PG&E's Bidders' Webinar

Distribution Resources Plan (DRP)

Demonstration Project C RFO

August 22, 2017

Agenda

Topics	Presenter
• Introduction	Sandy Burns
• Goals of DRP	Michael Norbeck
• Demo C Overview	Michael Norbeck
• Distribution Services Needed	Michael Norbeck
• Solicitation Overview	Sandy Burns
– Eligibility	Sandy Burns
– Customer Engagement Support	Al Gaspari Jr
– Term Sheet	Andrew Lee
– Evaluation Methodology	Andrew Lee
• Offer Submittal Process	Izzy Carson
• Offer Form	Izzy Carson
• Intermission	
• Q & A	Team

Webinar Format

- PG&E will not take questions during the webinar
- Participants should email questions to **DRPRFO@pge.com** during the presentation
  - Questions will be answered at the end of the webinar
  - PG&E might not address all questions during the Q&A portion of this webinar
  - After the webinar, PG&E will compile and post a Q&A document on PG&E's DRP RFO website, accessed via **www.pge.com/rfo/DRP2017**
- PG&E may post a list of attendees on PG&E's website
  - If you do not want your name or the name of your company published, please send an email to **DRPRFO@pge.com** by August 24, 2017
- PG&E plans to post a recording of the webinar on PG&E's DRP RFO website

Webinar Overview

- This presentation is intended to provide a summary of the information and requirements set forth in the RFO materials
- Participants should carefully review the DRP Solicitation Protocol and all RFO materials, available on PG&E's DRP RFO website
- To the extent that there are any inconsistencies between information provided in this presentation and the requirements in the RFO materials, the RFO materials published on PG&E's website shall govern

Communications and Website

- RFO website (www.pge.com/rfo/DRP2017) provides everything you need to submit an Offer, including (but not limited to) the following:
  - RFO materials
  - Detailed instructions for submitting Offers(s) using Power Advocate and to the IE
  - Announcements, additional resources, and Q&A
- All solicitation communications should be directed to: DRPRFO@pge.com with a copy to the Independent Evaluator at Alan.Taylor@sedwayconsulting.com

DRP Demo C RFO Schedule

Date/Time	Event
August 14, 2017	PG&E issues DRP Demonstration Project D RFO
August 22, 2017	Participants' webinar
September 29, 2017 by 1:00 PM PPT	Deadline for Participants to submit Offers via Power Advocate
October 2, 2017	Deadline for IE to receive a flash-drive of Offers
November 30, 2017	Participants Notified of Eligibility for Shortlisted Offer Negotiations
December 4, 2017	Participants notify PG&E whether they accept Shortlist status
April 2018	Target Advice Letter filing with the CPUC
June 2018	CPUC approves contract (Decision date + 12 months)
February 2019	Resources online (Decision date + 20 months)
April, 2020	Forecasted Demo C Need

DRP Demo C RFO Schedule

- D.17-06-012 adopts two conflicting milestones:
  - Resource online date 2019
  - Wires need, and corresponding distribution deferral benefit, beginning 2020

- 2019 online date may be challenging
  - PG&E anticipates CPUC approval by mid 2018, at the earliest
  - Sellers need time to construct resources or acquire customers

- PG&E is allowing Sellers to offer 2019 and 2020 start dates

- *If 2020 online dates prove significantly more cost effective than 2019 online dates and/or more viable, PG&E may request the CPUC waive the 2019 online date requirement. There is no guarantee that the CPUC will allow 2020 start dates at this time.*

Independent Evaluator (IE)

- Primary role of the IE is to:
  - Monitor RFO processes to ensure fair and equal treatment of all Participants
  - Monitor evaluation processes to ensure PG&E has implemented methodology as described and that offers are treated consistently
  - Report on RFO process and proposed transactions to CPUC when filed for CPUC approval

- The IE may review all Offer data and communications with Participants

- 2017 DRP RFO IE is Sedway Consulting. Contact is:
  Alan Taylor (Alan.Taylor@sedwayconsulting.com)

Goals of DRP

Goals of DRP

Modernize distribution system to accommodate expected DER growth through two-way power flow

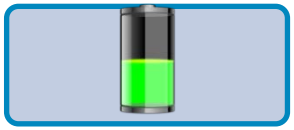
Enable customer choice of new electric DER technologies and services

Identify and develop opportunities for DERs to realize grid benefits

What are Distributed Energy Resources?

Distributed Energy Resources (DER) means:

Distributed Renewable Generation



Energy Storage

Energy Efficiency

Demand Response

Electric Vehicles

Demo C Overview

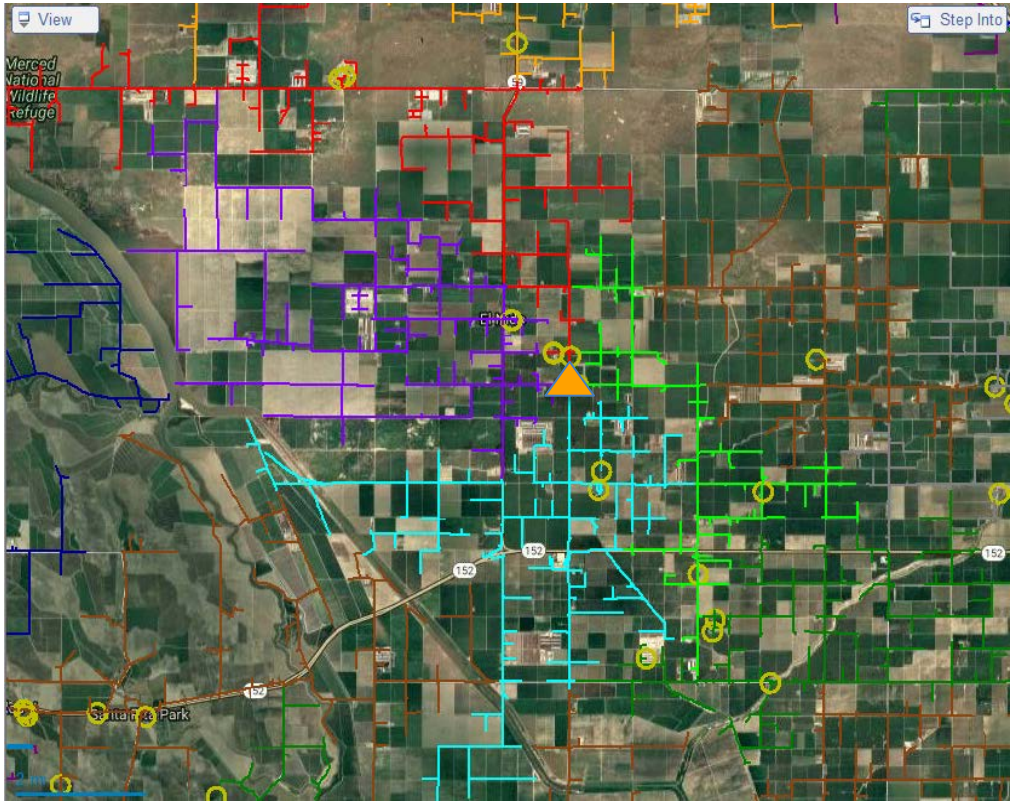
- CPUC has directed IOUs to procure distribution services from third party owned DERs in order to demonstrate DER capabilities in deferring traditional “wires” investments for two demonstration projects beginning in 2020: “Demo C” and “Demo D”

- PG&E has selected El Nido Substation (in Merced County) as location for Demo C
  - Targeting deferral of El Nido Transformer Bank No. 1 replacement project

- Learning objectives include:
  - Validation of DER distribution service capabilities
  - Sourcing of a localized DER portfolio via competitive solicitation
  - Administration and operation of a localized DER program by the utility
  - Validation of locational net benefits as estimated by indicative Locational Net Benefits Analysis (LNBA) model in DRP Demonstration Project B

El Nido Substation Location Overview

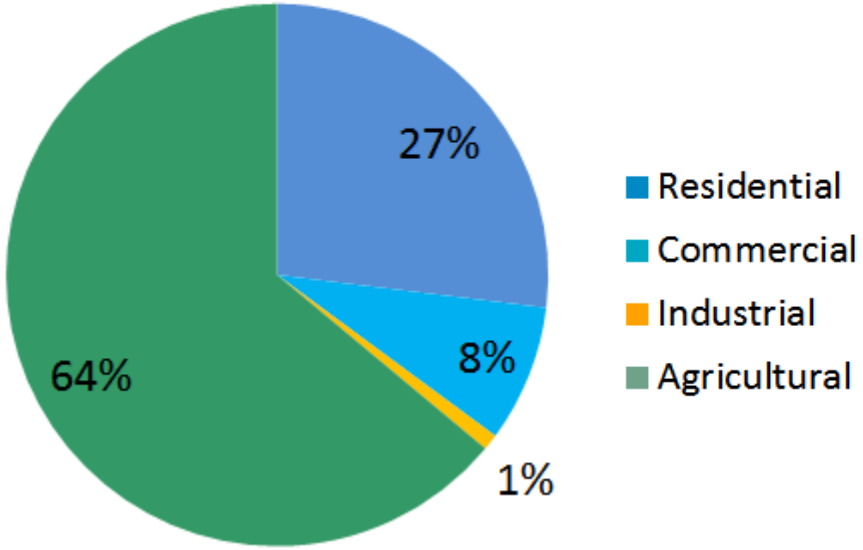
- Location: El Nido Substation Bank 1, Merced County
- 836 electric service points
- Summer Peaking Area
- Electrical Service: 12 kV voltage distributed to customers via 2 distribution feeders
- Customer base:
  - Agricultural (539 service points)
    - Dairies, Ranches, Poultry, Groundwater Pumping
  - Residential (227 service points)
  - Commercial and Industrial (77 service points)



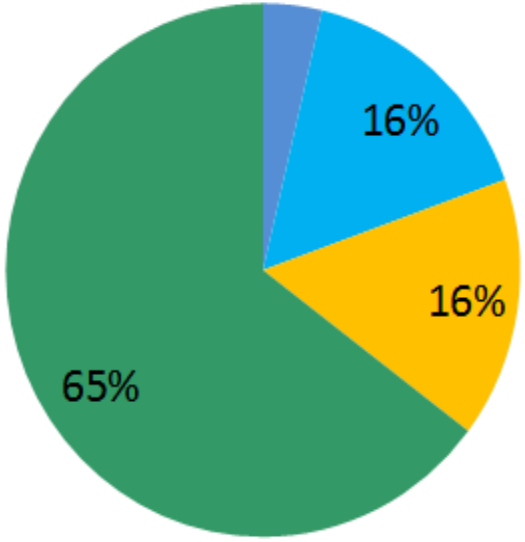
Symbols:	El Nido Feeders:	
= PV	1101 =	1102 =
= El Nido Sub	1103 =	1104 =

Customer Composition Served by El Nido Substation – Bank 1

Total Service Points by Sector



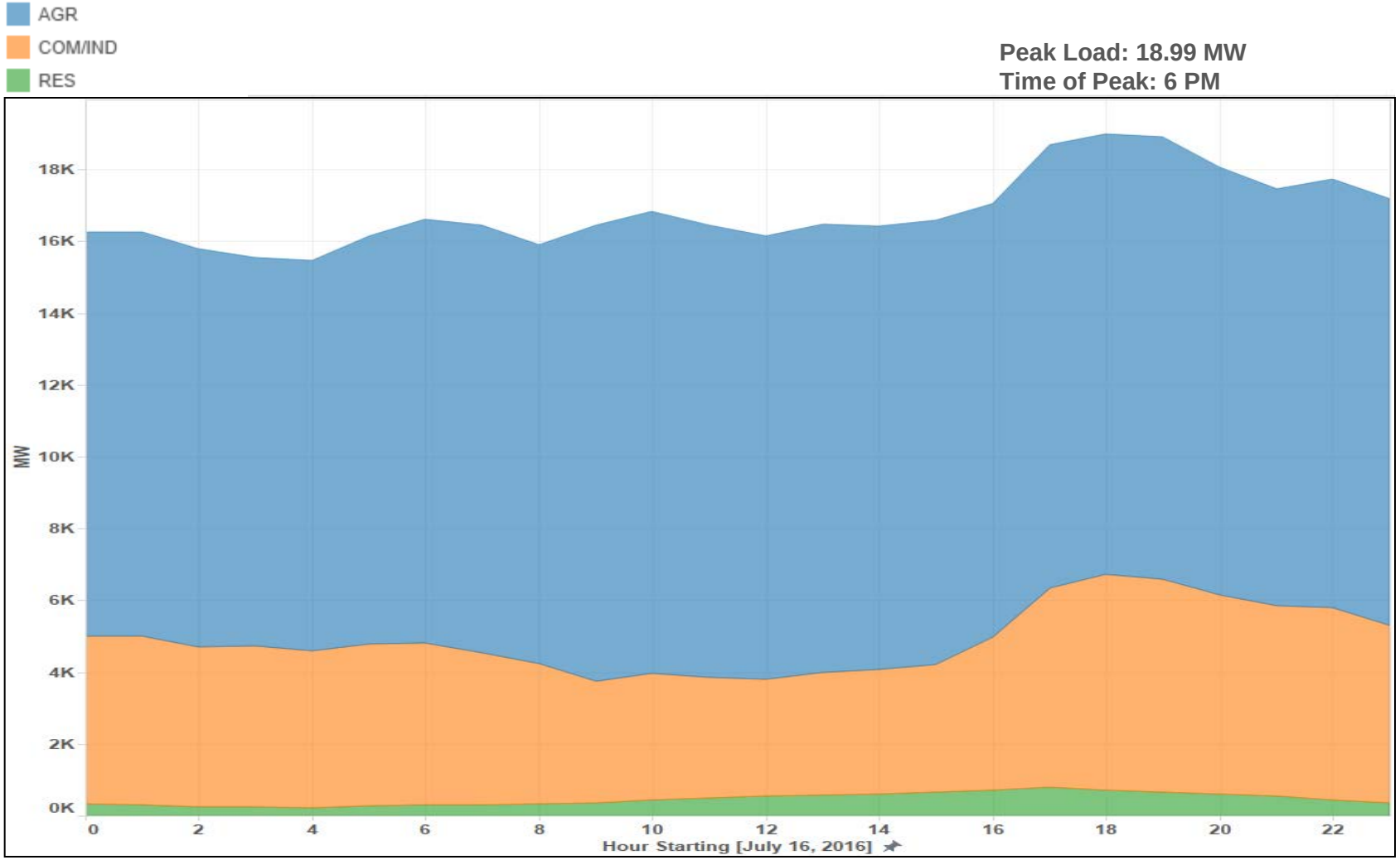
Peak Day Demand by Sector



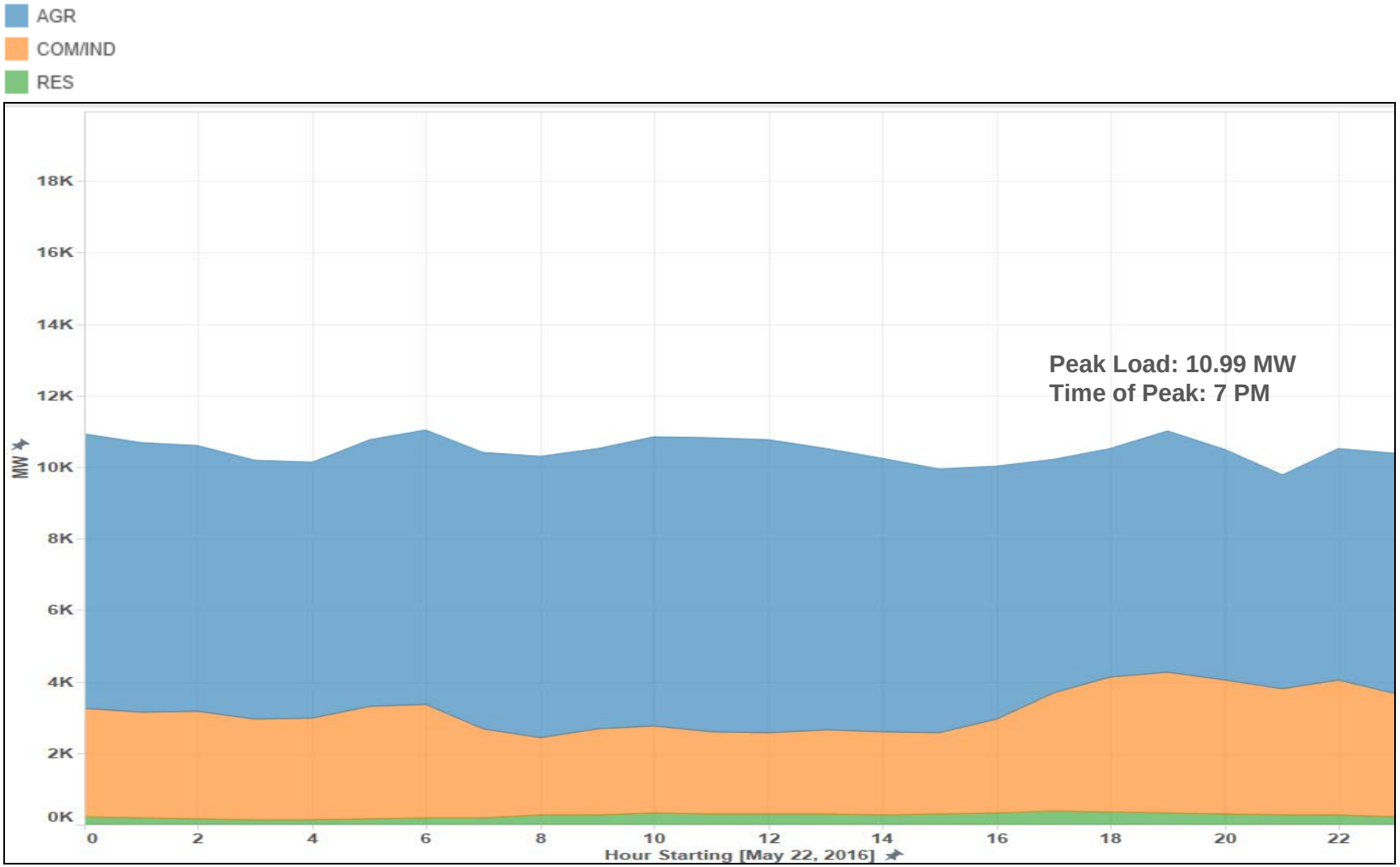
Customer Sector	Total Svc. Points*	Peak Day Demand (MW)
Residential	227	0.70
Commercial	69	3.00
Industrial	8	3.00
Agricultural	539	12.28

* Service point count as of June 1, 2017

Historical Peak Load: Day Shape by Customer Type



Historical Shoulder* Month Load: Day Shape by Customer Type



* Typical load day within the April, May, and September months; shoulder months of the “Summer” Planning cycle

Solar and DR Customers Served by El Nido Substation Bank 1

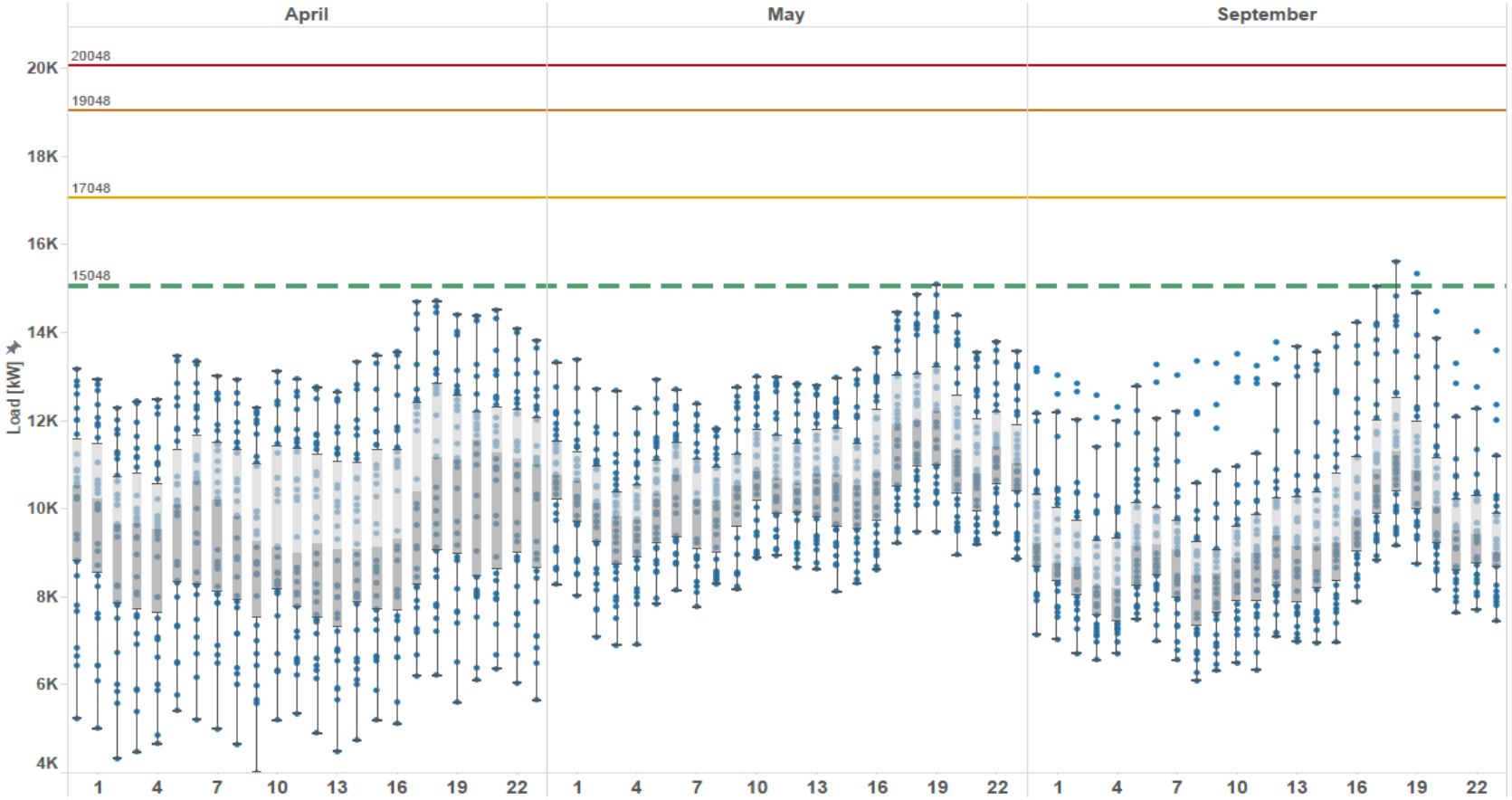
PV Interconnections*	
# of Customer PV Installations	Total PV Capacity (MW)
6	1.7

Demand Response	
# of Customers Participating in Programs	Reduction to Peak Demand (MW)
41	Negligible

* Customer interconnection values based on total number of customers interconnected as of June 1, 2017

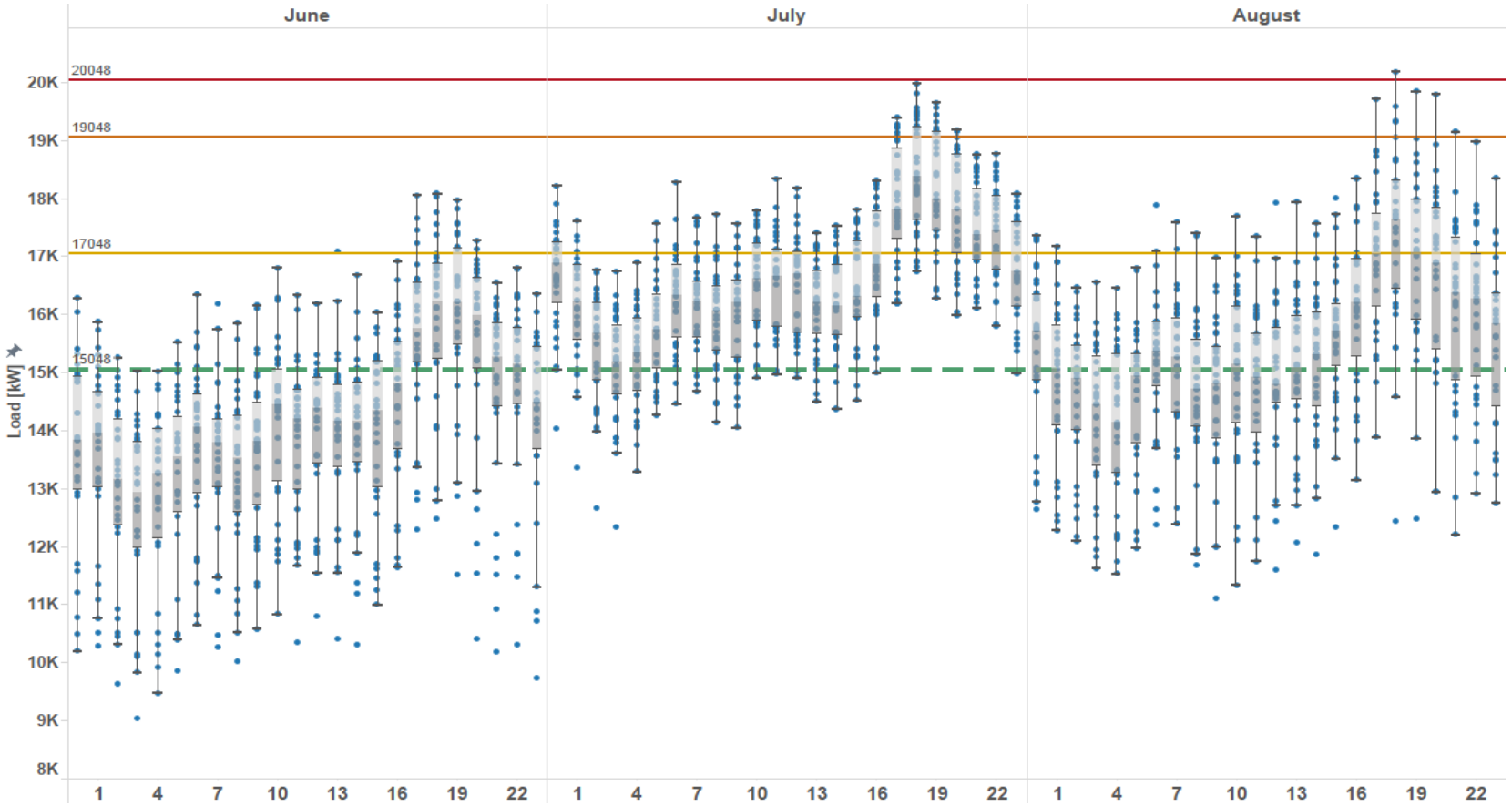
Distribution Capacity Need: El Nido Bank No. 1 Loading Forecasts for 2024 – *Shoulder Months*

- Peak load **approaches or exceeds** bank limit by < 1 MW ~4 hr/day April, May, September
- Load driven primarily by Ag pumping – sensitive to precipitation much more than temperature

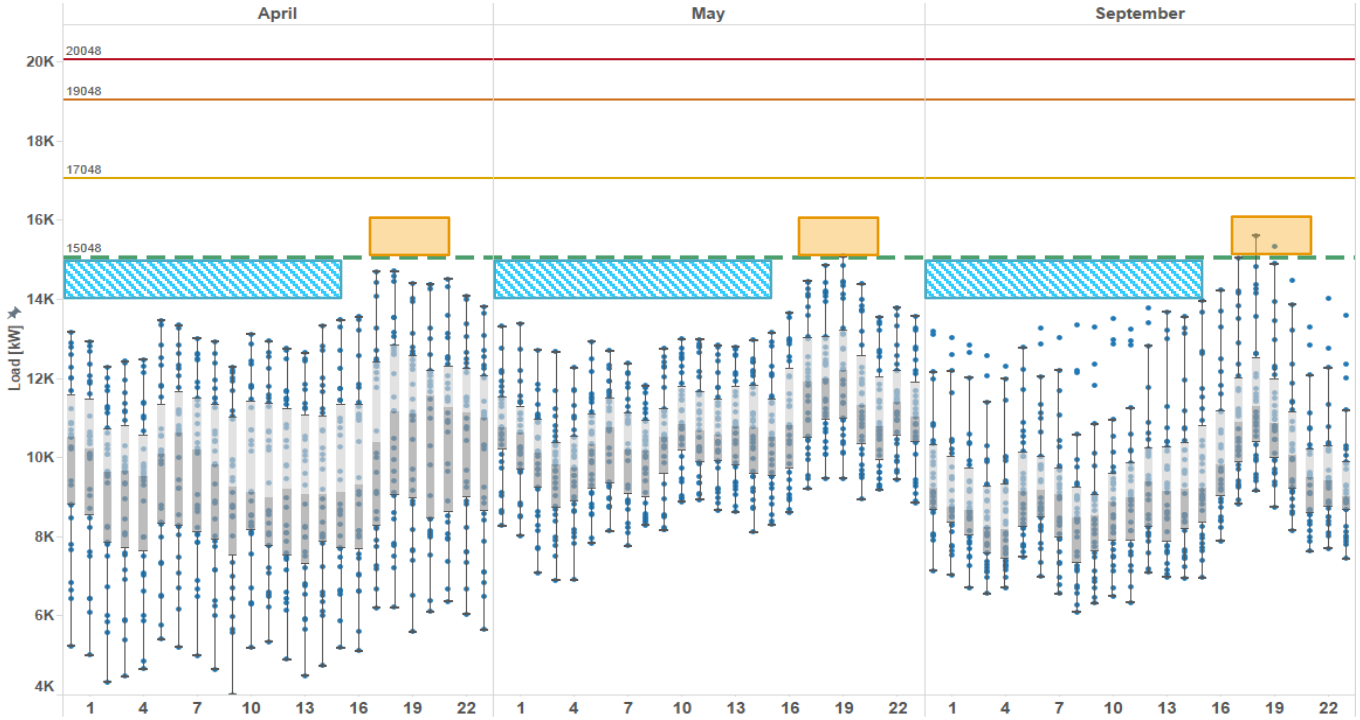


Distribution Capacity Need: El Nido Bank No. 1 Loading Forecasts for 2024 – *Summer Months*

- Peak load **exceeds** bank limit by 2 – 4 MW nearly 24 hr/day June – August



Distribution Capacity Services Procurement Summary – *Shoulder Months*

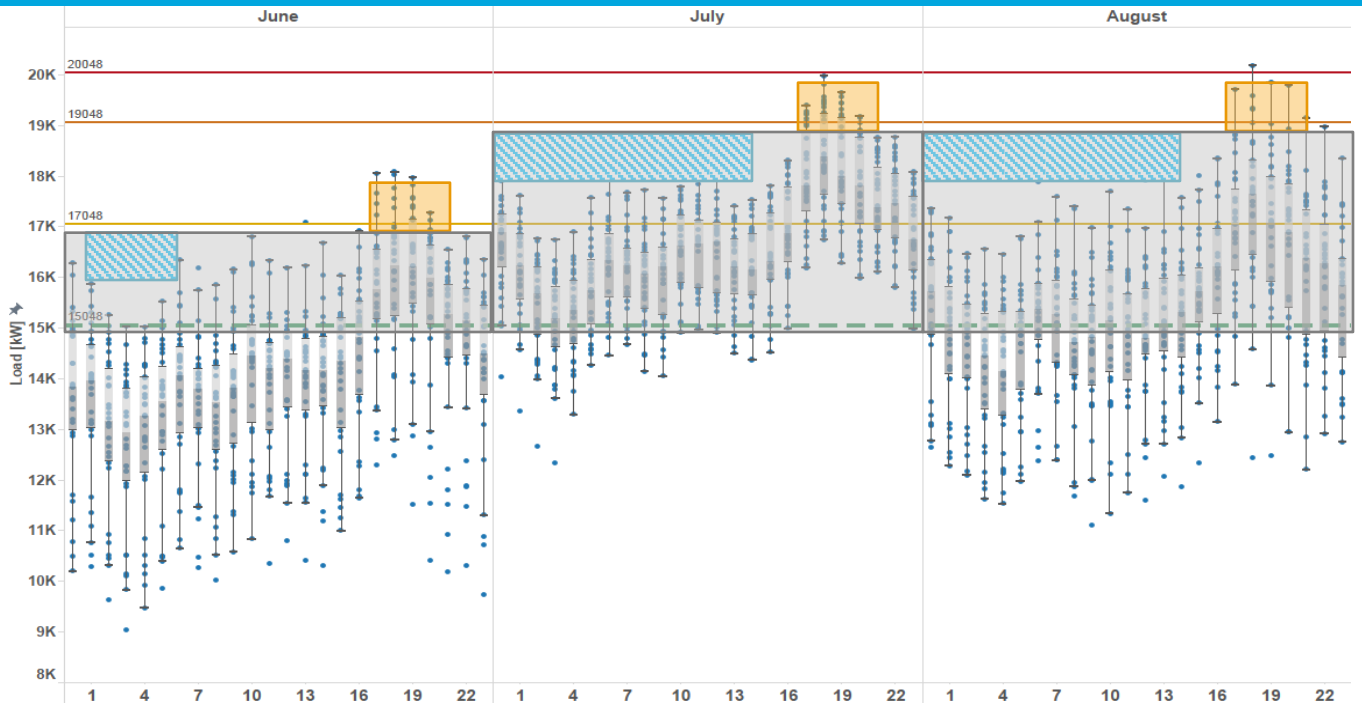


Allowable load increase

"Peaking" capacity

Month	Apr, May, Sept
Capacity type	***Peaking***
Magnitude	1 MW
Duration	5 – 9pm
Frequency	**50** calls/year (Apr – Sept); max **7** calls/mo; max **2** consecutive days
Allowable load increase	1 MW, 12am – 3pm

Distribution Capacity Services Procurement Summary – *Summer Months*



Month	June	July, August	Jun – Aug
Capacity type	***Baseload***	***Baseload***	***Peaking***
Magnitude	2 MW	4 MW	1 MW
Duration	24 hr	24 hr	5 – 9pm
Frequency	30 days	31 days/mo	**50** calls/year (Apr – Sept); max **15** calls/mo; max **7** consecutive days
Allowable load increase			1 MW 1 – 6am (Jun), 12am – 3pm (Jul, Aug)

Solicitation Overview

RFO Design (1/4)

- **Product**
  - PG&E is purchasing distribution capacity services only
  - No RA, energy, ancillary services, RECs, other attributes
  - Sellers may offer delivery terms beginning 2019 or 2020 and extending through 2024 or 2029
- **Project size**
  - Minimum size of 0.5 MW
  - Maximum size of 4 MW for baseload and 1MW for peak capacity
  - Offers must be in increments of 0.5 MW
  - Peak offers must be the same size for all the delivery months, delivery hours, and for the length of the delivery term
  - Baseload offer must be no more than 2 MW in June and 4 MW in July and August
- **Offers**
  - There are no limits on the number of offers
  - Offers may be mutually exclusive/inclusive of each other
  - ***If possible, Sellers are encouraged to provide an offer that meets the full baseload and/or peak need***

RFO Design (2/4)

- **Project eligibility**
  - DERs: Renewable distributed generation, energy storage, energy efficiency, demand response, electric vehicles
  - Participants may be either in-front-of-the-meter or behind-the-meter
  - Participants may offer one technology or a portfolio
    - If offering a portfolio, Participants must identify the composition of the portfolio
  - Participants may offer one resource or an aggregation

- **Measurement and verification**
  - Participants must submit a measurement and verification plan with their offers
  - Projects that utilize existing Measurement and Verification protocols adopted by CAISO or CPUC are preferred
  - Behind the meter Projects using a baseline methodology may require a customized approach

RFO Design (3/4)

- **Interconnection**
  - Project must connect to specified lines/feeders
  - No specific interconnection milestone required, but Participants must demonstrate they can meet the online date
  - Participants can utilize the Integration Capacity Analysis (ICA) map on PG&E's DRP RFO website to get an indicative understanding of current capacity on the distribution lines in the Chowchilla area

- **Double payments/double counting**
  - Projects must be fully or partially incremental to PG&E's programs, tariffs, and solicitations
    - Examples and links to PG&E's programs are provided on the PG&E DRP RFO website
  - Participants must submit Appendix B5 of the RFO materials to demonstrate how their Offer is incremental
  - Submit any questions on incrementality to DRPRFO@pge.com

RFO Design (4/4)

Examples of fully incremental, partially incremental, and non-incremental Projects

Resources can be:	Examples
Fully Incremental	Add-ons to existing DERs; New programs; EE Technology not included in Portfolio
Partially Incremental	Enhanced uptake of DER over base
Not Incremental	Existing rooftop PV compensated under NEM; Existing DG or ES compensated under SGIP; Existing EE or DR portfolio resources without enhancement

Customer Engagement Support

Customer Engagement Support

- PG&E is offering support to Participants with behind-the meter Projects to improve the chances of success in acquiring customers

- For all Participants, PG&E will provide a customer facing website to enable customers in the area to validate that this is a PG&E solicitation

- PG&E is also offering additional resources to support customer acquisition: Offers should reflect Participant's value of such support
  - Participants must include in their Offers the number of hours of PG&E Customer Relationship Manager support it wants
  - Final scoping of support is subject to negotiation

  Example of services for 50 hours
  - Assist in evaluating and executing co-branding opportunities
  - Customer engagement support for Participants' identified targets

  Example of services for 200 hours
  - Same as 50 hours plus:
  - Assist with development of outreach plans
  - Assist in identifying high potential customers

Term Sheet Overview

Transaction

- Products: Distribution baseload and distribution peak capacity in accordance with Operating Parameters
  - Decrease load or increase generation during specified hours
  - Sellers are free to monetize other revenue streams
  - Seller is free to operate the resource how it wants outside of the Restricted Periods

- Seller commits to provide Product at Contract Capacity
  - Seller may sell excess amount of Product from Project to third parties
  - Seller may sell other attributes of the Project to third parties

Transaction

- Distribution baseload capacity
  - Sellers must dispatch every hour of every day during June, July and August
- Distribution peak capacity
  - 5 to 9 pm, April-September
  - PG&E may dispatch up to 50 times per calendar year
    - April, May, September: up to 7 times per month, up to 2 consecutive days
    - June, July, August: Up to 15 times per month, up to 7 consecutive days
  - Sellers will be instructed on whether they are required to provide distribution peak capacity by 8 am day-ahead
- Seller will provide PG&E with real-time visibility into DER performance
  - Sellers are required to install a communications system and equipment for PG&E to be able to remotely monitor Project status on an aggregate and individual unit basis
- Restricted Periods
  - For resources that require charging or load shifting, project may only increase load during the following periods
    - June: 1 am to 6 am
    - April, May, July, August, and September: 12 am (midnight) to 3 pm

Compensation

- Compensation:
  - Fixed price ($/kw-month)
  - For distribution peak capacity, also includes a variable price ($/kwh) for amount of Distribution Services Project provides when required
- If Contract Capacity is not delivered, fixed payment will be reduced

Ratio	Reduction
≥1.00	100%
≥0.90 and < 1.00	Ratio
≥0.80 and < 0.90	Ratio x 50%
≥0.75 and < 0.80	0
< 0.75	Ratio – 75% (Seller will pay PG&E)

Project Site and Customers

- Sellers are solely responsible for acquiring Customers
- Sellers may remove or replace Sites/Customers, provided that changes are in accordance with safety provisions
- Seller must provide PG&E a list of Customers and satisfy incrementality criteria prior to Initial Delivery Date
  - Changes to initial Customer list must continue to satisfy incrementality criteria
- Seller's marketing materials that reference PG&E are subject to written approval by PG&E
- Seller is responsible for all marketing activities, provided that PG&E may provide specified type of assistance and number of hours of customer representative time

Performance Assurance

Performance Assurance

- "Project Development Security" is due to PG&E within five (5) business days following CPUC approval of the agreement and must be in the form of a letter of credit or cash and in the following amounts:
  - $60 per kW for all new resources
  - $25 per kW for existing resources

- "Delivery Term Security" is due to PG&E before the Initial Delivery Date and will be held by PG&E throughout the delivery term
  - Maximum of $125/kw or 10% of the sum of the highest 36 months of fixed payments

Damage Payment/Termination Payment

- In an event of default, defaulting party will owe non-defaulting party an amount equal to the performance assurance

Conditions Precedent

- If CPUC Approval has not occurred on or before 180 days from the date on which PG&E files the agreement with the CPUC, then either party may terminate the agreement

- Initial Delivery Date shall not occur until Seller:
  - Has constructed the Project and provided certification from an independent engineer that Project is commercially operable and constructed in accordance with the safety requirements
  - Has passed an initial Performance Test demonstrating that the Project is capable of delivering Distribution Services
  - Has provided PG&E with a list of Sites and Customers and PG&E has verified that such Sites/Customers are incremental
  - Has provided Delivery Term Security

Events of Default

- Failure to meet a Critical Milestone
- Failure to meet Initial Delivery Date
- Monthly Distribution Services Factor for any calendar year is less than 75%
- Results of Performance Test shows that the Project provides less than 85% of Contract Capacity
- Seller does not operate in accordance with the Restricted Periods for more than 3 days per year

Evaluation Methodology

Evaluation Criteria: Least Cost, Best Fit

- **Quantitative Factors**
  - Distribution deferral value
  - Contract payments
  - Customer engagement/support costs
  - Administrative costs

- **Qualitative Factors**
  - Project viability (including technology, interconnection, site control assessment, developer experience and customer acquisition plan)
  - Credit
  - Technology, counterparty diversity
  - Small business enterprise

Offer Submittal Process

Offer Submittal

- Offers must be submitted via the online platform at Power Advocate. Only accepted registrants are permitted to submit Offers.
  - Register through Power Advocate at: https://www.poweradvocate.com/pR.do?okey=71695&pubEvent=true
  - PG&E strongly encourages you to register well in advance of Offer due date of **September 29th at 1:00 PM (PPT).**

- Offer materials must also be submitted to the IE on a USB flash drive, no later than **October 2nd** at the following address:

Sedway Consulting, Inc.
821 15th Street
Boulder, CO 80302

- PG&E will only consider Offers that, as of the submittal deadline, are complete and conforming Offers.

Keys to a Successful Proposal

- Sellers may choose to submit multiple Offers. Variations include:
  - Delivery Term
    - Start year 2019 or 2020
    - End year 2024 or 2029
  - Peak and/or baseload
  - With or without customer engagement support
  - Pricing

Required Offer Submission Forms

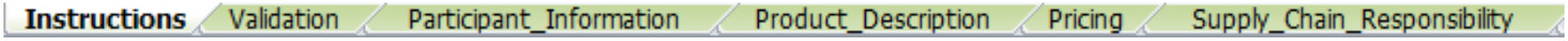
- Offer package must be in the format as specified in the 2017 DRP RFO Protocol.
- Introductory Letter. Format: MS Word
- Fully Completed Offer Form (Appendix A); Format: MS Excel
- Supplemental RFO Appendix Document (Appendices B1 through B7). Format: MS Word (submit one combined document)
- Interconnection Studies, if applicable; Format: PDF or MS Word

Note: Incomplete documentation will require additional communication to resolve any issues

Offer Form

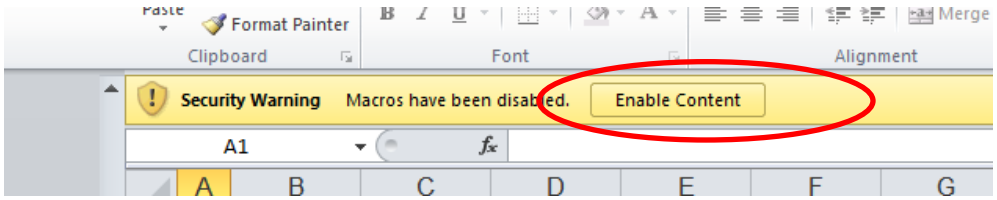
Offer Form Structure

- Instructions
- Validation Worksheet
- Participant Information
- Project Description
- Pricing Sheet
- Supply Chain Responsibility



Offer Form – Instructions

- Be sure to ENABLE MACROS when opening the Offer Form.



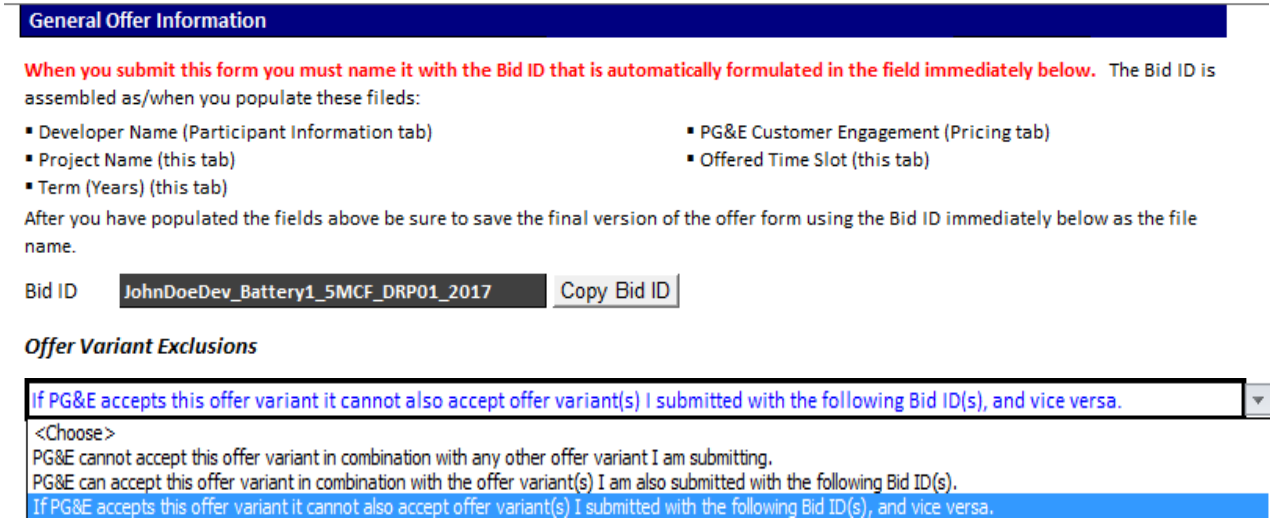
- Instruction tab provides clear directions on completing the offer form.
- Please make sure you save and submit the form in Microsoft Excel ".xlsb" format. **No other formats will be accepted**.
- Each cell with a yellow background must be filled out. Once completed the yellow background will disappear.
- Grayed out cells are auto-calculated cells.
- If the word "Complete" does not appear at the top of the page the form will be deemed invalid and returned to you.

Offer Form – Participant Information

Participant Information					
Counterparty/Legal Entity Name	DER Energy LLC				
Street Address	123 Main Street				
City	El Nido	State	CA	Zip Code	12312
Country	USA				
Website					
Authorized Contact #1		**Authorized Contact #2**			
First Name	John	First Name			
Last Name	Doe	Last Name			
Title	Principal Developer	Title			
Phone 1	(123) 123-1234	Phone 1			
Phone 2		Phone 2			

- Complete legal entity name
- At least one authorized contact
- Read through each attestation and affirmation on the Participant Information tab. A number of these items are specific to and/or new to this RFO.

Offer Form – Product Description



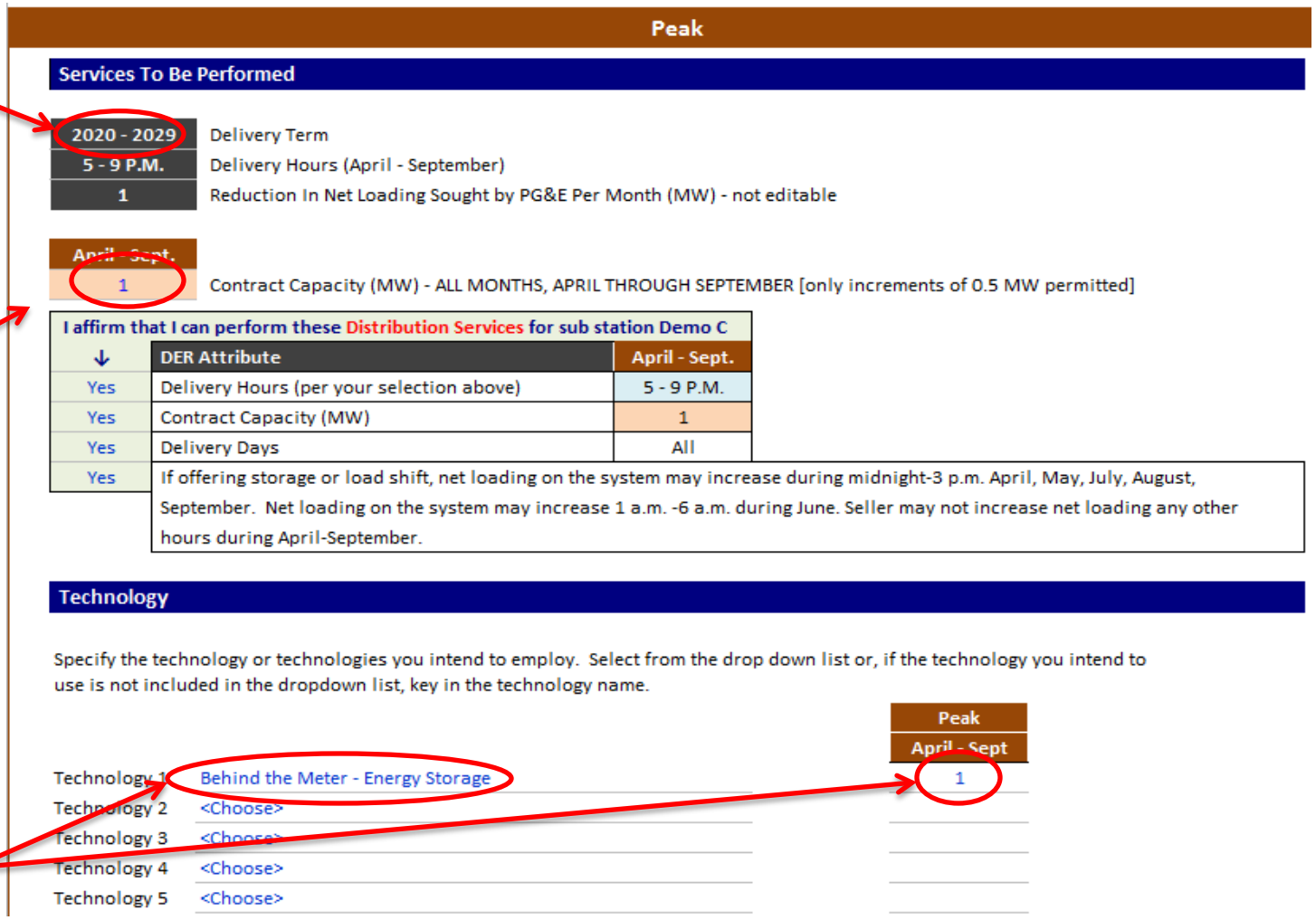
- Name file to match bid ID
- Offer Variant Exclusions

Offer Form – Product Description

1. Select Term

2. Select Contract Capacity

3. Select Technology and enter capacity



Peak

Services To Be Performed

2020 - 2029	Delivery Term
5 - 9 P.M.	Delivery Hours (April - September)
1	Reduction In Net Loading Sought by PG&E Per Month (MW) - not editable

April - Sept.	
1	Contract Capacity (MW) - ALL MONTHS, APRIL THROUGH SEPTEMBER [only increments of 0.5 MW permitted]

I affirm that I can perform these Distribution Services for sub station Demo C

↓	DER Attribute	April - Sept.
Yes	Delivery Hours (per your selection above)	5 - 9 P.M.
Yes	Contract Capacity (MW)	1
Yes	Delivery Days	All
Yes	If offering storage or load shift, net loading on the system may increase during midnight-3 p.m. April, May, July, August, September. Net loading on the system may increase 1 a.m. -6 a.m. during June. Seller may not increase net loading any other hours during April-September.	

Technology

Specify the technology or technologies you intend to employ. Select from the drop down list or, if the technology you intend to use is not included in the dropdown list, key in the technology name.

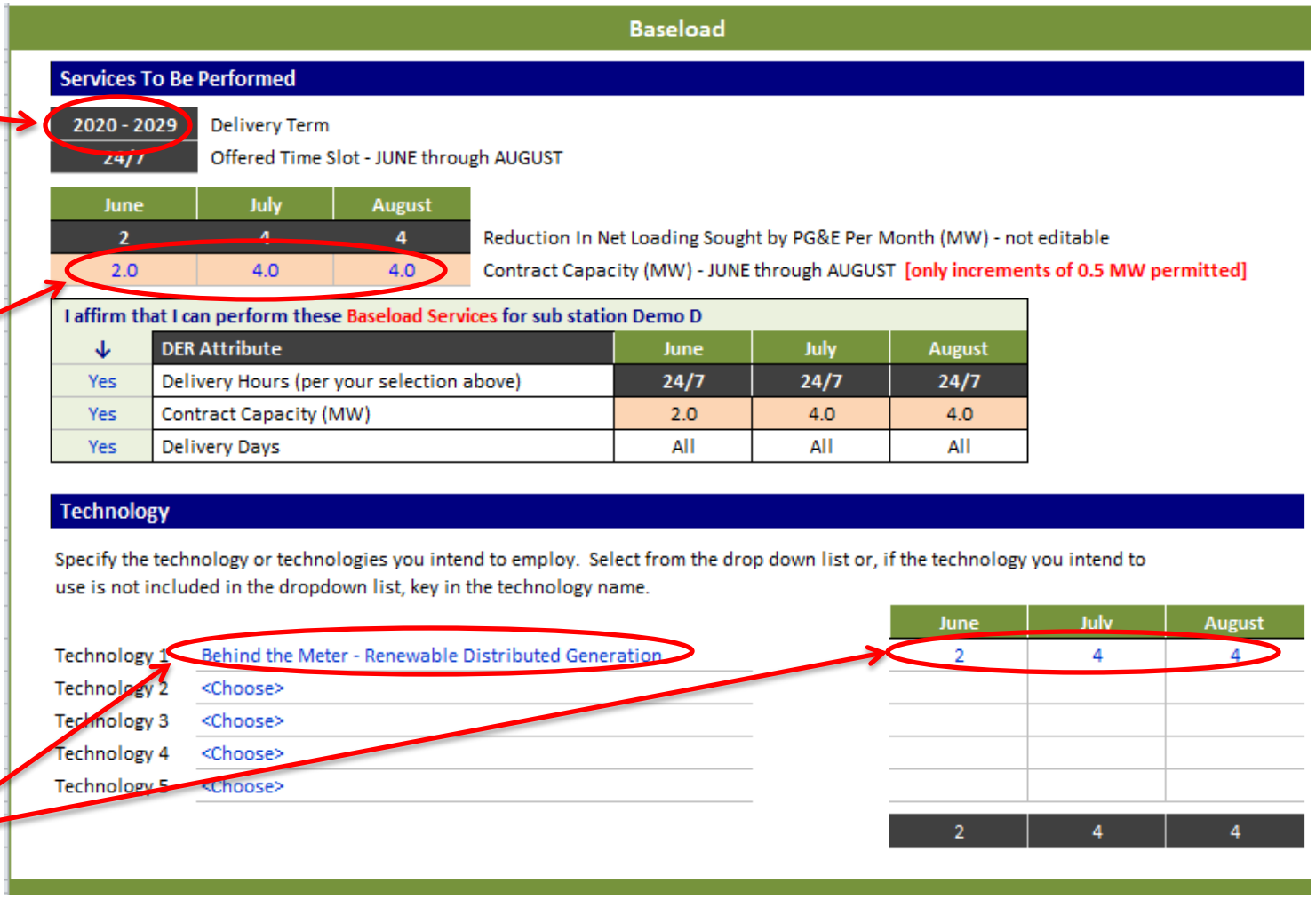
		Peak April - Sept
Technology 1	Behind the Meter - Energy Storage	1
Technology 2	<Choose>	
Technology 3	<Choose>	
Technology 4	<Choose>	
Technology 5	<Choose>	

Offer Form – Product Description

1. Select Term

2. Select Contract Capacity

3. Select Technology and enter capacity



Baseload

Services To Be Performed

2020 - 2029	Delivery Term
24/7	Offered Time Slot - JUNE through AUGUST

June	July	August	
2	4	4	Reduction In Net Loading Sought by PG&E Per Month (MW) - not editable
2.0	4.0	4.0	Contract Capacity (MW) - JUNE through AUGUST [only increments of 0.5 MW permitted]

I affirm that I can perform these Baseload Services for sub station Demo D

↓	DER Attribute	June	July	August
Yes	Delivery Hours (per your selection above)	24/7	24/7	24/7
Yes	Contract Capacity (MW)	2.0	4.0	4.0
Yes	Delivery Days	All	All	All

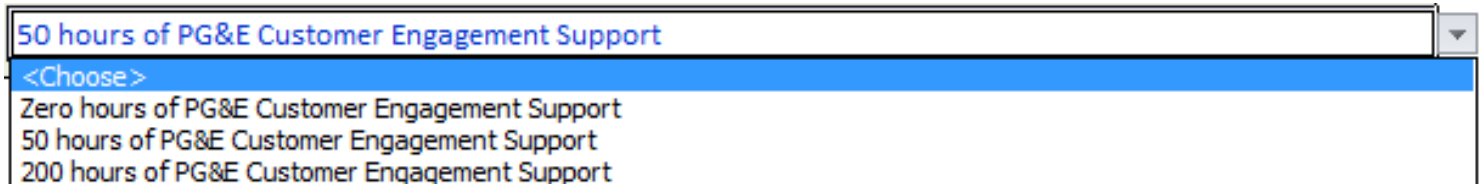
Technology

Specify the technology or technologies you intend to employ. Select from the drop down list or, if the technology you intend to use is not included in the dropdown list, key in the technology name.

		June	July	August
Technology 1	Behind the Meter - Renewable Distributed Generation	2	4	4
Technology 2	<Choose>			
Technology 3	<Choose>			
Technology 4	<Choose>			
Technology 5	<Choose>			
		2	4	4

Offer Form – Pricing

***Customer Engagement Support for Behind the Meter Projects only**



- Enter Fixed Capacity Price in $/kW-Month
- Enter Variable Price in $/kWh

Intermission

Q & A