



**CALIFORNIA
ENERGY COMMISSION**



**California Energy Commission
November 08, 2023 Business Meeting
Backup Materials for Agenda Item No 03k:
Battelle Memorial Institute dba Battelle Pacific Northwest Division**

The following backup materials for the above-referenced agenda item are available in this PDF packet as listed below:

1. Proposed Resolution
2. Contract Request Form
3. Scope of Work

STATE OF CALIFORNIA
STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION: **Battelle Memorial Institute dba Battelle Pacific Northwest Division**

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

RESOLVED, that the CEC approves agreement 600-23-003 with Battelle Memorial Institute dba Battelle Pacific Northwest Division, manager and operator of the U.S. Department of Energy's Pacific Northwest National Laboratory, for a \$979,000 contract to design and build a system to determine circuit-specific clustered electric vehicle (EV) charging load using forecasted adoption rates for individual grid system components in several utility territories in California; and

FURTHER BE IT RESOLVED, that the Executive Director or their designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC 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 CEC held on November 08, 2023.

AYE:
NAY:
ABSENT:
ABSTAIN:

Dated:

Kristine Banaag
Secretariat



CONTRACT REQUEST FORM (CRF)

A. New Agreement Number

IMPORTANT: New Agreement # to be completed by Contracts, Grants, and Loans Office.

New Agreement Number: 600-23-003

B. Division Information

1. Division Name: Fuels and Transportation Division
2. Agreement Manager: Micah Wofford
3. MS-19
4. Phone Number: 916-776-7198

C. Recipient's Information

1. Recipient's Legal Name: Battelle Memorial Institute dba Battelle Pacific Northwest Division
2. Federal ID Number: 31-4379427

D. Title of Project

Title of project: EVs at Scale for California's Distribution Grids

E. Term and Amount

1. Start Date: 11/8/2023
2. End Date: 12/31/2025
3. Amount: \$979,000

F. Business Meeting Information

1. Operational agreement to be approved by Executive Director? No
2. Are the ARFVTP agreements \$75K and under delegated to Executive Director? No
3. The Proposed Business Meeting Date: 11/8/2023
4. Consent or Discussion? Discussion
5. Business Meeting Presenter Name: Micah Wofford
6. Time Needed for Business Meeting: 5 minutes.
7. The email subscription topic is: Clean Transportation Program

Agenda Item Subject and Description:

Battelle Memorial Institute dba Battelle Pacific Northwest Division. Proposed resolution approving agreement 600-23-003 with Battelle Memorial Institute dba Battelle Pacific Northwest Division, manager and operator of the U.S. Department of Energy's Pacific Northwest National Laboratory, for a \$979,000 contract to design and build a system to determine circuit-specific clustered electric vehicle (EV) charging load using forecasted adoption rates for individual grid system components in several utility territories in California, and adopting staff's determination that this action is exempt from CEQA. (CTP funding) Contact: Micah Wofford (Staff Presentation: 5 minutes)

G. California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?

Yes

If yes, skip to question 2.



If no, complete the following (PRC 21065 and 14 CCR 15378) and 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

2. If Agreement is considered a "Project" under CEQA answer the following questions.

a) Agreement **IS** exempt?

Yes

Statutory Exemption?

No

If yes, list PRC and/or CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

PRC section number: None

CCR section number: None

Categorical Exemption?

Enter Yes or No Yes

If yes, list CCR section number(s) and separate each with a comma. If no, enter "None" and go to the next question.

CCR section number: 14 CCR 15306

Common Sense Exemption? 14 CCR 15061 (b) (3)

Yes

If yes, explain reason why Agreement is exempt under the above section. If no, enter "Not applicable" and go to the next section.

This Agreement is for the development and implementation of software in a laboratory setting and will not involve any physical construction, installation of equipment, or other activities that have potential for resulting in either a direct or indirect physical change in the environment. Rather, the work consists solely of computer-based and document-based activities.

Therefore, this Agreement is exempt under CEQA Guidelines section 15306 as basic data collection, research and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource, and exempt under CEQA Guidelines section 15061(b)(3), the common sense exemption, because it can be seen with certainty that there is no possibility the activity in question may have a significant effect on the environment.

The project will not impact an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies; does not involve any cumulative impacts of successive projects of the same type in the same place that might be considered significant; does not involve unusual circumstances that might have a significant effect on the environment; will not result in damage to scenic resources within a highway officially designated as a state scenic highway; the project site is not included on any list compiled pursuant to Government Code section 65962.5; and



the project will not cause a substantial adverse change in the significance of a historical resource. Therefore, none of the exceptions to categorical exemptions listed in CEQA Guidelines section 15300.2 apply to this project and this project will not have a significant effect on the environment.

b) Agreement **IS NOT** exempt.

IMPORTANT: consult with the legal office to determine next steps.

No

If yes, answer yes or no to all that applies. If no, list all as “no” and “None” as “yes”.

Additional Documents	Applies
Initial Study	No
Negative Declaration	No
Mitigated Negative Declaration	No
Environmental Impact Report	No
Statement of Overriding Considerations	No
None	No

H. Subcontractors

List all Subcontractors listed in the Budget (s). Insert additional rows if needed. If no subcontractors to report, enter “No subcontractors to report” and “0” to funds. **Delete** any unused rows from the table

Subcontractor Legal Company Name	Budget
No subcontractors to report	\$ 0

I. Key Partners

List all key partner(s). Insert additional rows if needed. If no key partners to report, enter “No key partners to report.” **Delete** any unused rows from the table.

Key Partner Legal Company Name
No Key Partner Legal Company to report

J. Budget Information

Include all budget information. Insert additional rows if needed. If no budget information to report, enter “N/A” for “Not Applicable” and “0” to Amount. **Delete** any unused rows from the table.



Funding Source	Funding Year of Appropriation	Budget List Number	Amount
ARFVTP	22/23	600.118L	\$979,000

TOTAL Amount: \$979,000

R&D Program Area: Enter R&D Program Area. Example: EDMFO: EDMF

Explanation for "Other" selection Enter explanation for "Other"

Reimbursement Contract #: Enter Reimbursement Contract Number

Federal Agreement #: Enter Federal Agreement Number

K. Contractor's Contact Information

1. Contractor's Administrator/Officer

Name: Mary Foraker

Address: 902 Battelle Boulevard, P.O Box 999, MSIN K9-15

City, State, Zip: Richland, WA, 99352

Phone: 509-375-3818

E-Mail: mary.foraker@pnnl.gov

2. Contractor's Project Manager

Name: Katherine Wolf

Address: 902 Battelle Boulevard

City, State, Zip: Richland, WA 99354

Phone: 509-375-6727

E-Mail: Katherine.wolf@pnnl.gov

L. Selection Process Used

There are three types of selection process. List the one used for this CRF.

Selection Process	Additional Information
Competitive Solicitation #	Not Applicable
Non Competitive Bid (<i>Attach DGS-GSPD-09-007</i> https://www.dgs.ca.gov/PD/Forms)	Not Applicable
Exempt	Sole Source for Clean Transportation Program pursuant to Health and Safety Code section 44272 (j)

M. Contractor Entity Type



Contractor Entity Type	Yes or No?
Private Company <i>(including non-profits)</i>	Yes
CA State Agency <i>(including UC and CSU)</i>	No
Government Entity <i>(i.e. city, county, federal government, air/water/school district, joint power authorities, university from another state)</i>	No

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

The contractor is a certified: Enter "SB", "MB", or "DVBE".

O. Civil Service Considerations

- a. Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)? No
- b. Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER) No
- c. The Services Contracted: Yes.

If no, go to the next question. If yes, which of the following applies to the contract? More than one can apply, list each answer choice, and separate them with a comma:

- are not available within civil service
- cannot be performed satisfactorily by civil service employee
- 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 following applies to the contract: are of such a highly specialized or technical nature that the expert knowledge, expertise, and ability are not available through the civil service system.

- d. The Services are of such an urgent, temporary, or occasional nature that the delay to implement under civil service would frustrate their very purpose?

Enter "urgent", "temporary", or "occasional nature".

Justification:

Battelle Memorial Institute is uniquely qualified to perform the tasks laid out in the project scope because they have experience developing the modeling framework for relevant electricity system power flow analyses. Battelle is the only entity capable of providing these particular services and products.

P. Payment Method



1. Is the payment method Reimbursement, Advanced Payment, or Other?
Advanced Payment
If Other, explain: Enter explanation for "Other" payment method.
2. If Reimbursement, is it in arrears based on Itemized Monthly, Itemized Quarterly, Flat Rate, or One-time?
Enter "Itemized Monthly", "Itemized Quarterly", "Flat Rate", or "One-time".

Q. Retention

Is Agreement subject to retention? No.
If Yes, Will retention be released prior to Agreement termination? Enter Yes or No.

R. Justification of Rates

Battelle Memorial Institute’s rates for staff salary and overhead costs are audited and approved by the U.S. Department of Energy.

S. Disabled Veteran Business Enterprise Program (DVBE)

Provide requested additional information.

1. Exempt (Interagency/Other Government Entity) No.
2. Meets DVBE Requirements DVBE No.
Amount: \$ 0 DVBE %:
3. Is the Contractor Certified DVBE or Subcontracting with a DVBE? If subcontracting with a DVBE, provide the name of the DVBE company. If none applies, enter “Not Applicable”.
Not Applicable
4. Contractor selected through CMAS or MSA with no DVBE participation No.
5. Requesting DVBE Exemption (attach CEC 95) Yes.

T. Miscellaneous Agreement Information

1. Will there be Work Authorizations? No.
2. Is the contractor providing confidential information? No.
3. Is the contractor going to purchase equipment? No.
4. What is the check frequency of the progress reports? Monthly, Quarterly, or Other? If Other, please provide explanation.
Quarterly
5. Will a final report be required? Yes.
6. Is the Agreement, with amendments, longer than three years? If yes, why?
No.

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

List all items that should be attached to this CRF by entering “Yes” or “No”.

Item Number	Item Name	Attached
1	Exhibit A, Scope of Work/Schedule	Yes
2	Exhibit B, Budget Detail	Yes



Item Number	Item Name	Attached
3	DGS-GSPD-09-007, NCB Request	No
4	CEC 95, DVBE Exemption Request	Yes
5	Awardee CEQA Documentation	Yes
6	Resumes	No
7	CEC 105, Questionnaire for Identifying Conflicts	Yes

Approved By

Individuals who approve this form must enter their full name and approval date in the MS Word version.

Agreement Manager: Agreement Manager Name

Approval Date: Agreement Manager's Approval Date

Office Manager: Office Manager Name

Approval Date: Office Manager's Approval Date

Deputy Director: Deputy Director Name

Approval Date: Deputy Director's Approval Date

Exhibit A SCOPE OF WORK

TASK LIST

Task #	Task Name
1	Agreement Management
2	Environment for Distribution Circuit Capacity Assessment
3	Grid Data Maps
4	Tools and Training for Distribution System Planning

ACRONYMS / GLOSSARY

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

Acronym	Definition
API	Application Programming Interface
CAM	Commission Agreement Manager
Contractor or PNNL	Battelle Memorial Institute dba Battelle Pacific Northwest
DOE	United States Department of Energy
EDGE	EVSE Deployment and Grid Evaluation Tool
CEC	California Energy Commission
EV	Electric Vehicle
EVI-Pro	Electric Vehicle Infrastructure Projections Model
EVSE	Electric Vehicle Supply Equipment i.e. Charger
GIS	Geographic Information System
HEVI-LOAD	Medium- and Heavy-Duty Electric Vehicle Infrastructure Load, Operations, and Deployment Model
IOU	Investor-Owned Utility
MDHD	Medium- and Heavy-Duty
PNNL	Pacific Northwest National Laboratory
POU	Publicly-Owned Utility
SCADA	Supervisory Control and Data Acquisition

BACKGROUND / PROBLEM STATEMENT

In the context of widespread electric vehicle (EV) charging deployment, especially for medium- and heavy-duty (MDHD) vehicles, there is a need for rigorous study of the distribution grid system. With proper planning and futureproofing, the electric grid will have the capacity to support the increase in charging load that will be a consequence of high MDHD EV adoption rates. The work by Battelle Memorial Institute dba Battelle Pacific Northwest (Contractor or PNNL), the manager and operator of the Pacific Northwest National Laboratory for the U.S. Department of Energy, under this contract constitutes an approach to develop solutions to grid-related barriers by deploying adequate grid infrastructure in a way that avoids overspending funds or overbuilding the electric system. Currently, no publicly available grid data exist to support impact analyses in publicly-owned utility (POU) territories in California. This scope of work addresses that gap and provides a way to supplement the missing information.

GOALS AND OBJECTIVES OF THE AGREEMENT

The goal of this agreement is to design and build a system to determine circuit-specific clustered EV charging load using forecasted adoption rates for individual grid system components in several utility territories in California. This project would provide new technical capabilities to utilities to perform detailed grid infrastructure analyses. The project will also support the development of the CEC's EVSE Deployment and Grid Evaluation (EDGE) tool by making robust grid data available for integration to supplement existing regional data gaps. Using an existing load flow analysis framework developed by PNNL, this project will:

- Design a tool for use by small and medium utilities to understand future EV load and the applicability of mitigation strategies such as load management or necessary primary distribution system upgrades.
- Assist utilities in creating publicly-accessible grid data portals for incorporation into the EDGE tool and for other purposes to support distribution grid planning and readiness for forecasted EV charging load.
- Provide utilities with technical capabilities that will assist grid planners in circuit planning that includes circuit-specific EV adoption forecasts to analyze the system down to the secondary distribution circuit.

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 CEC's web site:

<https://www.energy.ca.gov/funding-opportunities/funding-resources/formatting-reports-and-writing-style-consultants-california>

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 CEC 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.

Software Application Development

If this scope of work includes any software application development, including but not limited to databases, websites, models, or modeling tools, contractor shall utilize the following standard Application Architecture components in compatible versions:

Microsoft ASP.NET framework (version 3.5 and up) Recommend 4.0
Microsoft Internet Information Services (IIS), (version 6 and up) Recommend 7.5
Visual Studio.NET (version 2008 and up) Recommend 2010
C# Programming Language with Presentation (UI), Business Object and Data Layers
SQL (Structured Query Language)
Microsoft SQL Server 2008, Stored Procedures Recommend 2008 R2
Microsoft SQL Reporting Services Recommend 2008 R2
XML (external interfaces)

Any exceptions to the Software Application Development requirements above must be approved in writing by the CEC Information Technology Services Branch.

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 Commission Agreement Officer, and a representative of the CEC Accounting Office. The meeting may be held remotely. 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:

- An Updated Schedule of Deliverables (if applicable)
- Kick-Off Meeting Agenda (CEC)

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 CEC’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 CEC 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 CEC's process for adding or replacing subcontractors.

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 on time and within budget.

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 CEC 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 CEC staff prior to the term end date of this Agreement. The meeting may be held remotely. 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 - Environment for Distribution Circuit Capacity Assessment

The goal of this task is to develop an automated modeling environment to assist California's utilities, including publicly-owned utilities, to estimate the available circuit capacity of their electric grid system to support charging needs of EVs in the future in their service territories. The tool will address the estimation of capacity at the primary (and, where feasible, secondary) circuit level, revealing any capacity limitations spurred by large-scale adoption of EVs and associated charging. The tool will also assess the applicability of mitigation strategies for adverse grid conditions, such as load management or necessary distribution system upgrades.

The Contractor shall:

- Identify two California utilities to obtain distribution circuit information from to use as test cases for the development of the tool.

- Data will be obtained for five circuits per utility.
- Develop a process to estimate circuit-specific EV adoption forecasts and apply to the above circuits.
 - Synchronize and calibrate using existing EV forecast data available to the CEC.
- Obtain circuit-specific data from the utilities to quantify current load characteristics.
- Develop a tool that uses utility data, circuit-specific EV forecast information, and a realistic mix of travel behaviors to identify potential bottlenecks and mitigation options.
- Develop a guide document that explains the use of the tool with a target audience of utility planning staff.

Deliverables:

- Tool that estimates distribution circuit EV hosting capacity at the primary circuit level.
- A guide document explaining the use of the tool, targeted at utility planners.

Task 3 - Grid Data Maps

The goal of this task is to assist POUs (and other small utilities, as feasible) in creating publicly-accessible grid data maps – similar to the CPUC-mandated Integration Capacity Analysis (ICA) maps that the three largest IOUs currently maintain – for incorporation into the CEC’s EDGE tool. The grid data map will be targeted at charging infrastructure developers and will provide users with an understanding of circuit capacities at the substation level.

The Contractor shall:

- Collect primary and, where applicable, secondary distribution grid data for most or all POUs in California.
 - These data could include details on existing grid infrastructure (e.g., transformer and conductor capacities), supervisory control and data acquisition (SCADA) system data on existing load patterns, and geographic information system (GIS) data on grid equipment locations.
- Create a backend database to house the collected data.
- Develop application programming interface (API) queries to assist with EDGE integration.
- Plot the grid infrastructure data on a GIS layout to enable integration with the EDGE tool.

Deliverables:

- GIS map representing the grid infrastructure for most or all POUs
- Backend database with POU grid infrastructure data
- API queries to access the database for integration with EDGE

Task 4 - Tools and Training for Distribution System Planning

The goal of this task is to develop a suite of training tools to assist utility planners with infrastructure planning in the context of growing EV adoption in their territories. This task will leverage the process for circuit-level EV forecast estimation from Task 2, and prior work funded through the United States Department of Energy (DOE), to develop the suite of tools to help planners identify bottlenecks in their system down to the secondary circuit level. The circuit-level EV forecasting portion of the tool will incorporate assumptions from the Electric Vehicle Infrastructure Projections Model (EVI-Pro) and the Medium- and Heavy-Duty Electric Vehicle Infrastructure Load, Operations, and Deployment Model (HEVI-LOAD) for projected growth and locations of light-, medium-, and heavy-duty EVs.

The Contractor shall:

- Develop a toolset which includes circuit-level EV forecasting and circuit analysis capabilities.
- Develop training materials including manuals, presentations, screenshots, and videos (as applicable) for utility planners.
- Once the training is available and until the end of this contract term, provide technical assistance and troubleshooting to the utility planners.

Deliverables:

- Toolset for circuit-level EV adoption forecasting and circuit analysis
- Training materials for utility planners
- Record of technical assistance and troubleshooting provided to utility planners to be included in the Final Report