

CONTRACT REQUEST FORM (CRF)

CEC-94 (Revised 10/2015)

CALIFORNIA ENERGY COMMISSION

A) New Agreement 600-19-005 (To be completed by CGL Office)

B) Division	Agreement Manager:	MS-	Phone
600 Fuels and Transportation Division	Noel Crisostomo	6	916-653-8625

C) Contractor's Legal Name	Federal ID Number
DOE - Lawrence Berkeley National Laboratory	94-2951741

D) Title of Project
Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections

E) Term and Amount	Start Date	End Date	Amount
	9 / 01 / 2019	10 / 30 / 2021	\$ 400,000

F) Business Meeting Information			
☐ Operational agreement (see CAM Manual for list) to be approved by Executive Director			
☐ ARFVTP agreements \$75K and under delegated to Executive Director.			
Proposed Business Meeting Date	8 / 14 / 2019	☐ Consent	☒ Discussion
Business Meeting Presenter	Noel Crisostomo	Time Needed:	5 minutes
Please select one list serve. Altfuels (AB118- ARFVTP)			

Agenda Item Subject and Description
DOE-LAWRENCE BERKELEY NATIONAL LABORATORY. Proposed resolution approving Agreement 600-19-005 with the U.S. Department of Energy's Lawrence Berkeley National Laboratory for a \$400,000 contract to conduct charging infrastructure analyses of plug-in EVs used in medium-and heavy-duty on-road applications. This agreement will analyze the needed charging infrastructure and geographic load impacts of medium-and heavy-duty vehicle charging, and will conduct a scoping analysis to inform potential grid upgrades and on-road fleet load coordination. The findings from this study will be incorporated into the Energy Commission's infrastructure modeling work and infrastructure requirement projections for 2030 pursuant to AB 2127 (Ting, 2018). (Clean Transportation Program funding) Contact: Noel Crisostomo. (Staff presentation: 5 minutes)

G) California Environmental Quality Act (CEQA) Compliance
1. Is Agreement considered a "Project" under CEQA? ☐ Yes (skip to question 2) ☒ No (complete the following (PRC 21065 and 14 CCR 15378)): Explain why Agreement is not considered a "Project": Agreement will not cause direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment because it consists of a paper study and computational analyses done via computer modeling, and will not involve any construction or similar physical changes to the environment.
2. If Agreement is considered a "Project" under CEQA: ☐ a) Agreement IS exempt. (Attach draft NOE) ☐ Statutory Exemption. List PRC and/or CCR section number: _____ ☐ Categorical Exemption. List CCR section number: _____ ☐ Common Sense Exemption. 14 CCR 15061 (b) (3) Explain reason why Agreement is exempt under the above section: _____
☐ b) Agreement IS NOT exempt. (Consult with the legal office to determine next steps.) Check all that apply ☐ Initial Study ☐ Environmental Impact Report ☐ Negative Declaration ☐ Statement of Overriding Considerations ☐ Mitigated Negative Declaration

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)				
Legal Company Name:	Budget	SB	MB	DVBE
	\$ 0	☐	☐	☐
	\$ 0	☐	☐	☐
	\$ 0	☐	☐	☐

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**I) List all key partners:** (attach additional sheets as necessary)

Legal Company Name:

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List No.	Amount
ARFVTP	2019-20		\$400,000
Funding Source			\$
Funding Source			\$
Funding Source			\$
Funding Source			\$
R&D Program Area:	Select Program Area	TOTAL:	\$400,000
Explanation for "Other" selection			
Reimbursement Contract #:		Federal Agreement #:	

K) Contractor's Administrator/ Officer				Contractor's Project Manager			
Name:	Joanna Santoro			Name:	Colin Sheppard		
Address:	Lawrence Berkeley National Laboratory 1 Cyclotron Road, M/S 64R0121			Address:	Lawrence Berkeley National Laboratory 1 Cyclotron Road, M/S 90R2121		
City, State, Zip:	Berkeley, CA 94720			City, State, Zip:	Berkeley, CA 94720		
Phone:	510-486-6824	Fax:	- -	Phone:	707-616-8532	Fax:	- -
E-Mail:	jlsantoro@lbl.gov			E-Mail:	colin.sheppard@lbl.gov		

L) Selection Process Used (For amendments, address amendment exemption or NCB, do not identify solicitation type of original agreement.)

- ☐ Solicitation Select Type Solicitation #: - - # of Bids: Low Bid? ☐ No ☐ Yes
☐ Non Competitive Bid (Attach CEC 96)
☒ Exempt Other Governmental Entity

M) Contractor Entity Type

- ☐ Private Company (including non-profits)
☐ CA State Agency (including UC and CSU)
☒ Government Entity (i.e. city, county, federal government, air/water/school district, joint power authorities, university from another state)

N) Is Contractor a certified Small Business (SB), Micro Business (MB) or DVBE?

- ☒ No ☐ Yes
 If yes, check appropriate box: ☐ SB ☐ MB ☐ DVBE

O) Civil Service Considerations

- ☐ Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)
☐ Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER)
☒ The Services Contracted:
 ☐ are not available within civil service
 ☐ cannot be performed satisfactorily by civil service employees
 ☒ are of such a highly specialized or technical nature that the expert knowledge, expertise, and ability are not available through the civil service system.
☐ The Services are of such an:
 ☐ urgent
 ☐ temporary, or
 ☐ occasional nature
 that the delay to implement under civil service would frustrate their very purpose.

Justification:

Public Resources Code 25229 directs the Energy Commission to assess charging infrastructure demand and associated electrical upgrades, equipment designs, and other programs needed to meet the state's 2030 transportation electrification goals. LBNL, the proposed contractor, has the experience, expertise, knowledge, and skills to assist with the Commission's assessment. The analysis will quantify fleet duty schedules, electric energy, geographic dispersion of charging, and grid loading. The specialized skills required in the work, including convergent travel and grid network modeling, are unavailable in civil service. For example, a differentiation between the scope of this work and the state's traffic demand analysis (e.g. travel surveys conducted by the Department of Transportation) is the quantification of trip electric fueling requirements, charging power capacity, and characterization of local electric

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grid constraints. Similar to the Energy Commission's previous charging infrastructure demand assessments with national laboratory contractors for light duty vehicles, this work is unprecedented in civil service. LBNL has conducted initial analysis of similar scope for the U.S. Department of Energy, and has developed specialized modeling tools that operate on high-performance computers to analyze traffic network flows and the associated impacts on electric vehicle charging and grid systems.

P) Payment Method

- ☐ A. Reimbursement in arrears based on:
- ☐ Itemized Monthly ☐ Itemized Quarterly ☐ Flat Rate ☐ One-time
- ☒ B. Advanced Payment
- ☐ C. Other, explain:

Q) Retention

1. Is Agreement subject to retention? ☒ No ☐ Yes
- If Yes, Will retention be released prior to Agreement termination? ☐ No ☐ Yes

R) Justification of Rates

Lawrence Berkeley National Laboratory's rates for staff salary and overheaded costs are audited and approved by the U.S. Department of Energy.

S) Disabled Veteran Business Enterprise Program (DVBE)

1. ☒ Exempt (Interagency/Other Government Entity)
2. ☐ Meets DVBE Requirements DVBE Amount:\$ 0 DVBE %: _____
- ☐ Contractor is Certified DVBE
- ☐ Contractor is Subcontracting with a DVBE: Name of DVBE Company
3. ☐ Contractor selected through CMAS or MSA with no DVBE participation.
4. ☐ Requesting DVBE Exemption (attach CEC 95)

T) Miscellaneous Agreement Information

1. Will there be Work Authorizations? ☒ No ☐ Yes
2. Is the Contractor providing confidential information? ☒ No ☐ Yes
3. Is the contractor going to purchase equipment? ☒ No ☐ Yes
4. Check frequency of progress reports
- ☐ Monthly ☒ Quarterly ☐ Other...
5. Will a final report be required? ☐ No ☒ Yes
6. Is the Agreement, with amendments, longer than a year? If yes, why? ☐ No ☒ Yes
- Yes. The data collection and modeling under this agreement requires a two year timeline.

U) The following items should be attached to this CRF (as applicable)

- | | | |
|---|---|--|
| 1. Exhibit A, Scope of Work | ☐ N/A | ☒ Attached |
| 2. Exhibit B, Budget Detail | ☐ N/A | ☒ Attached |
| 3. CEC 96, NCB Request | ☒ N/A | ☐ Attached |
| 4. CEC 95, DVBE Exemption Request | ☒ N/A | ☐ Attached |
| 5. CEQA Documentation | ☒ N/A | ☐ Attached |
| 6. Resumes | ☐ N/A | ☒ Attached |
| 7. CEC 105, Questionnaire for Identifying Conflicts | | ☒ Attached |

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

Exhibit A – Scope of Work

TASK LIST

Task #	Task Name
1	Agreement Management
2	Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections for 2030
3	Electric Vehicle Charging Load and Flexibility Quantification, Scoping Analysis of High-Resolution Statewide Planning for Medium and Heavy-Duty Electric Vehicle-Grid Integration, and Model Harmonization Between BEAM and EVI-Pro
4	Participate in Infrastructure Assessment Workshops

ACRONYMS/GLOSSARY

Specific acronyms and terms used throughout this scope of work are defined as follows:

Acronym	Definition
BEAM	Behavior, Energy, Autonomy, and Mobility
BEV	Battery Electric Vehicle
CAM	Commission Agreement Manager
Contractor	Lawrence Berkeley National Laboratory
Energy Commission	California Energy Commission
EVI-Pro	Electric Vehicle Infrastructure Projections
HDV	Heavy-Duty Vehicle
HEVI-Pro	Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections
LBNL	Lawrence Berkeley National Laboratory
MDV	Medium-Duty Vehicle
PHEV	Plug-In Hybrid Electric Vehicle
V2G Sim	Vehicle-to-Grid Simulator

BACKGROUND/PROBLEM STATEMENT

California Energy Commission staff have been tasked with providing statewide electric vehicle infrastructure projections under the 2018 ZEV Action Plan Priorities Update at

page 6 to “Use the Electric Vehicle Infrastructure Projection (EVI-Pro) . . . models to build on the 2025 infrastructure need projections . . . to further forecast the charging and fueling needs to support 5 million ZEVs by 2030. Develop innovative infrastructure deployment strategies and 2030 infrastructure need projections that spur greater private investment in the construction of infrastructure.” Additionally, Assembly Bill 2127 (Ting, Statutes of 2018, Chapter 365, Public Resources Code Section 25229) and Senate Bill 1000 (Lara, Statutes of 2018, Chapter 368, Public Resources Code Section 25231) direct the Energy Commission to complete infrastructure assessment activities, which this contract will facilitate.

Further developing the Energy Commission and National Renewable Energy Laboratory-developed Electric Vehicle Infrastructure Projections (EVI-Pro) tool for 2030 will require quantifying charging infrastructure needs for medium-duty vehicles (MDVs) and heavy-duty vehicles (HDVs) operating on roads in California. Air pollution and climate change regulations are inducing electrification of these sectors and creating new demand for charging infrastructure. MDV and HDV charging infrastructure in both private and public charging applications will be necessary to support reliable on-road fleet operations. The required charging capabilities for these vehicles may exceed the capacity of existing electric utility distribution systems and require grid upgrades before deployment is possible. Projections for the electrification of on-road MDVs and HDVs will also consider transportation and electricity system interactions with light-duty vehicles.

GOALS AND OBJECTIVES OF THE AGREEMENT

The goal of this agreement is to perform a two-year research effort to support the Energy Commission's work to design and implement new modeling efforts that complement the existing EVI-Pro tool to assess optimal deployment of MDV and HDV charging infrastructure in California. Work under this agreement will include development of quantitative tools to assess on-road medium- and heavy-duty commercial mobility demands, charging infrastructure, and grid impacts using data and research from Lawrence Berkeley National Laboratory (Contractor) and in coordination with other Energy Commission contractors. This Agreement will provide scenarios, data sets, inputs, and results including but not limited to:

- Public and private charging infrastructure requirements for battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) operating in the on-road medium-duty and heavy-duty applications in 2030.
- Scenarios for the geographic adoption of medium- and heavy-duty BEVs and PHEVs
- Archetypical grid infrastructure upgrade requirements for various medium- and heavy-duty applications, using grid capacity analyses available from electric utilities.
- Electricity consumption profiles, with sensitivities for unmanaged charging, smart charging, and trip dispatch coordination across on-road vehicle classes (light-, medium-, and heavy-duty vehicles).

FORMAT/REPORTING REQUIREMENTS

Deliverables/Reports

When creating reports, the Contractor shall use and follow, unless otherwise instructed in writing by the Commission Agreement Manager (CAM), the latest version of the Consultant Reports Style Manual published on the Energy Commission's website:

http://www.energy.ca.gov/contracts/consultant_reports/index.html

Each final deliverable shall be delivered as one original, reproducible, 8 ½" by 11", camera-ready master in black ink. Illustrations and graphs shall be sized to fit an 8 ½" by 11" page and readable if printed in black and white.

Electronic File Format

The Contractor shall deliver an electronic copy (CD ROM or memory stick or as otherwise specified by the CAM) of the full text in a compatible version of Microsoft Word (.doc).

The following describes the accepted formats of electronic data and documents provided to the Energy Commission as contract deliverables and establishes the computer platforms, operating systems and software versions that will be required to review and approve all software deliverables.

- Data sets shall be in Microsoft (MS) Access or MS Excel file format.
- PC-based text documents shall be in MS Word file format.
- Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
- Project management documents shall be in MS Project file format.

TASK 1- AGREEMENT MANAGEMENT

Task 1.1 Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Contractor shall:

- Attend a "kick-off" meeting with the CAM, the Contracts Officer, and a representative of the Accounting Office. The meeting will be held via webinar or teleconference. The Contractor shall include their Project Manager, Contracts Administrator, Accounting Officer, and others designated by the CAM in this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting.

- If necessary, prepare an updated Schedule of Deliverables based on the decisions made in the kick-off meeting.

The CAM shall:

- Arrange the meeting including scheduling the date and time.
- Provide an agenda to all potential meeting participants prior to the kick-off meeting.

Deliverables:

- Updated Schedule of Deliverables
- Kick-Off Meeting Agenda (Energy Commission)

Task 1.2 Invoices

The Contractor shall:

- Prepare invoices for all reimbursable expenses incurred performing work under this Agreement in compliance with the Exhibit B of the Terms and Conditions of the Agreement. Invoices shall be submitted with the same frequency as progress reports (Task 1.4). Invoices must be submitted to the Energy Commission's Accounting Office.

Deliverables:

- Invoices

Task 1.3 Manage Subcontractors

The goal of this task is to ensure quality products, to enforce subcontractor Agreement provisions, and in the event of failure of the subcontractor to satisfactorily perform services, recommend solution to resolve the problem.

The Contractor shall:

- Manage and coordinate subcontractor activities. The Contractor is responsible for the quality of all subcontractor work and the Energy Commission will assign all work to the Contractor. If the Contractor decides to add new subcontractors, they shall 1) comply with the Terms and Conditions of the Agreement, and 2) notify the CAM who will follow the Energy Commission's process for adding or replacing subcontractors.

Deliverables:

- Letter describing the subcontracts needed, or stating that no subcontracts are required
- Draft subcontracts
- Final subcontracts

Task 1.4 Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the objectives of this Agreement.

The Contractor shall:

- Prepare progress reports which summarize all Agreement activities conducted by the Contractor for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due within 15 calendar days after the end of the reporting period. The CAM will provide the format for the progress reports.

Deliverables:

- Quarterly Progress Reports

Task 1.5 Final Report

The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work completed under this Agreement. The Final Report shall be prepared in language easily understood by the public or layperson with a limited technical background.

The Final Report must be completed before the termination date of the Agreement in accordance with the Schedule of Deliverables.

The Final Report shall be a public document. If the Contractor has obtained confidential status from the Energy Commission and will be preparing both a public and a confidential version of the Final Report, the Contractor shall perform the following subtasks for both the public and confidential versions of the Final Report.

Task 1.5.1 Final Report Outline

The Contractor shall:

- Prepare and submit a draft outline of the Final Report for review and approval. The CAM will provide written comments to the Contractor on the draft outline. The Contractor shall review the comments and discuss any issues with the recommended changes with the CAM.
- Prepare and submit the final outline of the Final Report, incorporating CAM comments.

Deliverables:

- Draft Outline of the Final Report
- Final Outline of the Final Report

Task 1.5.2 Final Report

The Contractor shall:

- Prepare the draft Final Report for this Agreement in accordance with the approved outline.
- Submit the draft Final Report for review and comment. The CAM will provide written comments to the Contractor. The Contractor shall review the comments and discuss any issues with the recommended changes with the CAM.
- Prepare and submit the Final Report, incorporating CAM comments.

Deliverables:

- Draft Final Report
- Final Report

Task 1.6 Final Meeting

The goal of this task is to discuss closeout of this Agreement and review the project.

The Contractor shall:

- Meet with Energy Commission staff prior to the term end date of this Agreement. The meeting will be held via webinar or teleconference. This meeting will be attended by the Contractor Project Manager and the CAM. The CAM will determine any additional appropriate meeting participants. The administrative and technical aspects of Agreement closeout will be discussed at the meeting.
- Present findings, conclusions, and recommended next steps (if any) for the Agreement, based on the information included in the Final Report.
- Prepare a written document of meeting agreements and unresolved activities.
- Prepare a schedule for completing the closeout activities for this Agreement, based on determinations made within the meeting.

Deliverables:

- Written documentation of meeting agreements
- Schedule for completing closeout activities

TECHNICAL TASKS

Task 2 – Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections for 2030

The goal of this task is to develop a modeling tool to quantify charging infrastructure requirements for MDVs and HDVs operating on California roads in 2030. This task will inform the analysis and comparative efforts in Task 3.

The Contractor Shall:

- Work with the CAM to develop charging infrastructure modeling objective functions and to identify vehicle deployment trajectories and geographic adoption scenarios.
- Work with the CAM to assess literature and identify necessary data resources for analysis, including those from the Energy Commission's Transportation Energy Demand Forecast, and external data sources on MDV and HDV operational requirements and BEV and PHEV technology attributes from the California Air Resources Board and other sources.
- Leverage best practice charging infrastructure modeling techniques, including but not limited to the Contractor's Behavior, Energy, Autonomy, and Mobility (BEAM) Model, Contractor's Vehicle-to-Grid Simulator (V2G Sim) and the Energy Commission and National Renewable Energy Laboratory's Electric Vehicle Infrastructure Projections (EVI-Pro) tool to enable flexible scenario analysis for Medium- and Heavy-Duty Electric Vehicle Infrastructure Projections (HEVI-Pro).
- Develop the HEVI-Pro tool.
- Quantify charging infrastructure requirements and uncertainties for California's on-road MDVs and HDVs in 2030.

Deliverables:

- Draft of the HEVI-Pro modeling framework for consideration at the Infrastructure Assessment Workshops and revisions incorporating feedback
- Summary report documenting data sources, development of assumptions and scenarios, and results quantifying charging infrastructure requirements by 2030
- Modeling tool (HEVI-Pro)

Task 3 – Electric Vehicle Charging Load and Flexibility Quantification, Scoping Analysis of High-Resolution Statewide Planning for Medium and Heavy-Duty Electric Vehicle-Grid Integration, and Model Harmonization Between BEAM and EVI-Pro

The goal of this task is to conduct a thorough assessment of the data and modeling gaps in conducting a comprehensive statewide analysis of the grid infrastructure capacity requirements associated with MDV and HDV BEVs and PHEVs, in order to identify archetypical designs for assessing make-ready electrical equipment needed to support electrification of MDV and HDV applications. This task will also assess the needs for analyzing load flexibility from MDV and HDV electrification as it extends to smart charging and the coordination of on-road vehicle dispatch. This task will leverage the results of Task 2.

The Contractor shall:

- Model and analyze use patterns for MDVs and HDVs to create a baseline load profile for BEVs and PHEVs by geographic area (e.g. county, utility, and/or forecast zone).
- Quantify possible load flexibility from managing charging with smart controls, while maintaining MDV and HDV operational requirements.
- In coordination with the CAM and Energy Commission contractors at the University of California at Davis, identify scenarios for automated vehicle growth in light-duty vehicles and potential implications for MDVs and HDVs.
- In coordination with the CAM and Energy Commission contractors at the National Renewable Energy Laboratory, identify scenarios for smart charging of light-duty vehicles and potential implications for MDVs and HDVs.
- In coordination with the CAM and Energy Commission contractors at the National Renewable Energy Laboratory, identify opportunities for model harmonization and linkages between EVI-Pro and BEAM. Use findings from this work in quantifying smart charging of light-duty vehicles and the potential applicability for MDVs and HDVs.
- Create load profiles resolved by geographic area, using the HEVI-Pro tool.
- Working with the CAM, conduct a scoping analysis to assess data availability to integrate electric distribution grid information with HEVI-Pro, including the investor-owned utilities' Integration Capacity Analysis Maps, parcel information, and other data to analyze the adequacy of distribution systems to support MDV and HDV electrification. Obtain data from utilities.
- Include in the scoping analysis an estimate of the modeling and analytical development necessary to quantify the potential for coordinating trip and

charging schedules of MDVs and HDVs with other on-road vehicles. Include example use cases and first order bounding estimates of the opportunity to enhance load flexibility via fleet coordination.

- Develop a proof-of-concept analytical framework for identifying and quantifying the types and components of make-ready electrical equipment for MDV and HDV applications with high potential for electrification by 2030. Leverage data from external sources, including the Energy Commission, the California Public Utilities Commission, other contractors, or other organizations to inform this framework.

Deliverables:

- Draft of the analyses for smart charging, automated vehicles, utility distribution system data integration, on-road vehicle dispatch coordination scenarios, and make-ready electrical equipment framework for consideration at the Infrastructure Assessment Workshops and revisions incorporating feedback.
- Draft final report on 2030 HEVI-Pro, including analyses for smart charging, automated vehicles, utility distribution system data integration, on-road vehicle dispatch coordination scenarios, and make-ready electrical equipment framework.
- Final report on 2030 HEVI-Pro, including analyses for smart charging, automated vehicles, utility distribution system data integration, on-road vehicle dispatch coordination scenarios, and make-ready electrical equipment framework.

Task 4 – Participate in Infrastructure Assessment Workshops

The goals of this task are to assist in identifying participants and developing schedules and agendas for at least two Energy Commission-led workshops, as well as to participate in the workshops and modify HEVI-Pro development based on feedback received from them. The workshops will provide a venue for discussion and collaboration among the Contractor, Energy Commission staff, Energy Commission contractors National Renewable Energy Laboratory and the University of California, Davis, invited professionals with expertise in infrastructure analysis, and public stakeholders. The workshops will collect expert guidance on the Contractor's progress and the Contractor's coordination with other projects.

The Contractor shall:

- Prepare for CAM's consideration a *List of Workshop Invited Participants* that includes the names, companies, physical and electronic addresses, and phone

numbers of potential participants. The list will be discussed at the kick-off meeting.

- o Invitees to the workshops may include qualified professionals spanning the following types of disciplines:
 - Researchers knowledgeable about the project subject matter
 - Members of trades that will apply the results of the assessment (e.g. designers, engineers, architects, contractors, and trade representatives)
 - Public interest market transformation implementers
 - Product developers relevant to the assessment
 - U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the assessment
 - Public interest environmental groups
 - Utility representatives
 - Air district staff
 - Members of relevant technical society committees
- Provide input to the CAM to assist with preparation of a workshop schedule, which will be based in part on Contractor's progress on this Contract. This includes:
 - o Discuss the workshop schedule with the CAM at the kick-off meeting. Contractor's progress on this Agreement will inform schedule of workshops.
- Provide input to the CAM for preparation of agendas for each workshop. The agendas will include presentations, facilitated discussion with Workshop Invited Participants on modeling and assumptions, and opportunities for comments from public stakeholders.
- Prepare *Workshop Presentations and Back-up Materials* for each workshop. Present progress on the development of the HEVI-Pro modeling framework in Task 2 and the scoping and scenario analyses in Task 3. Coordinate materials with the Energy Commission's electric vehicle infrastructure analysis contractors at the National Renewable Energy Laboratory and University of California at Davis.
- Participate in at least two Energy-Commission led, in-person workshops.
- Receive, summarize, and incorporate Workshop Invited Participants' and public stakeholders' feedback on assumptions and modeling into analyses and draft reports.
 - o Contractor's participation in the workshops will allow for a review of issues that have the potential to influence and interact with Contractor's infrastructure assessment at the state and federal levels, regional and municipal jurisdictions, and electric utility service territories. After each workshop, the Contractor shall consider and discuss with the CAM

information gathered during workshops for potential incorporation into technical task deliverables.

Deliverables:

- List of Workshop Invited Participants
- Workshop Presentations and Back-up Materials

STATE OF CALIFORNIA

**STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION - RE: DOE-LAWRENCE BERKELEY NATIONAL LABORATORY

RESOLVED, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the Energy Commission approves Agreement 600-19-005 with the U.S. Department of Energy's Lawrence Berkeley National Laboratory for a \$400,000 contract to conduct charging infrastructure analyses of plug-in EVs used in medium- and heavy-duty on-road applications. This agreement will analyze the needed charging infrastructure and geographic load impacts of medium- and heavy-duty vehicle charging, and will conduct a scoping analysis to inform potential grid upgrades and on-road fleet load coordination. The findings from this study will be incorporated into the Energy Commission's infrastructure modeling work and infrastructure requirement projections for 2030 pursuant to AB 2127 (Ting, 2018); and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the Energy Commission.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on August 14, 2019.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

Cody Goldthrite

Secretariat