

# CA - PMM

**Project Name:** California GHG Regulated Emissions and Energy use in Transportation (

**OCIO Project #:** \_\_\_\_\_

**Department:** California Air Resources Board

**Revision Date:** \_\_\_\_\_

## Concept Statement

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### Description

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**Brief description of the proposed project:**

The ARB proposes to develop a CA-GREET system to meet the increased demands of the Low Carbon Fuel Standard program and regulation. The system will provide the required functionality and reliability to continue performing required modeling processes used to develop fuel Carbon Intensity (CI) values in support of the LCFS program area.

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### Need Statement

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**High Level Functional Requirements:**

The CA-GREET model must allow both internal ARB users and external entities to (a) develop new fuel pathways, and (b) modify existing pathways. A pathway is a quantitative "well-to-wheels" description of a fuel life cycle. Its primary output is a fuel carbon intensity (CI) value. The model must contain the data on which pathways are developed, but also must be capable of accepting new descriptive data.

**What is Driving This Need?**

The Low Carbon Fuel Standard (Sections 95480, 95480.1, 95481, 95482, 95483, 95484, 95485, 95486, 95487, 95488, 95489, and 95490, title 17, California Code of Regulations) requires the use of CA-GREET to calculate transportation fuel carbon intensities before they can be sold on the California market.

**Risk to the Organization if This Work is Not Done:**

The existing CA-GREET model has become unstable and unreliable. It consists of a large, complex spreadsheet, originally developed by Argonne National Laboratory, and subsequently modified by Life Cycle Associates (LCA), a California consulting firm. It has grown to the point where it is near the capacity of Excel 2003, but it cannot be run in Excel 2007 (as confirmed by LCA). It has become increasingly difficult to use and to maintain, often producing error messages which are challenging to troubleshoot. It also contains bugs--mostly in the form of formula errors and cells not properly linked in to calculations.

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### Benefit Statement

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#### Intangible Benefits

**Process Improvements** (describe the nature of the process improvement):

A stable, reliable, and cleanly designed CA-GREET model will allow ARB staff, as well as outside entities, to focus on the process of developing fuel pathways rather than troubleshooting the pathway development tool. The current tool is significantly slowing the implementation of the LCFS regulation at a time when it is critically important to move swiftly. A large number of new fuel pathways are needed over the coming months. All must be developed in GREET. All time spent troubleshooting the tool is time away from new fuel pathway development.

**Other Intangible Benefits:**

The current model does not reflect well on the ARB. The LCFS is an innovative, first-of-its kind, and controversial climate change regulation. Implementation is challenging under ideal circumstances. Implementation challenges are exacerbated, however, when a fundamental quantitative tool required by the regulation is perceived to be sub-optimal. The CA-GREET model simply doesn't reflect well on the regulation or on the Air Resources Board.

#### Tangible Benefits

**Revenue Generation** (describe how revenue will be generated):

**Cost Savings** (describe how cost will be reduced):

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**Cost Avoidance** (describe the cost and how avoided):

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**Risk Avoidance** (describe the risk and how avoided):  
 As new pathways are added to the CA-GREET model, it will become increasingly unstable and unreliable. It could become such a serious impediment to the implementation and functioning of the LCFS that it will have to be retired. This would seriously jeopardize the LCFS program. Because use of the CA-GREET is mandated under the LCFS, a regulatory change would be required before it could be retired. An added risk is that no replacement for the CA-GREET currently exists. This would require either that ARB staff quickly develop a replacement, or that the regulation provide detailed and lengthy instructions on how

**Improved Services:**  
 As the above entries demonstrate, the CA-GREET significantly impedes the provision of services under the LCFS. Fuel pathway development, both internally and externally is slower and more difficult than it should be. If pathways could be developed quickly and efficiently, service (pathway development, monitoring, and enforcement) regulated parties would be far better served. It should be noted that entities attempting to develop new LCFS fuel pathways regularly call ARB staff seeking advice on how to use and and troubleshoot the CA-GREET model. A well-designed and stable model would reduce this non-productive

### Consistency

| "No" Responses  |     | Rationale | Action Required |
|---|-----|-----------|-----------------|
| Enterprise Architecture   | Yes |           |                 |
| Business Plan   | Yes |           |                 |
| Strategic Plan  | Yes |           |                 |
|   |     |           |                 |

### Impact to Other Entities

#### Nature of Impact to Other Entities

**Entity:** External entities seeking to develop new LCFS fuel pathways  
*Describe the nature of the impact:*  
 Fuel pathway development would be quicker, more straightforward, and relatively problem-free.

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|   |
|---|
| <b>Entity:</b>                            |
| <i>Describe the nature of the impact:</i> |
|   |

|   |
|---|
| <b>Entity:</b>                            |
| <i>Describe the nature of the impact:</i> |
|   |

|   |
|---|
| <b>Entity:</b>                            |
| <i>Describe the nature of the impact:</i> |
|   |

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### Solution Alternatives

#### Alternative 1:

Develop a replacement CA-GREET on a relational database platform. Although the overall volume of data that must be managed and used is not large, the size and number of required data tables is large for the current spreadsheet platform. This model must be made publicly available, which means it could be run on a standalone basis or as a web-based application or both. The interface would accept input from the user and manage the calculation of fuel pathway carbon intensities. This process would make it necessary for the user to both update existing data tables, and add new table.

#### Technical Considerations for Alternative 1:

The model must be self-contained and capable of being used by the public. This would include the ability to modify and augment the data tables on which the calculations draw. The model must have the capacity maintain data on the maximum conceivable number of fuel pathways. That number is unknown, but could be several hundred (probably not exceeding 1,000).

ROM Cost: \$200,000 to \$400,000

Note: high end of range must not exceed 200% of low end of range

#### Alternative 2:

Develop a CA-GREET replacement in-house. This would be done on either a spreadsheet or a relational database platform.

#### Technical Considerations for Alternative 2:

ARB staff is capable of developing a CA-GREET replacement, but this would be major, time-consuming effort for which staff resources are not available. The result would not be a professional quality product, as would the software produced under Alternative 1.

ROM Cost: \$0 to \$0

Note: high end of range must not exceed 200% of low end of range

#### Alternative 3:

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Change the regulation so that it does not require the use of a specific tool, but, instead describes exactly how pathway CIs are to be calculated. ARB staff would develop and make available a tool that external parties could, but would not be required to, use. That tool would be similar to the one that would be developed under Alternative 2.

### Technical Considerations for Alternative 3:

The technical considerations for this alternative would be similar to those listed under Alternative 2. In addition, however, even more staff would be needed to undertake a lengthy and demanding regulation change. The regulation would have to change under both Alternatives 2 and 3, but the magnitude of the change required under Alternative 2 would be much greater.

ROM Cost: \_\_\_\_\_ to \_\_\_\_\_

**Note: high end of range must not exceed 200% of low end of range**

## Recommendation

### Comparison:

| Alternative 1 | ROM Cost  |             | Risk   |
|---------------|-----------|-------------|--|
|               | \$200,000 | - \$400,000 | <i>delays due to lengthy consultant selection and IT development</i>   |
| Alternative 2 | ROM Cost  |             | Risk   |
|               | \$0       | - \$0       | <i>Extensive delays to LCFS implementation. Extended de-bugging</i>    |
| Alternative 3 | ROM Cost  |             | Risk   |
|               | \$0       | - \$0       | <i>Same as with Alternative 2, but the risk of serious problems is</i> |

### Conclusions:

|   |   |
|---|---|
| 1 | Alternative 1 provides by far the most useful product and the least risk. |
| 2 |   |
| 3 |   |
| 4 |   |

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**Recommendation:**

Develop a CA-GREET replacement under contract, as described in Alternative 1

### Project Approach *(if known)*

|   |   |  |                                  |
|---|---|--|----------------------------------|
| <b>System Complexity:</b>                 |   | System Business Hours: <i>(e.g., 24x7, 9am-5pm)</i> : 24x7 |                                  |
| Architecture                              | <input type="checkbox"/> Mainframe <input type="checkbox"/> Client Server <input type="checkbox"/> Web Based      x                                       | Num. of New Databases:                                     |                                  |
| Technology                                | <input type="checkbox"/> New <input type="checkbox"/> New to Staff <input type="checkbox"/> In-House Experience      x                                    | Interfaces:  |                                  |
| Implementation                            | <input type="checkbox"/> Central Site <input type="checkbox"/> Phased Roll-out      Central site  | Num. of Sites:   |                                  |
| M & O Support                             | <input type="checkbox"/> Contractor      x <input type="checkbox"/> Data Center <input type="checkbox"/> Project <input type="checkbox"/> In House        |  |                                  |
| Procurement Approach:<br>Request for bids |   |  | Number of Procurements:<br><br>1 |
| Open Procurement?                         | Yes   | Delegated Procurement?                                     | Yes                              |
| Scope of Contract                         | <input type="checkbox"/> Development      x <input type="checkbox"/> Implementation <input type="checkbox"/> M & O      x <input type="checkbox"/> Other: |  |                                  |
| Anticipated Length of Contract:           | Years /   | 1.5  | extensions for      years      1 |