Technical Feasibility of Compressed Air Energy Storage (CAES) Utilizing a Porous Rock Reservoir

Final Report Appendix — Chapter 9

March 2018

Report Number DOE-PGE-00198-8

Prepared by

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Principal Investigator

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Citation

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Legal Disclaimer

Abstract

Pacific Gas & Electric Company (PG&E) conducted a project to explore the viability of underground compressed air energy storage (CAES) technology.

CAES uses low-cost, off-peak electricity to compress air into a storage system in an underground space such as a rock formation or salt cavern. When electricity is needed, the air is withdrawn and used to drive a generator for electricity production.

The project screened potential sites in California and selected two locations: King Island, near Stockton, and East Island in San Joaquin County. All necessary rights were acquired at both sites to conduct tests and develop a CAES facility. Core drilling provided information on reservoir rock properties, caprock properties, reservoir pressure, and reservoir fluid. Results found the conditions at the King Island site to be more favorable than East Island. Air injection testing at King Island produced data on flow dynamics, rock mechanics, and other factors. Finally, the project team developed a conceptual engineering design for a CAES facility and reservoir infrastructure, and analyzed the environmental impacts and permitting requirements.

To determine the interest and qualifications of potential third parties, the project issued a Request for Offer (RFO), which required applicants to describe their technical qualifications to develop, construct, own, operate, and maintain a CAES facility at the King Island site, and to estimate their costs for participation in the project. Offers were received, but the best offer was not economically competitive with alternative storage technologies.

The project demonstrated the technical feasibility of using an abandoned natural gas reservoir for storing high-pressure compressed air for a 300-MW-by-10-hour CAES facility. The reservoir at the King Island site was shown to be capable of accommodating the flow rates and pressures necessary for the operation of the facility. However, the estimated high cost of a CAES facility will have to be addressed in the context of the cost of alternative energy storage technologies.

Chapter 9 Attachments

A901: CAES Offer Form
A902: CAES Term Sheet
A903: Resource Adequacy Only Term Sheet
A904: Capacity Storage Term Sheet
A905: RFO Protocol

A901: CAES Offer Form

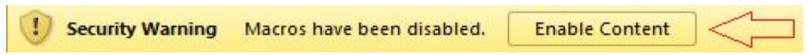
Instructions for Appendix A: CAES RFO Offer Form

Version CAES 1.3

PLEASE BE SURE TO ENABLE MACROS. OTHERWISE THIS WORKBOOK WILL NOT FUNCTION PROPERLY.

Macros can be enabled by clicking the "Enable Macros" button on the "Microsoft Excel Security Notice" that is displayed before the form opens…

…or by clicking the "Enable Content" button that is sometimes displayed at the top of the screen when the form first opens.



Disclaimer: Calculated revenue and credit requirements are estimates only. Any actual revenue and credit amounts will be determined based on discussion between PG&E and the individual counterparty.

Unless otherwise provided herein, all capitalized terms shall have the meaning ascribed to them in PG&E's Smart Grid Compressed Air Energy Storage Demonstration Project Request for Offers Solicitation Protocol dated **March 30, 2016** or the applicable Agreements/Term Sheet.

Important Notes

1. Please submit this file in **Microsoft Excel.** **Other versions will not be accepted.**
2. The workbook is set to recalculate automatically; however, if for some reason it is not refreshed automatically, please press **F9** to refresh.
3. The workbook functions best using **Microsoft Excel 2010** in the **.xlsb** format on a **Windows XP Operating System.**
4. Fill out the tabs from left to right, and fill out individual cells on each tab from top to bottom.
5. Every cell with a yellow background must be filled in. As you fill these fields in, the yellow background will disappear. Once all fields on a tab have been filled in, you will see the word "Complete" appear at the top of the page. If the word "Complete" does not appear, the form will be deemed invalid.
6. If a cell is grayed out then you cannot enter data. Some grayed out cells become editable when particular selections are made in other cells or on other tabs. Some grayed out cells are auto-populated with results based on values entered in other cells and are never editable directly.
7. If your project has multiple offers and/or variations, then please submit a separate Offer Form Excel Workbook for each variation.
8. Participants are encouraged to take every opportunity to fully describe their proposal. The inclusion of free form blocks allows the Participant to describe aspects of their proposal in more detail. In particular, if this Offer Form does not request all the important information associated with your proposal you should use these free form blocks or the **Additional Information** tab to describe your proposal in more detail.

9. The following table lists the tabs that must be completed:

Offer Form Tabs	Description
Participant Information	This tab asks about general counterparty information, ownership, developer information, and confirmation that the counterparty acknowledges the protocol.
Project Information	This tab asks about general project information,including information on: offer and variation numbers, project name and location, online date and delivery term, electric interconnection, signal response and control, storage unit specifications, and seller security requirements.
Operating And Degradation Information	This tab asks about operating characteristics of the energy storage system, including charging/discharging parameters, ancillary services information, ramp rates, system response and start-up times, run-time limitations, daily constraints, emission rates (if applicable), flexible RA conditions (if applicable) and degradation.
CAES Agreement (if applicable)	This tab asks about pricing. Only used if the CAES Agreement contract type is selected in the Offer Information section of the Project Information tab.
Resource Adequacy (RA) Only Offers (if applicable)	This tab asks for additional information for RA Only offers: price, offered MW, and anticipated facility maintenance schedules. Only used if the RA Only Agreement contract type is selected in the Offer Information section of the Project Information tab.
Capacity Storage Agreement (if applicable)	This tab asks for additional information for Capacity Storage Agreement offers: price, offered MW, Efficiency (percentage), Variable O&M ($/MWh), Contract Heat Rate (mmbtu/MWh), and anticipated facility maintenance schedules. Only used if the Capacity Storage Agreement contract type is selected in the Offer Information section of the Project Information tab.
Supplier Diversity	This tab is a questionnaire about supplier diversity qualifications.

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Validation Worksheet

Version CAES 1.3

Please make sure your form is complete before you submit it. If the form is not complete, please do not submit it as it will be returned to you.

This form is not complete. Please do not submit the form until you have filled in all the required information.

Tab Name	Message
Participant_Information	There are 32 missing or incorrect values on this tab
Project_Information	There are 32 missing or incorrect values on this tab
Operating And Degradation Info	There are 554 missing or incorrect values on this tab
CAES_Agreement	N/A
RA Only Offers	N/A
Capacity Storage Agreement	N/A
Supplier_Diversity	There are 7 missing or incorrect values on this tab
Additional Information	No additional information provided

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Participant Proposal and Contact Information

Version CAES 1.3

There are 32 missing or incorrect values on this tab

Counterparty Information					
Counterparty/Legal Entity Name					
Street Address					
City		State	<Choose>	Zip Code	
Country					
Website					

Developer Information					
Developer Name					
Street Address					
City		State	<Choose>	Zip Code	
Country					
Authorized Contact #1		**Authorized Contact #2**			
First Name		First Name			
Last Name		Last Name			
Title		Title			
Phone 1		Phone 1			
Phone 2		Phone 2			
Email		Email			

Project Owners

Name	Ownership %	Website URL
	0%	ERROR: Total must be 100%

Acknowledgement of Protocol

By selecting "Yes" participant hereby agrees to the terms of the Solicitation Protocol. Participant acknowledges that any costs incurred to become eligible or remain eligible for the solicitation, and any costs incurred to prepare an offer for this RFO are solely the responsibility of Participant. <Choose>

Electronic Signature
Title

Select 'Yes' to certify that the typed name acts as your electronic signature. <Choose>

Participant Authorization

By selecting 'Yes", participant hereby confirms that they are "a duly authorized representative of Participant." <Choose>

Electronic Signature
Title

Select 'Yes' to certify that the typed name acts as your electronic signature. <Choose>

Attestation

By providing the electronic signature, below, Participant hereby attests that all information provided in this Offer Package and in response to this CAES RFO is true and correct to the best of Participant's knowledge as of the date such information is provided. <Choose>

Electronic Signature
Title

Select 'Yes' to certify that the typed name acts as your electronic signature. <Choose>

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Participant Proposal – Project Description

Version CAES 1.3

There are 32 missing or incorrect values on this tab

Be sure to fill in all yellow fields on this tab before proceeding to other tabs! Many features on other tabs will not function until selections are made on this tab.

General Offer Information

Offer Number		Offer Source	CAES
Variation	<Choose One>	Year	2015
Total Offers		Bid ID	_{}_0<_of_0_CAES2015

Project Information

(If necessary use the **Additional Information** tab to provide more details.)

Full Legal Project Name

I will use the preferred Energy Conversion Facility location <Choose>

Street Address

City State CA

County Zip Code

Latitude degrees Longitude degrees

Type of Site Control <Choose One>

Air Pollution Control District

Note: Projects must directly interconnect to the CAISO system.

Project Description

Offer Information

<Choose One> Contract Type

Product(s) Offered: Select "Yes" to all that apply

Yes	Resource Adequacy		Non-spinning Reserves (Ancillary Services)
	Energy		Spinning Reserves (Ancillary Services)
	Black Start		Regulation Up/Down (Ancillary Services)
Yes	Flexible Resource Adequacy		

Delivery Term Start Date		
Delivery Term Length (Months)		0.00 years
Nominal Discharge Rating ("Design Dmax")		MW
Nominal Discharge Duration		Hrs

Electrical Interconnection Information

(If necessary use the **Additional Information** tab to provide more details.)

The Data Room has interconnection information that may be useful in filling out this section of the Offer Form.

Interconnection App. Status	None
Interconnecting Utility	PG&E
Interconnection Queue	
Full Capacity Deliverability/Energy Only?	Full capacity deliverability
Interconnection Net Capacity	MW
Interconnection Voltage	kV
Interconnection Level	Transmission
Delivery Market	NP15
Expected Interconnection Point	

Interconnection COD (including Deliverability)

Other Characteristics

Storage Unit Specifications

(If necessary use the **Additional Information** tab to provide more details.)

Number and ratings (MW, inlet temperature, inlet pressure) of expanders (unfired)?

Number and ratings (MW, inlet temperature, inlet pressure) of gas turbines (fired)?

Number and ratings (MW, inlet temperature, inlet pressure) of steam turbines?

Number and ratings (inlet and outlet temperatures, pressure) of recuperators?

Number, ratings (MW) and type (e.g., axial flow, scroll, reciprocating) of compressors?

Description of intercooling or aftercooling compressor stages?

Will compressors have variable speed drives for part-load operation?

Storage Technology Description

Signal Response and Control

(If necessary use the **Additional Information** tab to provide more details.)

Is the CAES system dispatchable by PG&E? <Choose>

Will the CAES system be capable of automatic dispatch to ADS signals via SCADA? <Choose>

Will the CAES system be capable of automatic dispatch to AGC signals via SCADA? <Choose>

Describe any user software available to monitor/control your energy storage technology (if not applicable or unknown at this time, please indicate that in your response):

Describe in general terms the activities and time necessary to initiate a startup and after receiving a request.

Seller Security Requirements

Calculations are illustrative and final amounts are subject to confirmation by PG&E's Credit Department for any executed contract.

	Required	Offered	%
Project Development Security ($)*	0.00		
Delivery Term Security Offered ($)*	0.00		

* Project Development Security (PDS) is $60/kW x Design Dmax; and Delivery Term Security (DTS) is $125/kW x Design Dmax or 10% of capability payments up to 3 years, whichever is higher.

Fuel

To display this section answer "Yes" to the question "Will natural gas be used for operation?" at left.

Natural Gas

Will Natural Gas be Used for Operation? <Choose>

Number of Gas-firing Units

Gas Interconnection

(Use the **Additional Information** tab to provide more details.)

To display this section answer "Yes" to the question "Will natural gas be used for operation?" at left.

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Participant Proposal - Operating and Degradation Characteristics

Version CAES 1.3

There are 554 missing or incorrect values on this tab

Operating Characteristics Notes

1. All MMBtu values should be provided based on Higher Heating Value.
2. Reference Operating Conditions are: 60 F ambient temperature, 0 Run Hours (new and clean) and Reference Stored Air Mass and Reference Reservoir Pressure as specified below for 0% State of Charge (SOC).
3. Performance between specified values (e.g., between 100% and 0% SOC, between 100% and 75% Dmax) will be assumed to follow a linear relationship. If Bidder believes this assumption is unreasonably inaccurate, Bidder may insert explanatory rows or columns on the **Additional Information** tab to provide finer gradations of performance data. If that approach is not satisfactory please contact PG&E.

Brown indicates cells that are particularly important

Performance vs. Temperature		Ambient Temperature, °F										
	Unit	20	30	40	50	60	70	80	90	100	110	120
Dmax @ 100% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dmax @ 0% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dmin @ 100% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dmin @ 0% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Duration	Hrs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Energy	MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ Dmax, 100% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 75% Dmax, 100% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 50% Dmax, 100% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ Dmin, 100% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ Dmax, 0% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 75% Dmax, 0% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 50% Dmax, 0% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ Dmin, 0% SOC	MWh/10^6lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cmax (negative value) @ 100% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cmax (negative value) @ 0% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cmin (negative value) @ 100% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cmin (negative value) @ 0% SOC	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Charge Duration	Hrs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ Cmax, 100% SOC	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ Cmax, 0% SOC	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ Cmin, 100% SOC	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ Cmin, 0% SOC	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ Dmax, 100% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 75% Dmax, 100% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 50% Dmax, 100% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ Dmin, 100% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ Dmax, 0% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 75% Dmax, 0% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 50% Dmax, 0% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ Dmin, 0% SOC	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Performance vs. Reservoir State of Charge (SOC)		State of Charge (SOC), %										
	Unit	0	10	20	30	40	50	60	70	80	90	100
Reference Stored Air Mass	10^6 Lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference Reservoir Pressure	psia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reservoir Self-Discharge Rate	10^6 Lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dmax @60F	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 60F, Dmax	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @ 60F, Dmin	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 60F, Dmax	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate @ 60F, Dmin	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ 60F, Cmax	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness @ 60F, Cmin	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Part to Full Load Performance		Part Load Factor, % of Dmax or Cmax; [enter NA if Unit(s) incapable of operating at designated part load factor]									
	Unit	10	20	30	40	50	60	70	80	90	100
Heat Rate @50% SOC, 60F	MMBtu/MWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharging Station Load @50% SOC, 60F	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Charging Station Load @50% SOC, 60F	MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density @50% SOC, 60F	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Compression Effectiveness @50% SOC, 60F	MWh/10^6 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Performance Degradation and Recovery - Discharging System		Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6	Interval 7	Interval 8	Interval 9	Interval 10	Interval 11	Interval 12
Total Run Hours to next Major Overhaul		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duration of Major Overhaul in hours		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duration of Annual Maintenance in hours	0.00												
Equivalent Run Hours per Hot Startup	0.00												
Equivalent Run Hours per Warm Startup	0.00												
Equivalent Run Hours per Cold Startup	0.00												
Run Hour Multiplier for hrs. providing...	0.00												
... Load Following or Regulation													
Dmax Multiplier for just before Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dmax Multiplier for just after Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density Multiplier for just before Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discharge Power Density Multiplier for just after Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate Multiplier for just before Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heat Rate Multiplier for just after Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Performance Degradation and Recovery - Charging System		Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6	Interval 7	Interval 8	Interval 9	Interval 10	Interval 11	Interval 12
Total Run Hours to next Major Overhaul		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duration of Major Overhaul in hours		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duration of Annual Maintenance in hours	0.00												
Equivalent Run Hours per Startup	0.00												
Run Hour Multiplier for Load Following or Regulation	0.00												
Cmax Multiplier for just before Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cmax Multiplier for just after Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness Multiplier for just before Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compression Effectiveness Multiplier for just after Interval		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operating Reserves	Spinning	Non-spinning
Maximum Discharging MW	0.00	0.00
Maximum Charging MW	NA	0.00

Regulation	Charging MW	Discharging MW
Minimum Load Point for Regulation Service	0.00	0.00
Maximum Load Point for Regulation Service	0.00	0.00

Discharging Startup Definitions				
"Hot Startup" means time from last shutdown to beginning of startup is≤	0.00	min		
"Warm Startup" means time from last shutdown to beginning of startup is >	0.00	min, and ≤	0.00	min
"Cold Startup" means time from last shutdown to beginning of startup is >	0.00	min		

Discharging Startup and Standby						
"Hot Standby" means Unit is hot and spinning, ready for immediate synchronization and initiation of load						
Time, Fuel and Energy for Hot Startup to Hot Standby	0.00	minutes	0.00	MMBtu	0.00	MWh
Time, Fuel and Energy for Warm Startup to Hot Standby	0.00	minutes	0.00	MMBtu	0.00	MWh
Time, Fuel and Energy for Cold Start to Hot Standby	0.00	minutes	0.00	MMBtu	0.00	MWh
Fuel and Power to maintain Hot Standby indefinitely			0.00	MMBtu/hr	0.00	MW
Time, Fuel and Energy for Hot Standby to Dmin	0.00	minutes	0.00	MMBtu	0.00	MWh

Charging Startup and Standby						
"Standby" means Unit is ready for immediate synchronization and initiation of load						
Time, Fuel and Energy for Notification to Standby	0.00	minutes	0.00	MMBtu	0.00	MWh
Fuel and Power to maintain Standby indefinitely			0.00	MMBtu/hr	0.00	MW

Unit Ramps

Assume steady-state starting and ending load points (LP). Insert or delete load points between Dmin and Dmax as needed.

Discharging	Load Point	Time	
Hot Standby to Dmin		0.00	minutes

Flexible RA

These fields refer to the definition in Appendix B of Decision 14-06-050 dated June 26, 2014 (click here to display the document).

PmaxRA 0.00 MW *Maximum positive output sustainable for four or more*

Dmin to Load Point 1	0.00	LP1, MW	0.00	minutes
Load Point 1 to Load Point 2	0.00	LP2, MW	0.00	minutes
Load Point 2 to Load Point 3	0.00	LP3, MW	0.00	minutes
Load Point 3 to Dmax			0.00	minutes
Dmax to LP3			0.00	minutes
LP3 to LP 2			0.00	minutes
LP2 to LP1			0.00	minutes
LP1 to Dmin			0.00	minutes
Dmin to Hot Standby			0.00	minutes
Transitions between Discharging and Charging				
Dmin to Cmin			0.00	minutes
Cmin to Dmin			0.00	minutes
Charging				
Standby to Cmin			0.00	minutes
Cmin to Cmax			0.00	minutes
Cmax to Cmin			0.00	minutes
Cmin to Standby			0.00	minutes
Is simultaneous charging and discharging possible, e.g., to allow for power generation when the reservoir is at 0% SOC?			<Choose>	

			uninterrupted hours
PminRA/Psupply_min	0.00	MW	*Minimum positive output sustainable for three or more hours.*
Start-up time	0.00	minutes	*Time to go from being turned off (cold start) to discharging at PminRA*
ARR_pos	0.00	MW/min	*The average ramp rate from PminRA/Psupply_min to PmaxRA*

Calculated Values for reference

EFC_posMore90min		(facility positive)
EFC_posLess90min	0.00	(facility positive)
EFC	0.00	

Run and Down Time Limitations

Minimum Run Time after a Discharging Startup	0.00	minutes
Minimum Run Time after a Charging Startup	0.00	minutes
Minimum Down Time between a Discharging Shutdown and a Restart	0.00	minutes
Minimum Down Time between a Charging Shutdown and a Restart	0.00	minutes

Other Operating Constraints (Enter "NA" if not applicable) per Unit	Per Day	Per Year
Discharging Hot Start-ups	0	0
Discharging Warm Start-ups	0	0
Discharging Cold Start-ups	0	0
Total Discharging Start-ups	0	0
Charging Start-ups	0	0
Transitions between Charging and Discharging	0	0

Other Operating Characteristics and Limitations

Please describe any other significant operating and performance characteristics or limitations that are not already captured in this offer form. (If necessary use the **Additional Information** tab to provide more details.)

Emission Rates and Constraints

To display this section answer "Yes" to the question "Will natural gas be used for operation?" on the Project Information tab.

Pacific Gas and Electric Company

Supplier Diversity Information

Version CAES 1.3

There are 7 missing or incorrect values on this tab

Supplier Diversity

If your company has an active Supplier Diversity program you do not feel is adequately addressed or properly highlighted with these questions, please send in separate documentation with your Offer for evaluation.

1 Is your company a Diverse Business Enterprise (i.e., Woman-, Minority-, Service Disabled veteran-, or Lesbian-, Gay-, Bisexual- or Transgender-owned business enterprise)? <Choose>

2a. Does your company have a Supplier Diversity program? <Choose>

Please describe program:

1500 character limit (1500 remaining)

2b. Does your company have a supplier Diversity Mentorship program with DBEs? <Choose>

Please describe program:

500 character limit (500 remaining)

3 Does your company promote diverse subcontracting? <Choose>

Please describe program:

500 character limit (500 remaining)

4 What percentage of your company's total contracting and procurement spend for the prior year was with DBE owned-businesses?

5 What percentage of procurement spend for this projectwill be spent with DBE owned-businesses over the course of the proposed PPA?

5a. Pre COD?

5b. Post IDD?

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A902: CAES Term Sheet

CAES Power Purchase Agreement Term Sheet

As described in the Protocol, PG&E invites input from Participants on the commercial structure proposed in this term sheet. The proposed structure generally is based on PG&E's Energy Storage Agreement and Tolling Agreement. PG&E requests that Participants review the entirety of the Energy Storage Agreement and Tolling Agreement for additional details and further information; the summaries contained herein are provided for convenience only.

Topic	Summary of Terms
Expected Initial Delivery Date (EIDD) Initial Delivery Date (IDD)	The EIDD is the date on which Seller expects the Delivery Term to begin. The IDD is the actual date on which the Delivery Term begins. It is the first day of the calendar month immediately following the calendar month in which all Conditions Precedent have been met; provided that, the IDD cannot occur before the EIDD. Buyer has a termination right if IDD has not occurred by 12/1/2024. See Energy Storage Agreement, Section 1.1.
CPUC Approval	The CAES Agreement will become effective when PG&E receives final and non-appealable CPUC Approval of it, as requested by PG&E without any conditions, restrictions or modifications. If CPUC Approval has not occurred on or before 365 days from the date on which Buyer files the Agreement with the CPUC seeking CPUC Approval, then either Party may terminate the Agreement. See Energy Storage Agreement, Section 1.3.
Credit	Cash, Letter of Credit, or Guaranty (note: any proposed Guaranty shall be subject to Buyer's acceptance in its sole discretion; furthermore, any accepted Guaranty may be applied only towards the Delivery Term Security.) See Energy Storage Agreement, Section 12.
Project Development Security	$15/ kW of Design Dmax at ROC at execution of the CAES Agreement plus an additional $45/kW of Design Dmax at ROC to be posted eleven months after CPUC Approval. Seller's termination damages to be paid to Buyer for an Event of Default prior to IDD will not exceed the required posted amount of Project Development Security. Note: these credit provisions may be modified to reflect credit amounts proportional to storage energy (MWh) or a combination of capacity and energy. See Energy Storage Agreement, Section 12.
Reference Operating Conditions (ROC)	Reference Operating Conditions are: 60 F ambient temperature, 60% relative humidity, 0 Run Hours (new and clean) and the Stored Air Mass and Reservoir Pressure as specified by Seller for 0% State of Charge.
Delivery Term Security	The greater of (a) $125.00/kW of Design Dmax at ROC or (b) 10% of the sum of the highest estimated Monthly Fixed Payments for any 36 month period. Note: these credit provisions may be modified to reflect credit amounts proportional to storage energy (MWh) or a combination of capacity and energy. See Energy Storage Agreement, Section 12.
Seller Termination	Seller has a no-fault termination right that may be exercised at any time until that date which is three hundred sixty-five (365) days after the date that PG&E receives CPUC

Right	Approval of the CAES Agreement.
Seller Reduction Right	Seller may decrease the Project capacity rating by up to 50% before 12/31/2019, provided that such reduction shall (a) result in the same proportional changes to the MCC values; (b) not decrease for the Project: the ratio of the Project's Design Cmax to the Design Dmax, the Discharge Power Density, the ancillary service capabilities per MW of Design Dmax or Design Cmax, or the ramp rates; and, (c) not increase for the Project: the ratio of the station loads to Design Dmax, the Compression Effectiveness, the Heat Rate, the performance degradation rates, or the startup and shut down times.
Construction Milestones	There are three (3) critical milestones: (1) Buyer's review of the Site Safety Plan prior to finalization of Project Design, (2) the Guaranteed Construction Start Date (GCSD), and (3) the EIDD. The GCSD may be extended by no more than three hundred sixty-five (365) days. If the GCSD is not achieved after such extension, then the Seller is subject to an Event of Default. The IDD may be extended to the earlier of (A) three hundred sixty-five (365) days after the EIDD and (B) 12/1/2024. See Energy Storage Agreement, Section 13.
Delay Damages	If the IDD occurs after the EIDD for any reason other than an Event of Force Majeure (and excepting any delay solely due to Buyer's review of the Site Safety Plan), then Seller will pay Buyer Delay Damages of $160.00/day per MW of Design Dmax at ROC. Regardless of the reason for delay, Buyer has the right to terminate the CAES Agreement and pursue and collect damages from Seller arising from such termination if the Project does not achieve IDD by 12/1/2024; provided that, Seller will not be liable for damages if such failure solely is due to an Event of Force Majeure. See Energy Storage Agreement, Section 13.
Purchase and Sales Obligation, Exclusivity	Buyer has rights to all Product produced by the Project, regardless of contractual amounts specified. For example, if the Project's Net Qualifying Capacity is greater than the monthly capacity, Buyer still may claim the larger amount. See Energy Storage Agreement, Section 2.1- 2.3.
Resource Adequacy (RA)	Seller will take all actions (a) to ensure that the Project qualifies to provide RA and (b) to provide all of the Project's RA Capacity during the Delivery Term. The Project must have Full Capacity Delivery Status by the IDD. See Energy Storage Agreement, Section 2.2.
Compensation to Seller for Product	Compensation for Product will equal the sum of all of the following as determined on a calendar month basis for the applicable calendar month: • Monthly Fixed Payment; • Monthly Variable Payment; • Start-Up Payment; • Deviation Charges, Forced Outage Compensation, and Other Deviation

	Charges; • Monthly Efficiency Adjustment; • Gas Balance True-Up; • GHG Compensation; and • Any other compensatory adjustments as required by the CAES Agreement. See Tolling Agreement, Section 6.1 and Energy Storage Agreement, Section 11.1.
Monthly Fixed Payment	The amount of Seller's Monthly Fixed Payment depends on the Project's ability to meet guaranteed performance measures. The base formula for calculating the Monthly Fixed Payment is: $MFP_m = [[CPP \times MAF_m \times MCC_m] \times AA_m] \times (1+DEA)/2$ CPP= Capability Payment Price, $/kW-yr MAF= Monthly Allocation Factor MCC= Monthly Contract Capability, kW AA= Availability Adjustment DEA = Discharge Energy Adjustment.
Capability Payment Price	Yearly rates for the Monthly Contract Capability ($/kW-yr) including fixed O&M.
Monthly Allocation Factor	Buyer specified factors that will allocate the yearly Capability Payment Price across each calendar month. The factors may vary between 4-15%.
Monthly Contract Capability (MCC)	At IDD, the MCC will be the sum of (1) the Design Dmax and (2) the Design Cmax, at 0% SOC and at the following monthly ambient temperatures (deg F). January 57 February 62 March 68 April 74 May 82 June 90 July 94 August 93 September 90 October 78 November 66 December 56 The MCCs may be adjusted depending on the results of the Performance Tests.
Availability Adjustment (AA)	To the extent the Project is not capable of charging, storing, or discharging energy for unexcused reasons, the Availability will be reduced. Excused Scheduled Maintenance Hours and Force Majeure hours that do not exceed the amount of Excused Hours will not reduce Availability. Any derates solely due to ambient conditions or State of Charge changes from Buyer's Schedule will not reduce Availability. Unavailable non-energy products will reduce Availability, but based on a percentage of the unavailable product hours. Seller will report Availability for both Charging and Discharging sides.

	The Availability Adjustment calculation will be the lesser of the Availability calculated for Charging and the Availability calculated for Discharging. For the first two (2) Contract Years in the Delivery Term: • If Availability is greater than or equal to 98%, then AA=100%; • If Availability is less than 98%, then AA = Availability . For all other Contract Years: • If Availability is greater than or equal to 98%, then AA=100%; • If Availability is less than 98%, but not less than 70%, then AA = 100% - [(98% - Availability) × 2]; • If Availability is less than 70% then AA=0.
Discharge Energy Adjustment	Discharge Energy is the total MWh the Project can discharge from 100% to 0% SOC. Seller specifies the pounds of air in the reservoir that correspond to 100% and 0% SOC. The Discharge Energy Adjustment is the ratio of the tested Discharge Energy to the expected Discharge Energy corrected to the average ambient conditions during the test. Buyer will have the right to test the Discharge Energy during the Performance Tests. If the tested Discharge Energy is less than the expected Discharge Energy, there will be a reduction to the Monthly Fixed Payment (Discharge Energy Adjustment) until Seller demonstrates a tested Discharge Energy greater than or equal to the expected Discharge Energy in a subsequent Performance Test.
Monthly Variable Payment	MVP_m = VOM payment ($/MWh Discharged) + Discharge Operating Hours payment ($/ fired hour) + Charge Operating Hours payment ($/ fired hour). All payments are based on the lesser of scheduled and actual energy or operating hours. To the extent necessary, Seller will substantiate that variable costs reflect actual cost of operation as needed with the CAISO. The parties will discuss contract terms to ensure that variable costs are acceptable to the CAISO.
Start-Up Payment	The Start-Up Payment will be based on Seller specified rate for hot, warm, and cold successful start-ups that are part of Buyer's schedule. Seller may have separate Start-Up Payments for compression and generation.
Monthly Efficiency Adjustment	The Monthly Efficiency Adjustment, which is described in greater detail in the formula at the end of the termsheet, is a way to capture CAES specific guaranteed performance measures: • Compression Effectiveness • Reservoir Self Discharge rate; and • Discharge Power Density The Monthly Efficiency Adjustment will be applied as a reduction to Buyer's total monthly payment to Seller and will equal the product of the average real time price during Buyer's Discharge Schedule and the Discharge Energy Shortfall. The Discharge Energy Shortfall is the difference between the expected discharge MWh

	and the actual discharged MWh, where the expected discharge MWhs are based on actual MWhs charged, the expected reservoir self-discharge rate, the actual net change in SOC of the reservoir, and the actual operating conditions (ambient temperature, SOC, run hours) for the applicable calendar month. The Design Performance Spreadsheet will be used to calculate the expected monthly Compression Effectiveness and expected monthly Discharge Power Density, both of which will be used in the Monthly Efficiency Adjustment calculation throughout the Delivery Term. • Inputs to the Performance Spreadsheet, for each settlement interval: RT ambient conditions, SOC, equivalent run hours, Buyer's Schedule • Outputs: expected Compression Effectiveness and expected Discharge Power Density for each settlement interval
Design Performance Spreadsheet	For the purpose of establishing the initial expected performance of the Project, Seller shall provide a spreadsheet program ("Design Performance Spreadsheet") that models the performance parameters provided in the Offer Form and duplicated in Appendix II of the PPA. The Design Performance Spreadsheet will always be used for the Gas Balance True-up and the Monthly Efficiency Adjustment throughout the Delivery Term. Seller will provide the Design Performance Spreadsheet in a specified time prior to contract execution. If Seller exercises Seller's right to decrease the project Capacity by 12/31/19, Seller will provide an updated Design Performance Spreadsheet within a specified time; however, changes to the operating parameters will be restricted as described above in Seller Reduction Right. The Design Performance Spreadsheet calculates parameters in the Offer Form as a function of operating conditions, including: • Expected Dmax = function (Ambient Temperature, SOC, equivalent run hours) • Expected Dmin = function (Ambient Temperature, SOC, equivalent run hours) • Expected Cmax = function (Ambient Temperature, SOC, equivalent run hours) • Expected Cmin = function (Ambient Temperature, SOC, equivalent run hours) • Expected Compression Effectiveness ($MWH_C/10^6$lb-air) = function (ambient temperature, Buyer's Charge Schedule, SOC, Total Run Hours) • Expected Discharge Power Density ($MWH_D/10^6$lb-air) = function (ambient temperature, Buyer's Discharge Schedule, SOC, Total Run Hours) • Expected Heat Rate = function (ambient temperature, Buyer's Discharge Schedule, SOC, Total Run Hours) • Expected SOC at the end of the Settlement Interval = function (SOC, Buyer's Charge Schedule, Buyer's Discharge Schedule) • Expected Reservoir Self Discharge for the Settlement Interval = function (SOC) Seller agrees that the performance parameters set forth in the Design Performance Spreadsheet, and Appendix II of the CAES Agreement shall be used for establishing

	the expected performance for the Monthly Efficiency Adjustment and Gas Balance True-up and for calculating Events of Default, and that no other representation of Project performance shall be used for such purposes, including the Operating Performance Spreadsheet and CAISO master file information. Seller acknowledges that there may be differences between the initial expected performance of the Project, as represented in the Design Performance Spreadsheet or Appendix II and the subsequent expected performance of the project, as may be represented in the Operating Performance Spreadsheet or CAISO master file. Seller acknowledges and agrees that it has no rights or remedies against PG&E, and that PG&E has no obligations or liabilities to Seller, with respect to PG&E's use of different performance spreadsheets for different purposes, including for settlements and scheduling. To the extent that actual performance is better than design performance, Seller's additional compensation is limited to the Gas Balance True-up. Prior to IDD, PG&E must approve the Design Performance Spreadsheet, which should be validated against data points in Appendix II.
Operating Performance Spreadsheet	Throughout the Delivery Term, Seller shall provide Operating Performance Spreadsheets that reflect the current expected operating capabilities of the Project. The Operating Performance Spreadsheets shall be in the same format as the Design Performance Spreadsheet. Seller shall provide an updated Operating Performance Spreadsheet whenever the current version is less than 98% accurate. The Operating Performance Spreadsheet shall not be used for either the Gas Balance True-up or the Monthly Efficiency Adjustment.
Heat Rates	Seller to provide heat rates as a function of ambient temperature, load level, run hours and SOC in the Design Performance Spreadsheet. Deviations from contractual heat rates will be settled via the Gas Balance True-up. • The Design Performance Spreadsheet will be used to calculate the heat rate to be used for the Gas Balance True-up • Inputs to the Design Performance Spreadsheet: RT ambient conditions, SOC at beginning of interval, equivalent run hours at beginning of interval, Buyer's Discharge Schedule for Settlement Interval, Delivered Energy for Settlement Interval • Outputs: Expected heat rates for each Settlement interval for Buyer's Discharge Schedule and Delivered Energy See Tolling Agreement, Section 4.2.
Gas	Buyer will provide gas for Buyer's Schedule at the contractual guaranteed heat rates. Seller is responsible for gas requirements other than those needed to satisfy Buyer's Schedule. Seller will reimburse Buyer for gas use that is higher than the contractual heat rates. If the actual heat rates are lower than the contractual heat rates, Buyer will pay Seller for 15% of the imbalance. See Tolling Agreement, Section 3.3.
GHG	Buyer will financially compensate Seller for those costs Seller incurs that are directly and exclusively tied to Seller's compliance with AB32 obligations related to the Scheduled Operations. As between Buyer and Seller, compliance with any and all AB32 obligations shall be Seller's exclusive responsibility.

	The quantity for compensation will be the lesser of actual Gas used and a calculation based on Buyer's Schedule or delivered energy, based on a rate of .05302 tonnes per MMBtu. The Allowance Price is the ICE Index price for the day of dispatch. See Tolling Agreement, Section 9.3 as pertaining to financial compensation.
Schedule Deviations	Seller is responsible for uninstructed energy deviations and instructed deviations due to Forced Outages (for both for charging and discharging). Seller is also responsible for any non-performance associated with other, non-energy Products. See Energy Storage Agreement, Section 3.4 and Tolling Agreement, Section 3.5.
Charge Energy	Buyer will provide Charge Energy for Buyer's Charge Schedule to Electrical Delivery Point. Buyer is responsible for Charge Energy associated with the pounds of air withdrawn for Buyer's Discharge Schedule and for Seller's specified Reservoir Self-Discharge Rate. Any other Energy required, e.g., for maintaining Reservoir Pressure or any other operational needs, is Seller's responsibility and will not be part of Buyer's Schedule. In addition, if Seller requires venting of air or reduction of pressure, Seller is responsible for the costs to restore the Reservoir Pressure or the air vented. The Seller's specified Cmax values will be tested; failure to meet such values will be an Event of Default for Seller.
Other operations	Seller shall bear the costs, including all CAISO charges, and receive the benefits of any operations outside of Buyer's Schedule. These operations include the Initial Performance Test; Seller's Performance Test; restoring State of Charge levels after Outages; managing the reservoir and compressed air systems, including air, water, and methane volumes, and operations to manage changes in design operating conditions or bubble volume. Operations during this time may not be considered available for purposes of the Availability Adjustment calculation.
Project Operating Data Systems	Seller will provide Buyer with Real-Time operational data, including ambient conditions, State of Charge, Equivalent Run Hours. Seller shall have all systems in place to respond to all electronic signals conveying dispatch instructions. Buyer will specify communication protocols. Seller must provide valid operational data necessary for financial settlements in conjunction with invoices or else Buyer payments to Seller will be withheld.
Interconnection Agreements and Facilities	Seller is responsible for developing and maintaining for the project throughout the Delivery Term all interconnection facilities to allow for the sufficient flow of electricity and natural gas at all times and expected operating conditions for both charging and discharging, including maintaining natural gas at any required pressure levels.
Station Use	Station loads may be netted during generation, but not during charging or when the unit is idle. Station loads that are not netted must have separate metering and retail service. Subject to CPUC and CAISO tariffs. See the Station Use definition in the ESA.
Scheduling	Seller will be the Scheduling Coordinator prior to IDD. Parties to discuss Scheduling Coordinator role post IDD.

	During the Delivery Term, Seller will use the Operational Performance Spreadsheet as the basis for determining expected capabilities (Dmax, Dmin, Cmax and Cmin) as a function of ambient conditions, SOC and equivalent run hours: • Inputs to the Performance Spreadsheet: DA ambient conditions, RT ambient conditions, SOC at beginning of interval, and the equivalent run hours at beginning of interval • Seller will report feasible ranges for Dmax- Dmin and Cmax – Cmin and any ambient condition or SOC related derates via a system that Buyer will specify. Seller should report any discrepancies between the expected capabilities based on the Operational Performance Spreadsheet and the actual capabilities of the Project as unavailable capacity for the purpose for the Availability Adjustment calculation.
Operational Restrictions	Operational restrictions outside of Feasible Schedules (e.g., number of starts, dispatch constraints) must be justified, e.g., necessary for compliance with the air permit.
Excused Scheduled Maintenance Hours	Seller is to specify the number of hours needed for annual scheduled maintenance and major overhaul events. Seller will provide the manufacturer's guidelines or service contracts to support such hours requested. For maintenance hours to be considered excused, Seller must satisfy Buyer's requirements for scheduling Maintenance Outages. See Energy Storage Agreement, Article 9 and Tolling Agreement, 3.8.
Force Majeure	If the Project experiences an Event of Force Majeure prior to the Initial Delivery Date, Seller may delay the Initial Delivery Date to the earlier of (A) three hundred sixty-five (365) days after the EIDD and (B) 12/1/2024, in either case without incurring Delay Damages; provided that, if IDD is not met after such extension then Buyer may terminate the CAES Agreement without any damages due from Seller. If the Project experiences an Event of Force Majeure during the Delivery Term, Seller may avoid having certain of the hours associated with the event treated as unavailable by "borrowing" up to one thousand (1,000) hours against future Excused Schedule Maintenance Hours. After such hours are used, unavailable hours due to Force Majeure will be considered unexcused for the purposes of the Availability Adjustment calculation. Under certain circumstances caused only by Force Majeure, Buyer may terminate the CAES Agreement and Seller would not pay damages: - If the Availability averages less than 60% over a rolling 12-month period (provision will not apply in Contract Years 1 and 2). - If the Capacity measured in a Performance Test is less than 80% of the expected capacity, and not fixed within three hundred sixty-five (365) days of the Performance Test - If the project is destroyed. Force Majeure never includes any failure of any equipment, electric transmission, gas transportation, and third party performance, unless caused by an event that would be

	considered a Force Majeure Event.
Performance Testing	Performance Tests will include both Discharge and Charging attributes, heat rates, and any other Product and performance metrics that Buyer requires. Buyer and Seller will develop test procedures for various attributes for initial and on-going testing. Initial Performance Test • Seller will conduct an Initial Performance Test prior to the IDD to demonstrate that the Project can meet at least 95% of its Capabilities (e.g., Cmax, Dmax, and Discharge Duration, etc.), and that the facility was constructed in accordance with the nameplate ratings in Appendix II. • Project MCC and resulting capacity payments to Seller may be reduced based on the test results, but Seller will have the opportunity to reestablish the original MCC in subsequent performance tests. • Data from the Initial Performance Test will be used to validate the Design Performance Spreadsheet. Ongoing Performance Tests • Buyer has the right to request Buyer's Performance Tests. • Seller may request a Seller's Performance Test if the Monthly Contract Capacity or Discharge Duration has been adjusted down after a Buyer's Performance Test, after a major maintenance event, or if the Project fails to meet the standards of any other test parameter for Other Products. • Performance Tests may be remote or on-site. Buyer and Seller will develop test procedures for both. • Buyer pays costs and receives benefits during Buyer or Seller Performance Test to the extent that the hours for the test are part of Buyer's Schedule. If Seller desires to perform a Seller Performance Test outside of Buyer's Schedule, Seller shall pay the costs and receive the benefits of such operations. • Seller shall update the Operational Performance Spreadsheet after a Performance Test to reflect actual operating capabilities (e.g., new values for Dmax, Cmax, Dmin, Cmin, Heat Rate, Duration, etc.). **Performance Testing for Dmax and Cmax** • Remote Performance Tests: o At any time, Buyer may test for Cmax and Dmax. The Cmax test consists of 10 not-necessarily-contiguous hours when Buyer's Charge Schedule is Cmax. The Dmax test consists of 10 not-necessarily-contiguous hours when Buyer's Discharge Schedule is Dmax. Hours in which the Seller has an Outage will not be included for test hours. o For each of the 10 hours, the Project's performance will be compared to the Design Performance Spreadsheet output. o The Dmax and Cmax used to calculate the MCC will be adjusted proportionally downward based on the results of the comparison. The adjustment will be based on the average of the ten ratios of actual to expected Dmax or Cmax values. An average ratio greater than or equal to 99% will not result in an adjustment. • Procedures will differ for on-site tests.

	Performance Testing for Duration • At any point, Buyer may test for the Charge Duration and Discharge Duration by issuing a Buyer's Charge Schedule of 0% to 100% SOC at Cmax or a Buyer's Discharge Schedule of 100% to 0% SOC at Dmax. • If Seller has bid a Design Discharge Duration or a Design Charge Duration that increases during the Delivery Term, Seller will have to schedule a Seller's Performance Test to demonstrate the increased duration. • Half of the percentage deficit in Discharge Duration will be applied to the Monthly Fixed Payment; however, deviations of 5% or less will not result in an adjustment. [Seller may propose an increased percentage based on Design Duration that is over 10 hours.]
Metering	The Project will have at least one high side CAISO meter. Each compressor and generator must have additional revenue quality meters. Buyer and Seller to discuss metering of Station Use.
Events of Default	Among other terms, Seller's failure to meet contractual rates for the following will be an Event of Default for Seller: - Availability: averages less than 70% over a rolling twelve (12) month period; provided that this provision will not apply in Contract Years 1 and 2. - Tested Discharge Capacity: Tests less than 80% of design unless Seller is able to cure to 85% of design within six (6) months. - Tested Charge Capacity: Tests less than 80% of design unless Seller is able to cure to 85% of design within six (6) months. - Discharge Duration: Tests at less than five (5) hours and Seller is unable to cure within 6 months. - Actual Heat rate: Tested heat rate is 5% greater than guaranteed heat rate and Seller is unable to cure within thirty (30) days. - Monthly Efficiency Adjustment: The Monthly MWH Discharge Shortfall divided by the Delivered Discharge Energy is greater than 10% over a rolling twelve (12) month period. See Energy Storage Agreement and Tolling Agreement "Events of Default".
Safety	Seller to provide an initial Site Safety Plan, and various updates at different stages of project development and for different events. See Energy Storage Agreement, Section 14.
Indemnification	Each of the Seller and PG&E would provide customary indemnities.
Dispute Resolution	Customary provisions consistent with a PG&E PPA which would include resolving disputes first by management and executive negotiations. If disputes are not resolved after referral to the Parties' executives, then the Parties will resolve disputes by non-binding mediation and then binding "baseball-style" arbitration conducted in San Francisco, California under the rules of JAMS.
Governing Law	California.
Confidentiality	Customary provisions consistent with a PG&E PPA. Throughout the term of the Agreement, neither Party shall disclose the non-public terms or conditions of the

	Agreement to a third party; provided that, a Party may disclose confidential information to that Party's affiliates, to Buyer's Procurement Review Group, to the CPUC, or in order to comply with any applicable law.
Conditions precedent	Customary provisions consistent with PG&E PPA.

Monthly Efficiency Adjustment

(A) Monthly Efficiency Adjustment ($) = P_{ave} * $MWH_{D\Delta}$ (but not < 0); Where,

P_{ave} ($/MWH) = Discharge Energy weighted average of 5-minute LMP prices during monthly settlement intervals in which there is a Buyer's Discharge Schedule.

$MWH_{D\Delta}$ = Monthly MWH Discharge Shortfall = $MWH_{D,E} - MWH_{D,S}$ (but not <0)

(B) $MWH_{D,E}$ = Expected MWH discharged = $[(MWH_{C,S} - MWH_{C,\Delta SOC}) * DPD_{AVE} / CE_{AVE}] + MWH_{D,\Delta SOC} - MWH_{SD}$

$MWH_{D,S}$ = Metered Discharge Energy (MWH) for the month {positive number}

$MWH_{C,S}$ = Metered Charge Energy (MWH) for the month {positive number}

ΔSOC (lbs air) = the pounds of air in the reservoir at the end of the month minus the pounds of air in the reservoir at the beginning of the month. {Note: positive means net charging for the month; negative means net discharging for the month.}

$MWH_{D,\Delta SOC}$ = the discharge MWH associated with a negative change in the SOC from the beginning of the month to the end of the month. If ΔSOC is a positive number $MWH_{D,\Delta SOC}$ is equal to zero.

$$MWH_{D,\Delta SOC} = |\Delta SOC| * DPD_{AVE} \text{ \{note: } MWH_{D,\Delta SOC} = 0 \text{ if } \Delta SOC \geq 0\}$$

DPD_{AVE} ($MWH_D/10^6$lb-air) = weighted average monthly Discharge Power Density, calculated at $MWH_{D\text{-weighted}}$ operating conditions (ambient temperature, load factor, SOC, Total Run Hours) of Buyer's Discharge Schedule

$MWH_{C,\Delta SOC}$ = the charge MWH associated with a positive change in the SOC from the beginning of the month to the end of the month. If ΔSOC is a negative number $MWH_{C,\Delta SOC}$ is equal to zero.

$$MWH_{C,\Delta SOC} = |\Delta SOC| * CE_{AVE} \text{ \{note: } MWH_{C,\Delta SOC} = 0 \text{ if } \Delta SOC \leq 0\}$$

CE_{AVE} ($MWH_C/10^6$lb-air) = weighted average monthly Compression Effectiveness, calculated at $MWH_{C\text{-weighted}}$ operating conditions (ambient temperature, load factor, SOC, Total Run Hours) of Buyer's Charge Schedule

(C) MWH_{SD} = Self Discharge MWH for the month

$MWH_{SD} = T_{IDLE} * RSDR_E * DPD_{AVE}$

T_{IDLE} = sum of the hours (fractional number) of all settlement intervals for the month in which there is no Buyer's Schedule

$RSDR_E$ (lb-air/hour) = Expected Reservoir Self-Discharge Rate = the Reservoir Self-Discharge Rate calculated for the average expected State of Charge for the month.

A903: Resource Adequacy Only Term Sheet

CAES Project
Resource Adequacy Storage Agreement Term Sheet

<table>
<tr><td>1.</td><td>Project</td><td>Energy storage facility and associated interconnection facilities.</td></tr>
<tr><td>2.</td><td>Expected Initial Delivery Date (EIDD)
Initial Delivery Date (IDD)</td><td>The EIDD is the date on which Seller expects the Delivery Term to begin.

The IDD is the actual date on which the Delivery Term begins. It is the first day of the calendar month immediately following the calendar month in which all Conditions Precedent have been met; provided that, the IDD cannot occur before the EIDD. Buyer has a termination right if IDD has not occurred by 12/1/2024.</td></tr>
<tr><td>3.</td><td>Product</td><td>Capacity Attributes produced by or associated with the Project that Buyer may apply towards its resource adequacy requirements, as may be identified from time to time by the CAISO, CPUC, or other Governmental Authority.

“Capacity Attributes” means, with respect to the Project, any and all of the following in each case which are attributed to or associated with the Project at any time during the delivery term:

(a) Resource adequacy attributes, exclusive of local and flexible resource adequacy attributes

(b) Local resource adequacy attributes,

(c) Flexible resource adequacy attributes, and

(d) other current or future defined characteristics (including the ability to perform at a given capacity level, provide ancillary services, ramp up or down at a given rate, and flexibility or dispatch-ability attributes), certificates, tags, credits, howsoever entitled, including any accounting construct or framework applied to any compliance obligations.

Prior to the delivery term and in accordance with CAISO and CPUC requirements, Seller shall obtain the NQC and EFC for the Project in order to provide the Product.</td></tr>
<tr><td>4.</td><td>Monthly Contract Quantity</td><td>Seller shall provide Product to Buyer for its exclusive use during the Delivery Term in the amounts listed below (“Contract Quantity”). Buyer shall pay for the Contract Quantity in the amount listed below (“Payment Quantity”).

<table>
<tr><td>Month-Year</td><td>Contract Quantity (MW)</td><td>Payment Quantity (MW)</td><td>Contract Price ($/kW-month)</td></tr>
<tr><td></td><td>___ MW resource</td><td>___ MW (for all</td><td></td></tr>
</table>
</td></tr>
</table>

		<table><tr><td></td><td>adequacy attributes, local resource adequacy attributes, other resource adequacy attributes ___ MW flexible resource adequacy attributes</td><td>Contract Quantity)</td><td></td></tr></table> Seller may sell any Product from the Project in excess of its Contract Quantity to a third party or into the applicable market, if any. Seller shall, and shall cause its SC to, comply with all applicable CAISO provisions, CPUC Decisions and all other applicable rules, requirements or laws, including any bidding of the Project into the applicable CAISO markets as required by CAISO.
5.	**Seller Reduction Right**	Seller may decrease the Project capacity rating by up to 50% provided that PG&E receives notification of reduction in Project capacity before 12/31/2019, provided that such reduction shall result in the same proportional changes to the monthly contract capacities.
6.	**Delivery of Product**	Seller shall submit, or cause Seller's SC to submit, Supply Plans to identify and confirm the amount of each attribute of Product provided to Buyer from the Project for Buyer's Annual Filing and each Showing Month during the Delivery Term. No later than 15 business days prior to the applicable compliance showing deadlines for Buyer's Annual Filing and each Showing Month during the Delivery Term, Seller will submit to Buyer Seller's proposed Supply Plan for such Annual Filing and Showing Month with the amount of Product ("Delivered Quantity") in a format and to a platform as communicated by Buyer to Seller prior to the compliance showing.
7.	**Alternate Capacity**	If Seller is unable to deliver any attribute of Product at the Contract Quantity at any time during the Delivery Term, other than for the events specified below, Seller shall provide replacement Product for the Contract Quantity not provided from an alternate facility ("Alternate Capacity"). If Seller fails to provide Buyer with Alternate Capacity, Buyer will pay Seller for the ratio of (a) Delivered Quantity to (b) Contract Quantity, multiplied by (c) the Payment Quantity, and Seller shall be liable for Buyer's replacement damages and/or indemnify Buyer for penalties, fines, and costs. If the Seller is unable to provide Product at the Contract Quantity because of any of the events below, then Seller shall not provide Buyer with Alternate Capacity. Buyer will pay Seller for the Delivered Quantity, and Seller is not liable for replacement damages and/or required to indemnify Buyer for penalties, fines, or costs. (a) Planned Outage. Seller's obligations to deliver Product at the

		Contract Quantity shall be reduced proportionately by the amount of any Planned Outage, as long as Seller complies with the Planned Outage scheduling obligations as described in Section 6. If Seller fails to comply with the Planned Outage scheduling obligations as described in the Scheduling Outages section, then Seller shall be liable for damages and/or indemnify Buyer for penalties, fines or costs. (b) Reduction in NQC and/or EFC. Seller's obligations to deliver Product at the Contract Quantity shall be reduced proportionately by the amount of reduction in the Project's NQC and/or EFC, as determined by CAISO or Governmental Authority.
8.	**Scheduling Outages**	Seller shall, or cause the Project's SC to, submit to Buyer, a schedule of proposed Planned Outages for the Contract Quantity, if any, that will occur during the Delivery Term, ("Planned Outage Schedule"), on each of the following dates during the term of the Agreement (i) IDD, (ii) thirty (30) days before the applicable year-ahead Compliance Showings, and (iii) no later than January 1, April 1, July 1 and October 1 of each calendar year. Within twenty (20) Business Days after its receipt of a Planned Outage Schedule, Buyer shall notify Seller of any reasonable request for changes to the Planned Outage Schedule, and Seller shall, to the extent consistent with good utility practices, accommodate Buyer's requests regarding the timing of any Planned Outage for the Contract Quantity. Seller or the Project's SC shall notify Buyer within five (5) Business Days of any change to a Planned Outage Schedule submitted to Buyer. In the event that the CAISO declares a system emergency during a Planned Outage, Seller shall make reasonable efforts to reschedule such Planned Outage. Seller shall not schedule a Planned Outage without the prior written consent of Buyer (which shall not be unreasonably withheld).
9.	**Charging Energy**	Seller shall be responsible for any costs required to charge the Project.
10.	**Capacity Procurement Mechanism**	Seller shall cause the Project's SC to not accept any proposed Capacity Procurement Mechanism ("CPM") designation by the CAISO unless and until Buyer has agreed to accept such designation. In addition, Seller shall cause the Project's SC to promptly notify Buyer within one Business Day of the time SC receives a proposal from CAISO to designate any portion of the Contract Quantity as CPM capacity.
11.	**Scheduling Coordinator**	During the delivery term, Seller, or Seller's Third-Party SC will be the Scheduling Coordinator for the Project and will be responsible for the cost of such services and compliance with all CAISO requirements to enable Seller to deliver the Product, including any CAISO Must Offer Obligations ("MOO").
12.	**Gas**	Seller is responsible for all gas requirements and costs, including station use
13.	**GHG**	Seller is responsible for GHG compliance and costs

14.	**Compensation**	The monthly payment to Seller for the Product will be calculated as follows. Please see Appendix A for sample calculations. MPm = KPm m where, MPm = Monthly Payment for month *m*; KPm = Capacity Payment for month *m*; Capacity Payment. The monthly Capacity Payment will be calculated as follows: KPm = CPm x (DQm / CQm) x PQm, where, CPm = Contract Price for month m; DQm = Delivered Quantity for month m; CQm = Contract Quantity for month m; PQm = Payment Quantity for month m
15.	**Allocation of CAISO Payments and Costs**	As between Buyer and Seller, Seller shall retain any revenues Seller or Seller's SC may receive from and pay all costs, penalties, charges charged to Seller or Seller's SC by the CAISO or any other third party in connection with the Project, except as expressly provided otherwise in the Agreement.
16.	**Confidentiality**	Customary provisions consistent with a PG&E PPA. Throughout the term of the Agreement, neither Party shall disclose the non-public terms or conditions of the Agreement to a third party; provided that, a Party may disclose confidential information to that Party's affiliates, to Buyer's Procurement Review Group, to the CPUC, or in order to comply with any applicable law.
17.	**Events of Default**	Customary provisions consistent with a PG&E PPA and shall also include the following Seller events of default for performance: • The amount of Product provided from the Project (including during a Showing Month) averages less than 90% of the Contract Quantity over a rolling 12-month period for any reason, including due to any Outage, reduction in NQC/EFC, or delivery of Alternate Capacity. • The amount of Product provided from the Project (including during a Showing Month) averages less than 95% of the Contract

		Quantity over a rolling 24-month period for any reason, including due to any Outage, reduction in NQC/EFC, or delivery of Alternate Capacity
18.	**Attestation and Audit Rights**	Seller will be required to attest periodically that the amount of Product provided from the Project has averaged at least 90% of the Contract Quantity over the previous rolling 12-month period. Seller will be required to attest periodically that the amount of Product provided from the Project has averaged at least 95% of the Contract Quantity over the previous rolling 24-month period. At Buyer's request, Seller shall provide to Buyer all information and data necessary to demonstrate that Seller provided the Product from the Project.
19.	**CPUC Approval**	If CPUC Approval has not occurred on or before 365 days from the date on which Buyer files the Agreement with the CPUC seeking CPUC Approval, then either Party may terminate the Agreement. "CPUC Approval" means a final and non-appealable order of the CPUC, without conditions or modifications unacceptable to either of the Parties, which contains the following terms: (i) approval of this Agreement in its entirety, including all related payments to be made by the Buyer and Buyer's proposed cost recovery treatment, subject only to CPUC review of the Buyer's administration of this Agreement; (ii) a finding that procurement under the Agreement counts as proposed by Buyer toward the energy storage target established by CPUC Decision No. 13-10-040, or any subsequent related decision(s)
20.	**Seller Termination Right**	Seller has a no-fault termination right that may be exercised at any time until that date which is three hundred sixty-five (365) days after the date that PG&E receives CPUC Approval of the CAES Agreement.
21.	**Indemnification**	Each of the Seller and PG&E would provide customary indemnities.
22.	**Delivery Term**	The delivery term is [·] years, and the expected initial delivery date ("EIDD") is [·], which shall be the first day of the designated month. The initial delivery date ("IDD") is the later of the EIDD and the first day of the month directly following satisfaction of CPUC Approval and the Conditions Precedent. Seller may extend the deadline for IDD to the earlier of (A) three hundred sixty-five (365) days after the EIDD and (B) 12/1/2024 upon notice to Buyer 60 days prior to EIDD. If Seller has not achieved IDD as of EIDD for any reasons other than a Force Majeure event, for every day of the IDD Cure Period beginning with the day after EIDD through and including the date IDD occurs, Seller

		shall pay Buyer liquidated damages of $160/day per MW multiplied by the Payment Quantity ("Delay Damages"). Regardless of the reason for delay, Buyer has the right to terminate the CAES Agreement and pursue and collect damages from Seller arising from such termination if the Project does not achieve IDD by 12/1/2024; provided that, Seller will not be liable for damages if such failure solely is due to an Event of Force Majeure.
23.	**Conditions Precedent**	Customary provisions consistent with a PG&E PPA, adjusted for Seller Termination Right
24.	**Force Majeure**	Customary provisions consistent with a PG&E PPA. A Party shall not be considered to be in default in the performance of its obligations to the extent that the failure or delay of its performance is due to a Force Majeure event.
25.	**Safety**	Seller will be required to meet certain safety standards and may be required to submit to PG&E a site safety plan with respect to the Project. Seller's safety obligations will be reflective of the nature of the contract structure between Seller and Buyer.
26.	**Collateral**	Seller agrees to deliver to Buyer collateral in a form acceptable to Buyer to secure its obligations under the Agreement, which Seller shall maintain in full force and effect, as follows: (a) Project Development Security. Seller shall post Project Development Security in the form of cash or letter of credit, equal to $15.00/kW multiplied by the Payment Quantity, as of the Execution Date of the Agreement. Seller shall post an additional Project Development Security in the form of cash or letter of credit, equal to $45.00/kW multiplied by the Payment Quantity (for a total Project Development Security of $60.00/kW multiplied by the Payment Quantity), to be posted eleven months after CPUC Approval. (b) Prior to the IDD, Seller shall post Delivery Term Security in the form of cash or letter of credit, in an amount equal to the greater of $125.00/kW multiplied by the Payment Quantity or 10% of the sum of the highest estimated Capacity Payments for any 36-month period during the Delivery Term. Seller may apply the Project Development Security toward the Delivery Term Security.
27.	**Dispute Resolution**	Customary provisions consistent with a PG&E PPA which would include resolving disputes first by management and executive negotiations. If disputes are not resolved after referral to the Parties' executives, then the Parties will resolve disputes by non-binding mediation and then binding "baseball-style" arbitration conducted in San Francisco, California under the rules of JAMS.

28.	**Governing Law**	California

APPENDIX A

Sample calculation for Capacity Payment

Assumptions

1. Contract Price = $8/kw-month

2. Contract Quantity for month m:

20 MW resource adequacy attributes, local resource adequacy attributes
40 MW flexible resource adequacy attributes

3. Payment Quantity for month m = 20 MW

4. Delivered Quantity for month m:

20 MW resource adequacy attributes, local resource adequacy attributes
30 MW flexible resource adequacy attributes

Calculation

KPm = CPm x (DQm / CQm) x PQm
= $8/kw-mo x 1000 kw/MW x (50 MW / 60 MW) x 20 MW
= $133,333.33

A904: Capacity Storage Term Sheet

CAES Project
Capacity Storage Agreement Term Sheet

<table>
<tr><td>1.</td><td>Project</td><td>Energy storage facility and associated interconnection facilities.</td></tr>
<tr><td>2.</td><td>Expected Initial Delivery Date (EIDD)
Initial Delivery Date (IDD)</td><td>The EIDD is the date on which Seller expects the Delivery Term to begin.

The IDD is the actual date on which the Delivery Term begins. It is the first day of the calendar month immediately following the calendar month in which all Conditions Precedent have been met; provided that, the IDD cannot occur before the EIDD. Buyer has a termination right if IDD has not occurred by 12/1/2024.</td></tr>
<tr><td>3.</td><td>Product</td><td>Capacity Attributes produced by or associated with the Project that Buyer may apply towards its resource adequacy requirements, as may be identified from time to time by the CAISO, CPUC, or other Governmental Authority.

“Capacity Attributes” means, with respect to the Project, any and all of the following in each case which are attributed to or associated with the Project at any time during the delivery term:

(a) Resource adequacy attributes, exclusive of local and flexible resource adequacy attributes

(b) Local resource adequacy attributes,

(c) Flexible resource adequacy attributes, and

(d) other current or future defined characteristics (including the ability to perform at a given capacity level, provide ancillary services, ramp up or down at a given rate, and flexibility or dispatch-ability attributes), certificates, tags, credits, howsoever entitled, including any accounting construct or framework applied to any compliance obligations.

Prior to the delivery term and in accordance with CAISO and CPUC requirements, Seller shall obtain the NQC and EFC for the Project in order to provide the Product.</td></tr>
<tr><td>4.</td><td>Monthly Contract Quantity</td><td>Seller shall provide Product to Buyer for its exclusive use during the Delivery Term in the amounts listed below (“Contract Quantity”). Buyer shall pay for the Contract Quantity in the amount listed below (“Payment Quantity”).

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<tr><td>Month-Year</td><td>Contract Quantity (MW)</td><td>Payment Quantity (MW)</td><td>Contract Price ($/kW-month)</td></tr>
<tr><td></td><td>___ MW resource</td><td>___ MW (for all</td><td></td></tr>
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</td></tr>
</table>

		<table><tr><td></td><td>adequacy attributes, local resource adequacy attributes, other resource adequacy attributes ___ MW flexible resource adequacy attributes</td><td>Contract Quantity)</td><td></td></tr></table> Seller may sell any Product from the Project in excess of its Contract Quantity to a third party or into the applicable market, if any. Seller shall, and shall cause its SC to, comply with all applicable CAISO provisions, CPUC Decisions and all other applicable rules, requirements or laws, including any bidding of the Project into the applicable CAISO markets as required by CAISO.
5.	**Seller Reduction Right**	Seller may decrease the Project capacity rating by up to 50% provided that PG&E receives notification of reduction in Project capacity before 12/31/2019, provided that such reduction shall a) result in the same proportional changes to the monthly contract capacities and b) shall not change contractual parameters used for variable settlement, including efficiency, duration, VOM and heat rate.
6.	**Delivery of Product**	Seller shall submit, or cause Seller's SC to submit, Supply Plans to identify and confirm the amount of each attribute of Product provided to Buyer from the Project for Buyer's Annual Filing and each Showing Month during the Delivery Term. No later than 15 business days prior to the applicable compliance showing deadlines for Buyer's Annual Filing and each Showing Month during the Delivery Term, Seller will submit to Buyer Seller's proposed Supply Plan for such Annual Filing and Showing Month with the amount of Product ("Delivered Quantity") in a format and to a platform as communicated by Buyer to Seller prior to the compliance showing.
7.	**Alternate Capacity**	If Seller is unable to deliver any attribute of Product at the Contract Quantity at any time during the Delivery Term, other than for the events specified below, Seller shall provide replacement Product for the Contract Quantity not provided from an alternate facility ("Alternate Capacity"). If Seller fails to provide Buyer with Alternate Capacity, Buyer will pay Seller for the ratio of (a) Delivered Quantity to (b) Contract Quantity, multiplied by (c) the Payment Quantity, and Seller shall pay Buyer the Variable Settlement at the Payment Quantity and be liable for Buyer's replacement damages and/or indemnify Buyer for penalties, fines, and costs. If the Seller is unable to provide Product at the Contract Quantity because of any of the events below, then Seller shall not provide Buyer with Alternate Capacity. Buyer will pay Seller for the Delivered Quantity, and Seller is not liable for replacement damages and/or required to indemnify Buyer for

		penalties, fines, or costs. (a) Planned Outage. Seller's obligations to deliver Product at the Contract Quantity and pay the Variable Settlement at the Payment Quantity shall be reduced proportionately by the amount of any Planned Outage, as long as Seller complies with the Planned Outage scheduling obligations as described in Section 6. If Seller fails to comply with the Planned Outage scheduling obligations as described in the Scheduling Outages section, then Seller shall be liable for damages and/or indemnify Buyer for penalties, fines or costs. (b) Reduction in NQC and/or EFC. Seller's obligations to deliver Product at the Contract Quantity and pay the Variable Settlement at the Payment Quantity shall be reduced proportionately by the amount of reduction in the Project's NQC and/or EFC, as determined by CAISO or Governmental Authority.
8.	**Scheduling Outages**	Seller shall, or cause the Project's SC to, submit to Buyer, a schedule of proposed Planned Outages for the Contract Quantity, if any, that will occur during the Delivery Term, ("Planned Outage Schedule"), on each of the following dates during the term of the Agreement (i) IDD, (ii) thirty (30) days before the applicable year-ahead Compliance Showings, and (iii) no later than January 1, April 1, July 1 and October 1 of each calendar year. Within twenty (20) Business Days after its receipt of a Planned Outage Schedule, Buyer shall notify Seller of any reasonable request for changes to the Planned Outage Schedule, and Seller shall, to the extent consistent with good utility practices, accommodate Buyer's requests regarding the timing of any Planned Outage for the Contract Quantity. Seller or the Project's SC shall notify Buyer within five (5) Business Days of any change to a Planned Outage Schedule submitted to Buyer. In the event that the CAISO declares a system emergency during a Planned Outage, Seller shall make reasonable efforts to reschedule such Planned Outage. Seller shall not schedule a Planned Outage without the prior written consent of Buyer (which shall not be unreasonably withheld).
9.	**Charging Energy**	Seller shall be responsible for any costs required to charge the Project.
10.	**Capacity Procurement Mechanism**	Seller shall cause the Project's SC to not accept any proposed Capacity Procurement Mechanism ("CPM") designation by the CAISO unless and until Buyer has agreed to accept such designation. In addition, Seller shall cause the Project's SC to promptly notify Buyer within one Business Day of the time SC receives a proposal from CAISO to designate any portion of the Contract Quantity as CPM capacity.
11.	**Scheduling Coordinator**	During the delivery term, Seller, or Seller's Third-Party SC will be the Scheduling Coordinator for the Project and will be responsible for the cost of such services and compliance with all CAISO requirements to enable Seller to deliver the Product, including any CAISO Must Offer Obligations ("MOO").

12.	**Gas**	Seller is responsible for all gas requirements and costs, including station use.
13.	**GHG**	Seller is responsible for GHG compliance and costs.
14.	**Compensation**	The monthly payment to Seller for the Product will be calculated as follows. Please see Appendix A for sample calculations. MPm = KPm – VSm where, MPm = Monthly Payment for month *m*; KPm = Capacity Payment for month *m*; VSm = Variable Settlement for month *m* <u>Capacity Payment</u>. The monthly Capacity Payment will be calculated as follows: KPm = CPm x (DQm / CQm) x PQm, where, CPm = Contract Price for month m; DQm = Delivered Quantity for month m; CQm = Contract Quantity for month m; PQm = Payment Quantity for month m <u>Variable Settlement</u>. The monthly Variable Settlement will be calculated as follows: The Variable Settlement may need to be adjusted depending on a resource's operational characteristics. VSm = PQm x ∑ max (SASd, ESd, RASd) where, PQm = Payment Quantity for month m; ∑ = the sum from d = 1 to n, where n = total number of days in a month; SASd = Spin Ancillary Services Settlement for day d, ESd = Energy Settlement for day d; and RASd = Regulation Ancillary Services Settlement for day d <u>Spin Ancillary Services Settlement</u> will be calculated as follows:

		SASd = ∑ SASPi where, ∑ = the sum from i = 1 to (y – z), where y is the number of hours in a day and z is the number of hours of duration of the Project; SASPi = the i-th largest Spin Day-Ahead Price for all Settlement Periods in a day <u>Energy Settlement</u> will be calculated as follows: ESd = ∑ (large (DAPi) – (small (DAPi) / E) – VOM- HR*(Gas+ GHG)) where, ∑ = the sum from i = 1 to z, where z is the number of hours of duration of the Project; Large (DAPi) = the i-th largest Day-Ahead Price for all Settlement Periods in a day; Small (DAPi) = the i-th smallest Day-Ahead Price for all Settlement Periods in a day; E = Efficiency of the Project, stated in a percentage, set forth in the Agreement; VOM = Variable O&M value in $/MWh, set forth in the Agreement In the event that for any i, (large (DAPi) – small (DAPi) / E – VOM) – HR*(Gas+GHG)) is less than zero, then (large (DAPi) – small (DAPi) / E – VOM) – HR*(Gas+GHG)) for such i is equal to zero. HR= Contract Heat Rate Gas = the sum of the Gas Index Price and the Gas Transport Charges GHG = the product of the GHG Price and 0.05302 metric tons/ MMBtu, where the GHG Price is the Allowance Price published by the CAISO for the Day-Ahead Market on the Trading Day. <u>Regulation Ancillary Services Settlement</u> will be calculated as follows: RASd = ∑ (RDASPi + RUASPi,)where, ∑ = for day d, the sum from i =1 to z, where z is the number of hours of duration of the Project; RDASPi = the i-th largest Regulation Down Day Ahead Price for all Settlement Periods in a day RUASPi = the i-th largest Regulation Up Day Ahead Price for all Settlement Periods in a day

15.	**Allocation of CAISO Payments and Costs**	As between Buyer and Seller, Seller shall retain any revenues Seller or Seller's SC may receive from and pay all costs, penalties, charges charged to Seller or Seller's SC by the CAISO or any other third party in connection with the Project, except as expressly provided otherwise in the Agreement.
16.	**Confidentiality**	Customary provisions consistent with a PG&E PPA. Throughout the term of the Agreement, neither Party shall disclose the non-public terms or conditions of the Agreement to a third party; provided that, a Party may disclose confidential information to that Party's affiliates, to Buyer's Procurement Review Group, to the CPUC, or in order to comply with any applicable law.
17.	**Events of Default**	Customary provisions consistent with a PG&E PPA and shall also include the following Seller events of default for performance: • The amount of Product provided from the Project (including during a Showing Month) averages less than 90% of the Contract Quantity over a rolling 12-month period for any reason, including due to any Outage, reduction in NQC/EFC, or delivery of Alternate Capacity. • The amount of Product provided from the Project (including during a Showing Month) averages less than 95% of the Contract Quantity over a rolling 24-month period for any reason, including due to any Outage, reduction in NQC/EFC, or delivery of Alternate Capacity.
18.	**Attestation and Audit Rights**	Seller will be required to attest periodically that the amount of Product provided from the Project has averaged at least 90% of the Contract Quantity over the previous rolling 12-month period. Seller will be required to attest periodically that the amount of Product provided from the Project has averaged at least 95% of the Contract Quantity over the previous rolling 24-month period. At Buyer's request, Seller shall provide to Buyer all information and data necessary to demonstrate that Seller provided the Product from the Project.
19.	**CPUC Approval**	If CPUC Approval has not occurred on or before 365 days from the date on which Buyer files the Agreement with the CPUC seeking CPUC Approval, then either Party may terminate the Agreement. "CPUC Approval" means a final and non-appealable order of the CPUC, without conditions or modifications unacceptable to either of the Parties, which contains the following terms: (i) approval of this Agreement in its entirety, including all related

		payments to be made by the Buyer and Buyer's proposed cost recovery treatment, subject only to CPUC review of the Buyer's administration of this Agreement; (ii) a finding that procurement under the Agreement counts as proposed by Buyer toward the energy storage target established by CPUC Decision No. 13-10-040, or any subsequent related decision(s).
20.	**Seller Termination Right**	Seller has a no-fault termination right that may be exercised at any time until that date which is three hundred sixty-five (365) days after the date that PG&E receives CPUC Approval of the CAES Agreement.
21.	**Indemnification**	Each of the Seller and PG&E would provide customary indemnities.
22.	**Delivery Term**	The delivery term is [·] years, and the expected initial delivery date ("EIDD") is [·], which shall be the first day of the designated month. The initial delivery date ("IDD") is the later of the EIDD and the first day of the month directly following satisfaction of CPUC Approval and the Conditions Precedent. Seller may extend the deadline for IDD to the earlier of (A) three hundred sixty-five (365) days after the EIDD and (B) 12/1/2024 upon notice to Buyer 60 days prior to EIDD. If Seller has not achieved IDD as of EIDD for any reasons other than a Force Majeure event, for every day of the IDD Cure Period beginning with the day after EIDD through and including the date IDD occurs, Seller shall pay Buyer liquidated damages of $160/day per MW multiplied by the Payment Quantity ("Delay Damages"). Regardless of the reason for delay, Buyer has the right to terminate the CAES Agreement and pursue and collect damages from Seller arising from such termination if the Project does not achieve IDD by 12/1/2024; provided that, Seller will not be liable for damages if such failure solely is due to an Event of Force Majeure.
23.	**Conditions Precedent**	Customary provisions consistent with a PG&E PPA, adjusted for Seller Termination Right
24.	**Force Majeure**	Customary provisions consistent with a PG&E PPA. A Party shall not be considered to be in default in the performance of its obligations to the extent that the failure or delay of its performance is due to a Force Majeure event.
25.	**Safety**	Seller will be required to meet certain safety standards and may be required to submit to PG&E a site safety plan with respect to the Project. Seller's safety obligations will be reflective of the nature of the contract structure between Seller and Buyer.
26.	**Collateral**	Seller agrees to deliver to Buyer collateral in a form acceptable to Buyer to secure its obligations under the Agreement, which Seller shall maintain in

		full force and effect, as follows: (a) Project Development Security. Seller shall post Project Development Security in the form of cash or letter of credit, equal to $15.00/kW multiplied by the Payment Quantity, as of the Execution Date of the Agreement. Seller shall post an additional Project Development Security in the form of cash or letter of credit, equal to $45.00/kW multiplied by the Payment Quantity (for a total Project Development Security of $60.00/kW multiplied by the Payment Quantity), to be posted eleven months after CPUC Approval. (b) Prior to the IDD, Seller shall post Delivery Term Security in the form of cash or letter of credit, in an amount equal to the greater of $125.00/kW multiplied by the Payment Quantity or 10% of the sum of the highest estimated Capacity Payments for any 36-month period during the Delivery Term. Seller may apply the Project Development Security toward the Delivery Term Security.
27.	**Dispute Resolution**	Customary provisions consistent with a PG&E PPA which would include resolving disputes first by management and executive negotiations. If disputes are not resolved after referral to the Parties' executives, then the Parties will resolve disputes by non-binding mediation and then binding "baseball-style" arbitration conducted in San Francisco, California under the rules of JAMS.
28.	**Governing Law**	California.

APPENDIX A

Sample calculation for Capacity Payment

Assumptions

1. Contract Price = $8/kw-month

2. Contract Quantity for month m:

20 MW resource adequacy attributes, local resource adequacy attributes
40 MW flexible resource adequacy attributes

3. Payment Quantity for month m = 20 MW

4. Delivered Quantity for month m:

20 MW resource adequacy attributes, local resource adequacy attributes
30 MW flexible resource adequacy attributes

Calculation

KPm = CPm x (DQm / CQm) x PQm
= $8/kw-mo x 1000 kw/MW x (50 MW / 60 MW) x 20 MW
= $133,333.33

Sample Calculations for Variable Settlement for day d

Assumptions

1. Day-Ahead Prices:

Hour	Energy	Regulation Up	Regulation Down	Spin
1	$22.07	$0.89	$5.57	$0.10
2	$22.03	$1.39	$4.36	$0.10
3	$21.37	$0.10	$6.45	$0.10
4	$21.56	$1.39	$4.58	$0.10
5	$22.94	$0.90	$2.92	$0.10
6	$25.69	$1.50	$2.64	$0.25
7	$32.28	$4.64	$3.81	$2.44
8	$35.78	$9.97	$3.26	$8.39
9	$29.30	$4.25	$3.59	$3.80
10	$25.78	$1.16	$3.18	$0.70
11	$24.94	$0.71	$0.00	$0.25
12	$24.86	$0.71	$3.81	$0.25
13	$24.65	$0.72	$3.81	$0.25
14	$24.48	$0.71	$3.37	$0.25
15	$24.80	$0.90	$0.00	$0.25
16	$26.19	$0.71	$3.82	$0.25
17	$26.94	$0.71	$3.14	$0.25
18	$31.59	$2.05	$3.81	$1.73
19	$34.50	$5.58	$3.81	$4.19
20	$43.01	$12.44	$2.93	$10.23
21	$38.93	$9.65	$2.93	$7.44
22	$34.20	$4.29	$3.81	$3.80
23	$31.05	$2.40	$1.14	$1.00
24	$28.65	$2.93	$1.80	$0.25

2. Number of hours of duration of Project = 4

3. Efficiency = 85%

4. VOM = $0/MWh

Spin Ancillary Services Settlement Calculation

SASd = ∑ SASPi,

where ∑ = sum from i to 20,

Rank		Spin
1	$	10.23
2	$	8.39
3	$	7.44
4	$	4.19
5	$	3.80
6	$	3.80
7	$	2.44
8	$	1.73
9	$	1.00
10	$	0.70
11	$	0.25
12	$	0.25
13	$	0.25
14	$	0.25
15	$	0.25
16	$	0.25
17	$	0.25
18	$	0.25
19	$	0.25
20	$	0.10

SASd = $46.07/MW

Energy Settlement Calculation

ESd = ∑ (large (DAPi) – (small (DAPi) / E) – VOM),

where ∑ = sum from i to 4

Rank	Large	Small
1	$ 43.01	$ 21.37
2	$ 38.93	$ 21.56
3	$ 35.78	$ 22.03
4	$ 34.50	$ 22.07

Example for Rank 1

Large (DAP_1) – (small DAP_1) / E) – VOM = $43.01/MWh – ($21.37/MWh / 85%) – $0/MWh
= $17.86/MWh

Regulation Ancillary Services Settlement

RASd = ∑ (RDASPi + RUASPi,),

where ∑ = sum from i to 4

Rank	Reg Up	Reg Down
1	$ 12.44	$ 6.45
2	$ 9.97	$ 5.57
3	$ 9.65	$ 4.58
4	$ 5.58	$ 4.36

Example for Rank 1

$RDASP_1 + RUASP_1$ = $6.45/MW + $12.44/MW
= $18.89/MW

A905: RFO Protocol

Smart Grid Compressed Air Energy Storage Demonstration Project Request for Offers

Solicitation Protocol

2015 CAES RFO

October 9, 2015

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LIST OF APPENDICES

I. Introduction and Overview

Pacific Gas and Electric Company ("PG&E") is issuing this Smart Grid Compressed Air Energy Storage ("CAES") Demonstration Project Request For Offers (referred to herein as the "RFO," "Solicitation," or "2015 CAES RFO") to (1) potentially procure products and services related to PG&E's CAES demonstration project, and (2) determine the technical and economic feasibility of energy storage using compressed air ("Project"). This RFO is issued in accordance with the California Public Utilities Commission's ("CPUC") January 21, 2010 Decision ("D.") 10-01-025 authorizing certain funding for the Project.

The Project is supported by various entities and is intended to enable PG&E to demonstrate the viability of advanced compressed air energy storage. The CPUC has authorized PG&E to commit up to $24.9 million, which matches an award of $24.9 million from the United States Department of Energy ("DOE")[1] under the American Recovery and Reinvestment Act, for Phase 1 of a Smart Grid Compressed Air Energy Storage demonstration project ("Phase 1"). In August 2013, the California Energy Commission ("CEC") awarded $1.0 million in funds to analyze how an advanced, underground compressed air energy storage plant might provide ancillary services to the California Independent System Operator Corporation's ("CAISO") electric grid to help California meet its renewable energy resource goals.[2]

The Project would use energy to compress air and inject it into a depleted natural gas reservoir in a porous rock formation that is approximately one half to one mile underground ("Proposed Reservoir"). When electricity is needed, the compressed air would be (1) released, (2) heated using natural gas, and (3) expanded in a turbine that powers an electric generator at an energy conversion facility ("Energy Conversion Facility"). The Proposed Reservoir and Energy Conversion Facility sites are in San Joaquin County, California, and would be connected via an air pipeline. There are other components that may be part of the Project design, such as a natural gas pipeline and generator electricity tie-line to the Energy Conversion Facility, a recycled cooling water supply pipeline, and wastewater injection wells. These components are not included in this RFO and therefore would need to be procured by a Participant (defined below) outside the RFO context.

This document ("Solicitation Protocol") describes the process by which PG&E will request and evaluate offers submitted by qualified entities ("Participants") interested in developing the Project.

Background

There are three phases of the Project, which are described below:

Phase 1: The first phase consists of evaluating the feasibility of developing a CAES facility. PG&E has identified a site with technical potential and is issuing the RFO to determine its economic and commercial potential. PG&E will submit a Final Technical Report to the DOE, CPUC and CEC that, among other items, includes information on the costs and benefits of the Project. The Final Technical Report will be a public document and will provide specific findings on the geology, preliminary engineering, RFO results, and other information that PG&E has obtained.

[1] Award DE-OE0000198.
[2] The CEC award reduced the CPUC-authorized matching funds by an equal amount.

Information submitted by Participants in response to this RFO will be consolidated and summarized, but not specifically attributed to any Participant, in the Final Technical Report.

Phase 2: If PG&E decides to proceed with the Project based on RFO results, the second phase would include construction, commissioning, and commercial operation of the Project.

Phase 3: The third phase involves monitoring of the Project to collect two (2) years of operational data and technological information.

Phase 1 seeks to accomplish certain DOE Project Objectives, which are to:

> "1. Verify the technical performance of advanced CAES technology using a porous rock formation as the underground storage reservoir;
>
> 2. Integrate intermittent renewable resources by using the CAES plant to provide ramping/regulation to steady the power fluctuations from load and intermittent renewables;
>
> 3. Use the CAES plant to provide emergency spinning/non-spinning reserve (synchronous and non-synchronous); and
>
> 4. Perform Volt Amperes-Reactive (VAR)/voltage support."[3]

It is important to note that this Project is a demonstration project whose viability is being studied under Phase 1, as explained above. At the end of this Solicitation, if PG&E determines that a Participant can design, construct, and operate a viable Project, then PG&E may select that Participant and engage in negotiations relating to the "CAES Agreement," which is described in Section III, Agreement Types, below. However, because the technology and other attributes of the Project, including its design, could vary, the RFO requirements and proposed commercial structure may evolve throughtout the RFO process. If the Project moves forward, then as between PG&E and the Participant, the Participant would be responsible for designing, building, owning, operating, and maintaining the Project. PG&E would seek to transfer applicable land rights for the Project in the event negotiations with such Participant conclude successfully with executed agreements.

I.A. Solicitation Overview

PG&E seeks offers (each, an "Offer") for an Energy Conversion Facility using air stored at the Proposed Reservoir in San Joaquin County. PG&E is seeking to purchase energy, capacity, ancillary services, and, as applicable, renewable and environmental attributes, and any other benefits ("Products") from a new Energy Conversion Facility to be designed, constructed, operated, and maintained by Participant that utilizes the San Joaquin site, or another site obtained by the Participant.

PG&E requests that interested parties meeting the criteria established in this Solicitation Protocol submit an Offer in accordance with the directions provided below. By responding to this RFO, such party agrees to be bound by all of the terms, conditions and other provisions of this RFO, and any changes or supplements to it, that may be issued by PG&E.

[3] PG&E's Assistance Agreement with the US Department of Energy, DE-OE0000198, Attachment 2, Section A.

I.B. RFO Websites and Communications

1. PG&E Website

This Solicitation Protocol, announcements, frequently asked questions ("FAQs") and other information are available for Participants to download from PG&E's website at www.pge.com/rfo (select "2015 CAES RFO"). Please note that these documents are subject to change as necessary to meet RFO needs.

All correspondence will be monitored by the Independent Evaluator ("IE"). An IE is an independent, third-party evaluator who will monitor and evaluate PG&E's conduct of the Solicitation for compliance with applicable CPUC standards. To ensure the accuracy and consistency of information provided to all Participants, PG&E requests that Participants communicate by e-mail to both PG&E (CAESRFO@pge.com) and to each representative of the Boston Pacific Company, Inc., the IE that PG&E has retained for this RFO: Frank Mossburg (fmossburg@bostonpacific.com) and Sam Choi (schoi@bostonpacific.com).

With respect to any matter of general interest raised by a Participant, PG&E may, without reference to the inquiring Participant, post the question and PG&E's response on PG&E's website. While PG&E will review all inquiries, it may decline to respond to any particular inquiry.

2. Power Advocate Website

All Offers for this RFO must be submitted electronically through Power Advocate, an on-line, third-party bidding platform. Information about how to register for Power Advocate is provided in Section VI, Offer Submittal Process, below.

3. PG&E Data Room

In addition to the public Solicitation material posted by PG&E at www.pge.com/rfo, PG&E will post all Project-related documents associated with this Solicitation to an electronic data room ("Data Room"). The Data Room contains PG&E's findings on geology, preliminary engineering, environmental analysis, and other information that PG&E has gathered through testing and analyses of the San Joaquin site. An overview of the contents of the Data Room is provided in Appendix 3, Data Room Contents.

Participants will need to refer to these Data Room documents to prepare their Offer. The amount of information available in the Data Room is very sizeable and complex; therefore, Participants are encouraged to take the steps necessary to obtain access to the Data Room as soon as possible. To gain access to the Data Room, Participants must submit to PG&E via Power Advocate (1) an executed Confidentiality Agreement (Appendix 1) or a redline version of it, if modifications are proposed, and (2) sufficient and complete information regarding their respective experience, qualifications and organization (Appendix 2). Participants who lack a mutually acceptable and executed Confidentiality Agreement and/or sufficient experience and qualifications will not be provided access to the Data Room. Participants with fully executed Confidentiality Agreements and sufficient experience and qualifications will be provided access to the Data Room via a link to the Data Room site.

PG&E DISCLAIMERS REGARDING DATA ROOM MATERIALS. PG&E MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND OR NATURE, EXPRESS OR IMPLIED, WITH RESPECT TO ANY OF THE DOCUMENTS, INFORMATION, AND MATERIALS PROVIDED IN THE DATA ROOM (COLLECTIVELY, "DATA ROOM MATERIALS") OR TO THE ACCURACY AND COMPLETENESS OF ANY OF THE DATA ROOM MATERIALS.

WITHOUT LIMITING THE FOREGOING, PG&E MAKES NO REPRESENTATION OR WARRANTY OF MERCHANTABILITY, USAGE OR SUITABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WITH RESPECT TO ANY OF THE DATA ROOM MATERIALS, OR THE ABSENCE OF ANY INACCURACIES THEREIN, ANY SUCH REPRESENTATIONS AND WARRANTIES BEING HEREBY EXPRESSLY DISCLAIMED. FURTHER, NO MATERIAL OR INFORMATION PROVIDED BY OR COMMUNICATIONS BY PG&E OR ITS REPRESENTATIVES TO ANY PARTICIPANT WILL CAUSE OR CREATE ANY WARRANTY, EXPRESS OR IMPLIED, AS TO THE CONDITION OR QUALITY OF ANY OF THE DATA ROOM MATERIALS.

I.C. Schedule Overview

The schedule for this RFO is provided below. All deadlines close at 5:00 P.M. Pacific Prevailing Time ("PPT"), unless otherwise noted. Section I.D, Events in the RFO Schedule, contains additional details for some of the steps in the schedule.

Ongoing	Participants are invited to register on-line for the RFO at www.pge.com/rfo and clicking on "2015 CAES RFO."
October 9, 2015	PG&E issues the RFO.
October 9, 2015 and ongoing	Participants may submit to PG&E executed or redlined (if proposing modifications) Confidentiality Agreement (Appendix 1) and completed responses to the Experience, Qualifications and Organization inquiries (Appendix 2) to request access to the Data Room.
October 16, 2015	Data Room will be available to Participants PG&E has approved for access.
October 26, 2015	Deadline for Participants to submit registration for CAES General Participants' Webinar.
October 29, 2015	General Participants' Webinar.
November 15, 2015 thru March 31, 2016	Optional individual CAES Project site visits and visits to the California State University Bakersfield Core Repository for viewing of reservoir cores may begin for Participants who have been approved for access to the Data Room.
March 2016 (date and time TBD)	Participants' Offer Form Webinar.
No later than March 1, 2016	PG&E posts the CAES Agreement.
May 9, 2016	All Offers must be received by PG&E via the Power Advocate website no later than 1:00 P.M. PPT.
July 20, 2016	PG&E notifies shortlisted Participants and requests Shortlist Offer Deposits.

August 3, 2016	Participant notifies PG&E whether or not it accepts PG&E's Shortlist position and posts any Shortlist Offer Deposit.
February 28, 2017 (approximate)	If applicable, PG&E and shortlisted Participants complete negotiation of a CAES Agreement, which shall be subject to "CPUC Approval," as provided in the CAES Agreement.
TBD	PG&E issues Final Technical Report to DOE.

The RFO schedule is subject to change at PG&E's sole discretion at any time and for any reason. PG&E will endeavor to notify Participants of any schedule change, but shall not be responsible or liable in any way or manner, or for any costs, expenses or liability incurred by any Participant or any third party to participate in this RFO, including any expense or liability due to a change in the schedule or for failing to provide notice of any change. PG&E reserves the right to execute agreements with individual Participants at any time after shortlisting. PG&E plans to seek CPUC Approval of all executed agreements resulting from this RFO (as discussed in Section XV of this Protocol). The CPUC's approval process may take up to eighteen (18) months, or longer, from the date PG&E submits an agreement for CPUC Approval. Therefore, Participants should factor the CPUC's approval process into their Project development timelines and proposals.

PG&E is committed to minimizing the amount of time required to negotiate agreements, while ensuring that Participants have sufficient time to prepare Offers and PG&E has sufficient time to evaluate and review Offers. Negotiations of shortlisted Offers may conclude sooner or be extended beyond the dates specified above.

I.D. Events in the RFO Schedule

1. On-line Registration

Participants may register at the RFO website http://www.pge.com/rfo to receive timely announcements and updates about PG&E's RFO and other related information. On-line registration is not required, but is strongly recommended. Participants who register will receive informational notices for this RFO.

2. PG&E Issues the Solicitation; Access to Data Room Materials

Documents associated with the Solicitation are posted to PG&E's CAES RFO website. In addition, PG&E will post in the Data Room PG&E's findings on geology, preliminary engineering, environmental analysis, and other information that PG&E has gathered through testing and analyses of the San Joaquin site. A Participant will need to review the Data Room materials to prepare its Offer(s). See Section 1.B.3, PG&E Data Room, for the requirements to gain access to the Data Room.

3. Participants' Webinar

PG&E will hold a Participants' Webinar on October 29, 2015. The Webinar will provide an overview of the RFO and requirements. Call-in information and an attendance registration form will be provided on the Solicitation website. In order to facilitate the number of RFO Webinar Participants, PG&E requests that Participants submit the Participants' Webinar Registration Form by no later than 5:00 p.m. PPT on October 26, 2015.

4. Participants' Offer Form Webinar

PG&E will hold a Participant's Offer Form Webinar in March 2016. During this Webinar, PG&E will provide an overview of the CAES RFO Offer Form. Call-in information will be provided on CAES RFO website.

5. Offers Due

A Participant must submit its Offer to PG&E by 1 p.m. PPT on May 9, 2016 in compliance with the directions found in Section VI, Offer Submittal Process. Offer package(s) must include the documents described in Section VI.D, Required Information.

Upon receiving Offers, and as necessary, PG&E may request a meeting or conference call to discuss a Participant's Offer. The purpose of these discussions is to provide PG&E with clarity and a full understanding of the details of an Offer for its evaluation. The IE may monitor these discussions.

6. PG&E Selects Shortlist

PG&E expects to select a list of Participants for continued evaluation and negotiation ("Shortlist"). PG&E expects to notify those Participants selected for the Shortlist by a notice emailed to such Participants ("Shortlist Notice"). Please refer to Section XIII, Shortlist Notification to Participants, for further information about the Shortlist process.

To continue, a selected Participant shall post a Shortlist Offer Deposit as described in Section V.C, Shortlist Offer Deposit. PG&E reserves the right to request additional information from any selected Participant on the Shortlist.

I.E. PG&E's Reservation of Rights

This RFO is an invitation to submit Offers to PG&E; it does not constitute an offer to buy and creates no obligation to execute any agreement or to enter into any transaction under an agreement. PG&E reserves the right to request information from a Participant at any time during the Solicitation process. PG&E reserves the right, in its sole discretion, to reject any Offer at any time for any reason, including but not limited to, grounds that the Offer does not conform to the terms and conditions of this RFO or contains terms that are not acceptable to PG&E. PG&E also retains the right, in its sole discretion, at any time, (1) to formulate and implement new or additional criteria for the evaluation and selection of Offers; (2) to negotiate with any Participant; or (3) to modify this RFO as it deems appropriate to implement the RFO and to comply with applicable law or other direction provided by the CPUC. In addition, PG&E reserves the right to either suspend or terminate this RFO at any time for any reason. PG&E will not be liable, in any way, by reason of such withdrawal, rejection, suspension, termination or any other action described in this paragraph, to Participant or to any third party. PG&E will not reimburse the Participant for its expense of participating in this RFO under any circumstances, regardless of whether such Participant's Offer is selected, not selected, rejected or disqualified.

II. Eligibility Requirements

PG&E will consider an Offer that meets the applicable specifications described below.

II.A. Project Location

The Project must be based at the reservoir identified in this Solicitation (Proposed Reservoir) and use the reservoir as the compressed air storage medium. The Energy Conversion Facility may be at the site studied by PG&E, or the Participant may propose an alternate site. However, the Delivery Point for the electricity products must be within the CAISO-controlled transmission grid.

The Project must, at a minimum, supply the maximum value of the output of at least one generation unit. A generation unit generally includes: a recuperator, high pressure expander, high pressure combustor, low pressure combustor, low pressure expander, and an associated portion of plant auxiliaries to support operation.

II.B. Commercial Online Date

The Project must bid an Initial Delivery Date (as defined in the CAES Agreement) of no later than December 31, 2024, which must include any and all extensions for permitted delays.

II.C. Certain Performance and Operational Requirements and Preferences

Requirements. PG&E requires the following:

1. The capability of the offer must be between 100 MW and 350 MW.

2. The Project must have at least a four (4) hour continuous minimum discharge (i.e., generation) duration, the ability to transition from charging (i.e., air compressing) level to discharging in forty-five (45) minutes or less, and the ability to be dispatched seven (7) days/week, twenty-four (24) hours per day. All operational limitations must be based on clear physical/equipment restrictions or external limitations established by statute, regulation or ordinance (e.g., air permit constraints), and be detailed in the Offer.

2. The Project must directly interconnect into the CAISO transmission grid and have at least one dedicated CAISO meter on the high side of a step-up transformer. In addition, the Project will be required to meter each compressor or generation unit and may be required to meter auxiliary load with revenue quality meters, depending on system design. The Project must be able to respond to the electronic signals of PG&E, a third-party Scheduling Coordinator, or CAISO systems (e.g., SCADA, Automatic Generation Control ("AGC"), and Automated Dispatch Signal ("ADS")).

3. Participants must offer a Project that will be capable of delivering Resource Adequacy ("RA") value (fully deliverable under the CAISO Tariff requirements) and Flexible RA. The Project must meet the applicable CPUC requirements for duration and CAISO requirements for deliverability as well as any other requirements that will enable PG&E to receive all of the RA and Flexible RA benefits associated with the Project. Offers for Projects that are either Energy Only or Partial Capacity Deliverability Status (as that term is defined under the CAISO Tariff) are not eligible to participate in this RFO.

4. PG&E requires Offers in which PG&E is the sole off-taker of the Products from the Project. Participants will not be allowed to sell, deed, grant, convey, transmit, or otherwise provide any energy, capacity (such as RA), ancillary services ("Ancillary Services" as defined in the CAISO Tariff) or any other output or product, including capacity attributes or other benefits associated with the output of the Project, to any entity

other than PG&E. PG&E holds the full rights to require the Project to compress and generate.

5. Participants must provide specific operating flexibility or constraints as part of their Offer package. Details must be defined by the Participant in the Offer Form (Appendix A), and Project Description (Appendix B1), and be substantiated in terms of technical limitations, permit requirements, and/or environmental regulations.

6. The Project must be able to provide Ancillary Services.

7. Participants must design, develop, construct, commission, operate, and maintain the Project in conformance with Prudent Electrical Practices, as defined in Appendix F, Safety.

Preferences. In general, PG&E has a strong preference for operationally flexible and dispatchable resources. A Project that has the following characteristics is preferred:

1. minimize startup time to full operation, both on charging and generation sides;

2. broad range between (a) the minimum compression level and maximum compression level and (b) the minimum generation level and maximum generation level, with minimal losses in efficiency and maximum dispatch granularity across such ranges;

3. maximize ramp-up and ramp-down rates for charge and generation;

4. high rate and efficiency of compression (i.e., lbs/MWh air injected into the reservoir) and efficiency (low heat rate, MWh/lbs withdrawn from the reservoir)) of generation;

5. provision for an air bubble size that increases the operational flexibility of the Project (i.e., a larger air bubble may allow the Project to compress more air to enable longer generation times);

6. a zero or low heat rate (if a technical solution exists to reduce and/or eliminate the natural gas use required, please address in detail in the Offer); and

7. minimizes transition times between charging (i.e., injecting air into the reservoir) and discharging (i.e., generating electricity).

III. Agreement Types

The following section describes the expected agreements for the Project and Products being solicited under the RFO (collectively, the "Agreements").

As will be further provided in the CAES Agreement, each Participant must agree and be able to: (1) schedule and dedicate the contracted amount of Product; and (2) not sell, deed, grant, convey, transmit, or otherwise provide any energy, capacity, Ancillary Services or any other output or Product, as provided above, to any entity other than PG&E.

III.A. Compressed Air Energy Storage Agreement

Due to the complex nature of the Project's technology, the CAES Form Agreement ("CAES Agreement") will not be finalized until early 2016. The CAES Agreement will be for the storage, purchase and sale of Product to PG&E from a Project to be designed, developed, constructed, commissioned, operated and maintained by the Participant. PG&E reserves the right to change the form and content of the CAES Agreement during the Solicitation and negotiation process.

PG&E's current Tolling Agreement and Energy Storage Agreement are examples of the types of form agreements that PG&E has used previously for tolling and energy storage services, respectively. These documents are available for reference on the CAES RFO website. PG&E expects that many terms in the CAES Agreement will be the same or similar to those in the Energy Storage Agreement. PG&E also expects that the CAES Agreement will incorporate natural gas, heat rate, GHG, and other relevant terms from the Tolling Agreement, with additional and replacement terms to account for the unique attributes of CAES.

Key principles of the Tolling and Energy Storage Agreements are:

- PG&E provides charging energy and natural gas as defined in the contract.
- The majority of compensation is paid via a monthly fixed payment. While the exact formula will vary for CAES as compared to the Tolling and Energy Storage Agreements, the monthly fixed payment would decrease if availability and other key performance parameters are not met.
- PG&E will be the Scheduling Coordinator.
- PG&E will be able to schedule the project according to the Operating Characteristics provided in the Offer Form.
- Participants will bear all deviations to the extent the Project does not perform to schedule.

A timeline for release of the CAES Agreement and associated documents is as follows:

- No later than November 30, 2015: PG&E issues the CAES Agreement Term Sheet, which will describe the major terms of the CAES Agreement.
- No later than December 31, 2015: PG&E will reach out to Participants approved for access to the Data and schedule meetings to provide Participants with the opportunity to present their preliminary Project designs to PG&E.
- No later than March 1, 2016: PG&E will issue the CAES Agreement, which is expected to be based in part on information collected from Participants during their presentations to PG&E.

PLEASE NOTE: As stated above, PG&E is providing the current forms of its Tolling Agreement and Energy Storage Agreement to assist Participant in preparing its Offer. However, PG&E emphasizes that these documents are only being provided as examples to assist with the Participant's initial consideration of providing an Offer under the Solitication and should only be utilized as reference documents. The Participant shall be mindful of the timeline presented above for the release of the actual documentation related to the CAES Agreement and base its final Offer on the content of those documents.

III.B. Assignment Agreement

The natural gas reservoir at the San Joaquin site selected for the Project (Proposed Reservoir) is the underground portion of land owned by outside parties. Under California law, the right for injection, storage and withdrawal of compressed air in an underground reservoir or formation is owned by the owner of the non-mineral estate, subject to an obligation to not unreasonably interfere with the rights of

the owners of the mineral estate to explore for, develop and produce natural gas or oil. PG&E holds the right to acquire: (1) an underground storage lease and agreement from the owner of the non-mineral estate overlying the storage reservoir site, together with (2) the right to acquire mineral owner consent agreements from the separate owners of mineral rights at the Proposed Reservoir, which consent to the Project and preclude the mineral owners or their lessees from drilling into or through the storage reservoir. The rights referenced in (1) and (2) above are referred to as the "Storage Rights". Additionally, PG&E holds options and/or is negotiating to acquire options: (3) a ground lease on nearby lands ("Energy Conversion Facility Site") for installation and operation of a compressor station and an Energy Conversion Facility (a generating plant) and related ancillary equipment, and (4) easements for installation of pipelines for conveyance of compressed air to and from injection wells which would be located over the Proposed Reservoir and Energy Conversion Facility Site and for a water pipeline ("Pipeline Easement"). PG&E would exercise its rights to acquire the Storage Rights and assign those rights to the successful Participant, and expects also to assign PG&E's rights to acquire the Energy Conversion Facility Site and the Pipeline Easement to such Participant using the proforma assignment agreement included in this Solicitation at Appendix E2 ("Assignment Agreement"), the terms and conditions of which shall not be modified unless Participant has obtained an alternative site for the Energy Conversion Facility and/or alternative rights to the necessary pipelines.

IV. Credit

Participants that execute a CAES Agreement with PG&E must post collateral to PG&E to mitigate PG&E's risk in the event that the Project is not constructed or placed into commercial operation, or the Participant is otherwise unable to meet the conditions of the CAES Agreement prior to the start of the delivery term. PG&E will retain the collateral as liquidated damages due to PG&E in the event the Participant defaults under the terms of the CAES Agreement prior to the start of the delivery term ("Project Development Security" or "PDS").

If providing a Letter of Credit, please review carefully the Letter of Credit requirements set forth in the CAES Agreement.

IV.A. Project Development Security

All Project Development Security must be in the form of a cash deposit or a Letter of Credit. Participants that execute a CAES Agreement must post Project Development Security in the amount of $15/kW at execution of the CAES Agreement and an additional $45/kW at CPUC Approval.

IV.B. Delivery Term Security

In order to commence the delivery term, the Participant must post Delivery Term Security ("DTS") in an amount equal to the greater of (a) $125/kW, or (b) 10% of the maximum 36 month fixed capability payments. The purpose of the DTS, which may be in the form of cash, Letter of Credit, or guaranty acceptable to PG&E in its sole discretion, is to manage the credit risk associated with the Products being procured as part of this RFO.

V. Terms for RFO Participation

V.A. Agreement by Participant

Each Participant submitting an Offer shall provide the electronic signature of a duly authorized officer of Participant on the Offer Form. By providing such signature, the Participant (1) agrees to be bound by all

terms, conditions and other provisions of this RFO and any changes or supplements to it that may be issued by PG&E; and (2) makes the following representations and warranties:

1. Participant has read, understands, and agrees to be bound by all terms, conditions and other provisions of the RFO.

2. Participant has had the opportunity to seek independent legal and financial advice of its own choosing with respect to the RFO.

3. Participant is not an affiliate of PG&E, PG&E Corporation, or any of their affiliates.

4. Participant has obtained all necessary authorizations, approvals and waivers, if any, required of Participant as a condition of: (a) submitting its Offer and, (b) if Participant's Offer is selected, executing Agreement(s) with PG&E in the form submitted with its Offer, or at the conclusion of negotiations.

5. Participant is submitting its Offer subject to all applicable laws including, but not limited to, the Federal Power Act and all amendments thereto, and Public Utilities Code §454.5.

6. Participant represents that it has carefully considered the terms and conditions of its Offer and that it is submitting its Offer in good faith, such that PG&E may reasonably expect Participant to enter into Agreements, and to negotiate, if requested by PG&E, as provided in Section XIV, Execution of Agreements, below.

7. Participant has not engaged in and will not engage in, communications with any other Participant in the RFO concerning any terms contained in Participant's Offer, unless explicitly authorized by PG&E, and has not engaged in activities in violation of State or Federal antitrust laws or other unlawful or unfair business practices in connection with the RFO ("Prohibited Communication Activities").

Notwithstanding the foregoing, Participant may engage in communications with its advisors, counsel, experts or employees who have a need to know the content of the communications and have agreed to keep such information confidential (collectively, "Advisors"). In addition, Participant may engage in communications with other Participants submitting an Offer in the RFO and their Advisors ("Other Participants"), so long as: (a) such Other Participants are under common ownership and control with that Participant; (b) Participant and Other Participants do not engage in Prohibited Communication Activities; and (c) in the event Participant and Other Participant share a common Advisor, Participant has, prior to sharing communications with such Other Participant and the common Advisor, provided PG&E with (i) notice of such Other Participant and common Advisor and (ii) an attestation that Participant has not and will not engage in Prohibited Communication Activities with either the Other Participant or the common Advisor.

8. If Participant's Offer is selected for the Shortlist and Participant accepts the position on the Shortlist, then Participant agrees to negotiate in good faith with PG&E.

9. Participant will promptly notify PG&E of any change in circumstance that may affect its ability to fulfill the terms of its Offer at any time during (a) the Solicitation process and (b) any negotiations with PG&E with respect to its Offer, including up to any execution of any Agreements or Participant's withdrawal of its Offer.

If Participant is submitting an Offer jointly with other entities, and the Offer is selected for the Shortlist, PG&E may require, as part of the shortlisting process, additional representations and warranties, along with additional documentation, from all entities involved in the joint Offer (see Section VI.D, Required Information).

A BREACH BY ANY PARTICIPANT OF THE REPRESENTATIONS AND WARRANTIES IN SECTION V.A OF THIS SOLICITATION PROTOCOL, IN ADDITION TO ANY OTHER REMEDIES THAT MAY BE AVAILABLE TO PG&E UNDER APPLICABLE LAW, IS GROUNDS FOR IMMEDIATE DISQUALIFICATION OF SUCH PARTICIPANT FROM PARTICIPATION IN THE 2015 CAES RFO AND, DEPENDING ON THE NATURE OR SEVERITY OF THE BREACH, MAY ALSO BE GROUNDS FOR TERMINATING THE 2015 CAES RFO IN ITS ENTIRETY.

V.B. Safety

PG&E is committed to providing safe utility (electric and gas) service to its customers. As part of this commitment, PG&E requests that each Participant provide in its Offer: (1) safety information and protocols related to the technology for the Project; and (2) a complete and accurate description of the safety record, history and practices of the entities that will design, develop, construct, commission, operate, and/or maintain the Project, including any actions taken to manage or mitigate any safety incidents. This information shall include the Occupational Safety and Health Administration (OSHA) Recordable Incident Rates and Experience Modifications Rates of such entities for the previous three (3) years. In addition, each Participant shall complete Appendix F, Safety, as part of its Offer. Please note that Participants may need to provide an independent third party engineer's report detailing the safety of the technology and verifying the safety history and practices of the entities identified by Participant to design, develop, construct, commission, operate, and/or maintain the Project. The CAES Agreement will contain specific requirements intended to ensure that the entities designing, developing, constructing, commissioning, operating, and/or maintaining the Project do so in compliance with all applicable laws and PG&E's standards and requirements, and in a safe, reliable and efficient manner that protects the public health and safety of California residents, business, employees and the community.

V.C. Shortlist Offer Deposit

If the Participant receives a Shortlist Notice and accepts the Shortlist position, then the Participant shall post a deposit ("Shortlist Offer Deposit") in the amount of $3 per kilowatt (kW) of Design Dmax[4] before 5:00 P.M. PPT on the tenth (10^{th}) business day after receiving such Shortlist Notice. Participant shall maintain the Shortlist Offer Deposit until the termination of negotiations with PG&E or as otherwise provided pursuant to the terms of the CAES Agreement negotiated by PG&E and Participant.

1. Purpose of Shortlist Offer Deposit

The Shortlist Offer Deposit is intended to secure the obligation of each Participant to enter into definitive Agreements, or negotiate and execute definitive Agreements, as expressly provided in Section XIV, Execution of Agreements, below. If the Participant fails to submit the Shortlist Offer Deposit within the required time period, the Participant's Offer may be rejected and removed from the Shortlist.

[4] Design Dmax as indicated in the Offer Form.

2. Form of Shortlist Offer Deposit

The form of the Shortlist Offer Deposit may be either: (a) a cash deposit through a wire transfer, or (b) a Letter of Credit. These two options are detailed below.

(a) Cash Deposit

Cash may be deposited with PG&E to be held as collateral through a wire transfer, as instructed in the Shortlist Notice. PG&E will pay interest on each cash deposit, calculated on a monthly basis and compounded at the end of each calendar month, from the date on which the cash is fully deposited to the date of returning the cash deposit to the Participant. The applicable interest rate will be the rate per annum equal to the Monthly Federal Funds Rate (as reset on a monthly basis, as of the first day of the month, based on the latest month for which such rate is available) as reported in Federal Reserve Bank Publication H.15-519 or its successor publication ("Interest Rate"). The Interest Rate shall be calculated based on a three hundred sixty (360) day year and shall be payable upon the return of the cash deposit.

(b) Letter of Credit

A Letter of Credit posted by a Participant as collateral must satisfy all of the requirements below.

"Letter of Credit" means an irrevocable, non-transferable, stand-by letter of credit in the form attached hereto as Appendix D2, (i) issued either by (A) a U.S. commercial bank or (B) a U.S. branch of a foreign commercial bank that meets all of the following conditions: (I) it has sufficient assets in the U.S. as determined by PG&E, and (II) it is acceptable to PG&E in its sole discretion; and (ii) for which the issuing U.S. bank or foreign bank, must have a Credit Rating of at least "A-" from S&P or "A3" from Moody's, with a stable outlook designation. In the event the issuer is rated by both rating agencies and the ratings are not equivalent then the lower rating will apply. If the Letter of Credit is issued by a branch of a foreign bank, PG&E may require changes to the form Letter of Credit included as Appendix D2. All costs of the Letter of Credit shall be borne by Participant. The Letter of Credit should be sent by overnight delivery to:

Pacific Gas and Electric Company
Attn: Manager, Credit Risk Management
77 Beale Street, Mail Code B28L
San Francisco, CA 94105

3. Return of Shortlist Offer Deposit

The Shortlist Offer Deposit will be returned to Participant by PG&E under one or more of the following conditions:

(a) Upon execution of the Agreements and Participant's submission of the collateral required under the Agreements;

(b) PG&E's rejection of the Offer subsequent to Shortlist selection; or

(c) In the course of negotiations, if PG&E and Participant cannot agree on the terms of the Offer and the Agreements; provided that Participant has not unilaterally withdrawn the Offer as submitted through the Solicitation, or breached this Solicitation Protocol.

4. Forfeiture of Shortlist Offer Deposit

The Participant will forfeit the Shortlist Offer Deposit in its entirety due to: (a) any material misrepresentation in information submitted in Participant's Offer; (b) Participant unilaterally withdrawing its Offer from the Solicitation; or (c) a breach of this Solicitation Protocol by Participant. In the event that Participant forfeits the Shortlist Offer Deposit, PG&E will be entitled to draw upon the Shortlist Offer Deposit in its entirety as payment for direct and indirect damages incurred in connection with the Participant's misrepresentation or breach of this Solicitation Protocol.

5. Shortlist Offer Deposit as Security

PG&E shall be able to retain any cash deposit or draw on any Letter of Credit provided as a Shortlist Offer Deposit as security under an executed CAES Agreement, in the event that Participant fails to provide additional security and/or agrees to PG&E's retention of the Shortlist Offer Deposit as Project Development Security in accordance with the terms of the executed CAES Agreement, if applicable.

VI. Offer Submittal Process

VI.A. Overview

All Offers must be received via Power Advocate by May 9, 2016 at 1:00 p.m. PPT, as specified in Section I.C, Schedule Overview.

Submitting Documents: All Offers ***must*** be submitted electronically through Power Advocate. Prior to submitting an Offer, Participants must register with Power Advocate at the Public Registration Link: https://www.poweradvocate.com/pR.do?okey=50932&pubEvent=true (or search for Event #50932). PG&E strongly encourages Participants to register with Power Advocate well before the deadline for PG&E's receipt of all Offers. PG&E will post on PG&E's website detailed instructions for submitting Offers and using the online platform.

Power Advocate functions in most browsers; however, it may not work as well in browsers older than Internet Explorer version 8.

Each Offer must be uploaded onto Power Advocate as a "Commercial and Administrative" document type. Upload times can be lengthy for large files and Participants should plan accordingly. Each Offer should be in a separate zip file. Please make sure that file names for submittals do not contain any special characters such as *&#, and keep file names short. However, please include short references to the Participant's name (such as an acronym) and the Appendix (e.g., App. B).

Electronic Document Formats: The electronic documents must be submitted as Microsoft Word, Microsoft Excel, or .pdf files, as identified in Section VI.D, Required Information. However, maps or drawings may be in alternate formats (e.g. .jpg, kmz), as appropriate. Each Appendix must be a separate folder or document; please do not combine multiple appendices into one long .pdf file. To the extent possible, .pdf files should be provided in a searchable format. The Participant should not provide documents in any other electronic format unless specifically requested.

VI.B. Need for Complete Offer Packages

Each Participant's Offer must be complete at the time of submission. Participant's failure to provide all required information may prevent PG&E from being able to evaluate and rank the Offer, which means that the Offer may not be considered for the Shortlist.

VI.C. Number of Offers and Variations Allowed Per Participant

Participants may submit one Offer and up to five (5) variations of that Offer (i.e., the original, single Offer and five additional variations of that Offer). A variation may alter such attributes as term, price, commercial operation date, duration of discharge, operational characteristics or other Agreement-related terms and conditions.

VI.D. Required Information

Note on Joint Offers: If a Participant is submitting a joint Offer with another Participant, PG&E may require additional documentation or conditions, such as retaining separate legal counsel, restricting the sharing of certain information, and/or requiring all parties to the joint Offer to execute a modified Confidentiality Agreement and agree to, and execute, modified terms for RFO participation, similar to those set forth in Section V.A, Agreement by Participant.

For the RFO, each Participant must complete the following documents, which are located in the Appendices, with Offer-specific information, in the order given below.

1. Data Room Admission Requirements

Table VI.1: Data Room Admission Requirements

Appendix	Title	Description	Format
1	Confidentiality Agreement	Participant must execute the Confidentiality Agreement, or submit a redline of the Confidentiality Agreement if modifications are requested. This Confidentiality Agreement must be approved by PG&E and executed by both Participant and PG&E before the Participant may access the Data Room.	MS Word
2	Experience, Qualifications and Organization	Participant must describe its experience and staff qualifications, along with its organizational structure, as requested in Appendix 2. PG&E must be satisfied that Participant's information and documentation meets the requirements of Appendix 2 before the Participant may access the Data Room.	MS Word

2. Offer Package

Each Participant shall provide an **Introductory Letter** that describes the Project with pertinent information and a description of the Offer (e.g., price, term, size, etc.) information, including identification of each variation proposed. In addition, each Participant shall complete all of the Appendices listed in Table VI.2, below.

Please address any potential changes to the Project due to an Offer variation in the appropriate Appendices. A separate Offer Form is required for each Offer variation, but an entirely new Offer package is not required; there is no need to submit unchanged, duplicative Appendices if the information is the same. However, please provide a short note at the beginning of the applicable Appendix indicating which sections are duplicative among multiple Offer variations.

Any operational limitations on the Project due to technology constraints or other factors must be specifically identified in Appendix A, Offer Form, and Appendix B1, Project Description, and must be substantiated in terms of technical limitations, permit requirements, and/or environmental regulations.

Table VI.2: CAES RFO Offer Package			
Appendix	**Title**	**Description**	**Format**
A	Offer Form	Project pricing and operational information.	MS Excel
B1	Project Description	Description of the Project (include the requested information).	MS Word
B2	Project Milestone Schedule	Description of the key milestones and associated dates (which should align with proposed commercial operation date).	MS Word
B3	Project Interconnection and Transmission	Description of interconnection information and any interconnection studies for the Project.	MS Word (interconnection studies may be submitted in PDF format)
C	FERC 717 Waiver	Authorization of the disclosure of Participant's transmission-related information to PG&E's marketing and/or merchant business unit ("PG&E Merchant").	MS Word
D1	Finance Information	Description of the Project's financing plans, prior project financing by Participant, and Participant financial statements.	MS Word
E1	Redline of E1 – CAES Agreement (once available)	Once the CAES Agreement is available, Participant should carefully review and provide PG&E with proposed alternate language in the form of a red-lined CAES Agreement that, if agreed to and incorporated, the Participant would execute. **Please ensure that any revisions are consistent with data provided in all applicable Appendices of this Solicitation Protocol.**	MS Word
E2	Redline of E2 – Assignment Agreement	Participant should carefully review the Assignment Agreement. If Participant proposes an alternative site for the Energy Conversion Facility and/or alternative rights to the necessary pipelines, then Particiapnt shall provide PG&E with proposed alternate language in the form of a redline Assignment Agreement that, if agreed to and incorporated, the Participant would execute. **Please ensure that any revisions are consistent with data provided in all applicable Appendices of this Solicitation Protocol.**	MS Word

Table VI.2: CAES RFO Offer Package			
Appendix	**Title**	**Description**	**Format**
F	Safety	Description of the Participant's safety record and policies and site safety plan for the Project.	MS Word

3. Post-Shortlist Documents (if applicable)

If the Participant is offered and accepts the Shortlist position, then the Participant must complete the Appendices listed in Table VI.3, below. In addition, the Participant will need to provide a **Shortlist Offer Deposit** as described in Section V.C., Shortlist Offer Deposit, by August 3, 2016. Any delay in providing the Appendices below will impact the Participant's Shortlist position.

Table VI.3: CAES RFO – Post-Shortlist Appendices			
Appendix	**Title**	**Description**	**Format**
D2	Letter of Credit (if applicable)	Delivery instructions will be provided in the Shortlist Notice.	MS Word
G	Request for Taxpayer ID (W-9) Form (if applicable)	Please provide the requested information if posting a cash deposit.	PDF

Any proposed changes to the Agreements by a Participant will be considered part of that Participant's Offer; that is, PG&E will assume that the Participant is willing to execute such Agreements based on those terms. However, PG&E may decide not to accept Participant's changes or may propose its own modifications.

VII. Pricing

Participants must include in their Offer Form proposed pricing for the following items, as applicable (please refer to the CAES Agreement for the definitions of these terms). Offers may include a fixed escalation. Please note that indexed escalation proposals will not be accepted. Also, please note that PG&E would provide the natural gas for the Project, at contractual heat rates.

1. Capability Payment Price ($/kW-yr) (fixed price): a $/MW payment on which the monthly fixed payment is based. The Capability Payment Price is measured based on the monthly generation MW capacity at maximum contractual reservoir pressure conditions.

2. Variable O&M Price ($/MWh) for Discharge: a $/MWh payment for each MWh of scheduled generation pursuant to Buyer's Schedule.

3. Fired Hour Charge ($/fired hour/unit) for Discharge: a $/fired hour/unit, where the "fired hour" is an hour or partial hour in which a given Unit is generating at Minimum Load or higher from the time Start-Up is initiated until Shut-Down as required pursuant to Scheduled Operations.

4. Fired Hour Charge ($/fired hour/unit) for Charge: a $/fired hour/unit, where the "fired hour" is an hour or partial hour in which a given Unit was generating or compressing at

Minimum Load or higher from the time Start-Up is initiated until Shut-Down as required pursuant to Scheduled Operations.

5. Discharge Start-up Costs ($/start/unit): a payment made for each Successful Scheduled Start-up of the generating unit. For a successful start, the Project must generate at steady state mode for a minimum of the lesser of one hour or Minimum Run Time.

6. Charge Start-up Costs ($/start/unit): a payment made for each Successful Scheduled Start-up of the compression unit. For a successful start, the Project must compress at steady state mode for a minimum of the lesser of one hour or Minimum Run Time.

VIII. Evaluation of Offers

PG&E's evaluation will apply the principles of "least-cost, best-fit" using quantitative and qualitative criteria based on information contained in the submitted Offers.[5]

VIII.A. Quantitative Attributes

As part of the quantitative evaluation, PG&E looks at each Project's Net Market Value (NMV) and Portfolio Adjusted Value (PAV).

1. Net Market Value (NMV)

NMV compares an Offer's costs to its market value. The risks and uncertainties associated with an Offer's costs and benefits will be considered as part of Net Market Value. NMV is calculated for each Offer as follows:

Net Market Value: NMV = Benefits - Costs

Where:

Benefits = (E + A + C)

E = Energy Value
A = Ancillary Services Value
C = Capacity Value

Costs = (V + F)

V = Variable Cost
F = Fixed Cost

And where the individual components of the equation are detailed below:

(a) Energy Value ("E")

Energy Value captures the net revenue of the electric energy in the CAISO markets delivered to the grid and used from the grid for each Offer based on a charging and discharging time series obtained for the Offer over its delivery term.

[5] Participants shall submit accurate figures, descriptions and calculations with their Offers.

The market value of the energy will be computed using the appropriate price curves for Trading Hub (NP15) adjusted for congestion and losses specific for the project location to account for the Location Marginal Price ("LMP") at the Location.

(b) Ancillary Services Value ("A")

For Offers that provide PG&E the ability to schedule and receive CAISO market revenues for Ancilllary Services in accordance with CAISO Tariff requirements, the incremental benefit of having Ancillary Services capability will be captured.

(c) Capacity Value ("C")

The value of Resource Adequacy ("RA") capacity associated with each Offer will be determined based on the projected monthly quantity of Net Qualifying Capacity ("NQC," for System RA) and Effective Flexible Capacity ("EFC," for Flexible RA). Resources that are expected to be found fully deliverable by the CAISO will be attributed the full System RA capacity value for its projected NQC.[6] To the extent that an Offer provides Flexible RA, the EFC that is expected to count and meet the must-offer obligation for Flexible RA will be evaluated at the projected monthly price for Flexible RA and added to the Capacity Benefit.[7]

(d) Variable Cost ("V")

Variable Cost includes the cost of fuel (other than grid energy) and associated GHG cost, Variable O&M ("VOM") for discharge, Fired Hour Charges for discharge and charge, and/or Start-up Costs for discharge and charge, if applicable, but does not include the market costs for Charging Energy. The contract VOM price will affect the discharge time series: all other things being equal, a lower VOM will result in more energy charging and discharging both in PG&E's evaluation and in actual operation. Variable cost for an Offer will be calculated as the sum of hourly variable payments.

(e) Fixed Cost ("F")

Fixed Cost for an Offer will be calculated as the sum of projected monthly fixed payments and associated debt equivalence cost. Monthly fixed payments will be based on the Capability Payment Price ($/kW-yr) and the monthly Contract Capability specified in the Offer.

Each Offer will be assigned an annual fixed overhead cost (independent of the size of the Project, but possibly dependent on the use case of the Project) representing administrative costs plus the cost of scheduling into CAISO markets.

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[6] See the Commission's Resource Adequacy program (http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra_history.htm) and the CAISO Reliability Requirements (http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx).

[7] See the Commission's current RA proceeding (Rulemaking 11-10-023) and the CAISO's FRAC-MOO initiative (http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleResourceAdequacyCriteria-MustOfferObligations.aspx).

2. Portfolio Adjusted Value (PAV)

PG&E will calculate PAV to derive the value of each Offer from the perspective of PG&E's portfolio, not just from the market perspective. PAV may include the adjustments to the NMV based on factors that are relevant to PG&E's total energy portfolio, including but not limited to: (1) transmission network upgrade costs; (2) increased efficiency for fossil generation; and (3) renewable generation curtailment support.

(a) Transmission Network Upgrade Cost

Transmission availability and transmission-related costs will be part of an Offer's PAV. PG&E will use the latest CAISO tariff rules[8] and results from the independent study conducted as part of the feasibility study to determine the Transmission Network Upgrade Cost adder for all Offers. Network upgrades include all facilities necessary to: (i) reinforce the transmission system after the point where a Project's electricity first interconnects with and enters the utility's transmission grid; and (ii) transmit or deliver the full amount of generation to or from the Project.[9] Transmission cost adders reflect the reimbursed portion of the cost of potential network upgrades borne by customers. Any transmission cost adders attributed to the Project will also be considered in ranking Offers.

(b) Increased Generation Efficiency

Compressed air energy storage has the potential for allowing fossil generation in PG&E's portfolio to run with fewer startups and to operate more efficiently. Similarly, compressed air energy storage could reduce the amount of demand response dispatches that are triggered when the market energy prices are very high. Such increased efficiency could reduce the portfolio's overall generation cost in such cost components as start-up, fuel, GHG and VOM costs. PG&E will estimate such avoided generation costs to PG&E's portfolio brought about by compressed air energy storage, with regard to changes in fuel use, GHG compliance instruments, and start-ups at fossil generators. Such avoided cost would differ among Offers due to the variation in characteristics of those Offers.

(c) Avoided RPS Curtailment

Higher penetration of renewable energy increases the likelihood of curtailment. Storage can help reduce the curtailment of intermittent generation in PG&E's portfolio, which would benefit PG&E's customers by reducing instances of over-generation as well as avoiding curtailments of renewable generation, such as wind and solar, that contribute to meeting PG&E's renewable portfolio standard requirements. PG&E will estimate the potential economic effect of an offer's ability to avoid the curtailment of renewable resources in PG&E's portfolio.

VIII.B. Qualitative Factors

Any or all qualitative factors may impact a Project's status for Shortlisting or Agreement execution.

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[8] Refer to the CAISO website (http://www.caiso.com/rules/Pages/Regulatory/Default.aspx) for the most recent tariff information.

[9] Network upgrades include transmission lines, transformer banks, special protection systems, substation breakers, capacitors, and other equipment needed to transfer power to the consumer. Network upgrades typically are funded upfront by Participants, and partially refunded after commercial operation. The reimbursed portion of the costs of network upgrades are included in transmission rates and paid by customers. For Projects that are fully deliverable, PG&E will consider both reliability and deliverability network upgrades.

1. Project Viability

"Project Viability" means the likelihood that the Project can be successfully developed and provide the Product and services required for the period stated in the Offer. This assessment is based on a review of the status and plans for key Project activities (e.g. financing, permitting, engineering, procurement, construction, interconnection, start-up and testing, operations, fuel supply, water supply, wastewater discharge, labor agreements, site control, etc.).

2. Contract Modifications

PG&E may assess the materiality and cost impact of any of Participant's proposed modifications to Solicitation requirements and the CAES Agreement. The Assignment Agreement (Appendix E2) may not be modified unless Participant proposes an alternative site for the Energy Conversion Facility and/or alternative rights to the necessary pipelines. PG&E strongly encourages Participants to only make those changes to the CAES Agreement associated with their Offer that address particular Project development or operational issues. PG&E will give additional consideration to Participants that agree to take on additional risk beyond what is specified in the CAES Agreement.

3. Credit

PG&E may consider the Participant's capability to perform all of its financial and financing obligations under the Agreements and PG&E's overall credit concentration with the Participant or its banks, including any of Participant's affiliates.

4. Supplier Diversity

It is the policy of PG&E that Diverse Business Enterprises ("DBE") such as Women-, Minority-, Service Disabled Veteran- and Lesbian, Gay, Bisexual, and Transgender-owned Business Enterprises[10] shall have the maximum practicable opportunity to participate in the performance of Agreements resulting from this Solicitation. PG&E encourages Participants to carry out PG&E's policy and contribute to PG&E's supplier diversity goal by reaching greater than 30 percent of all procurement with DBEs.

Supplier Diversity is a consideration in the selection process. If Participant is selected and an Agreement is negotiated, the Agreement will include a requirement to make good faith efforts toward meeting the contracted supplier diversity target, and a successful Participant will be expected to report payments made to DBEs to support the Project upon request but no less than annually.

5. Safety

PG&E will seek information from Participants regarding the safety history and practices of the entities that will design, develop, construct, commission, operate, and/or maintain the Project and safety information related to the technology for the Project.

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[10] CPUC General Order 156 defines this group collectively as "WMDVLGBTBEs." See http://www.cpuc.ca.gov/puc/supplierdiversity/ and http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M152/K827/152827372.pdf.

IX. Site Control

The site control issues that the Participant must take into consideration in making its Offer are described in further detail in Section C of Appendix 3.

X. Electric Interconnection

Each Participant should refer to Appendix B3, Project Interconnection and Transmission, with regards to the documentation to provide in its Offer on interconnection. A third party, independent report on interconnection (for informational use only) is available in Section I.B.3, PG&E Data Room.

The San Joaquin site is not associated with an active CAISO interconnection queue position. PG&E does not require Offers to have entered the CAISO process at the time of Offer submission; however, the Project must have an Interconnection Agreement in place with the CAISO prior to commercial operation. The Participant will be responsible for all activities and costs associated with obtaining interconnection, including interconnection study costs[11], network upgrades, and interconnection facilities as determined via the relevant interconnection process. Participant also is responsible for achieving a deliverability status consistent with its Offer.

The interconnection study process can be lengthy (over two years), followed by potentially several years to engineer, design, and build any required interconnection facilities or upgrades. If PG&E selects a Participant for Phase 2, the Participant would be required to submit a CAISO interconnection request for Full Capacity Deliverability Status at the first available time in conjunction with the CAISO's process.

The actual interconnection costs and schedule to support this Project can be obtained by participating in the interconnection process managed by the CAISO's Generator Interconnection and Deliverability Allocation Process (GIDAP)[12]. The Interconnection Request to participate in the CAISO's interconnection study process requires the generator to provide Project-specific information (such as the point of interconnection, planned commercial operation date, size of unit(s), generator and transformer design characteristics, etc.) to be studied as part of the electrical interconnection process. The Participant will be responsible for submitting an interconnection request and acting as the company submitting the request. Copies of the completed Interconnection Studies must be provided to PG&E when they are available.

To facilitate the development of a successful Project, PG&E will reimburse the successful Participant with funds, up to a maximum of $250,000.00, that such Participant shall apply solely and exclusively towards its Interconnection Study Deposit, as described in the CAISO tariff. If a portion of the Interconnection Study Deposit is returned by the CAISO to the Participant, then the Participant promptly shall return that portion of funds to PG&E.[13] The successful Participant will be responsible for any and all additional funding associated with the CAISO process. For example, the Participant may have to make a deposit in lieu of site control to begin the interconnection process, and should plan accordingly.

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[11] Except for the portion of the interconnection study deposit that PG&E will reimburse to the Participant, as noted below.

[12] See CAISO's website for information on the current interconnection process at: https://www.caiso.com/planning/Pages/GeneratorInterconnection/Default.aspx.

[13] Refer to the CAISO website (http://www.caiso.com/rules/Pages/Regulatory/Default.aspx) for the most recent tariff information.

After a resource has made it through the CAISO study phase of the interconnection process, the Participant is expected to enter into an Interconnection Agreement, ensure that the resource is correctly modeled in the CAISO's market systems, and install any needed metering and telemetry equipment before participation in the wholesale power market is allowed. Participants may refer to a set of requirements listed in the CAISO's New Resource Implementation Checklist[14] for further information.

XI. Confidentiality Agreement

Except as provided below, all information and documents provided to PG&E by a Participant in connection with this RFO shall be considered confidential information, and PG&E and the Participant shall be prohibited from disclosing such information and documents to any and all third parties except as provided below.

It is expressly contemplated that materials submitted by a Participant in connection with this RFO will be provided to the CPUC and its staff, the Independent Evaluator, and PG&E's Procurement Review Group ("PRG"). PG&E will seek confidential treatment pursuant to D.06-06-066 and Public Utilities Code section 583 with respect to any Participant-supplied non-public RFO information and documents ("Participant's Confidential Information") that are submitted by PG&E to the CPUC for the purpose of obtaining CPUC approval of the Agreements. PG&E will also seek, with the PRG, confidentiality and/or non-disclosure agreements applicable to the Participant's confidential information. PG&E cannot, however, ensure that the CPUC will afford confidential treatment to a Participant's confidential information, or that those confidentiality agreements or orders will be obtained from and/or honored by the PRG or the CPUC.

With respect to any information or documents provided by the Participant, PG&E shall have the right to disclose such Participant information to the CPUC and its staff, the Independent Evaluator, the PRG, CAISO, any other control area operator or balancing authority, and any other entity in order to comply with any applicable law, regulation, or rule or order issued by a court or entity with competent jurisdiction over PG&E, at any time, even in the absence of a protective order, confidentiality agreement or nondisclosure agreement, as the case may be, without notification to the Participant and without liability or any responsibility of PG&E to the Participant or any other third party.

In addition, PG&E shall have the right to summarize the information submitted by the Participant with information from other Participants in response to this RFO. Such information shall be consolidated, but not specifically attributed to any Participant, to provide an overview of the results of the RFO in the Final Technical Report and/or other summarized reports for regulatory purposes.

The Participant also acknowledges and agrees that by executing the Confidentiality Agreement found at Appendix 1, that any and all information included in the Data Room must remain confidential until the conclusion or termination of the RFO. Thereafter, the Data Room Materials shall be released by PG&E as part of the Final Technical Report and/or other summarized reports.

[14] CAISO's new resource implementation process is described at: http://www.caiso.com/participate/Pages/NewResourceImplementation/Default.aspx.

XII. Procurement Review Group (PRG) Review

Following completion of the evaluation and PAV ranking of Offers, PG&E will submit the results of the evaluation and its recommendations to the PRG. Such information will include at least the all-in cost ranking of Offers, the consideration of non-price evaluation criteria, and PG&E's recommendations based on such information. PG&E has no obligation to obtain the concurrence of the PRG with respect to any Offer.

PG&E assumes no responsibility for the actions of the PRG, including actions that may delay or otherwise affect the schedule for this Solicitation, including the timing of the selection of Offers and/or obtaining of CPUC Approval.

XIII. Shortlist Notification to Participants

The Solicitation schedule set forth in Section I.C, Schedule Overview, may be modified at PG&E's sole discretion. PG&E expects to be able to provide an e-mail notification to Participants whose Offers have been selected for the Shortlist, and invite each Participant on the Shortlist to conduct discussions and negotiations with PG&E regarding the Offer selected for the Shortlist. PG&E anticipates notifying those Participants whose Offers were not Shortlisted shortly thereafter. As previously stated, PG&E may contact Participants prior to Shortlisting during the evaluation process to seek or notify Participants of deficiencies in their Offers or Offer Packages.

XIV. Execution of Agreements

By submitting an Offer, Participant agrees, if its Offer is selected for PG&E's Shortlist, that it is prepared to (1) enter into definitive Agreements, and (2) negotiate, if so requested by PG&E, and execute definitive Agreements mutually acceptable to PG&E and the Participant. PG&E's evaluation of a Participant's Offer, and PG&E's Shortlisting of a Participant, will not constitute any acceptance of any modification made by the Participant to the Agreements. In all cases, PG&E reserves the right to decline to execute any Agreements with a Participant regardless of whether or not the Participant proposed any modifications.

XV. CPUC Approval

Whether an executed Agreement goes into effect or not is expressly conditioned on PG&E's receipt of CPUC Approval, which will be more specifically defined in the Agreements. At a minimum, PG&E will require a finding from the CPUC that PG&E's entry into the Agreements satisfies PG&E's energy storage compliance requirement, that the terms are reasonable, and that PG&E will recover the costs incurred pursuant to the Agreements under PG&E's preferred rate mechanisms. Additionally, the Agreements will be subject to a no-fault termination if CPUC Approval does not occur by a specified deadline (as set forth in the Agreements). CPUC Approval also typically requires that such approval be final and non-appealable, without any modifications that are unacceptable to PG&E or the Participant.

XVI. Waiver of Claims and Limitations of Remedies

Except as expressly set forth in this Protocol, by submitting an Offer, the Participant knowingly and voluntarily waives all remedies or damages at law or equity concerning or related in any way to the Solicitation, the Solicitation Protocol and/or any attachments to the Solicitation Protocol ("Waived Claims"). The assertion of any Waived Claims by Participant may, to the extent that Participant's Offer

has not already been disqualified, automatically disqualify such Offer from further consideration in the Solicitation or otherwise.

By submitting an Offer, the Participant further agrees that the only forums in which Participant may assert any challenge with respect to the conduct or results of the Solicitation is through the Alternative Dispute Resolution ("ADR") services provided by the CPUC pursuant to Resolution ALJ 185, August 25, 2005. The ADR process is voluntary in nature, and does not include processes, such as binding arbitration, that impose a solution on the disputing parties. However, PG&E will consider the use of ADR under the appropriate circumstances. Additional information about this program is available on the CPUC's website at the following link:

http://docs.cpuc.ca.gov/published//Agenda_resolution/47777.htm

The Participant further agrees that other than through the ADR process, the only means of challenging the conduct or results of the Solicitation is a protest to PG&E's filing seeking CPUC approval of any Agreements entered into as a result of the Solicitation, that the sole basis for any such protest shall be that PG&E allegedly failed in a material respect to conduct the Solicitation in accordance with this Protocol, and the exclusive remedy available to Participant in the case of such a protest shall be an order of the CPUC that PG&E again conduct any portion of the Solicitation that the CPUC determines was not previously conducted in accordance with the Solicitation Protocol. The Participant expressly waives any and all other remedies, including, without limitation, compensatory and/or exemplary damages, restitution, injunctive relief, interest, costs, and/or attorneys' fees. Unless PG&E elects to do otherwise in its sole discretion, during the pendency of such a protest or ADR process, the Solicitation and any related regulatory proceedings related to the Solicitation, will continue as if the protest had not been filed, unless the CPUC has issued an order suspending the Solicitation or PG&E has elected to terminate the Solicitation.

The Participant agrees to indemnify and hold PG&E harmless from any and all claims by any other Participant asserted in response to the assertion of a Waived Claim by the Participant or as a result of a Participant's protest to PG&E's filing with the CPUC of any Agreement resulting from the Solicitation.

Except as expressly provided in this Protocol, nothing herein, including Participant's waiver of the Waived Claims as set forth above, shall in any way limit or otherwise affect the rights and remedies of PG&E.

XVII. Termination of the RFO-Related Matters

PG&E reserves the right at any time, in its sole discretion, to terminate the RFO for any reason whatsoever without prior notification to any Participant and without liability of any kind to or responsibility of PG&E or anyone acting on PG&E's behalf. Without limitation, grounds for termination of the RFO may include the assertion of any Waived Claims by a Participant or a determination by PG&E that, following evaluation of the Offers, there are no Offers that provide a viable Project acceptable to PG&E.

PG&E reserves the right to change the Offer evaluation criteria for any reason, to terminate further participation in this Solicitation process by any Participant, to accept any Offer or to enter into any definitive Agreement, to evaluate the qualifications of any Participant, and to reject any or all Offers, all without notice and without assigning any reasons and without liability to PG&E or anyone acting on PG&E's behalf. PG&E shall have no obligation to consider any Offer.

In the event of termination of the RFO for any reason, PG&E will not reimburse any Participant for any expenses incurred in connection with the RFO regardless of whether such Participant's Offer is selected, not selected, rejected or disqualified.