrial facility operators to report directly to CARB as required by AB617; and 3) add recurring comprehensive data publishing capabilities as directed by AB197. This solution will be designed to enable the Division to configure the system to meet changing business needs with minimal or no involvement from the external vendor.

CARB will obtain through the procurement effort an external solution integration vendor experienced with software product development of the Waterfall development methodology. CARB has estimated dedicating a higher percentage of existing and future staff time to participate in development, testing, and deployment of the system components during the development period. CARB's goal is to have a fully developed product within 24 months of project initiation.

The solution will be implemented through collaborative efforts of the integration vendor, CARB business staff and CARB information technology staff. The custom developed system will be hosted at the CA State data center in tenant managed services (TMS). Operations and maintenance of the custom system will be the responsibility of CARB business and IT resources.

Approach (check all that apply)

☑ Increase staff - new or existing capabilities

☑ Modify the existing business process or create a new business process

☐ Reduce the services or level of services provided

☑ Utilize new or increased contracted services

☐ Enhance the existing IT system

☑ Create a new IT system

☐ Perform a business-based procurement to have vendors propose a solution

☐ Other, specify:

2.10.4 Benefit Analysis

Benefits/Advantages

A custom solution meets all of the unique regulatory and functional requirements. The requirements for this application are unique to the program, making detailed customization necessary for the solution.

The custom solution could provide the Department greater control over how certain business processes are supported and accommodated within the solution.

The solution could be built to be adaptable to changing business needs.

There are no extraneous functions that would be included but remain unused, potentially affecting the speed and stability of the application

Uses CARB-supported technologies: a custom solution can be built using technologies and architecture supported by CARB staff.

A custom solution will have greater consistency overall, rather than relying on the successful integration of many individual COTS/MOTS based components.

A custom solution can be built entirely with non-proprietary software components unlike a COTS/MOTS based solution. This facilitates the transparency of process and methodology required of a government regulatory agency.

A custom solution by a vendor approach will provide the opportunity to establish a rigid timeline for project completion and agreed-upon scope consistent with the requirements for supporting AB197 and AB617.

Disadvantages

The time commitment from business staff is substantial during the software development and stabilization timeframe.

Custom software typically has numerous defects for the first one to three years until the software has been stabilized.

Implementation cost: this solution would have the highest implementation cost, since it requires building a custom solution to replace the current system, as well as incorporating a new advanced reporting portal

Anticipated Time to Achieve Objectives After Project Go-Live

Objective Number	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
1.1	●	○	○	○	○
2.1	●	○	○	○	○
3.1	●	○	○	○	○

Anticipated Time to Achieve Financial Benefits After Project Go-Live

Financial Benefit	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
Increased Revenues	○	○	○	○	○
Cost Savings	○	○	○	○	○
Cost Avoidance	○	○	○	○	○
Cost Recovery	○	○	○	○	○

2.10.5 Assumptions and Constraints

Assumptions:
1. OIS staff will support maintenance and operations for the new system, requiring additional staffing.

Constraints:
1. Vendor services will be required to support the development and implementation of the custom solution.
2. Schedule: It is anticipated that this effort will be constrained to 24 months. This estimate is based on similar CARB efforts in the past.

3. Scope: The scope will be constrained to the replacement of CEIDARS and GHG emission inventory systems, with additional data reporting functionality as directed by AB197 and AB617.
4. System will be built using the current CARB-supported information technology architecture and services.

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed (check all that apply):

☐ Enhance the current system

☑ Develop a new custom solution

☐ Purchase a Commercial off-the-Shelf (COTS) system

☐ Purchase or obtain a system from another government agency (Transfer)

☐ Subscribe to a Software as a Service (Saas) system

☐ Other, specify: [   ]

Identify cloud services to be leveraged (check all that apply):

☐ Software as a Service (SaaS) provided by OTech

☐ Software as a Service (SaaS) provided by commercial vendor

☐ Platform as a Service (PaaS) provided by OTech

☐ Platform as a Service (PaaS) provided by commercial vendor

☑ Infrastructure as a Service (IaaS) provided by OTech

☐ Infrastructure as a Service (IaaS) provided by commercial vendor

☐ No cloud services will be leveraged by this alternative. Provide a description of why cloud services are not being leveraged:

CARB maintains a robust virtualized server environment at the CA State Data Center Tenant Managed Services facility, allowing CARB to host this solution without additional hardware costs.

Identify who will modify the existing system or create the new system (check all that apply)

☑ Agency/state entity IT staff

☑ A vendor will be contracted

☐ Inter-agency agreement will be established with another governmental agency. Specify Agency name(s):

[   ]

☐ Other, specify:

[   ]

Identify the implementation strategy:

◉ All requirements will be addressed in this proposed project in a single implementation.

○ Requirements will be addressed in incremental implementations in this proposed project.

○ Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date.

Specify the year when remaining requirements will be addressed: [   ]

Identify if the technology for the proposed project will be mission critical and public facing:

☑ The technology implemented for this proposed project will be considered mission critical and public facing.

2.10.7 Architecture Information

Business Function/Process(es)

Emission inventory reporting and query system

Application, System or Component:	Emissions reporting
COTS, MOTS or Custom:	<u>Custom Application</u>
Name/Primary Technology:	Python/ .Net

Runtime Environment

Cloud Computing Used?	○ Yes ◉ No
	If "Yes", specify: <u>Select..e</u>
Server/Device Function:	Database
Hardware:	Virtual Server
Operating System:	Microsoft Server 2012
System Software:	Microsoft SQL Server 2016
System Interfaces:	
Data Center Location:	State Data Center Operated by Department of Technology

Security

Access: (check all that apply)	☑ Public ☑ Internal State Staff ☐ External State Staff
	☐ Other, specify:
Type of Information: (check all that apply)	☐ Personal ☐ Health ☐ Tax ☐ Financial ☐ Legal ☑ Confidential
	☑ Other, specify: Air emissions (public), process rates (CBI)
Protective Measures: (check all that apply)	☑ Technical Security ☑ Identity Authorization and Authentication
	☑ Physical Security ☑ Backup and Recovery
	☐ Other, specify:

Data Management

Data Owner	**Name:**	David Edwards
	Title:	AR Sup II
	Business Program:	Greenhouse Gas and Toxics Emission Inventory Branch
Data Custodian	**Name:**	Skip Campbell
	Title:	DRM IV
	Business Program:	System Development and Support Branch

2.10.1 Solution Type

○ Recommended   ◉ Alternative

2.10.2 Name

Custom Developed Replacement Solution - In-House

2.10.3 Description

Use internal CARB staff to develop and implement a custom solution to 1) fully replace the existing CEIDARS Emission Inventory system to integrate criteria, toxic, and greenhouse gas emissions in a consistent structure including interfacing with internal and external systems for exchanging data and reporting); and 2) add functionality to allow industrial facility operators to report directly to CARB as required by AB617; 3) add recurring comprehensive data publishing capabilities as directed by AB197. This solution will be designed to enable the Division to configure the system to meet changing business needs with no involvement from an external vendor.

CARB will hire additional IT and business staff with experience in software product development of the Waterfall methodology to develop and stabilize the new custom system. CARB anticipates 1) dedicating a higher percentage of key staff time to participate in the development, testing, and deployment of the system components and 2) the addition of temporary resources to ensure the business is fully supported during the development period. With in-house development. CARB's goal is to have a fully developed product within 24 months of project initiation.

The solution will be implemented through collaborative efforts of CARB business staff and CARB information technology staff. The custom developed system will be hosted at the CA State data center in tenant managed services (TMS).

Approach (check all that apply)

☑ Increase staff - new or existing capabilities

☑ Modify the existing business process or create a new business process

☐ Reduce the services or level of services provided

☐ Utilize new or increased contracted services

☐ Enhance the existing IT system

☑ Create a new IT system

☐ Perform a business-based procurement to have vendors propose a solution

☐ Other, specify:

2.10.4 Benefit Analysis

Benefits/Advantages

The solution could meet all of the unique regulatory and functional requirements: the requirements for this application are unique to the program, making detailed customization necessary for the solution.

The custom solution could provide the Department greater control over how certain business processes are supported and accommodated within the solution.

The solution could be built to be adaptable to changing business needs.

There are no extraneous functions that would be included but remain unused, potentially affecting the speed and stability of the application

Uses CARB-supported technologies: a custom solution can be built using technologies and architecture supported by CARB staff.

A custom solution based off the current systems allows for easier adaptation and transfer of legacy data.

Disadvantages

The current system does not support reporting functionality directed by recent legislation, in particular the direct reporting of emissions by industrial facilities. This functionality will have to be entirely created from scratch.

The time commitment from business staff is substantial during the software development and stabilization timeframe.

More internal IT staff will be required to support the development and stabilization of the software than would be with either a vendor led custom development or a COTS/MOTS implementation.

If the increased number of qualified in-house staff needed to implement the new system cannot be obtained via recruitment and hiring, the completion of a fully viable product within the needed 24 month project timeframe will be likely fail.

If in-house staff do not have adequate system development expertise, the attempt to build the system may fail; a low quality system may be implemented; and/or the user interface may be cumbersome to use.

Anticipated Time to Achieve Objectives After Project Go-Live					
Objective Number	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
1.1	●	○	○	○	○
2.1	●	○	○	○	○
3.1	●	○	○	○	○

Anticipated Time to Achieve Financial Benefits After Project Go-Live					
Financial Benefit	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
Increased Revenues	○	○	○	○	○
Cost Savings	○	○	○	○	○
Cost Avoidance	○	○	○	○	○
Cost Recovery	○	○	○	○	○

2.10.5 Assumptions and Constraints

Assumptions:
1. The solution shall be developed through the Waterfall development methodology.
2. OIS staff will support maintenance and operations for the new system. This may require additional staffing.

Constraints:
1. Additional IT staff will need to be hired to support development and stabilization.
2. Additional training of inhouse IT staff will be required to increase software development expertise on the selected development platform, security, and data management.
3. Speed of system development is entirely dependent on Department priorities, adherence to schedule, and urgency for completion.
4. Schedule: It is anticipated that this effort will be constrained to 24 months. This estimate is based on silmilar CARB efforts in the past.
5. Scope: The scope will be constrained to the replacement of CEIDARS and GHG emission inventory systems, with additional data reporting functionality as directed by AB197 and AB617.
6. System will be built using the current CARB-supported information technology architecture and services.

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed (check all that apply):

☐ Enhance the current system

☑ Develop a new custom solution

☐ Purchase a Commercial off-the-Shelf (COTS) system

☐ Purchase or obtain a system from another government agency (Transfer)

☐ Subscribe to a Software as a Service (Saas) system

☐ Other, specify:

Identify cloud services to be leveraged (check all that apply):

☐ Software as a Service (SaaS) provided by OTech

☐ Software as a Service (SaaS) provided by commercial vendor

☐ Platform as a Service (PaaS) provided by OTech

☐ Platform as a Service (PaaS) provided by commercial vendor

☑ Infrastructure as a Service (IaaS) provided by OTech

☐ Infrastructure as a Service (IaaS) provided by commercial vendor

☐ No cloud services will be leveraged by this alternative. Provide a description of why cloud services are not being leveraged:

CARB maintains a robust virtualized server environment at the CA State Data Center Tenant Managed Services facility, allowing CARB to host this solution without additional hardware costs.

Identify who will modify the existing system or create the new system (check all that apply)

☑ Agency/state entity IT staff

☐ A vendor will be contracted

☐ Inter-agency agreement will be established with another governmental agency. Specify Agency name(s):

☐ Other, specify:

Identify the implementation strategy:

◉ All requirements will be addressed in this proposed project in a single implementation.

○ Requirements will be addressed in incremental implementations in this proposed project.

○ Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date.

Specify the year when remaining requirements will be addressed:

Identify if the technology for the proposed project will be mission critical and public facing:

☑ The technology implemented for this proposed project will be considered mission critical and public facing.

2.10.7 Architecture Information

Business Function/Process(es)

Emission inventory reporting and query system

Application, System or Component:	Emissions reporting
COTS, MOTS or Custom:	Custom Application
Name/Primary Technology:	Python / .Net

Runtime Environment

Cloud Computing Used?	○ Yes ◉ No If "Yes", specify: Select...
Server/Device Function:	Database
Hardware:	Virtual Server
Operating System:	Microsoft Server 2012
System Software:	

	Microsoft SQL Server 2016
System Interfaces:	
Data Center Location:	State Data Center Operated by Department of Technology

Security

Access: (check all that apply)	☑ Public ☑ Internal State Staff ☐ External State Staff ☐ Other, specify:
Type of Information: (check all that apply)	☐ Personal ☐ Health ☐ Tax ☐ Financial ☐ Legal ☑ Confidential ☑ Other, specify: Air emissions (public), process rates (CBI)
Protective Measures: (check all that apply)	☐ Technical Security ☐ Identity Authorization and Authentication ☐ Physical Security ☐ Backup and Recovery ☐ Other, specify:

Data Management

Data Owner	**Name:**	David Edwards
	Title:	AR Sup II
	Business Program:	Greenhouse Gas and Toxics Emission Inventory Branch
Data Custodian	**Name:**	Skip Campbell
	Title:	DPM IV
	Business Program:	Systems Development and Support Branch

2.10.1 Solution Type

○ Recommended   ● Alternative

2.10.2 Name

Modified Off The Shelf MOTS

2.10.3 Description

Engage an external vendor to configure, modify, integrate, and implement an integrated Modified Off the Shelf (MOTS) solution to 1) fully replace the existing CEIDARS Emission Inventory system to integrate criteria, toxic, and greenhouse gas emissions in a consistent structure including interfacing with internal and external systems for exchanging data and reporting); 2) add functionality to allow industrial facility operators to report directly to CARB as required by AB617, and 3) add recurring comprehensive data publishing capabilities as directed by AB197.

CARB will select through the procurement effort a MOTS product and an external solution integration vendor specifically experienced with integrating that product. However, because of the unique reporting and regulatory requirements supported by CARB's emission inventory program, it will be necessary for the system integration vendor to not only configure the COTS product but to also perform extensive software customizations. Depending on the level of customization available for the product procured, these software customizations may take the form of custom secondary scripts within the software product. Customization may also include developing custom software outside of the COTS product that performs operations on the COTS database or a custom developed database where data is replicated between it and the COTS database.

The solution will be configured, modified, and implemented through collaborative efforts of the integration vendor, MOTS product vendor (where applicable), CARB business staff, and CARB information technology staff. The MOTS may be hosted by the integration vendor and implemented as a Software as a Service (SaaS) and include a Platform as a Service (PaaS) service to enable ongoing development and maintenance. Providing PaaS services as part of the solution will enable Agency to configure the system to meet changing business needs with minimal or no additional software development or involvement from the external vendor. Operations and

maintenance of the system customizations will be the responsibility of the systems integration vendor and CARB business and IT resources. An ongoing per user subscription is required to use and obtain support for the product.

Approach (check all that apply)

- ☑ Increase staff - new or existing capabilities
- ☑ Modify the existing business process or create a new business process
- ☐ Reduce the services or level of services provided
- ☑ Utilize new or increased contracted services
- ☐ Enhance the existing IT system
- ☑ Create a new IT system
- ☐ Perform a business-based procurement to have vendors propose a solution
- ☐ Other, specify:

2.10.4 Benefit Analysis

Benefits/Advantages

MOTS software products are typically more stable and mature because of each MOTS company's dedication to software development; adherence to formal institutionalized processes; 100% dedication of knowledge teams to the business domain; and continual vetting and refining of their products over years with multiple similar customers.

There is a shorter time to deployment than a custom developed solution since the reviewed MOTS products will meet the majority of the requirements with low levels of software development required.

The time commitment from business staff is minimal to moderate during the software configuration, customization, and deployment timeframe.

MOTS software products are typically based on technology platforms that enable the exchange of data with a variety of other technology platforms and formats, and allow vendors to customize, extend, test, and build applications and workflows to meet specific needs.

The modular nature of the known MOTS products will allow the Agency the flexibility for a variety of phased implementation approaches.

MOTS software may have additional capabilities that can be exploited when required at a later date, generally for a relatively small increase in software license cost or in some cases for no additional cost.

MOTS software is typically being continually improved, with additional functionality and technical enhancements being added on a frequent basis.

Resources for knowledge of and expertise in the potential MOTS software packages are available through multiple vendors, providing options for implementation, support, and maintenance.

Knowledgeable customer support for MOTS software is typically stable through the years of ownership. Help desk support and training are available.

MOTS software is typically well documented, and the documentation is updated for each change to the software.

The initial price of a MOTS solution is substantially less than the initial cost to develop a custom solution since CARB benefits from the advantage of having development and support costs shared across customers that

purchase the MOTS software products.

Disadvantages

CARB will likely need to adjust their business processes to align with the configuration of the MOTS solution, however the process is strictly constrained by regulatory emissions reporting requirements.

The amount of business process change could impact the duration of implementation and staff acceptance of organizational change.

Configuration of the MOTS solution to implement some of the requirements might require workarounds that result in a less than desirable interaction with the system.

Additional software development could be required to customize CARB-specific regulatory requirements.

There is a risk that the vendor could stop supporting the software in the future.

Legacy data may need significant cleansing to adapt to a MOTS solution.

MOTS solutions may be based on proprietary software components that inhibit the complete transparency of methodologies required by a government regulatory agency.

A MOTS solution would likely require significant customization since the existing market is nonexistent for CARB's unique business case.

Anticipated Time to Achieve Objectives After Project Go-Live					
Objective Number	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
1.1	◉	○	○	○	○
2.1	◉	○	○	○	○
3.1	◉	○	○	○	○

Anticipated Time to Achieve Financial Benefits After Project Go-Live					
Financial Benefit	Within 1 Year	2 Years	3 Years	4 Years	Over 4 Years
Increased Revenues	○	○	○	○	○
Cost Savings	○	○	○	○	○
Cost Avoidance	○	○	○	○	○
Cost Recovery	○	○	○	○	○

2.10.5 Assumptions and Constraints

Assumptions:
1. The selected MOTS software will continue to be a viable and supported product for the foreseeable future.
2. Multiple vendors are available to configure, customize, and maintain a MOTS implementation.
3. CARB is not limited to using CalCloud or other OTech services to support the implementation of the selected MOTS software.
4. The MOTS software can be configured, customized, and/or extended to fully meet requirements.

Constraints:
1. Vendor services will be required to support the development and implementation of the MOTS solution.

2. Strategies for other Agency enterprise solutions (e.g., use of other COTS/MOTS products, overall enterprise architecture, data governance/management, etc.) need to be finalized before implementing any MOTS solution.

3. The product must be configured, customized, and/or extended to fully meet requirements.

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed (check all that apply):

☐ Enhance the current system

☐ Develop a new custom solution

☑ Purchase a Commercial off-the-Shelf (COTS) system

☐ Purchase or obtain a system from another government agency (Transfer)

☑ Subscribe to a Software as a Service (Saas) system

☐ Other, specify: [   ]

Identify cloud services to be leveraged (check all that apply):

☐ Software as a Service (SaaS) provided by OTech

☑ Software as a Service (SaaS) provided by commercial vendor

☐ Platform as a Service (PaaS) provided by OTech

☑ Platform as a Service (PaaS) provided by commercial vendor

☑ Infrastructure as a Service (IaaS) provided by OTech

☐ Infrastructure as a Service (IaaS) provided by commercial vendor

☐ No cloud services will be leveraged by this alternative. Provide a description of why cloud services are not being leveraged:

[   ]

Identify who will modify the existing system or create the new system (check all that apply)

☑ Agency/state entity IT staff

☑ A vendor will be contracted

☐ Inter-agency agreement will be established with another governmental agency. Specify Agency name(s):

[   ]

☐ Other, specify:

[   ]

Identify the implementation strategy:

◉ All requirements will be addressed in this proposed project in a single implementation.

○ Requirements will be addressed in incremental implementations in this proposed project.

○ Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date.

Specify the year when remaining requirements will be addressed: [   ]

Identify if the technology for the proposed project will be mission critical and public facing:

☑ The technology implemented for this proposed project will be considered mission critical and public facing.

2.10.7 Architecture Information

Business Function/Process(es)

Emission inventory reporting and query system	
Application, System or Component:	Emissions reporting
COTS, MOTS or Custom:	Modified off-the-shelf (MOTS)
Name/Primary Technology:	Locus Platform

Runtime Environment

Cloud Computing Used?	○ Yes ◉ No If "Yes", specify: Select...
Server/Device Function:	Database
Hardware:	Virtual Server
Operating System:	Microsoft Server 2012
System Software:	Microsoft SQL Server 2016
System Interfaces:	Web browser
Data Center Location:	State Data Center Operated by Department of Technology

Security

Access: (check all that apply)	☑ Public ☑ Internal State Staff ☐ External State Staff ☐ Other, specify:
Type of Information: (check all that apply)	☐ Personal ☐ Health ☐ Tax ☐ Financial ☐ Legal ☑ Confidential ☑ Other, specify: Air emissions (public), process rates (CBI)
Protective Measures: (check all that apply)	☑ Technical Security ☑ Identity Authorization and Authentication ☐ Physical Security ☑ Backup and Recovery ☐ Other, specify:

Data Management

Data Owner	**Name:**	David Edwards
	Title:	AR Sup II
	Business Program:	Greenhouse Gas and Toxics Emission Inventory Branch
Data Custodian	**Name:**	Skip Campbell
	Title:	DPM IV
	Business Program:	Systems Development and Support Branch

2.11 Recommended Solution

2.11.1 Rationale for Selection

A custom solution developed by a vendor allows CARB to combine the functionality of two currently disparate systems while retaining their current functionality. It will allow CARB to meet the new requirements of AB197 and AB617 with the ability to adapt to future business needs. While an in-house developed solution has many of the same advantages as a vendor developed solution, the additional staffing and training requirements would put the development timeframe outside acceptable limits. A MOTS solution would also be less cost effective since no current commercial solution exists to comprehensively handle the unique needs of a statewide emission inventory system, and developing the needed functionality while omitting extraneous functionality would take more time and effort than the custom solution.

**See the attached Market Research Report for more details.

📄 **3900_CARB_IMPEI_Market_Re
search_Report.pdf**
Adobe Acrobat Document
496 KB

2.11.2 Technical/Initial CA-PMM Complexity Assessment

Complexity	Complexity Zone
Technical Complexity Score: 1.4	◉ Zone I Low Criticality/Risk ◯ Zone II/III Medium Criticality/Risk ◯ Zone IV High Criticality/Risk

2.11.3 Procurement and Staffing Strategy

Activity

Cost Estimating

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ ITPOD Staff ☐ DGS Staff ☐ CA-PMO Staff ☐ STPD Staff ☐ Contractor ☐ Other, specify: [ ]
When Needed (check all that apply)	☑ Stage 3 Solution Development ☑ Stage 4 Project Readiness and Approval ☐ After project is approved (after Stage 4 Project Readiness and Approval)
Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☐ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☐ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Select...	Select...
If "Other," specify:	If "Other," specify:
[ ]	[ ]

Activity

Solicitation Development

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ ITPOD Staff ☐ DGS Staff ☐ CA-PMO Staff ☐ STPD Staff ☐ Contractor ☐ Other, specify:

When Needed (check all that apply)	☑ Stage 3 Solution Development ☑ Stage 4 Project Readiness and Approval ☐ After project is approved (after Stage 4 Project Readiness and Approval)
Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☐ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☐ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Select...	Select...
If "Other," specify:	If "Other," specify:

Activity

Conduct Procurement

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☐ Contractor
	☐ Other, specify: 	

When Needed (check all that apply)	☐ Stage 3 Solution Development ☑ Stage 4 Project Readiness and Approval ☐ After project is approved (after Stage 4 Project Readiness and Approval)
Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☐ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Select...	Select...
If "Other," specify:	If "Other," specify:

Activity

Project Management

Responsible	☑ Agency/State Entity Staff	☐ ITPOD Staff

(check all that apply)	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☑ Contractor
	☐ Other, specify:	

When Needed
(check all that apply)

☑ Stage 3 Solution Development

☑ Stage 4 Project Readiness and Approval

☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification
(check all that apply)

☐ Market research conducted (MR)

☑ Cost estimate provided (CE)

☐ Department of Technology CE

☐ DGS CE

☐ Request For Information conducted (RFI)

☑ Comparable vendor services have been used on previous contracts (CV)

☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Business Analysis

Responsible
(check all that apply)

☑ Agency/State Entity Staff   ☐ ITPOD Staff

☐ DGS Staff   ☐ CA-PMO Staff

☐ STPD Staff   ☑ Contractor

☐ Other, specify:

When Needed
(check all that apply)

☑ Stage 3 Solution Development

☑ Stage 4 Project Readiness and Approval

☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification
(check all that apply)

☐ Market research conducted (MR)

☑ Cost estimate provided (CE)

☐ Department of Technology CE

☐ DGS CE

☐ Request For Information conducted (RFI)

☑ Comparable vendor services have been used on previous contracts (CV)

☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Technical Analysis

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify: 	

When Needed (check all that apply)	☑ Stage 3 Solution Development ☑ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☑ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify: 	If "Other," specify:

Activity

Requirements Elicitation

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify: 	

When Needed (check all that apply)	☑ Stage 3 Solution Development ☑ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☑ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**

Request for Offer/California Multiple Award Schedules (RFO/CMAS)   Time and Materials (T&M)

If "Other," specify: If "Other," specify:

Activity

Organizational Change Management

Responsible (check all that apply)	☑ Agency/State Entity Staff	☐ ITPOD Staff
	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☐ Contractor
	☐ Other, specify:	

When Needed (check all that apply)	☐ Stage 3 Solution Development
	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR)
	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)
	☐ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle   **Contract Type**

Select...   Select...

If "Other," specify: If "Other," specify:

Activity

Testing

Responsible (check all that apply)	☑ Agency/State Entity Staff	☐ ITPOD Staff
	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☑ Contractor
	☐ Other, specify:	

When Needed (check all that apply)	☐ Stage 3 Solution Development
	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR)
	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)

	☑ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Design	

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff ☐ Other, specify: 	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
When Needed (check all that apply)	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)	
Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☑ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)	

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Integration/Development	

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff ☐ Other, specify: 	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
When Needed (check all that apply)	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)	
Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR)	

- ☑ Cost estimate provided (CE)
- ☐ Department of Technology CE
- ☐ DGS CE
- ☐ Request For Information conducted (RFI)
- ☑ Comparable vendor services have been used on previous contracts (CV)
- ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Data Cleansing

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify:	

When Needed (check all that apply)	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☑ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Data Validation

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify:	

When Needed	☐ Stage 3 Solution Development

(check all that apply)	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)
Cost Estimate Verification	☐ Market research conducted (MR)
(check all that apply)	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)
	☑ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Data Migration

Responsible	☑ Agency/State Entity Staff	☐ ITPOD Staff
(check all that apply)	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☑ Contractor
	☐ Other, specify:	

When Needed	☐ Stage 3 Solution Development
(check all that apply)	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification	☐ Market research conducted (MR)
(check all that apply)	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)
	☑ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Training

Responsible	☑ Agency/State Entity Staff	☐ ITPOD Staff
(check all that apply)	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☑ Contractor

When Needed	☐ Other, specify:
(check all that apply)	
	☐ Stage 3 Solution Development
	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)
Cost Estimate Verification	☐ Market research conducted (MR)
(check all that apply)	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)
	☑ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Contract Management

Responsible	☑ Agency/State Entity Staff	☐ ITPOD Staff
(check all that apply)	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☐ Contractor
	☐ Other, specify:	

When Needed	☐ Stage 3 Solution Development
(check all that apply)	☐ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification	☐ Market research conducted (MR)
(check all that apply)	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGS CE
	☐ Request For Information conducted (RFI)
	☐ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Select...	Select...
If "Other," specify:	If "Other," specify:

Activity

Enterprise Architecture

Responsible (check all that apply)	☑ Agency/State Entity Staff	☐ ITPOD Staff
	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☐ Contractor
	☐ Other, specify:	

When Needed (check all that apply)	☑ Stage 3 Solution Development
	☑ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR)
	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGSCE
	☐ Request For Information conducted (RFI)
	☐ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Select...	Select...
If "Other," specify:	If "Other," specify:

Activity

Quality Assurance

Responsible (check all that apply)	☑ Agency/State Entity Staff	☐ ITPOD Staff
	☐ DGS Staff	☐ CA-PMO Staff
	☐ STPD Staff	☑ Contractor
	☐ Other, specify:	

When Needed (check all that apply)	☑ Stage 3 Solution Development
	☑ Stage 4 Project Readiness and Approval
	☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR)
	☑ Cost estimate provided (CE)
	☐ Department of Technology CE
	☐ DGSCE
	☐ Request For Information conducted (RFI)
	☑ Comparable vendor services have been used on previous contracts (CV)
	☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Technical Installation of Hardware

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff ☐ Other, specify:	☐ ITPOD Staff ☐ CA-PMO Staff ☐ Contractor

When Needed (check all that apply)	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☐ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	**Contract Type**
Select...	Select...
If "Other," specify:	If "Other," specify:

Activity

Technical Installation of Software

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff ☐ Other, specify:	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor

When Needed (check all that apply)	☐ Stage 3 Solution Development ☐ Stage 4 Project Readiness and Approval ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)	☐ Market research conducted (MR) ☑ Cost estimate provided (CE) ☐ Department of Technology CE ☐ DGS CE ☐ Request For Information conducted (RFI) ☑ Comparable vendor services have been used on previous contracts (CV) ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Maintenance

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify:	

When Needed (check all that apply)
- ☐ Stage 3 Solution Development
- ☐ Stage 4 Project Readiness and Approval
- ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)
- ☐ Market research conducted (MR)
- ☑ Cost estimate provided (CE)
- ☐ Department of Technology CE
- ☐ DGS CE
- ☐ Request For Information conducted (RFI)
- ☑ Comparable vendor services have been used on previous contracts (CV)
- ☐ Leveraged Procurement Agreement (LPA)

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

Activity

Operations

Responsible (check all that apply)	☑ Agency/State Entity Staff ☐ DGS Staff ☐ STPD Staff	☐ ITPOD Staff ☐ CA-PMO Staff ☑ Contractor
	☐ Other, specify:	

When Needed (check all that apply)
- ☐ Stage 3 Solution Development
- ☐ Stage 4 Project Readiness and Approval
- ☑ After project is approved (after Stage 4 Project Readiness and Approval)

Cost Estimate Verification (check all that apply)
- ☐ Market research conducted (MR)
- ☑ Cost estimate provided (CE)
- ☐ Department of Technology CE
- ☐ DGS CE

Complete Only if Contractor Responsible for Activity

Procurement Vehicle	Contract Type
Request for Offer/California Multiple Award Schedules (RFO/CMAS)	Time and Materials (T&M)
If "Other," specify:	If "Other," specify:

	Yes	No
Will any of the activities identified above result in a competitive or non-competitive solicitation that will be over the Agency/state entity's DGS delegated purchasing authority?	○	◉

2.11.4 Enterprise Architecture Alignment

CARB has an existing Enterprise Architecture Framework consisting of a methodology, a conceptual framework and a process that will build on the foundations laid down in the overall IT strategy. The conceptual framework and methodology are based on the California Enterprise Architecture Framework (CEAF 2.0), The Open Group Architecture Framework (TOGAF). The Architecture Process provides for the creation of a vision and for the development of an architecture vision that realizes the IT Strategy. The vision will include business, application, data and technology architecture layers followed by migration planning, implementation governance and change management that works in conjunction with the project management process defined by CARB's Project Management Office.

Information Technology Capability Table		
Information Technology Capability	**Existing Enterprise Capability to be Leveraged**	**New Enterprise Capability Needed**
Public or Internal Portal/Website	◉	○
Public or Internal Mobile Application	◉	○
Enterprise Service Bus	◉	○
Identity and Access Management	◉	○
Enterprise Content Management (including document scanning and eForms capabilities)	◉	○
Business Intelligence and Data Warehousing	◉	○
Master Data Management	○	○
Big Data Analytics	○	○

2.11.5 Project Phases

Phase

Phase 1. Database System Architecture

Description

This phase covers an assessment of AB617-related systems in order to provide system architecture recommendations for developing the emission inventory database system to replace the legacy criteria and GHG emission inventory database systems, with the ability to communicate other AB617-related data systems, namely air quailty monitoring and a BARCT clearinghouse. Phase 1 task includes but not limited to the following:

1. Establish a project plan that describe the timing, and detailed project controls that will be used to monitor and manage project progress and direction. Project controls include a communication strategy, risk and issue management processes, change management procedures, quality assurance approach and system testing plan.

2. Analyze and prioritize CARB's technical and functional requirements jointly with CARB subject matter experts to assess the emission inventory, air quality monitoring, and BBT systems, their associated output products, and anticipated data fields resulting from upcoming reporting requirements. This analysis should also develop and maintain the Requirements Traceability Matrix for the Integrated Multi-Pollutant Emission Inventory Database System that satisfies the CARB's business needs.

3. Design the software solutions and database architecture that meets the technical requirements collaboratively with CARB subject matter experts and program staff. CARB anticipates an iterative development process that will include a design document updated as needed, including wire frame page mockups, form and report specifications, business rules, batch process logic, application prototypes, database designs, logical and physical data models and system security.

4. Define and design data model and structures of an integrated multi-pollutant emission inventory to facilitate the input, storage, and tracking of data in the emission inventory as well as streamlined communication with other relevant database system at CARB.

Phase 1 is projected approximately to take 6 months.

Phase Deliverable

Project plan document

Requirements Traceability Matrix

Database system architecture design artifacts and recommendations document

Database Data Model and Structure Document

Phase

Phase 2: Develop Emission Inventory Database

Description

After the proposed system architecture completed in Phase 1 is approved by CARB, construction of an emission inventory database system shall commence. This database system will meet all business requirements defined for the emission inventory program, as well as communicate seamlessly with air quality and BBT database systems. Tasks for this phase include but are not limited to the following:

1. Develop, maintain and deliver a written project plan entailing the project tasks, schedule, and expected workload required from both Contractor and CARB throughout the project. The project plan also includes project controls that will be used to monitor and manage project progress and direction. Project controls include communication strategy, potential risks and mitigation strategies, change management procedures, quality assurance approach, and setting up the development and test environments. Report implementation progress in terms of specific metrics, including but not limited to completed, in-progress, and remaining deliverables; implemented and tested application features, modules and components; reported, fixed, and outstanding defects; and any impediments or risks to successful and timely completion of the implementation effort.

2. Develop the database system solution that meets the business process, functional and technical requirements. CARB anticipates an iterative development process that will have Design Artifacts created throughout the development period, such as wire frame page mockups, form and report specifications, business rules, batch process logic, application prototypes, and database designs, including logical and physical data models and system security.

3. Code, comment, and unit test application components. CARB anticipates an iterative development process

that will result in frequent delivery of working software for system integration and user acceptance testing.

4. Design an automated data quality assurance approach to validate, verify and check data that gets integrated into the Database.

5. Design an automated tracking module that allows to track all data submittals with regard to source of the data, timing, and documentation.

6. Perform functional, performance and security testing of all code module and features delivered. Contractor must maintain an issue log and resolve issues effectively and efficiently.

7. Support User Acceptance Testing by ARB subject matter experts. Track and report all defects discovered during testing (include test reports in weekly status updates). Fix all user reported defects; re-deliver and re-test all defect repairs.

Phase 2 duration is approximately estimated to take 5 months.

Phase Deliverable

Task Management Plan Document

Requirements Traceability Matrix.

A working database system for the Integrated Multi-Pollutant Emission Inventory

Source Code Document

Data Quality Assurance Design Document

Tracking Module Document

Documentation for utilization and maintenance of the emission inventory system by its public, industry stakeholder, district, CARB, and administrative users

Phase

Phase 3: Develop Web-User Interface (Front End)

Description

This phase covers an iterative approach on developing a web-user application that allows authorized users to register, view the data reporting summary requirements, upload data submittals, perform data queries, and to utilize functional widgets (e.g. print, download) as describe in the AB 617 requirements, including but are not limited to the following:

1. Design and construct a Web-Based User Interface

2. Secure a log-on module for user, and registry for new user

3. Form for adding or editing data submittals by authorized users

4. Data output reporting including tabular and graphical data summaries and maps

5. Integration of QA/QC for real-time validation of the submitted data prior to committing it to the inventory database system

6. Maintenance of the tracking module for data submittals by authorized CARB staff

7. Perform functional, performance and security testing of all code module and features delivered. Must maintain an issue log and resolve issues effectively and efficiently.

8. Support User Acceptance Testing by ARB subject matter experts. Track and report all defects discovered during testing (include test reports in weekly status updates). Fix all user reported defects; re-deliver and re-test all defect repairs.

Phase 3 is anticipated to take approximately 9 months.

Phase Deliverable

Requirements Traceability Matrix.

Web-user interface architecture and construction artifacts and source codes

A working web user interface with security configurations and fully functional widgets

Data submittal and output reporting documentation

Application Builds

Phase

Phase 4: Transition

Description

Provide support for the initial deployment, migrating data into the new system, production support, and system transition to CARB staff, including but are not limited to the following;

1. Work with ARB system operations staff to successfully deploy the initial delivered solution into ARB's production environment. Provide written build and run-time instructions for each logical server and system process.

2. Develop and perform a one-time data conversion to the new system. Data conversion must include trial runs, data validation, and final loading of the data during the go-live production deployment.

3. Develop and deliver Programming, Operations, and User Manuals. Provide detailed document walkthroughs with ARB staff. Documentation and walkthroughs must include adequate material, detail, and question and answer periods sufficient to ensure knowledge transfer to CARB staff.

4. Develop and deliver an As-Built System Design Document that reflects the final high level architecture and design of the production system, including hardware performance specifications, software components, user roles, functional processing overview, web application site map, system data flows and interfaces, and data entity model. Provide detailed document walkthroughs with ARB staff. Documentation and walkthroughs must include adequate material, detail, and question and answer periods sufficient to

ensure knowledge transfer to ARB staff.

5. Provide software maintenance support, including response to production incidents, problem analysis, defect repairs, data fixes, application changes, system testing, user acceptance testing support, and application builds. All system changes must be delivered via established configuration management processes and procedures. Provide a written Root Cause Analysis of all Severity 1 (system unavailable) incidents. Fix all user reported defects; re-deliver and retest all defect repairs.

6. Support User Acceptance Testing by ARB subject matter experts. Track and report all defects discovered during testing (include test reports in weekly status updates). Fix all user reported defects; re-deliver and re-test all defect repairs.

7. Provide software maintenance support, including response to production incidents, problem analysis, defect repairs, data fixes, application changes, system testing, user acceptance testing support, and application builds associated with each Production Release. All system changes must be delivered via established configuration management processes and procedures. Fix all user reported defects; re-deliver and re-test all defect repairs. Work with CARB software maintenance staff to provide knowledge transfer of the detailed system design and code, and transition maintenance of the system to the State.

Phase 4 duration is projected to take approximately 4 months.

Phase Deliverable

Server Build and Run-time Instructions.

Converted Data Loaded.

Programming, operations and user manuals, and knowledge transfer and materials

Production Releases

As-Built System Design Document.

2.11.6 High Level Proposed Project Schedule

| Project Planning Start Date: | 9/1/2017 | Project Start Date: | 7/1/2018 |
| Project Planning End Date: | 6/29/2018 | Project End Date: | 6/30/2020 |

Activity Name	Start Date	End Date
Stage 3 Solution Development	11/1/2017	12/31/2017
Solicitation Development	1/1/2018	1/31/2018
Solicitation Package Review	2/1/2018	2/28/2018
Pre-solicitation for Industry Comments	3/1/2018	3/31/2018
Solicitation Negotiations	4/1/2018	4/30/2018
Stage 4 Project Readiness and Approval	5/1/2018	5/31/2018
Requirements	7/1/2018	7/16/2018

Data Conversion	7/17/2018	8/1/2018
Design	8/2/2018	12/31/2018
Development	1/1/2019	4/1/2020
Testing	4/2/2020	5/2/2020
Training	5/3/2020	5/15/2020
Data Migration	5/16/2020	6/1/2020
Deployment	6/2/2020	6/20/2020
Go Live	6/21/2020	6/30/2020
Maintenance and Operations	5/31/2020	12/30/2022

2.11.7 Cost Summary

Total Proposed Planning Cost:	$743,765
Total Proposed Project Cost:	$3,871,263
Average Proposed Operations Cost:	$246,020

2.12 Staffing Plan

2.12.1 Administrative

The CARB Administrative Section will support the project by supplying the following positions during the duration of the project. Previous workload for existing staff assigned to this project will be absorbed by additional positions approved for FY2017-18 which are not assigned to this project.

Position	Role	Phase	PY	Comments
Staff Services Analyst	Contract Analyst	PAL Project M&O	0.1 0.05 0	Very experienced leading contract management and administration process. Provide guidance and assistance for CAQM's project contract administration process. Existing workload will be allocated to new staff.
Staff Services Analyst	Procurement	PAL Project M&O	0.1 0 0	Well-experienced on procurement process. Provide guidance and assistance procurement solication process for CAQM's project approval lifecycle process. Existing workload will be allocated to new staff.

2.12.2 Business Program

CARB will meet increasing staff resource needs for this project by allocating the additional workload to current SME's along with several new positions which have already been approved for FY2017-18.

Position	Role	Phase	PY	Comments
Deputy Executive Officer	Project Sponsor	PAL Project M&O	0.05 0.05 0	Very experienced and capable sponsor with years of experience in similar efforts. Visibly supports the project at the executive level. Provides oversight and direction to the Project Director on strategic issues that affect the project. Resolves issues the Project Director is unable to resolve. Will add to current workload.
Assistant	Project	PAL	0.05	Well-experienced in similar effort. Visibly supports the

Role	Function	Phase	Value	Description
Division Chief	Oversight	Project M&O	0.05 0	project at the executive level. Provides independent internal review, oversight, and direction to the Project
Air Resources Sup II	Project Director/ Business Lead/OCM	PAL Project M&O	0.2 0.2 0	Years of experience leading similar efforts. Leads the Project. Directs the planning and execution of all project activities, team, and resources. Approves all project requirements, project schedule and cost changes. Accepts all project deliverables. Approves invoices. Will add to current workload.
Air Resources Sup II	Business Lead	PAL Project M&O	0 0.1 0	Well-experienced in leading similar efforts. Subject matter expert on criteria and emission inventory data and legacy databases. Lead the team and their associated project activities. Will add to current workload
Air Resources Sup I	SME	PAL Project M&O	0.25 0.4 0	Subject matter expert of criteria and emission inventory data, and the business requirements of the legacy databases. Some current workload will be redistributed to new hire described below.
Air Resources Sup I	SME	PAL Project M&O	0 0.2 0	New Staff to be hired to support the emission inventory program operations including database development project, and on-going maintenance & future operations.
Staff Air Pollution Specialist	SME	PAL Project M&O	1 1 0	Project lead and subject matter expert of criteria and emission inventory data, and the business requirements of the legacy databases. It is anticipated that the current workload assigned to a Staff Air Pollution Specialist SME will be reduced, and distribute its current workload to existing and new hires Staff Air Pollution Specialist colleagues.
Staff Air Pollution Specialist	SME	PAL Project M&O	0 0.1 0	New Staffs to be hired to support the emission inventory program operations including database development project, and on-going maintenance & future operations.
Air Resources Engineer	SME	PAL Project M&O	0 0.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Resources Engineer SME will be allocated to the new hires of Air Resources Engineer, freeing up sufficient time to take on tasks and responsibilities for this project.
Air Pollution Specialist	SME	PAL Project M&O	1 1.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Pollution Specialist SME's will be allocated to the new hires of Air Resources Engineer, freeing up sufficient time to take on tasks and responsibilities for this project.

The CARB OIS Division will support the project by supplying the following positions during the duration of the project.

Position	Role	Phase	PY	Comments
Senior Information Systems Analyst	Project Manager	PAL Project M&O	0.45 0.5 0	The OIS Project Management Office has a team of project managers with extensive experience in projects of a similar nature and scale. The OIS PM will be supplemented by .5 PY contracted PM during PAL and Phase 1 through 4.
Senior Information Systems Analyst	Business Analyst	PAL Project M&O	0.1 0.15 0	The OIS Project Management Office has a Business Analyst resource with extensive experience in projects of a similar nature and scale. The OIS BA will be suplemented by .5 PY contracted BA for PAL and Phase 1 through 3.
Senior Information Systems Analyst	Contract Analyst	PAL Project M&O	0.36 0.05 0	OIS has an IT Acquisitions team of resources dedicated to all IT acquisition issues for the California Air Resources Board (CARB). The team has vast experience and includes staff recognized as experts. The IT Operations and Support Branch Chief, the IT Operations Section Supervisor and the Senior IT Acquisitions Specialist have extensive IT acquisition experience. Combined, they have performed in roles ranging from contract managers, contract analysts, and all have experience in managing an IT acquisitions team. In addition to this highly experienced and seasoned executive-level team, OIS also has multiple IT acquisition specialists (analysts) with novice experience up to semi-expert level, all focused and dedicated to the unique requirements of State IT acquisitions. The IT Acquisitions team also has a dedicated IT budget analyst to monitor all of ARB's consolidated IT budget and IT projects.
Senior Information Systems Analyst	Procurement Analyst	PAL Project M&O	.28 0 0	OIS has an IT Acquisitions team of resources dedicated to all IT acquisition issues for the California Air Resources Board (CARB). The team has vast experience and includes staff recognized as experts. The IT Operations and Support Branch Chief, the IT Operations Section Supervisor and the Senior IT Acquisitions Specialist have extensive IT acquisition experience. Combined, they have performed in roles ranging from contract managers, contract analysts, and all have experience in managing an IT acquisitions team. In addition to this highly experienced and seasoned executive-level team, OIS also has multiple IT acquisition specialists (analysts) with novice experience up to semi-expert level, all focused and dedicated to the unique requirements of State IT acquisitions. The IT Acquisitions team also has a dedicated IT budget analyst to monitor all of ARB's consolidated IT budget and IT projects.

Position	Role	Phase	PY	Comments
System Software Specialist III	Technical SME	PAL Project M&O	0.1 0.1 0.1	OIS technical section has an extensive experience in technical projects of similar nature and scale. The current workload will be added as the technical SME. Part of the normal duties of the existing System Software Specialist (technical SME) is administering the legacy databases.
Staff Programmer Analyst	Technical SME	PAL Project M&O	0 1 1	New staff to be hired to support project and ongoing maintenances and operations.
Manager IV	Contract Manager	PAL Project M&O	0 0.02 0	OIS Management has extensive experience managing contracts of similar nature and scope. It is anticipated that the current contract management workload assigned to the Manager IV position will be reduced due to the expiration of current projects, freeing up sufficient resources to man this project.
Manager IV	Project Oversight	PAL Project M&O	0.2 0.2 0	OIS Management has extensive experience overseeing projects of similar nature and scope. It is anticipated that the current contract management workload assigned to the Manager IV position will be reduced due to the expiration of current projects, freeing up sufficient resources to man this project.

2.12.4 Testing

The CARB Air Quality Planning and Science Division and Office of Information Technology Staff will work in conjunction with contracted staff to support testing by supplying the following positions during the duration of the project. These internal PYs will be augmented with .5 PY contracted BA.

Position	Role	Phase	PY	Comments
Staff Programmer Analyst	Developer	PAL Project M&O	0 1 0	New staff to be hired to support project and ongoing maintenances and operations.
System Software Specialist II	Security	PAL Project M&O	0 .1 0	Security testing, part of normal duties.
Air Resources Engineer	SME/Testing	PAL Project M&O	0 0.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Resources Engineer SME will be allocated to the new hires of Air Resources Engineer, freeing up sufficient time to take on tasks and responsibilities for this project.
Air Pollution Specialist	SME/Testing	PAL Project M&O	0 0.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Pollution Specialist SME's will be allocated to the new hires of Air Resources Engineer,

| | | | | freeing up sufficient time to take on tasks and responsibilities for this project. |

2.12.5 Data Conversion/Migration

Data migration activities will include data cleanup, formatting, migration, and testing. The CARB Air Quality Planning and Science Division and Office of Information Technology Staff will work in conjunction with contracted staff to support testing by supplying the following positions during the duration of the project.

Position	Role	Phase	PY	Comments
Staff Programmer Analyst	Technical SME	PAL Project M&O	0 1 0	New staff to be hired to support project and ongoing maintenances and operations.
Staff Air Pollution Specialist	SME/Migration	PAL Project M&O	0 0.1 0	New Staffs to be hired to support the emission inventory program operations including database development project, and on-going maintenance & future operations.
Air Resources Engineer	SME/Migration	PAL Project M&O	0 0.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Resources Engineer SME will be allocated to the new hires of Air Resources Engineer, freeing up sufficient time to take on tasks and responsibilities for this project.
Air Pollution Specialist	SME/Migration	PAL Project M&O	1 1.8 0	Subject matter expert of the technical and business requirements for the multi-pollutant emission inventory. It is anticipated that the current workload assigned to Air Pollution Specialist SME's will be allocated to the new hires of Air Resources Engineer, freeing up sufficient time to take on tasks and responsibilities for this project.

2.12.6 Training and Organizational Change Management

The CARB Air Quality Planning and Science Division and Office of Information Technology Staff will work in conjunction with contracted staff to support OCM by supplying the following positions during the duration of the project. Since this is primarily a technology upgrade business interruption is expected to be minimal.

Position	Role	Phase	PY	Comments
Air Resources Sup II	OCM	PAL Project M&O	0 0.2 0	Years of experience leading similar efforts. Leads the Project. Directs the planning and execution of all project activities, team, and resources. Approves all project requirements, project schedule and cost changes. Accepts all project deliverables. Approves invoices. Will add to current workload.

2.12.7 Resource Capacity/Skills/Knowledge for Stage 3 Solution Development

CARB has an IT Acquisitions team with vast knowledge of the IT procurement policies and procedures. The acquisition team has well over 15 + years of IT Acquisitions experience. Experience ranges from conducting solicitations, evaluations of responses, to drafting the purchase order and/or contracts agreements.

The IT Acquisitions team is knowledgeable and well versed with the various procurement methods (i.e., RFP, IFB's, IT RFQs, SB/DVBE Option, Informal/Formal Solicitations, Leverage Agreements, Fair & Reasonable, and Non-Competitively Bids). The IT Acquisitions processes contracts and procurements from small dollar amounts to million dollar agreements. Having a wide range of expertise in the various areas of procurements and contracts staff are experienced with the STPD Streamlined Procurement Template.
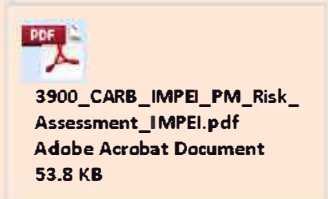
CARB's procurement office is familiar with the protest types and the use of the PCC 6611.

2.12.8 Project Management

2.12.8.1 Project Management Risk Assessment

Project Management Risk Score: 1.4

Attach file:

3900_CARB_IMPEI_PM_Risk_Assessment_IMPEI.pdf
Adobe Acrobat Document
53.8 KB

2.12.8.2 Project Management Planning

Are the following project management plans or project artifacts complete, approved by the designated Agency/state entity authority, and available for Department of Technology review?

Project Charter	**No**	Under development
Scope Management Plan	**No**	Under development
Risk Management Plan	**No**	Under development
Issue and Action Item Management Plan	**No**	Under development
Communication Management Plan	**No**	Under development
Schedule Management Plan	**No**	Under development
Human Resource Management Plan	**No**	Under development
Staff Management Plan	**No**	Under development
Stakeholder Management Plan	**No**	Under development
Governance Plan	**No**	Under development

2.12.9 Organization Charts

PDF
**3900_CARB_IMPEI_Org_Chart_
Project.pdf**
Adobe Acrobat Document
222 KB

PDF
**3900_CARB_IMPEI_Org_Chart_
Procurement.pdf**
Adobe Acrobat Document
100 KB

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**3900_CARB_IMPEI_Org_Chart_
IT.pdf**
Adobe Acrobat Document
373 KB

PDF
**3900_CARB_IMPEI_Org_Chart_
AQPSD_Program.pdf**
Adobe Acrobat Document
422 KB

PDF
**3900_CARB_IMPEI_Org_Chart_
Agency.pdf**
Adobe Acrobat Document
5.21 MB

2.13 Data Conversion/Migration

Identify the status of each of the following data conversion/migration activities:

Data Conversion/Migration Planning	In Progress
Data Conversion/Migration Requirements	In Progress
Current Environment Analysis	Not Started
Data Profiling	Not Started
Data Quality Assessment	Not Started
Data Quality Business Rules	In Progress
Data Dictionaries	Completed
Data Cleansing and Correction	Not Started

Data conversion and migration activities will be addressed during Stage 3 and Stage 4. This proposal is for a technology refresh of an existing system so it is anticipated that migration issues will be minimal.

3900_CARB_IMPEI_Current_Da taDictionary_DB_CEIDARS.pdf
Adobe Acrobat Document
313 KB

3900_CARB_IMPEI_Current_Da taDictionary_DB_GHG_EI.pdf
Adobe Acrobat Document
106 KB

2.14 Financial Analysis Worksheets

3900_CARB_IMPEI_FAW_IMPEI .xlsx
Microsoft Excel Worksheet
3.18 MB

Department of Technology Use Only

Preliminary Assessment – Department of Technology Use Only

Original "New Submission" Date	1/10/2018
Form Received Date	2/23/2018
Form Accepted Date	2/23/2018
Form Status	Completed
Form Status Date	4/11/2018

Main Form - Department of Technology Use Only

Original "New Submission" Date	1/10/2018
Form Received Date	2/23/2018
Form Accepted Date	2/23/2018
Form Status	Completed
Form Status Date	4/11/2018
Form Disposition	Approved
Form Disposition Date	4/11/2018