STATE OF CALIFORNIA

CONTRACT REQUEST FORM (CRF)

CEC-94 (Revised 12/2019) CALIFORNIA ENERGY COMMISSION

A) New Agreement # 800-20-005 (to be completed by CGL office)

B) Division	Agreement Manager:	MS-	Phone
800 Energy Assessments Division	Harinder Kaur	21	916-776-3731

C) Contractor's Legal Name	Federal ID #
Aspen Environmental Group	95-4337914

D) Title of Project
Technical Support For Energy Assessments

E) Term and Amount

Start Date	End Date	Amount
6 / 30 / 2021	6/29/ 2024	$ $2,500,000

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 06 / 09 / 2021 ☐ Consent ☒ Discussion

Business Meeting Presenter David Erne Time Needed: 5 minutes

Please select one list serve. EnergyPolicy (Integrated Energy Policy Report)

Agenda Item Subject and Description:

ASPEN ENVIROMENTAL GROUP. Proposed resolution approving Agreement 800-20-005 with Aspen Environmental Group for $2,500,000. Aspen will provide technical assistance to the Energy Assessments Division in a wide variety of analysis including to evaluate electric and natural gas system reliability, improve demand forecasting, assess resource availability, and evaluate distributed generation performance and impacts. (Funding Source: ERPA and COIA) Contact: David Erne (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 the work in this contact is providing technical expertise to the Energy Assessments Division, which involves forecasting and analysis.

2. If Agreement is considered a "Project" under CEQA:

   a) ☐ Agreement **IS** exempt.

   ☐ 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
- ☐ Negative Declaration
- ☐ Mitigated Negative Declaration
- ☐ Environmental Impact Report
- ☐ Statement of Overriding Considerations

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name:	**Budget**
See Attachment 1	$ 0.00
	$ 0.00
	$ 0.00

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

Legal Company Name:

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
State - ERPA	2020/2021	800.001	$700,000
State - COIA	2020/2021	800.001c	$300,000
State - ERPA	2021/2022		$750,000
State - ERPA	2022/2023		$750,000
Funding Source			$

R&D Program Area: Select Program Area TOTAL: $2,500,000

Explanation for “Other” selection

Reimbursement Contract #: Federal Agreement #:

K) 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

L) Selection Process Used

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☒ Solicitation RFP Solicitation #: RFP-20-802 # of Bids: 1 Low Bid ☒ No ☐ Yes

☐ Non Competitive Bid *(Attach DGS-GSPD-09-007 https://www.dgs.ca.gov/PD/Forms)*

☐ Exempt Select Exemption (see instructions)

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? Yes

If yes, check appropriate box(es): ☒ 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:

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 aforementioned analyses.

P) Payment Method

1. ☒ Reimbursement in arrears based on:
   ☒ Itemized Monthly ☐ Itemized Quarterly ☐ Flat Rate ☐ One-time
2. ☐ Advanced Payment
3. ☐ Other, explain:

Q) Retention

Is Agreement subject to retention? ☐ No ☒ Yes

If Yes, Will retention be released prior to Agreement termination? ☐ No ☒ Yes

R) Justification of Rates

The rates are similar to the rates for this company in a previous contact.

STATE OF CALIFORNIA

CONTRACT REQUEST FORM (CRF)

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S) Disabled Veteran Business Enterprise Program (DVBE)

1. ☐ Exempt (Interagency/Other Government Entity)
2. ☒ Meets DVBE Requirements DVBE Amount:$ 150,000 DVBE %: 6%
   a. ☐ Contractor is Certified DVBE
   b. ☒ Contractor is Subcontracting with a DVBE: Granite Data Solutions
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 three years? If yes, why? ☐ No ☒

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.	DGS-GSPD-09-007, 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**

Attachment

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)				
Legal Company Name:	**Budget**	**SB**	**MB**	**DVBE**
The Adept Group, Inc.	$	X		X
ADM Associates, Inc.	$			
Alan Sanstad	$			
The Applied Economics Clinic	$			
Better Climate Research and Policy Analysis	$	X		
Corinne Scown	$			
David Brownstone	$			
David Bunch	$			
DH Green Energy, Inc.	$	X		X
Demand Side Analytics, LLC	$			
Energy and Environmental Economics, Inc.	$			
Flynn Resource Consultants, Inc.	$	X		
GC Green, Inc.	$	X		X
GEI Consultants, Inc.	$			
Granite Data Solutions	$			X
Grid Subject Matter Experts	$	X		
Guidehouse, Inc.	$			
Hanover Startegy Advisors, LLC	$			
Hillard Huntington	$			
ICF International, Inc.	$			
Itron, Inc.	$			
Katie Coughlin	$			
Kevala, Inc.	$			
Marshall Miller	$			
Maximillian Auffhammer	$			
Michel P. Florio	$			
Mobius Risk Group, LLC	$			
MRW & Associates, LLC	$			
Rand Corporation	$			

Attachment

Stillwater Associates, LLC	$			
Trinity Consultants, Inc	$			
Verdant Associates, LLC	$	X		
Walker & Associates	$			
Xanthus Consulting International, Inc.	$			

Scope of Work and Deliverables

This section describes the contract's scope of work, deliverables, and due dates under this agreement.

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 resulting agreement will include 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
CARB	California Air Resources Board
CAISO	California Independent System Operator
CPUC	California Public Utilities Commission
CAM	Commission Agreement Manager
CEC	California Energy Commission
DAWG	Demand Analysis Working Group
DMV	Department of Motor Vehicles
DER	Distributed Energy Resource
EM&V	Evaluation, Measurement, and Verification
GHG	Green House Gases
IEPR	Integrated Energy Policy Report
IOU	Investor Owned Utility
MW	Mega Watts
PEV	Plug-in Electric Vehicle
POU	Publicly Owned Utility
RFP	Request for Proposal, this entire document
State	State of California
SCIT	Southern California Import Transmission
VMT	Vehicle Miles Traveled
WAs	Work Authorizations

WECC	Western Electricity Coordinating Council
ZEV	Zero Emission Vehicle

WORK AUTHORIZATIONS

The Agreement that results from this solicitation shall be conducted as a “work authorization” Agreement except for Task 1 work. For Tasks 2 - 8, no work shall be undertaken unless authorized by the 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 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.

Expected Total Hours: 50

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The Contractor shall:

- Attend a "kick-off" meeting with the Contract Agreement Manager (CAM), the Contracts Officer, and a representative of the Accounting Office. The meeting will take place by electronic conferencing (e.g., Zoom). 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)

TASK 1.2 INVOICES

Expected Total Hours: 200

Expected General Classifications: Accountant, Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

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.

Expected Total Hours: 200

Expected General Classifications: Administrative Managers, Program Managers

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.

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.

Expected Total Hours: 200

Expected General Classifications: Administrative Managers, Program Managers

The Contractor shall:
- Prepare progress reports which summarize all Agreement activities conducted by the Contractor or subcontractors 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 1.5 Work Authorizations

The goal of this subtask is to develop and manage all technical and budgetary aspects of Work Authorizations (WAs) in accordance with the requirements of this Agreement for work to be performed under Task 2 thru Task 9.

Expected Total Hours: 150

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

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. This allows the Contractor time to complete closeout activities for all WAs and to prepare the Final Report.

- 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 effect 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

TASK 1.6 FINAL REPORT

Expected Total Hours: 150
Expected General Classifications: Administrative Managers, Program Managers

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.

Deliverables:

- Draft of Final Report and Final Report

Schedule of Deliverables

Please see attachment 1 Schedule of Deliverables.

TECHNICAL TASKS

TASK 2 ELECTRICITY SYSTEM AND INFRASTRUCTURE ANALYSIS

Expected Total Hours: 4210

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain a range of analytical studies in the field of electric transmission, distribution and generation system analysis, planning and regulation. These assignments will be varied, complex, and technical, including engineering and economic studies related to integrated transmission, distribution and generation reliability issues. [The following sub-tasks are divided into core electricity system topic areas.]

Generation & Transmission System Assessment

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

2.1 Conduct analysis of local capacity area capacity requirements within the CAISO over multiple year time frames (from 1 – 25 years) under alternative energy demand, power plant retirement/development, and transmission system upgrade scenarios. Contractor shall acquire, or if not available, develop power flow base and transient stability base cases and prepare analyses of scenario variants to a base case using power flow and transient stability techniques equivalent to those prepared by the CAISO. Contractor should be prepared to address comparable analytic work for publicly-owned balancing authority areas operating systems in conjunction with the CAISO.

2.2 Undertake analyses of the feasibility and costs of reducing power plant capacity that currently must be located in the immediate coastal zones of California or tying in offshore wind. Feasibility shall examine the impacts of upgrades to transmission system elements (line rating increases through reconductoring, upgraded substations, additional interconnections between substations, developing reactive power elements that can substitute for power plant inertia, etc.). For feasible upgrades, contractor shall develop preliminary cost estimates of comparable certainty to industry-standard cost of generation assessments to allow initial tradeoff analyses.

2.3 Provide technical assistance for studying the implications of the development of specific bulk transmission projects, both planned and conceptual, for the integration of new renewable resources, the need for local capacity in transmission-constrained areas, energy storage and the ability to import energy from and rely upon generation capacity in neighboring states.

2.4 Identify, assess, and make recommendations regarding the feasibility of improvements in modeling techniques and data acquisition related to electricity system integration. This can include modifications to existing modeling techniques (e.g. – production cost models) or the applicability of new modeling techniques (e.g. – power flow studies), and the associated data acquisition strategy to support the modeling.

2.5 Collaborate with Energy Commission staff to define policy relevant scenarios compatible with modeling techniques and availability of data and assist Energy Commission staff translate the general concepts of the new scenarios/cases into simulation models and risk analysis datasets.

2.6 Assist in the development of in-house tools for compiling, analyzing, and presenting data, including but not limited to data on generation, electrical loads, and transmission flows. Provide technical support for the development of spreadsheet- and programming-based tools designed to facilitate the compilation and representation of data in useful formats and summarize the data statistically and graphically. Develop interfaces which facilitate ease of use.

2.7 Provide technical assistance on evaluating the operational, regulatory, and climate change variability and other uncertainties affecting the availability of hydro-generation and how hydro dispatch may change to accommodate intermittent renewable generation.

2.8 Provide technical support to implement exploratory modeling and other risk assessment techniques in conducting resource planning and policy decision support for the electricity and natural gas systems. Assist in development of low resolution models, meta-models, sampling techniques and other tools necessary to conduct exploratory modeling, interpret results and present results and findings in easily understandable graphics and formats.

2.9 Provide assessment of current and projected fuel costs for individual power plants in the west, differences between long term contract cost provisions and short-term market prices, related delivery costs, cost differentials with other fuels that may induce fuel switching decisions, and other variables that may affect plant costs and wholesale electricity prices.

2.10 Provide technical assistance in updating California generation unit emission factors and developing emission factor sub models for the criteria pollutants pursuant to the federal Clean Air Act for fossil generating facilities that are responsive to alternative duty cycle predictions from production simulation models (e.g., numbers of hot and cold starts/stops, part or full load dispatch, response to load following instructions from a system operator and other relevant drivers of emissions).

2.11 Provide a method, analysis, and insights into how changes in generation capacity will impact the greenhouse gas emissions profile of overall generation.

2.12 Provide analysis on the planning implications of large amounts of generation (e.g., solar, wind) or transmission resources that could have potential to shift peak or critical periods. The analysis will investigate mitigation steps that can be taken and alternatives to additional generation.

TASK 3 IMPROVE DEMAND FORECASTING METHODS

Expected Total Hours: 2900

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain technical assistance in the preparation and improvement of year-ahead forecasts of monthly peak demand and longer-term forecasts of annual peak and energy demand, and transportation energy demand forecasting.

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

3.1 Identify and assess various hourly demand forecasting methodologies and techniques currently being used by academic and other experts to forecast electricity hourly demand.

3.2 Identify and implement methods to improve staff peak demand forecasting methods.

3.3 Provide recommendations for new energy demand forecasting models and identify and implement ways to improve staff energy demand forecasting methods.

3.4 Transfer or migrate energy demand models to improved platforms.

3.5 Provide analysis of information gathered during energy end use surveys and develop inputs to the forecasting models from new residential, commercial building, industry, and transportation survey results.

3.6 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. 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.

3.7 Analyze energy demand impact of building decarbonization strategies and how it might impact the staff demand forecast modeling and data collection.

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 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. Assist staff in developing existing and projected hourly load shapes for different geographic zones throughout the Western Electricity Coordinating Council region.

3.10 Identify and assist staff in implementing methods to further incorporate climate change in Energy Commission demand forecasts. Provide analysis of climate change impacts on temperatures and temperature variability at the regional level.

3.11 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. Specific attributes may include, but are not limited to, vehicle prices, fuel efficiency, acceleration, driving range, number of makes and models, maintenance cost, and technology introduction schedule.

3.12 Provide analysis and data collection in support of transportation energy demand forecasting.

3.13 Identify, assess, and implement behavioral methodologies to forecast vehicle miles traveled (VMT) as well as VMT decay rate.

3.14 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 analysis of the benefits of potential interagency collaboration on modeling, analysis, and data sharing related to forecasting.

3.15 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.

TASK 4 IMPROVE ENERGY DEMAND ANALYSES

Expected Total Hours: 2050

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain technical assistance and recommendations related to other analyses conducted in the Demand Analysis Office that are not directly related to energy demand forecast methods.

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

4.1 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 and risk assessments into the forecasting process through meta-modeling and other analytical techniques.

4.2 Identify, assess, and implement behavioral methodologies to forecast adoption of efficiency measures, building electrification measures, and demand response participation.

4.3 Provide review and analyses of publicly owned utility evaluation, measurement, and verification (EM&V) studies in support of AB 2021 efficiency goals. Provide training where needed for the publicly owned utilities in conducting these studies. Develop and implement strategies for EM&V collaboration among utilities. Provide review and analysis of POU yearly efficiency progress report and target setting studies.

4.4 Evaluate the potential future adoption, structure, and impact of new tariff rates on energy consumption and peak including time-of-use tariffs.

4.5 Provide analysis on different electricity rate structures including time-of-use that may encourage consumer investments in load reduction, storage or distributed generation technologies.

4.6 Support research and analyses to understand extent that buildings have not been built to code when constructed, or are now below code because Title 24 not properly satisfied when building space changed usage type or for other reasons.

4.7 Provide recommendations for making reasonable adjustments to energy demand forecasts to account for its findings of market conditions and existing baselines.

4.8 Identify, assess and assist in implementation of alternative methods of making demand projections for time horizons beyond 10 years into the future when the uncertainty of many key variables used in demand forecasts grows very large.

TASK 5 NATURAL GAS ASSESSMENTS AND FORECASTING

Expected Total Hours: 4210

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain expert technical assistance on a variety of natural gas issues. Assistance will be provided in the areas of infrastructure analysis, supply and production cost analysis, gas demand analysis, price forecasting, risk analysis, and data collection.

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

5.1 Evaluate the potential operational and planning role of natural gas infrastructure including storage facilities in California and the United States in providing fuel system reliability to the electric generation sector and mitigating price spikes to customers.

5.2 Assess the potential need for new, replaced, or expanded pipeline capacity in California and the United States to meet economic or reliability needs.

5.3 Evaluate California's natural gas infrastructure to identify potential operational, safety, and reliability risks. Particular attention is to be given to natural gas storage areas, such as Aliso Canyon.

5.4 Assess the trends, risks, and consequences of potential regulatory action related to shale gas supply and other unconventional sources of natural gas over the next 20 years.

5.5 Assess the effects to California's natural gas markets resulting from the construction and operation of natural gas import or export terminals over the next 20 years. Evaluate potential impact to natural gas supplies and prices in California from a switch from coal-fired generation in other states to natural gas and renewables, and the potential for natural gas importation as a supply to the west coast.

5.6 Assess the operational and planning implications of difference in market structures and operations between natural gas and electricity. Assist staff in power flow modeling analyses.

5.7 Support hydraulic modeling methods to assess operational impacts during stress conditions on the gas system, such as short run flow effects of large swings in fossil generation demands resulting from high renewable energy penetration.

5.8 Support and provide training for hydraulic modeling methods to assess the flow of natural gas in the transmission and distribution systems.

5.9 Develop analytical frameworks, models, and tools to assess long-term natural gas demand scenarios and infrastructure needs for planning a reliable, safe, and affordable gas system.

TASK 6 CENTRAL STATION AND DISTRIBUTED GENERATION MARKET ASSESSMENT AND ANALYSIS

Expected Total Hours: 2050

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain expert technical analysis and support of assessments and analyses related to the costs, locations, and other relevant factors associated with investments in central station and distributed generation. Assistance will be focused on the areas of understanding the underlying factors associated with investment decisions as well as the potential future decisions under various policy regimes.

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

6.1 Provide technical support for the evaluation of the operation of renewable resources based on technology and location. Assist in developing operating profiles, capacity factor estimates, variability and peak hour availability estimates based on historical output and/or generation source (solar irradiation, wind density, and others) data.

6.2 Provide technical support to evaluate new market structures, financing instruments or regulatory mechanisms to encourage investments in the generation and storage technologies needed to integrate intermittent renewable technologies and other system reliability requirements.

6.3 Provide technical support to assess the revenue requirements to implement and integrate a combination of electricity supply and demand programs associated with target policy goals.

6.4 Provide technical support for the economic assessment of distributed resources technologies alone and in combination, including energy storage technologies, variable renewable generation technologies, and other technologies that may be included in microgrid projects. Assist in the development of cost estimates for project construction, associated transmission costs, and levelized energy cost estimates based on technology and location.

6.5 Provide technical support to the economic assessment of various utility-scale generation technologies, including but not limited to wind, geothermal, biomass, gas-fired, solar thermal, and solar photovoltaic. Provide technical assistance to update the cost drivers and associated uncertainties affecting the calculated levelized costs and evaluate probabilities that a combination of uncertainties will result in higher or lower levelized costs to inform decision makers about the possibility that certain policies may impact overall electricity system costs.

6.6 Provide technical support for the analysis of linkages and synergies in residential photovoltaic and personal PEV charging, including different options for ownership of photovoltaics.

TASK 7 DISTRIBUTION SYSTEM AND DISTRIBUTED ENERGY RESOURCE ASSESSMENT

Expected Total Hours: 2050

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

The goal of this task is to obtain technical assistance on distribution level policy questions related to decarbonization, cost and equity concerns, and supporting reliability and resiliency. Distribution level refers to both the distribution grid and to distributed energy resources (DER). DER are those resources on the distribution system deployed individually or in generation, including generation resources (e.g., solar), energy storage, electric vehicles, energy efficiency, and demand response..

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

7.1 Provide technical support for analysis of the costs, economics, operating characteristics, regulation/incentives, emission and environmental impacts, and other factors which influence deployment and impact of distributed energy resources.

7.2 Provide technical support for analyzing regulatory and market structures for distributed energy resource development.

7.3 Provide technical support to develop models, sampling techniques, and other public tools necessary to conduct quick and timely analysis and interpret and present results in a transparent and public friendly format.

7.4 Provide technical support for modeling of the impacts of distributed energy resources on the distribution system.

7.5 Provide technical support for developing distributed energy resource deployment and cost forecasts.

7.6 Provide technical support for developing customer distributed energy resource use cases for each customer class and each distributed energy resource type, including combinations of distributed energy resources owned by the customer or DER aggregations.

7.7 Provide technical support for evaluating distribution grid technologies, such as distribution automation and communication technologies, advanced inverters, and other technologies that enable distribution system infrastructure modernization and market participation.

7.8 Provide technical support for evaluating use cases for energy storage market participation and developing models to support energy storage deployment and market participation.

7.9 Provide technical support for comparative economic, load management, and behavioral analysis for home, workplace, and public charging options for personal PEVs.

7.10 Provide technical support for evaluating energy storage telemetry framework and standardization of energy storage resource telemetry requirements, evaluating transmission and distribution interconnection processes for energy storage, assessing permitting, fire protection codes and best practices for energy storage systems, and evaluating energy storage meter data collection practices.

7.11 Provide technical support to assess the potential for DER to help offset high electrification loads and consumer costs due to decarbonization, including equity concerns.

7.12 Provide technical support to assess the potential for high DER penetration to be beneficial for decarbonization.

7.13 Provide technical support to assess the potential for DER to address reliability and resiliency, including communities and areas likely to experience grid disruption events related to wildfires and public safety grid shutdowns.

7.14 Provide technical support to identify and summarize EPIC study reports that may provide insights into distribution level policy questions to be defined.

TASK 8: DATA MANAGEMENT

Expected Total Hours: 2050

Expected General Classifications: Administrative Managers, Program Managers, Computer Programmers, Customer Relations Representative, Data Analytics, Database Administrators, Engineers, Forecasters, Modelers, Science Writers, Scientists, Statisticians

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:

8.1 Assist with the development and implementation of tables, queries, views, scripts, reports, and other tools and systems needed to organize, manage, and present large volumes of energy data stored in the data warehouse.

RESOLUTION NO: 21-06-09-10

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: 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 800-20-005 with Aspen Environmental Group for $2,500,000. Aspen will provide technical assistance to the Energy Assessments Division in a wide variety of analysis including to evaluate electric and natural gas system reliability, improve demand forecasting, assess resource availability, and evaluate distributed generation performance and impacts; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her 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 9, 2021.

AYE:
NAY:
ABSENT:
ABSTAIN:

_____
Patricia Carlos
Secretariat