



**CALIFORNIA
ENERGY COMMISSION**



**CALIFORNIA
NATURAL
RESOURCES
AGENCY**

**California Energy Commission
June 12, 2024 Business Meeting
Backup Materials for Aspen Environmental Group**

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

[PROPOSED]

RESOLUTION NO: 24-0612-03d

STATE OF CALIFORNIA

**STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION**

RESOLUTION: Aspen Environmental Group

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 800-23-012 with Aspen Environmental Group for up to \$2,500,000. The agreement will initially be for \$750,000. Additional funding, up to the \$2,500,000 total, will require approval from the CEC's Executive Director through an amendment. Aspen will provide technical assistance to the Energy Assessments Division, CEC on a wide variety of analyses including to evaluate Electricity System and Infrastructure Analysis, Improve Energy Demand Forecasting Methods and Conduct Other Energy Demand Analyses, Natural Gas Assessments and Forecasting, and Data Management. Staff recommends conditional approval of this item based upon funding availability as of the 2024 Budget Act; 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 June 12, 2024.

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: 800-23-012

B. Division Information

1. Division Name: Energy Assessments
2. Agreement Manager: Harinder Kaur
3. MS-"Not Applicable"
4. Phone Number: 916-776-3731

C. Contractor's Information

1. Contractor's Legal Name: Aspen Environmental Group
2. Federal ID Number: 95-4337914

D. Title of Project

Title of project: Technical Support for Energy Assessments

E. Term and Amount

1. Start Date: June 30, 2024
2. End Date: June 29, 2027
3. Amount: \$750,000

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: June 12, 2024
4. Consent or Discussion? Consent
5. Business Meeting Presenter Name: N/A
6. Time Needed for Business Meeting: N/A
7. The email subscription topic is: EnergyPolicy (Integrated Energy Policy Report)

Agenda Item Subject and Description:

ASPEN ENVIROMENTAL GROUP. Proposed resolution approving Agreement 800-23-012 with Aspen Environmental Group for up to \$2,500,000. The agreement will initially be for \$750,000. Additional funding, up to the \$2,500,000 total, will require approval from the CEC's Executive Director through an amendment. Aspen will provide technical assistance to the Energy Assessments Division in a wide variety of analyses to evaluate Electricity System and Infrastructure Analysis, Improve Energy Demand Forecasting Methods and Conduct Other Energy Demand Analyses, Natural Gas Assessments and Forecasting, and Data Management. Staff recommends conditional approval of this item based upon funding availability as of the 2024 Budget Act. (Funding Source: ERPA) Contact: Harinder Kaur

G. California Environmental Quality Act (CEQA) Compliance

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

No

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: the work in this contract is providing technical expertise to the Energy Assessments Division, which involves forecasting and analysis.

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

a) Agreement IS exempt?

N/A

Statutory Exemption?

N/A

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?

N/A

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: "None"

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

N/A

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

"Not applicable"

b) Agreement IS NOT exempt.

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

N/A

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. Is this project considered "Infrastructure"?

No

I. Subcontractors



STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION

Contract Request Form
CEC-94 (Revised 01/2024)

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
ADM Associates Inc.	\$66,305.25
Alan Sanstad	\$ "0"
Better Climate Research and Policy Analysis	\$ "0"
Bruce McCarl	\$ "0"
David Brownstone	\$ "0"
David Bunch	\$ "0"
Energy and Environmental Economics, Inc.	\$31,051.15
Energeia	\$ "0"
Flynn Resource Consultants, Inc.	\$ "0"
GC Green, Incorporated. (DVBE)	\$89,702.25
Grid Subject Matter Experts	\$ "0"
Guidehouse, Inc.	\$10,673.44
Hanover Strategy Advisors, LLC	\$ "0"
Hillard Huntington	\$ "0"
ICF International, Inc.	\$131,433.96
Itron, Inc.	\$51,810.00
Ken Parris	\$800.00
Marshall Miller	\$ "0"
Michael Mastrandrea	\$ "0"
MRW & Associates, LLC	\$ "0"
Rand Corporation	\$ "0"
Verdant Associates, LLC	\$88,920.00
Walker & Associates	\$ "0"

J. 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
None



K. 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
ERPA	2023	800.001	\$750,000.00

TOTAL Amount: \$750,000.00

R&D Program Area: N/A

Explanation for "Other" selection N/A

Reimbursement Contract #: N/A

Federal Agreement #: N/A

L. Contractor's Contact Information

1. Contractor's Administrator/Officer

Name: Sevan Koshkarian

Address: 5020 Chesebro Road Suite 200

City, State, Zip: Agoura Hills, CA 91301

Phone: 818-338-6740

E-Mail: skoshkarian@aspeneg.com

2. Contractor's Project Manager

Name: Catherine Elder

Address: 8801 Folsom Blvd Suite 290

City, State, Zip: Sacramento, CA 95826

Phone: 916-379-0350

E-Mail: kelder@aspeneg.com

M. Selection Process Used

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

Selection Process	Additional Information
Competitive Solicitation #	RFP-23-802, # of bids 2
Non Competitive Bid (<i>Attach DGS-GSPD-09-007</i> https://www.dgs.ca.gov/PD/Forms)	"Not Applicable"
Exempt	"Not Applicable"

N. 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

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

No

P. Civil Service Considerations

- Not Applicable (Agreement is with a CA State Entity or a membership/co-sponsorship)? No
- Public Resources Code 25620, et seq., authorizes the Commission to contract for the subject work. (PIER) No
- 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 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 Services are of such an urgent, temporary, or occasional nature that the delay to implement under civil service would frustrate their very purpose?

"Urgent".

Justification:

This generation and transmission system, forecasting, resources, analytical methods, and energy market professional services technical support contract will provide the Energy Commission access to energy science, engineering, and economic experts that are not available within state service. The Contractor will work under the direction of the Energy Commission to complete the analyses.

Q. Payment Method



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

R. Retention

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

S. Justification of Rates

The rates are similar to the rates for this company in a previous contact (800-20-005).

T. Disabled Veteran Business Enterprise Program (DVBE)

Provide requested additional information.

1. Exempt (Interagency/Other Government Entity) No.
2. Meets DVBE Requirements DVBE Yes.
Amount: \$ 89,702.25 DVBE %: 11.9%
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".
GC Green, Incorporated.
4. Contractor selected through CMAS or MSA with no DVBE participation No.
5. Requesting DVBE Exemption (attach CEC 95) No.

U. Miscellaneous Agreement Information

1. Will there be Work Authorizations? Yes.
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.
Monthly
5. Will a final report be required? No.
6. Is the Agreement, with amendments, longer than three years? If yes, why?
No

V. 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
3	DGS-GSPD-09-007, NCB Request	No
4	CEC 95, DVBE Exemption Request	No



STATE OF CALIFORNIA
CALIFORNIA ENERGY COMMISSION

Contract Request Form
CEC-94 (Revised 01/2024)

Item Number	Item Name	Attached
5	Awardee CEQA Documentation	No
6	Resumes	Yes
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:

Approval Date:

Office Manager:

Approval Date:

Deputy Director:

Approval Date:

Exhibit A

SCOPE OF WORK

Scope of Work and Deliverables

ABOUT THIS SECTION

This section describes the contract scope of work, deliverables and due dates under the direction of the CAM.

The chosen “Contractor” will assist the Energy Assessments Division by performing the tasks specified in this Scope of Work under the direction of the Energy Commission’s CAM. The CAM will oversee the management and administration of the Agreement. The Agreement includes defined tasks for Task 1. Additionally, Work Authorizations (WAs) can be used on an as-needed basis as described below. The specific activities and the degree of effort for each activity may vary. Work assigned through WAs will depend on availability of funding as well as the Energy Commission’s demand for service as determined by the CAM.

DEFINITION OF KEY WORDS FOR SCOPE OF WORK AND DELIVERABLES

Important definitions for the Scope of Work are presented below:

Word/Term	Definition
CAM	Commission Agreement Manager
CEC	California Energy Commission
PM	Program Manager
RFP	Request for Proposal
State	State of California
WAs	Work Authorizations

WORK AUTHORIZATIONS

This Agreement shall be conducted as a “work authorization” Agreement except for Task 1 work. For Tasks 2 - 5, no work shall be undertaken unless authorized by the Contract Agreement Manager (CAM) through a specific written document called a “work authorization.” The CAM will prepare and issue the written work authorizations and shall set a maximum price, budget, and schedule for the work to be performed. The CAM will work, in consultation with the Contractor, to assign work to either the Contractor or a Subcontractor.

GENERAL REQUIREMENTS OR GOALS AND OBJECTIVES

TASK LIST

Task #	Task Name
1	Agreement Management
2	Electricity System and Infrastructure Analysis
3	Improve Energy Demand Forecasting Methods and Conduct Other Energy Demand Analyses.
4	Natural Gas Assessments and Forecasting
5	Data Management

TASK 1- AGREEMENT MANAGEMENT

The goal of this task is to provide for overall administrative management of the contract by the Contractor. In addition to the specific tasks below, the Contractor's Program Manager (PM) is responsible for directing the work performed by the Contractor Team to meet the objectives of the Agreement. The PM is also responsible for ensuring the quality and timely delivery of all deliverables, both technical and administrative from the Contractor Team. The PM will be the primary point of contact for the Contractor Team and is responsible for oversight of all work under this contract. The PM is also responsible for managing all subcontractor work, including ensuring quality products, enforcing subcontractor Agreement provisions, and in the event of failure of the subcontractor to satisfactorily perform services, recommending solutions to resolve the problem.

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 and a representative of the CEC Accounting Office. The meeting will be held via Zoom 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.

- Submit signed Information Security Program Plan Attestation that Contractor has an Information Security Program Plan (ISPP) that meets the minimum requirements as stated in SAM 5300 and any other applicable law. CAM will provide ISPP Attestation form.
- Submit signed Non-Disclosure Agreements (NDAs) from Contractor and Subcontractor employees prior to the sharing of confidential information with the employees. CAM will provide NDA form.
- Contractor shall ensure that all individuals employed by Contractor or a Subcontractor who will have access to confidential information take an annual security awareness training and submit the Employee Security Awareness Training Certificates.
- If necessary, preparation and amendment of Form 805 to identify any individuals designated as consultants, and verification of completed Form 700s and ethics training as required pursuant to Exhibit H Sections 2(d) & (e).
- Submit verification that confidential information and personal information is destroyed at agreement end (or when work is completed).

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)
- Signed Non-Disclosure Agreement from Contractor and Subcontractor employees
- Signed Information Security Program Plan Attestation Form
- Employee Security Awareness Training Certificates
- Form 805, and verification of Form 700s and ethics training
- Verification of destruction of confidential information and personal information

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 1.3). Invoices must be submitted to the CEC's Accounting Office.

Deliverables:

- Invoices

Task 1.3 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:

- Monthly Progress Reports

Task 1.4 Work Authorizations

The goal of this task is to develop and manage all technical and budgetary aspects of work authorizations (WA) in accordance with the requirements of this Agreement for work to be performed under Technical Tasks 2 thru Task 5.

The Contractor shall:

- Help prepare WAs in accordance with the contract requirements.
- The WA format and content shall be specified by the CAM.
- The WA end date should be no later than 60 days prior to the term end date of the Agreement.
- Submit all required WA Documents to the CAM.
- Administer WAs.
- Establish and maintain contractual agreements with entities performing work.
- Develop project schedules.
- Manage Subcontractor activities in accordance with the Agreement terms and conditions.
- Provide oversight and first-level review of reports and documentation, and comment on the content of deliverables.
- Review and approve all WA invoices.
- Provide audit and accounting services for all WAs.
- Immediately report any significant variances affecting performance of WAs and recommend mitigation actions for consideration by the Project Manager and CAM. Examples of significant variances include the inability to submit deliverables by key WA due dates, unavailability of key personnel that will affect timely submittal of deliverables, and key technical issues that would require change in scope, redirection of the effort, or discontinuation of the project.

- Coordinate with the CAM to close out completed WAs and remaining unallocated balances.
- Monitor and track each WA and the overall agreement.
- Provide updated WA project schedules, as needed, and determine if each WA is on schedule and deliverables are satisfactory.
- Determine the fiscal status of each WA and the overall Agreement.
- Prevent cost overruns.
- Track the start, progress, and closure of each WA.

Deliverables:

- WA Documents

TECHNICAL TASKS

TASK 2 ELECTRICITY SYSTEM AND INFRASTRUCTURE ANALYSIS

The goal of this task is to obtain a range of analytical expertise on electricity system supply resources and reliability.

At the direction of the CAM through a properly executed Work Authorization, the Contractor shall:

- 2.1 Provide expertise and analyses on the full range of electricity system resources, including fossil generation, solar, wind, energy storage, hydropower, geothermal, nuclear, and technologies using low carbon fuels, such as renewable natural gas and hydrogen. Analysis may include resources interconnected at the distribution or transmission level. Analyses may include evaluating current and historical resource deployment in California, US and internationally, performance characteristics, costs of the resources and associated support infrastructure. Analyses may include evaluating current and future market trends for these technologies and assessing the supply chains for these technologies. Analysis may also include evaluation of transmission and distribution system components.
- 2.2 Conduct analysis on resource plans for load serving entities in the California Independent System Operator and publicly owned utility territories to characterize trends and identify potential excesses or shortfalls in resource availability to meet system reliability requirement and state clean energy policies. Support the identification and investigation of issues associated with resource availability in California and the west. Provide support in evaluating the nexus between the gas system (e.g., prices, shortfalls) and fossil plant operation and availability and electricity system prices.

- 2.3 Provide expertise and analyses on electric system reliability, including developing new or using existing CEC models to evaluate electric system reliability and risks to reliability at different time scales, such as imminent summer conditions, and longer outlooks (e.g., five-, ten-, and fifteen-year timescales). Support the development of relevant inputs and assumptions for the models and different reliability scenarios for evaluation. Provide modeling and model quality control and validation support. Provide support in identifying potential additional (e.g., contingency) resources that may be necessary to support grid reliability during an extreme event. Assist in tracking resource availability during extreme events.
- 2.4 Support tracking and evaluation of electricity system trends and issues across the western United States for their potential impact on California.
- 2.5 Provide expertise on demand flexibility to support reliability and state clean energy goals. This includes evaluating current and historical performance of distributed energy resources (e.g., solar, storage, and flexible appliances) using publicly available data or using interval meter data provided by CEC and their control strategies. Analysis may include assessment in different utility or load serving entities in California and will require different approaches depending on the availability of data. Support may also include evaluating virtual power plants for their ability to support electric system reliability on a larger scale in California.
- 2.6 Provide support in analyzing current potential and future threats to energy systems (electricity, natural gas, and petroleum) in California to support CEC's emergency response role. This may include conducting risk assessments to different energy system infrastructure and supplies. Support may also be required to update operational plans for emergencies.
- 2.7 Provide support in developing reports and presentations on electric system supply and reliability analyses for audiences of different technical levels. Support may also be required to develop and maintain dashboards in Tableau for use by CEC internally or on the publicly available CEC website.

TASK 3 IMPROVE ENERGY DEMAND FORECASTING METHODS AND CONDUCT OTHER ENERGY DEMAND ANALYSES

The goals of this task are to 1) obtain technical assistance in the preparation and improvement of forecasts of annual and hourly energy demand, energy efficiency savings, fuel substitution impacts, and transportation energy demand; and 2) obtain

technical assistance and recommendations for other energy demand analyses which are not directly related to the forecast.

At the direction of the CAM through a properly executed Work Authorization, the Contractor shall:

- 3.1 Provide objective and independent expert assistance to make recommendations for improvements in or modifications to electricity, natural gas, and transportation energy demand forecasting methods, models, and data availability. Provide analyses of the advantages and disadvantages of adopting new methods and data related to forecasting. Identify and assess various hourly demand and 1-in-X peak demand forecasting methodologies and techniques used by academic and other experts. Assist staff in implementing demand forecasting improvements.
- 3.2 Recommend and implement a methodology to develop hourly load shapes for different geographic zones throughout the Western Electricity Coordinating Council region.
- 3.3 Transfer or migrate energy demand models to modern platforms such as R or Python.
- 3.4 Conduct energy use surveys or interviews. Provide analysis of information gathered during surveys or interviews and develop inputs to the forecasting models for the residential, commercial building, industrial, agricultural, and transportation sectors.
- 3.5 Provide analysis and data collection in support of efforts related to building and appliance standards, building electrification, energy efficiency and demand side programs and energy demand. Analyze energy demand impacts of residential and commercial building decarbonization strategies, as well as industrial and agricultural sector decarbonization strategies and assess impacts on energy demand. Assist staff in implementing methods to estimate energy demand impacts in the demand forecast.
- 3.6 Assess the impacts of climate change on energy demand and the uncertainty around energy demand. Assess drought impacts on the agricultural sector energy demand. Assess wildfire impacts on energy demand such as increased adoption and use of AC and decreased solar PV generation.
- 3.7 Evaluate retail electricity and natural gas price forecasting methodologies for residential, commercial, industrial, and transportation sectors incorporating input variables used in developing the electricity demand forecast.
- 3.8 Analyze energy and travel demand impact of California's transportation decarbonization goals and strategies, such as electrification, shared and micro mobility, sustainable land use development, and alternative fuels (e.g. hydrogen).

- 3.9 Develop recommendations for further geographic disaggregation of Energy Commission demand forecasts. Identify how further geographic disaggregation can be supported, given availability of utility customer data, economic-demographic historical and forecast data, efficiency program and self-generation data, and other required inputs. Provide recommendations for modifying Energy Commission models to have the capability to forecast at higher levels of disaggregation and assist staff in implementing these recommendations.
- 3.10 Provide analysis and data collection in support of transportation energy demand forecasting. Provide analysis and evaluation of existing and future issues associated with the adoption of electric and plug-in hybrid electric vehicles in California including the influence of federal and state policy and technology development. Identify and obtain data pertaining to historical and projected vehicle attributes and format these attributes for use in Energy Commission forecasting models.
- 3.11 Provide analysis and data collection in support of developing electric vehicle charging load shapes that incorporate vehicle grid integration technologies and using EVs as battery storage.
- 3.12 Provide analytical support for sensitivity analysis and exploratory modeling to identify key uncertainties regarding customer demand and resources. Provide recommendations and strategies to incorporate uncertainty analysis into the forecasting process.
- 3.13 Identify, assess, and implement methodologies to forecast adoption of efficiency measures, building electrification measures, and demand response participation.
- 3.14 Evaluate the potential future adoption, structure, and impact of new tariff rates on energy consumption and peak including time-of-use tariffs. Provide analysis on different electricity rate structures including time-of-use that may encourage consumer investments in load reduction, storage or distributed generation technologies.
- 3.15 Provide staff with training on forecasting methods and models, and other analytical techniques or methods that could be used to improve the CA Energy Demand Forecast. Train staff in pre/post regression analysis of customer-level interval meter billing data to determine load impacts from technologies such as electric vehicles, water or space heating electrification, or demand response.

TASK 4 NATURAL GAS ASSESSMENTS AND FORECASTING

The goal of this task is to obtain a range of analytical expertise on natural gas system supply resources and reliability.

At the direction of the CAM through a properly executed Work Authorization, the Contractor shall:

- 4.1 Provide support in conducting assessments of California's transmission and distribution natural gas infrastructure, including gas storage facilities, pipelines, and other system components, in the context of operations, safety, and reliability. Support may include evaluating impacts to natural gas availability to core and non-core customers from system failures within and outside California. Provide expertise on natural gas infrastructure operating and maintenance costs and other operating parameters and conduct analysis to inform the state's transition away from natural gas and the impacts on infrastructure and rates.
- 4.2 Provide assessments of global, national, and local natural gas trends (including supply and prices), issues, and events and synthesize the effects to California's natural gas market. This includes tracking and understanding the impacts of potential or new federal or state regulations to California's natural gas system.
- 4.3 Provide expertise and analyses to understand the operational interdependencies between the natural gas and electricity systems in California and west-wide. Support may include evaluating the potential for retirement or reconfiguration of fossil gas plants in California and the west and the resulting impact to natural gas demand and infrastructure.
- 4.4 Provide expertise in hydraulic modeling methods to assess gas system operations under various gas demand scenarios and make findings and recommendations.
- 4.5 Provide expertise on and analysis of low carbon fuels, such as renewable natural gas and hydrogen, and their potential role in the state's efforts to decarbonize the natural gas system. This may include understand the current California, US and international markets, generation technologies, and the conversion of these resources to support different sectors (e.g., industrial, commercial, and residential).
- 4.6 Provide support in developing reports and presentations on natural gas system supply and reliability analyses for audiences of different technical levels. Support may also be required to develop and maintain dashboards in Tableau for use by CEC internally or on the publicly available CEC website.

TASK 5: DATA MANAGEMENT

The goal of this task is to improve the Energy Assessments Division's data products.

At the direction of the CAM through a properly executed Work Authorization, the Contractor shall:

- 5.1 Provide technical support with the development and implementation of systems needed to organize, manage, and present large volumes of energy data stored in the data warehouse.

- 5.2 Provide technical support in the development and implementation of data visualizations including tables, queries, views, scripts, reports, and other tools.
- 5.3 Provide technical support to help facilitate working groups relevant to database structures, program requirements, and form development.
- 5.4 Provide technical support, training, and best practices for cloud database management.

SCHEDULE OF DELIVERABLES AND DUE DATES

Note: Actual deliverables will be specified in each Work Authorization

Task Number	Deliverable	Due Date
1	Agreement Management	Ongoing
1.1	<ul style="list-style-type: none"> Draft and Final Agendas Summary of the kickoff to be included in the monthly progress report. 	Monthly
	Monthly invoice (to be included with monthly progress reports)	Monthly
1.3	Monthly Progress Reports (including monthly invoice)	Monthly
1.4	WA Document	Monthly
2	Electricity System and Infrastructure Analysis	To Be Determined in WA.
3	Improve Energy Demand Forecasting Methods and Conduct Other Energy Demand Analyses	To Be Determined in WA
4	Natural Gas Assessments and Forecasting	To Be Determined in WA
5	Data Management	To Be Determined in WA