November 10, 2014
Estimated time:
10:00 am to 3:00 pm

SDG&E 2014 All Source RFO Bidder's Conference

Third of three

In-Person

Energy Innovation Center (EIC)

4760 Clairemont Mesa Blvd
San Diego, CA 92117

Teleconference/Webinar

By Phone: Call-in (866) 219-5829
Pass Code: 1647534

Audience link:
https://engage.vevent.com/rt/sempra/index.jsp?seid=95

SDGE connected

A Sempra Energy utility℠

Agenda

	Subject	Estimated Time
1	Logistics and Legal Disclaimers	10:00AM – 10:05AM
2	SDG&E and Supplier Diversity	10:05AM – 10:20AM
3	Overview of the Independent Evaluator's Role RFO Schedule, Conformance Requirements and Credit Exposure Calculation	10:15AM – 11:00AM
4	EE and DR - Eligibility Requirements, Required Forms and Incremental nature - Defining dates, milestones, periods, terms and etc. - Model Agreement - Evaluation - Treatment of mixed resource projects - Q&A Session	11:00AM – 1:00PM
5	Lunch Break	11:30AM– 12:00PM
6	Utility owned storage (Q&A)	1:00PM - 1:45PM
7	General Q&A Session	1:45PM - 2:20PM
8	E3 Training	2:20PM - 3:00PM

Logistics

- Logistics
  - Concentrate on DR, EE and Energy Storage
  - Highlight of FAQs are included in this presentation
  - E3 presentation is available during this bidders conference and has been posted on-line
- Housekeeping questions?

General Q&A Guidance

- SDG&E has posted (and will continue to post) questions and answers on the All Source solicitation website (http://www.sdge.com/all-source-2014-rfo)
  - Q&A's that apply to all product types are included on the main page (General, Evaluation, Interconnection and Credit); product type specific Q&As will be included on the page for each product type
- Questions from today will be written down; all questions and answers will be posted on the RFO website
- Questions can be submitted to AllSourceRFO@semprautilities.com at any time until the question submittal deadline
- Questions received (and answers) will be posted to the website periodically
- Deadline to submit questions: November 14, 2014
  - SDG&E will post the final set of answers no later than December 1, 2014 (offers are due on January 5, 2015)

Legal Disclaimers: Anti-Trust Guidelines & Document Conflict

- Anti-trust
  - All participants in today's meeting shall comply with anti-trust guidelines. These guidelines direct meeting participants to avoid discussions of topics or behavior that would result in anti-competitive behavior, including restraint of trade and conspiracy to create unfair or deceptive business practices or discrimination, allocation of production, imposition of boycotts and exclusive dealing arrangements
- Document Conflict
  - This presentation is intended to be a summary level discussion of the information and requirements established in the 2014 All Source RFO Materials. To the extent that there are any inconsistencies between the information provided in this presentation and the requirements in the RFO Materials, the RFO Materials shall govern

SDG&E
and
Supplier Diversity

Bruce Mayberry

DBE Program Manager

http://www.sempra.com/about/supplier-diversity

Diverse Supplier Initiative

General Order (GO) 156:

- Adopted by the California Public Utilities Commission in 1986
- Promote greater competition among utility suppliers by expanding the available supplier base and to encourage greater economic opportunity for women, minority, and disabled veteran owned businesses who have been historically left out of utility procurement

Fast Forward to 2014 at SDG&E:

"Advancing supplier diversity is more than just a priority for San Diego Gas & Electric® (SDG&E®); it's become part of our company's DNA." – *Jessie Knight, former CEO, SDG&E*

- Supplier diversity goals are part of our compensation goals
- 45% of our procurement dollars are being spent with diverse business enterprises (DBEs)

New GO 156 Electric Procurement Requirements

- Starting in 2012, Utilities were required to add separate reporting on electrical procurement spends
- The California IOUs developed standard reporting formats and definitions with the CPUC
- The IOUs continue their outreach efforts with DBE firms in all markets – conventional, renewable, capacity and other products including those that are being solicited in this RFO

Supplier Diversity Certification*

- Minority- or woman-owned company
  - California Public Utilities Commission (CPUC) Supplier Clearinghouse (free)
- Service Disabled Veteran Business
  - State of California, General Services Office of Small and Disabled Veteran Business (OSDC)
- NMSDC
  - Regional affiliates of the National Minority Supplier Development Council (NMSDC)
- Others
  - Small Business Administration 8(a) (SBA)
  - Women Business Enterprise Council (WBEC-WEST)
  - State and municipal government agencies

**Certification does not guarantee any business enterprise the right to bid or receive a contract.*

Supplier Diversity Contact Information

Bruce Mayberry

DBE Program Manager

BMayberry@semprautilities.com

858-654-8772

Brad Mantz

Energy Contracts Originator & E&FP Diversity Lead

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858-654-1588

Role of the Independent Evaluator

Jon Jacobs
PA Consulting

Independent Evaluator Introduction and Role

- Jonathan Jacobs and Barbara Sands of PA Consulting Group will be the Independent Evaluators ("IEs") for this solicitation. Both Jonathan and Barbara have been the IE for previous SDG&E's RFOs (e.g., RPS, RAM, all-source RFO and peaking capacity RFO)
  - The role of the IE is to ensure that SDG&E's evaluation of bids is transparent and that all bidders are treated fairly and equitably
  - The IE is expected to assure that affiliate and utility owned bids are not favored
  - The IE oversees SDG&E's Cost Development Team and Evaluation Team
  - The IE will also ensure that bid compliance decisions are fair
  - The IE oversees the modeling of the bids including how each bid is represented the models

The IE provides advice to SDG&E on evaluation issues as they arise

RFO Schedule / Conformance Requirements

Pat Charles
E&FP Origination Analytics Manager

http://www.sdge.com/all-source-2014-rfo

RFO Schedule

No.	Item	Date
1	RFO Issued	September 5, 2014
2	Pre-Bid Conference / Bidder Outreach Events	1) September 26, 2014 (All resource types) 2) October 24, 2014 (All resource types - conference call / webinar only), and 3) November 10, 2014 (EE, DR and Energy Storage only)
3	DEADLINE for ESSEPC Respondents to provide a written expression of interest to SDG&E (e-mail to AllSourceRFO@semprautilities.com or other written correspondence) containing company name and contact information	5pm, October 1, 2014
4	DEADLINE TO REGISTER for RFO Website access / to download RFO forms and documents	December 1, 2014
5	DEADLINE TO SUBMIT QUESTIONS Question submittal cut-off date. Answers to all questions will be posted on the website no later than December 1, 2014.	November 14, 2014

RFO Schedule

No.	Item	Date
6	CLOSING DATE: Offers must be uploaded to and received by the RFO Website no later than 1:00 PM Pacific Prevailing Time on January 5, 2015.	January 5, 2015
7	SDG&E Begins Bid Evaluation Process	January 6, 2015
8	SHORTLIST NOTIFICATION SDG&E notifies Shortlisted Bidders	June 5, 2015
9	SHORTLISTED BIDDERS ACCEPTANCE/WITHDRAWAL Letter due from Shortlisted Bidders indicating: a. Withdrawal from SDG&E's solicitation; OR b. Acceptance of shortlisted standing and including Shortlist Acceptance Fee	+10 Days after Shortlist Notification
10	SDG&E issues appreciation notices to unsuccessful Respondents	+3 Weeks after Shortlisted Bidders
11	SDG&E commences with contract negotiations	+11 Days after Shortlist Notification
12	SDG&E submits agreements for CPUC approval	Q1 2016
	* Negotiation time will vary depending on proposal specifics including proposed contract modifications.	

RFO Conformance Requirements

- This solicitation is for Local Capacity Requirements (LCR) as authorized in the Track 4 Decision (D.14-03-004)
- Four main conformance requirements for all resource types:

Location	• Resources must be located / must interconnect within the Local San Diego Subarea • For programs, customers enrolled must be located within SDG&E's service territory
Resource Adequacy	• The resource must qualify to count for RA / meet the RA counting rules / provide 'RA Value' (energy efficiency / load modifying DR)
Incremental	• The resource must be 'demonstrably incremental' to the assumptions used in the CAISO studies done that underlie the 500 – 800 MW authorization
Contract Term	• SDG&E will consider all contract terms • SDG&E does have preferences • some portion of contract term MUST encompass 2022

RFO Conformance Requirements – Resource Adequacy (RA)

- IOUs must meet CPUC RA requirements on a monthly basis.
  - RA resources used to meet these requirements have a 'must offer obligation' in the CAISO energy markets
- The resources that SDG&E is seeking through this All Source RFO are intended to count toward SDG&E's RA obligations or are required to provide RA value

Generation or energy storage resources	• must go through the CAISO deliverability study process and receive a non-energy only deliverability status
Use limited resources (such as DR programs or energy storage)	• must be capable of operating / being dispatched for 4 hours on 3 consecutive days
EE and load-modifying DR	• provide RA value by lowering the RA requirement (by reducing load)

- More information is available from the CAISO and the CPUC websites

  For example, please see the CAISO Tariff, Section 40 - http://www.caiso.com/Documents/Section40_ResourceAdequacyDemonstrationForAllSCsInTheCAISOBAA_May1_2014.pdf and the annual CPUC decisions governing the RA program: 2011 RA Requirements: D10-06-036, 2012: D11-06-022, 2013: D12-06-025, 2014: D13-06-024, 2015: D14-06-050

RFO Conformance Requirements – "…demonstrably incremental…"

The Track 4 decision, OP 6 , requires that SDG&E observe the requirements listed in OP 4 of D.13-02-015 – the Track 1 decision

- OP 4, b. "The resource must be demonstrably incremental to the assumptions used in the CAISO studies, to ensure that a given resource is not double counted."
- CAISO studies for track 4 were ordered via a revised scoping ruling issued 5/21/2013, available here: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M065/K202/65202525.PDF
  - Attachment A to the revised scoping ruling includes the Track 4 study assumptions
  - The CAISO study is more fully explained and the results are presented in the testimony of Mr. Robert Sparks, available at: http://www.caiso.com/Documents/Aug5_2013_Track_4_Testimony_RobertSparks_R12-03-014.pdf

See tables on following slides for additional resources

RFO Conformance Requirements – "…demonstrably incremental…"

Resource	*Is your Program or Resource Incremental? Check these resources…*
Demand Response (DR)	1) SDG&E's current DR Programs (http://www.sdge.com/business/demand-response-overview) 2) SDG&E's proposed 2015-16 DR programs (http://www.sdge.com/regulatory-filing/10486/oir-enhance-role-dr-meeting-state-resource-planning-ops-reqmt); approved via D.14-05-025 3) 2013 IEPR DR Forecast: (http://www.energy.ca.gov/2013_energypolicy/documents/demand-forecast_CMF/mid_case/ ; click on SDGE Mid.xls
Energy Efficiency (EE)	1) SDG&E's current EE programs (see http://www.sdge.com/save-money/upgrade-and-save -- gives information on SDG&E's EE rebate programs; CPUC Decision approving SDG&E's current programs: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M034/K299/34299795.PDF ; and reporting on SDG&E's current EE programs at http://eestats.cpuc.ca.gov/Views/Documents.aspx 2) SDG&E's proposal for 2015 EE programs (http://www.sdge.com/regulatory-filing/10501/2015-energy-efficiency-program-portfolio-changes-phase1-rulemaking-13-11-005) 3) See "Energy Efficiency Adjustments for a Managed Forecast: Estimates of Incremental Uncommittted Energy Savings Relative to the California Energy Demand Forecast 2012-2022" of September 14, 2012 at http://www.energy.ca.gov/2012_energypolicy/documents/demand-forecast/IUEE-CED2011_results_summary.xls ; See the 'mid savings elec' tab -- as discussed and directed in the revised scoping memo - Att A, p. 4, footnote 10

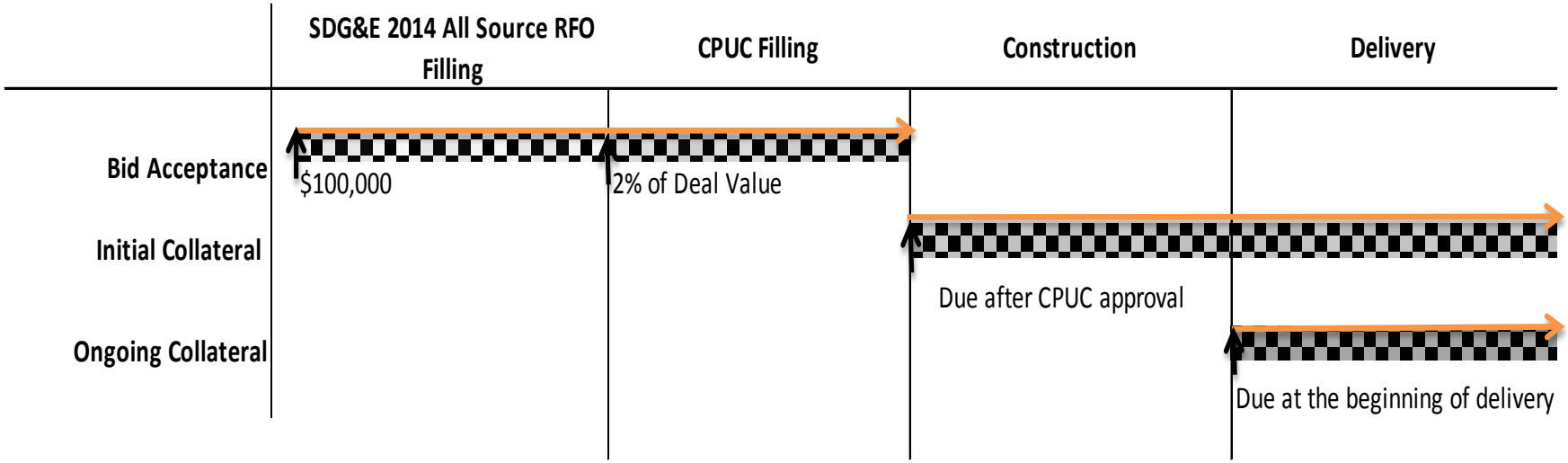
Product Type Resource Criterial and Eligibility Requirements (EE and DR)

Participation and Resource Criteria	Resource Type	
	EE	DR
Resource Specific Requirements	Customers enrolled must be within SDG&E's service territory; E3 calculator - Total Resource Cost (TRC) of 0.9 or greater;	Customers enrolled must be within SDG&E's service territory; E3 calculator - Total Resource Cost (TRC) of 0.9 or greater; Supply side resoruces preferred, but load modifying will also be considered
Program size limits	500 kW - 775 MW	500 kW - 775 MW
Preferred **Contract Term (Years)**	6 years or less	None stated

Credit Exposure Valuation

Remi Raphael
Quantitative Risk & Controls Manager

Collateral Requirements Timeline



- **Bid Acceptance:** The counterparties are required to post a cash amounts of $100,000 when their bids are shortlisted and accepted
- **Filling Requirements:** Upon successful negotiation of contractual terms and prior to filing with CPUC, counterparties are asked to post 2% of deal value (whichever is greater of $100,000 or 2%)
- **Initial collateral:** Upon approval of PUC filing, the counterparties will satisfy the initial collateral requirement based on the amount of SDG&E's exposure to counterparties' default or non-performance. The initial collateral requirement will be held during all the lifetime of the contract until contract expiration
- **Ongoing collateral requirement** : Due at delivery time (which may coincide with payment time), the ongoing collateral requirement is the amount counterparty need to post in order to satisfy mark-to-market/model exposure. The frequency of ongoing collateral requirement depends on the market changes and the counterparties' risk profiles

Collateral Requirements Calculation for EE

- Collateral postings may be required based on credit worthiness of seller and SDG&E exposure to seller's default
- The following formula is applied for both **initial collateral** requirement and **ongoing collateral** requirement, based on forward prices and current market condition. (methodology developed by SDG&E)
- $Collateral\ Requirement =$
  $\left[(\text{RA Value}) - (\text{Fixed Capacity Payment})\right] * \text{Contract Size}*$
  Contract Term
- Adjustment factor
  $\text{Probability of Default(PD) and Loss Given Default (LGD)}$

Collateral Requirements Calculation: Example1

Company *ABC, LLC* files RA bid for RFO:

- Contract Price = $30/kw-yr (this price is used for illustration only and do not reflect any expectation of pricing)
- Contract Size = 25,000kw
- Contract Term = 10 years
- At bid acceptance by SDG&E *ABC, LLC* should post $100,000;
- Upon filing with CPUC, *ABC, LLC* should post $50,000 (2%*30*10*25000=150,000);
- Upon approval by CPUC and during construction Initial Collateral will be due:
- RA price : $40/kw-yr
- If SDG&E determines that PD and LGD for company *ABC, LLC* are respectively 20% and 60%
- Company *ABC, LLC* should post initial collateral requirement =$300,000
- Based on the application of collateral requirement formula ((40-30)*10*25,000*20%*60%=300000)
- Considering $150,000 of collateral was received so far, additional $150,000 will be required

*SDG&E will hold the initial collateral until contract expires

Collateral Requirements Calculation: Example 2

- Recall the transaction on the prior slide between *ABC, LLC and SDG&E*
- 6 month later
  - *ABC, LLC* has completed its construction phase and passed the M&V process on time with Expected Project Completion date. *ABC, LLC* start s its delivery period, then SDG&E will calculate the ongoing collateral requirement needed
  - Let's assume that market conditions didn't change in the last 6 month and *ABC, LLC* risk profile didn't' change as well. After applying the same calculation SDG&E would set Ongoing Collateral=0
- One year later (or 6 months later , the frequency will be determined by company's risk profile), RA price rises to $45 KW-yr due to some plants retirement, SDG&E updates its analysis
  - SDG&E exposure = $450,000 , however, Initial Collateral requirement of $300,000 is maintained
  - Ongoing Collateral requirement of $150,000 is required
- Two years later
  - The market eases and RA price drops to $30 KW-yr , SDG&E updates its analysis
  - SDG&E exposure= 0 using collateral formula ((30-30)*10*25,000*20%*60%=0)
  - SDG&E will return the outstanding Ongoing Collateral of $150,000
  - However, SDG&E will maintain the Initial Collateral requirement of $300,000

At contract expiration date(10 years later): SDG&E returns the Initial Collateral requirement of $300,000

Credit Q&A (1/2)

- Should credit be included in the bid price?
  - In order to fairly evaluate bids and compare them against each other, we ask bidders not to include credit costs within their bid price. However, the respondent is required to fill out a credit form which provides the added cost of collateral per $100,000 increment to satisfy the initial collateral requirement if SDG&E decides not to extend unsecured credit. We are therefore asking for pricing without the credit cost and the added cost of collateral per $100,000 increment
- Should bidders provide a price that assumes SDG&E will extend credit?
  - Offers are firstly valued and ranked based on the assumption that unsecured credit will be granted for the full collateral requirement amount. If SDG&E decides not to extend unsecured credit to the bidder, it will use the cost of collateral provided in the credit form to estimate the incremental cost of credit to the original offer and then re-rank bids with this incremental cost included
- Will the credit requirement be higher the lower the price?
  - The credit requirement will not necessarily be higher the lower the price offered. However, intuitively, the lower the price offered, the higher SDG&E's exposure is to a counterparty default
- Will the credit requirement be different for different products at the same price?
  - The credit collateral requirement depends on the risk profile and the product type. Some products provide only capacity while others have additional benefits and therefore the credit collateral exposure would be higher

Credit Q&A (2/2)

- Regarding the shortlist acceptance fee, at what point is the fee return to the bidder?
  - If failure to reach agreement is due to no fault of the respondent, the shortlist acceptance fee is returned. If paid in cash, interest will be paid as well. If an agreement is reached, the fee is rolled over as part of the next level of collateral required (this will vary depending on the product type and the associated agreement. Please refer to the various model agreements for more details)
- For a special purpose entity / LLC how will credit worthiness be evaluated?
  - For any entity, SDG&E will evaluate its audited financial statements for the last three years. If an entity does not have audited financial statements then they can be granted secured credit in the form of a Letter of Credit or a Cash Deposit. SDG&E will evaluate the parent company for credit worthiness for those entities that supply the audited financial statements of a potential guarantor. In this second case, the potential guarantor would have to execute a Guaranty based on SDG&E's template that will be provided upon request and upon qualification of the counterparty
- What is the due date for the credit application?
  - The credit application is due on January 5, 2015 along with the rest of the offer

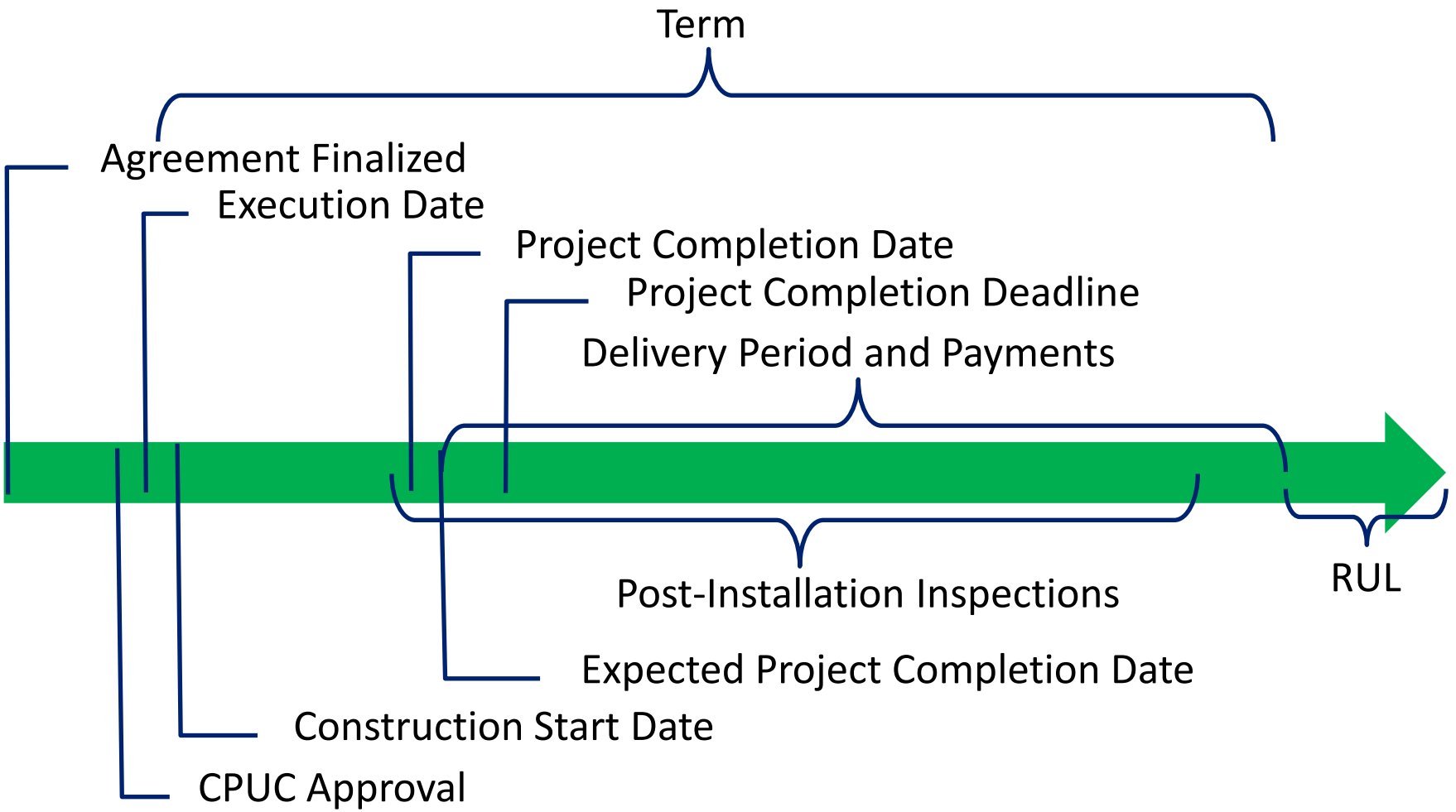
Energy Efficiency (EE)

Neil Sybert
Sr. Customer Programs Advisor

Energy Efficiency/Demand Response Required Forms

- Offer Form – Respondents must include in their Offer Form proposed pricing and if multiple pricing or capacity or other options are contemplated, multiple offer forms should be submitted
- Program Description Form – Submit one per program
- Credit Application – Submit one per program. A credit application will be required under all Agreements. Changes to terms and conditions will render the offer non-conforming and disqualify the program from further consideration
- DBE Subcontracting Form – Submit a completed copy. Additionally, provide a copy of certification documents received from the Supplier Clearinghouse. An application can be made before submission of the offer and referenced in the offer
- Redline to the EE Model Agreement/DR Pro Forma (Optional) – Failure to submit a redline with the proposal constitutes full acceptance of the Model Agreement
- Proposed Program's E3 Calculator – Submit full working version

EE Dates and Definitions

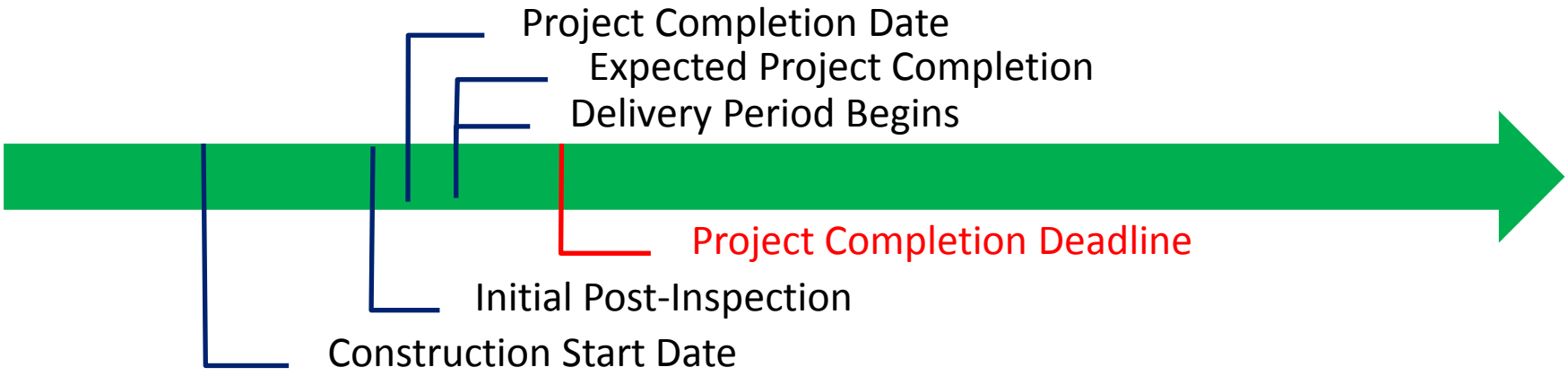


EE Project Initiation

- After notification, shortlisted bidders will negotiate an agreement with SDG&E based on the Model Agreement and any accepted redline edits
- If acceptable to both parties, finalized agreements will be submitted to the CPUC for approval
- Agreements will be executed only after receiving CPUC approval
- Contractor cannot proceed with any construction (or marketing) until after the Execution Date of the Agreement

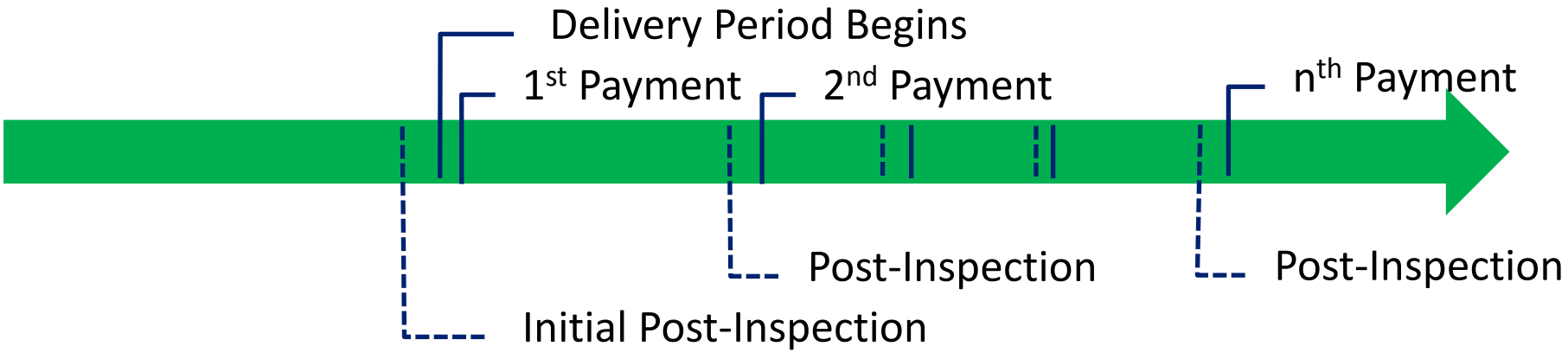
EE Project Completion

- The Project is consider complete once the conditions of the Agreement, including the M&V plan have been met
  - Generally this means that the total capacity (kW load reduction) has been achieved and verified by the Initial Post-Inspection
- The Project must be completed prior to the Project Completion Deadline or the Contractor will be in Default
  - I.e. 100% of the contracted capacity must be available prior to the deadline
- The Delivery Period begins on later of the Project Completion Date or the Expected Project Completion Date but no later than the Project Completion Deadline



EE Project Delivery and Payments

- The first payment follows the beginning of the Delivery Period and is a percentage of the total Contract Price (as agreed to by Parties)
  - The Delivery Period begins on later of the Project Completion Date or the Expected Project Completion Date but no later than the Project Completion Deadline
- Subsequent payments are made annually and represent an equal split of the remaining total Contract Price
- Each year, M&V must validate that the total contract capacity is being delivered



EE Model Agreement

Key provisions:

- Project
  - To be defined in Exhibit B
  - Multiple measures, sites, customers OK
- Payments
  - Annual Installments at the beginning of each year (% based on term of contract)
  - Capacity (kW) only
- Commercial Operation means that you have installed what was promised
- M&V
  - Specific to proposed program using standard practices

Requested changes must be submitted as a redline to the Model Agreement

EE Evaluation

Submissions will be evaluated in three phases:

1. Qualification based on cost effectiveness
   - Projects must have a minimum TRC of 0.9 as determined by the E3 Calculator
   - kW load drop, kWh energy savings, and EUL are all considered
2. Compete against both EE and other resource projects based on price of Capacity (kW)
   - Only price of Capacity (kW) is considered
   - (See the October 24th Bidder's Conference slides for details)
3. Compete against EE and other resource projects of similar capacity price considering the qualitative evaluation factors
   - Loading Order
   - DBE commitment
   - Project feasibility, including M&V
   - Financial strength of counterparty
   - (See the October 24th Bidder's Conference slides for details)

Energy Efficiency Q&A (1/6)

- Are payments based on net or gross?
  - Payments will be based on verified Gross Savings
- How will savings be "counted"? M&V, Deemed?
  - Determination of Savings will be defined in the approved M&V Plan. Seller must submit an M&V Plan with their bid. The final M&V plan will be negotiated between Seller and Buyer and included in the final Agreement
- Can one customize when the savings are available?
  - Seller should propose when energy savings and load drop will be delivered. SDG&E will consider all contract terms, but it prefers a contract term of 6 years or less. SDG&E also prefers EE programs that start delivering capacity as early as 2017 (subject to CPUC approval), but some portion of the Delivery Period must encompass calendar year 2022
- Is there a value to kWh saved in addition to kW saved?
  - Yes, kWh is valued as an energy benefit for DR and EE but it is minor compared to the capacity value in the evaluation process. Also, kWh is valued as an input in the E3 Calculator to meet the required 0.9 TRC

Energy Efficiency Q&A (2/6)

- Are incentives from core programs allowed to be part of the proposal?
  - All costs associated with the proposed project must be included within the proposal. Projects associated with an RFO Project are not eligible for incentives through any other IOU program
- What is the NTG ratio that should be used?
  - Seller should use the NTG ratio appropriate for each proposed measure. NTG will be used as an input to cost effectiveness determined by the E3 Calculator but not for payment, which will be based on verified Gross Savings
- How are savings determined?
  - Seller may propose deemed savings from DEER, custom savings, or a combination of the two. Any custom savings values will need to be supported by a work paper, which must be submitted by the Seller with their bid and approved by SDG&E and the CPUC

Energy Efficiency Q&A (3/6)

- Will an M&V plan need to be submitted?
  - Seller must submit an M&V Plan with their bid. The final M&V plan will be negotiated between Seller and Buyer and included in the final Agreement
- When does the collateral need to be posted?
  - The timing of collateral required under the contract is currently under review and a response will be posted shortly. Also note that shortlisted projects will owe a Shortlist Acceptance Fee, which is the greater of $100,000 or $2 per kW of project nameplate/aggregate program capacity and shall be required to be paid to SDG&E within ten (10) business days of notification by SDG&E that the offer has been shortlisted
- Does an E3 need to be completed for each project/site?
  - An E3 Calculator is required for each proposed Project. If a Project includes multiple projects and/or site(s), only one E3 is required. The E3 should list all included measures and the quantity of each measure. Site(s) only become relevant as they impact the selection of Climate Zone(s)

Energy Efficiency Q&A (4/6)

- Can one customize when the savings are available?
  - The details of this topic are being developed and will be reflected in the posted Model Agreement
- What if none of the available load curves in the E3 Calculator fit the proposed measure(s)?
  - Seller must submit an E3 Calculator using the available entry options. One possible solution is to provide a work paper that combines curves (e.g. positive HVAC and negative Lighting) and then enter measure(s) with multiple curves into E3 Calculator
- Are payments based on net or gross?
  - Payments will be based on verified Gross Savings
- How will savings be "counted"? M&V, Deemed?
  - Determination of Savings will be defined in the approved M&V Plan. Seller must submit an M&V Plan with their bid. The final M&V plan will be negotiated between Seller and Buyer and included in the final Agreement

Energy Efficiency Q&A (5/6)

- Will SDG&E post Energy Division (ED) M&V policies?
  - The 2013-2014 ED Evaluation Plan and CPUC Energy Efficiency Policy Manual can be found at the following CPUC link: http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/EM+and+V/
- If there are questions about how to fill out the E3, whom do we ask?
  - Questions about the E3 for this RFO must be submitted via email to AllSourceRFO@semprautilities.com. There will also be additional E3 training sessions at the upcoming Pre-Bid Conference/Outreach Events in October and November
- Can an EE bid include 100's of aggregated projects?
  - Yes, as long as it is priced as one aggregated Project

Energy Efficiency Q&A (6/6)

- Do you need to have a physical location for an EE program where customers will be marketed and identified after contract signing and thus will not be known beforehand?
  - For EE, Seller should include whatever information they believe is needed for SDG&E to evaluate their proposed project. If the project is comprised of one or a few sites, then a specific location(s) is likely needed. If the project will have a large number of sites, then specific locations are not required but a description of target areas or segments would be helpful. Reporting of all specific site locations will be required during the project term
- For EE is there a value to kWh saved in addition to kWh saved?
  - Yes, there is value in regard to meeting the 0.9 TRC that is calculated in the E3. Further information on pricing will be provided in the Model Agreement
- The life of EE projects is often greater than the 6 year contract term requested; will the savings associated with the expected life be valued by SDG&E?
  - Savings associated with the term of the contract will be valued, not the expected life
- Our firm is interested in responding to your current 2014 Energy Efficiency RFO. Do you know when the Model Agreement will be released?
  - The RFO EE Model Agreement is posted on the website as of October 31, 2014

Demand Response (DR)

Tony Rafati
Senior Program Advisor

DR Resources Criteria

- SDG&E preference would be bids that can meet the supply resources requirements
  - Supply Resource demand response is a resource that is integrated into the CAISO energy markets (D.14-03-026, OP 3)
  - Load Modifying Resource demand response is a resource that reshapes or reduces the net load curve (D.14-03-026, OP 2)
- If proposing a load modifying resource, the bidder should provide a detailed explanation as to why their proposal cannot be treated as a supply resource
- SDG&E would not consider bids with resources that are already being subsidized under another CPUC-regulated program or rate schedule.
- Non-dispatchable Permanent Load Shifting will not be considered as DR resource
- Fossil-fuel emergency back-up generation resources will not qualify

DR Product Highlights

- Products provide Resource Adequacy benefits to SDG&E
  - Payment for RA Credits Only
    - Bidders responsible for meeting all CAISO requirements
    - True-up to CPUC Qualified Capacity
  - No Energy Payment
    - Bidders entitled to all benefits, burden all penalties from the market
- Dispatchable Resource
  - Must be dispatchable
- Scheduling Coordinator (SC)
  - Third party SC services requirement

DR Evaluation

Submissions will be evaluated in three phases

1. Qualification based on cost effectiveness
   - Projects must have a minimum TRC of 0.9 as determined by the E3 Calculator
   - kW load drop, kWh energy savings, and T&D benefits are all considered
2. Compete against both DR and other resource projects based on price of Capacity (kW)
   - See the October 24th Bidder's Conference slides for details
3. Compete against DR and other resource projects of similar capacity price considering the qualitative evaluation factors
   - Loading Order
   - DBE commitment
   - Project feasibility, including M&V
   - Payment structure (% of first payment)
   - (See the October 24th Bidder's Conference slides for details)

Demand Response Q&A (1/7)

- Are there any meters in SDG&E's territory that cannot have a KYZ pulse equipment included?
  - Yes, there are meters in SDG&E's territory that cannot have a KYZ pulse equipment, for example the electro-mechanical meter types
- What is the minimum interval for SDG&E's Smart Meters?
  - The smart meters are capable of recording 5 minute intervals, but due to network bandwidth constraints we are limited to using 15 minute intervals, with the exception of a small population using 5 minute voltage intervals for grid analysis
- Are Technical Incentives (TI) allowed or not?
  - SDG&E requires the bidders to bid without expecting to receive any Technical Incentive (TI) funds to conform with the Incremental requirement. The current TI PIP strategy is "potential customers are those that can or are participating in one of the following programs: CPP-D, CBP, or any authorized pilot"

Demand Response Q&A (2/7)

- When does the collateral have to be posted?
  - The timing of collateral required under the contract is currently under review and a response will be posted shortly. Also note that shortlisted projects will owe a Shortlist Acceptance Fee, which is the greater of $100,000 or $2 per kW of project nameplate/aggregate program capacity and shall be required to be paid to SDG&E within ten (10) business days of notification by SDG&E that the offer has been shortlisted
- If there are questions about how to fill out the E3, whom do we ask?
  - Questions about the E3 for this RFO must be submitted via email to AllSourceRFO@semprautilities.com. There will also be additional E3 training sessions at the upcoming Pre-Bid Conference/Outreach Events in October and November
- Do you need to have a physical location for a DR program where customers will be marketed and identified after contract signing and thus will not be known beforehand?
  - SDG&E does not require a physical location where customers will be marketed, but the bidder should describe in their offer the Target Market, how the DR resources is incremental, as further described in Attachment A Project Description Form in the DR RFO documents

Demand Response Q&A (3/7)

- In Section B, paragraph 5 from the Demand Response RFO document, it states that the use of fossil-fuel backup-generation will not qualify. If the generation is not permitted as backup-generation but is permitted as a stationary source, with the flexibility to run more than just during emergencies, will that qualify as a Demand Response Resource under this RFO, or is all fossil-fuel generation precluded in the DR category?
  - Load reduction of the resource must be consistent with the CPUC requirements regarding the use of back-up generation for DR. Fossil-fuel emergency back-up generation resources will not qualify as a Demand Response Resource in this RFO based on the Commission's policy statement that fossil-fuel emergency back-up generation resources should not be allowed as part of a demand response program for RA purposes, subject to rules adopted in future RA proceedings

Demand Response Q&A (4/7)

- Does each site in an aggregator's bid need to meet the deliverability requirement (4 consecutive hours for 3 consecutive days), or can the aggregator's bid meet the delivery requirement as an aggregated unit?
  - Assuming this question pertains to demand response or energy storage, for an aggregator, each individual site does not need to meet the deliverability requirement (4 consecutive hours for 3 consecutive days), but together, as an aggregated unit, the facilities must meet this requirement. See D. 14-06-050 Appendix B, 11.2 and 13.4. Elements of aggregated resources need not individually meet RA eligibility requirements; rather, the resource as a whole must demonstrate eligibility. For example, a demand response provider may aggregate one resource that provides up to 1 MW for up to two hours and is available between the hours of 1 and 4 pm with another resource that is able to provide up to 1 MW for up to two hours and is available between the hours of 3 and 6 pm, in order to create an aggregated resource that is able to provide up to 1 MW for up to four hours and is available between the hours of 1 and 6 pm. Aggregated storage resources and aggregated DR resources will be granted a composite qualifying capacity and effective flexible capacity, based on both the duration over which the individual facilities can operate and the magnitude of their output

Demand Response Q&A (5/7)

- Regarding Section B, paragraph 5 from the Demand response RFO document, is there a benchmark or measure for “innovative” for DR products/ offerings given the forward nature of the RFO (e.g. 2022 delivery)? How should we go about proving today that it is innovative? Please provide any additional clarification that you might be able to offer
  - The Demand Response resource must be demonstrably incremental to the assumptions used in the California ISO studies. Sellers are required to explain and/or show how their proposed Demand Response resource is incremental. Sellers are encouraged to reference 1) SDG&E’s current 2012-2014 DR program portfolio (see: http://www.sdge.com/business/demand-response-overview); (2) SDG&E’s proposed 2015-2016 DR program portfolio (see: http://www.sdge.com/regulatory-filing/10486/oir-enhance-role-dr-meeting-state-resource-planning-ops-reqmt); and / or 3) 2013 Integrated Energy Policy Report (“IEPR”) DR forecast (see: http://www.energy.ca.gov/2013_energypolicy/documents/demand-forecast_CMF/mid_case/ ; click on SDGE Mid.xls). Incremental resources that are similar to existing Demand Response resources must demonstrate, to the satisfaction of both SDG&E and the IE, that the resource is “incremental”, for example, by being innovative or by targeting previously hard to reach markets or customers that have not been addressed to date

Demand Response Q&A (6/7)

- Should customer-side storage be bid in as a DR product in this RFO? If so, can you elaborate on the definition of "permanent load shifting" and the intent of Section B of paragraph 3 shown below?
  - "Permanent load shifting based on technology or behavior change will not be considered"
  - Eligible customer side storage technology will only be considered if SDG&E has exclusive rights to the resources. Part of a demand response program for RA purposes, subject to rules adopted in future RA proceedings
  - The Seller shall also ensure that the project has not obtained, and will not obtain, any compensation or other benefits pursuant to the Self-Generation Incentive Program, as defined in CPUC Decision 01-03-073, the California Solar Initiative, as defined in CPUC Decision 06-01-024, SDG&E's net energy metering tariff, or other similar program that exists now or in the future. Permanent Load Shifting exclusively refers to Thermal Energy Storage (TES) technologies eligible for incentive under SDG&E's PLS program. TES is not dispatchable thus will not be considered as a part of this RFO
- In its DR RFO document, SDG&E says that "behavior change" will not be considered. Our company has recently deployed a behavioral demand response capability that sends information to customers before, during, and after peak events. Would SDG&E be open to this solution?
  - As stated in Section 3.0, B. (Resource Criteria), 3: Permanent load shifting based on technology or behavior change will not be considered. There is a footnote that then indicates that the energy storage RFO might be considered by the respondent if the permanent load shifting results from an energy storage device
  - DG&E will consider such product only when: a) It is dispatchable and b)It can be assessed and credited RA credit to the benefit of SDG&E

Demand Response Q&A (7/7)

- Regarding the forthcoming Model Agreement, would SDG&E please provide some further information
  - Currently as stated on page 18 of 24 in SDG&E's Demand Response 2014 Local Capacity Requirement Request for Offers ("RFO") seeking Demand Response Resource, version 3 – updated 10/21/2014 "For load reduction products only: Redline forms of the Pro-Forma Agreement (Attachment B). For all supply/generation products: SDG&E shall supply bidder with applicable template when and if bid is shortlisted." SDG&E is working on a Pro-Forma Agreement which will be modeled similar to SDG&E's Resource Adequacy Capacity Product
- In a similar procurement last year, SCE included model terms and conditions that required vendors to commit to delivering kW Capacity in the future at a specific price, with the contract structure requiring the vendors to a guarantee (in the form of a down-payment) for kW's delivered. Is SDG&E going to do something similar?
  - SDG&E also requires the committed kW Capacity in the future with guidelines for competitive prices. The bidding price is the bidder's responsibility. The bidder assumes responsibility for adherence to CAISO guidelines and Must Offer Obligations
- In last year's SCE procurement, the utility required a 1-hour dispatch time. Is SDG&E going to require this same dispatch time?
  - SDG&E requires the bidding supply resource DR to meet the Local Capacity Requirements set forth by CAISO. All things being equal, faster responding resources will be given a higher value
  - Reference page 7, B.3 in the 2014 Local Capacity Requirement Request for Offers (RFO) seeking Demand Response Resources Version 3 – updated 10/21/2014

Break

Utility Owned Storage

Frank Thomas
Electric Project Dev Busn Manager

Energy Storage Q&A (1/19)

- For a respondent bidding ESSPPTA or ESSBOT is there any limitation to the number of projects?
  - Yes, no more than six priced projects will be allowed. Multiple locations or multiple installations of energy storage can be considered a single project. For example, the respondent may intend to install numerous 100 KW / 400 KWh energy storage systems (for example 10 or 15) within the San Diego local sub-area. Such a multiple location project would be considered a single project if priced as single project
- If a respondent bids an ESSPPTA project which has multiple locations in a specific sub area of SDG&E service territory, is that considered one project and the respondent can bid any number of other sub areas as a different project?
  - Yes, multiple locations associated with an ESSPPTA offer would be considered a single priced project if priced as such. Up to six priced projects will be allowed. All components (individual energy storage systems) need to interconnect within the San Diego local sub area. Within the San Diego local sub-area, the CAISO local effectiveness factor study for SDG&E showed that all areas are equally effective, so there is no further differentiation by area being considered

Energy Storage Q&A (2/19)

- If an ESSPPTA respondent bids a project which has 6 hours of storage capacity, can the same respondent offer 4 hours of storage capacity and have that considered a different project if both of the projects are located in the same defined sub area?
  - Yes, an ESSPPTA respondent may bid 6 hours of capacity and 4 hours of capacity or any other duration that conforms with RA counting rules. These would be considered two separate bids as described and would be evaluated separately since each is separately priced
- Can an ESSPPTA bid storage with a 3 hour discharge?
  - Yes. As stated in SDG&E's ESS RFO, respondents may bid a non-conforming offer (in this case due to not meeting the use limited resource RA counting rules), but should flag that in their offer. Then, if the RA counting rules change such that the offer would then count for RA and thus be conforming, the respondent is responsible for notifying SDG&E of that fact. If that notification is provided before SDG&E has shortlisted, the offer will then be evaluated along with the other conforming offers

Energy Storage Q&A (3/19)

- How does ES count against DR (if ES is used to reduce use)?
  - SDG&E would evaluate the project as a DR resource, and would count the ES component towards its Energy Storage Decision (D.13-10-040) ES procurement target based on the interconnection point
- Is there a term rate for (round trip) ES efficiency?
  - No minimum round trip efficiency will be required
- Will SDG&E specify the MWh duration that the ES system must run?
  - The project must meet the RA counting rules (4 consecutive hours for 3 consecutive days) as a minimum requirement
- Is there a typical cycle requirement for ES?
  - No, there is no minimum cycle requirement. However, SDG&E prefers systems with a capability for a minimum of 50 cycles per year
- Will there be additional information on ES cycling to account for degradation, or further information regarding full cycles?
  - No, Respondents should provide this information in the offer form. In the Energy Storage offer form, SDG&E requests information on degradation of both capacity and system efficiency; it is up to the Respondent to accurately describe their system in this regard. Additionally in the ES offer form, limits on the number of deep and shallow discharges is requested (on a daily, weekly, monthly and annual basis as well as for the contract term or useful life). The Respondent defines deep and shallow discharges

Energy Storage Q&A (4/19)

- Can an ESSPPTA bidder bid a single bid that includes Energy Storage, Demand Response, Energy Efficiency and would that be counted as one bid or as 1 ESSPTA bid, 1 Demand Response bid, 1 Energy Efficiency bid
  - Depending on the nature of the bid, it may be considered a single bid (and based on its nature, it would be categorized into one of the mentioned product types) and evaluated as a single offer, or it may be considered separate bids and evaluated separately – again, depending on the nature of the offer, including the pricing and operational intent). SDG&E would need to understand the specifics of this case in order to give a specific answer
- Will the Lake Hodges hydro project count towards the 25 MW of ES required under this All Source RFO?
  - No, Lake Hodges is existing energy storage facility and would therefore not meet the incremental requirement
- How much of the minimum 25 MW for ES associated with this All Source RFO could come from UOG?
  - SDG&E can own 100% of the 25 MW
- As it relates to the Energy Storage Decision (D.13-10-040), can SDG&E own 50% overall of the 165 MW ES target, or 50% of each domain?
  - Yes, SDG&E can own 50% overall target. There is no ownership limitation by domain

Energy Storage Q&A (5/19)

- If a developer increases the capacity of an existing ES facility, would that count as incremental?
  - SDG&E would have to review the bid specifics to determine if this would be incremental. Potentially the additional capacity could be incremental
- Is replacing a CCGT with ES considered incremental?
  - Probably not as it would just be replacing existing capacity. SDG&E would need to understand the offer specifics (ie: how it was shown/counted in the ISO studies, whether or not it shifts load, and the structure of the offer) in order to answer authoritatively
- What is the ES installation deadline?
  - This All Source RFO requires that the delivery term for the resource encompass all of calendar year 2022. This is sooner than the Energy Storage Decision deadline of year-end, 2024

Energy Storage Q&A (6/19)

Can new ES come online as early as 2016?

- Yes. However, the contract term must encompass all of calendar year 2022, but SDG&E will accept bids from projects that would begin deliveries prior to 2022
- Are 16 MW of ES required to be on prior to 2016?
- No. In its Energy Storage application (A.14-02-006) SDG&E specifies a 16 MW solicitation goal for the 2014 storage procurement cycle (See table LK-8, p. LSK-15 in the testimony of Mr. Lee Krevat – available here: http://www.sdge.com/regulatory-filing/10246/sdge%E2%80%99s-energy-storage-procurement-application). 12 MW referred to there (Local and Flexible Capacity Requirements – Transmission and Distribution connected) are intended to be met with this All Source RFO. The remaining 4 MW (Distribution Reliability/Power Quality) will be procured via a separate RFO to be issued no later than December 1, 2014

Energy Storage Q&A (7/19)

- Will ES output prior to 2017 be modeled or just included as cash flows?
  - SDG&E will model deliveries as described in the offer documents. As a practical matter, SDG&E believes it would be very difficult to get the application associated with the All Source RFO contracts approved by the CPUC in time to support deliveries beginning in 2016
- Does ES need to obtain a CAISO deliverability study prior to bidding?
  - No, but SDG&E does require that the developer pursue and obtain such a deliverability study to ensure that the resource counts for RA
- How will SDG&E value energy to charge ES?
  - SDG&E will value energy to charge ES based on the best forecast of such costs available at the time that it evaluates bids

Energy Storage Q&A (8/19)

- Will ES EPC and ES tolling agreements be treated the same in terms of modeling the resource?
  - Yes, a net market value will be calculated for each. For utility owned assets, the cost stream will be largely based on the revenue requirement associated with the asset. For third party owned assets, contract costs will be utilized in the calculation
- What is the process for determining ES risk? Will cutting edge technology be considered?
  - PU Code 2835 (and following sections) require that "commercially available technology" be utilized. SDG&E interprets this to mean technologically mature and widely available resources. This means that R&D projects or proof of concept projects/technologies will not meet this standard

Energy Storage Q&A (9/19)

- Is there a locational preference for ES?
  - All systems must interconnect within the San Diego Local subarea as defined by the CAISO. For a ESSBOT or ESSPPA project, the developer will need to find the location, and for an ESSEPC project, SDG&E will provide siting
- Some people think ES reduces the need for interconnection upgrades, will that be considered in this process?
  - These types of potential benefits will not be included in SDG&E's evaluation methodology for this solicitation
- If there were multiple batteries behind a distribution feeder, would they go through the interconnection study process as a single amount of capacity?
  - Yes, they will be combined and studied from the closest connected transmission substation

Energy Storage Q&A (10/19)

- Will the technical specifications specify ES size?
  - There are minimum size restrictions for SDG&E's ES RFO. For utility owned (ESSBOT or ESSEPC), it is 10MW; for third party owned (ESSPPA) it is 500 kW
- For Energy Storage, what information will developers have about the site and what type of equipment it can support?
  - For ESSBOT or ESSPPA offers, the developer/respondent is responsible for finding/securing sites. For ESSEPC offers, on or before October 31, SDG&E will provide information on sites as follows: SDG&E sends out information on utility owned land including buildable area, environmental limitations (if any), interconnection capacity limitations (if known), expected permitting complexity

Energy Storage Q&A (11/19)

- Will there be a proforma for ESSEPC and ESSBOT projects?
  - Due to the unique nature of various energy storage systems coupled with the complexities of commercial arrangements, there will not be a pro forma contract for ESSEPC or ESSBOT. SDG&E shall provide shortlisted entities with a term sheet or a contract as a starting point for negotiations
- Can a company that expresses interest (that is, provides a written expression of interest) by the 10/1 (ESSEPC) or 10/17 (ESSBOT) deadline later transfer the project to another company, or merge with another company?
  - It depends. If the new entity is bound by the terms of the NDA (as applicable), then perhaps. SDG&E would need to see the specifics in order to respond in an absolute manner
- Who will the SDG&E site locations be made available to?
  - Only those interested in the ESSEPC offer and who have entered into an NDA with SDG&E

Energy Storage Q&A (12/19)

- Other than credit requirements are there any deposits or fees for providing an ESSEPC offer?
  - No. SDG&E had been considering a bid deposit for this offer type but will not require any such bid deposit. The only fee involved with the RFO is the Shortlist Acceptance Fee, which is the greater of $100,000 or $2 per kW of project nameplate / aggregate program capacity and shall be required to be paid to SDG&E within ten (10) business days of notification by SDG&E that the offer has been shortlisted
- Please explain what O&M services should be included in the energy storage offer pricing?
  - If the technology requires active operations personnel, SDG&E seeks those to be vendor supplied. SDG&E envisions many installations being automated so the storage responds to dispatch orders from SDG&E without the need for operations personnel. Similarly, SDG&E envisions requisite maintenance activities being provided by the vendor commensurate with the maintenance requirements needed to meet warranty and guarantees
- Unless we can supply this O&M services, what would happen to us for bidding?
  - This applies only to ESSEPC and ESBOT bids. The Respondent could find another company to partner with for the bid or SDG&E would assess if it were able to provide the O&M services, but in any case SDG&E requires that the Respondent provide pricing for O&M throughout the useful life of the asset.

Energy Storage Q&A (13/19)

- According to PPT presented 9/26 pre-bid meeting, on page 81, it says December 10: ESSEPC bidders NOT seeking life duration O&M contracts submit O&M costs to RFO Mailbox…Allows SDG&E to validate before bids due. Does this mean that we would propose the O&M cost?
  - Yes. SDG&E sees the vendor/bidder as the most knowledgeable of the product offered and best suited to estimate life of facility O&M costs. SDG&E needs these submitted prior to the overall offer due date (January 5) so it can validate the forecast as this will be part of the overall cost of ownership forecast
- If that is the case, how can we calculate the O&M cost ?
  - If the Respondent is unable to identify expected O&M costs independently or with the assistance of a partner, then the product is not likely commercially proven. If O&M costs cannot be reasonably estimated or are unknown, then SDG&E would likely not want the product

Energy Storage Q&A (14/19)

- Does Sempra require that the EPC contractor meet the specified criteria, or does Sempra require that the combined team meet the specified criteria?
  - SDG&E requires the team lead that has been signatory to the previously submitted NDA meet the specified criteria. Please particularly see commercial viability items 5 & 6 which provide guidance to the specific criteria that must be met by bidders using third party technologies. EPC contractors would be considered “integrators” in this context
- Can ESSEPC bidders propose more than one technology for SDG&E to review?
  - Yes
- Does the expression of interest deadline apply to energy storage (battery) equipment suppliers also? We were under the impression that it applies for "respondents" meaning those submitting proposal to SDG&E, not companies that supply equipment to the respondents/developers.
  - The expression of interest should come from and NDA will be with respondents. Neither have to do with equipment suppliers. Equipment suppliers should not submit anything. SDG&E will not be procuring equipment, the EPC or BOT bidders will do so

Energy Storage Q&A (15/19)

- If XYZ Company has a ¼ MW system versus a 1 MW system in place with a solid trialed BMS/EMS, have met other IOU short list criteria, and have up to 1.25 MW/day of mfg capacity, are we disqualified under the ESSBOT Commercial Viability Criteria?
  - Yes
- If XYZ Company has chosen to provide an ESSBOT, can we change to an ESSEPC or an ESSPPTA?
  - Deadline for ESSEPC was 10/1/2014, so you would not be able to change to an ESSEPC (and commercial viability for ESSEPC is the same as ESSBOT). There is no linkage between being an ESSBOT and ESSPPTA. Further, there is no commercial viability screening for ESSPPTA. ESSPTA would require your bid submittal by January 5, 2015
- Regarding the utility owned storage options, does SDG&E require that the EPC contractor meet the specified criteria, or does SDG&E require that the combined team meet the specified criteria? One possible scenario is the combined team referenced could consist of EPC contractor, ESS Manufacturer, plant control provider, etc.
  - This question is moot for ESSEPC as it has already been addressed with respondents. For ESSBOT, SDG&E will accept a joint venture amongst two parties. Those two parties must meet all commercial viability requirements. Bidders that elect to form a joint venture do not need to form a separate LLC or other company. Both bidders may execute the EPC contract as joint venturers, with joint and several liability between the two parties

Energy Storage Q&A (16/19)

- If we formed a joint venture between XYZ and ABC, to provide EPC services, do we meet the intent of items 5 and 6 of the viability criteria?
  - SDG&E would accept a formal joint venture in such circumstances per the above
- As a potential respondent, we are advising SDG&E that we are not able to submit certain information on behalf of all of the battery vendors that we have requested quotes from. Please confirm that we can still submit an offer
  - The first step was to provide an expression of interest and then to complete / execute an NDA. Second, equipment only vendors (companies that are solely equipment suppliers) are not suitable to be respondents for utility owned storage offers unless they are part of a joint venture. If the equipment / battery supplier is not the lead "EPC" or in a joint -venture, it is the responsibility of the bidder (respondent) to include the equipment information in their package and not the equipment manufacturer. SDG&E will not accept information from equipment suppliers that simply want to sell equipment. SDG&E intends for the utility owned storage offers to be EPC or BOT offers

Energy Storage Q&A (17/19)

- Does customer-side energy storage bid in as DR help SDG&E meet its customer domain energy storage goals?
  - Yes – qualifying energy storage equipment installed behind customer meters can count toward SDG&E's customer domain energy storage goals that are included in D.13-10-040 and as further detailed in D.14-10-045 (decision approving the IOU's energy storage applications)
- What was the registration deadline of October 1st for?
  - The 10/1/2014 deadline was for the Utility owned storage, EPC approach, to provide their expression of interest. A similar deadline of 10/17 has passed for providing an expression of interest for the Utility owned storage, BOT approach
- Regarding shorter duration resources that don't meet the 3 day / 4 hour per day requirement. How will such resources be evaluated? If the shorter duration is acceptable, we could bid a lower price….
  - As stated in the RFO for ESSPPTA only, to the degree a storage resource does not meet the RA counting rules respondents are directed to complete and submit their offer and indicate that it is non-conforming but that you believe the RA Counting rules will change. If and when they do change, notify SDG&E via the RFO e-mail box (AllSourceRFO@SempraUtilities.com) of the rule change and if that occurs prior to shortlisting, assuming the offer is conforming in all other regards, it will be evaluated alongside the other conforming offers. If you believe a shorter duration resource can be priced lower, provide such an offer (indicating that it is currently non-conforming) using one of the allowed six priced offers. For ESSEPC and ESSBOT (utility owned) bids, such technology will not be accepted

Energy Storage Q&A (18/19)

- How many days per year should the energy storage resource be able to dispatch?
  - See the Energy Storage RFO document. SDG&E has expressed a preference for at least 50 times per year. As stated in the RFO: “SDG&E will not require a minimum amount of annual cycles. However, SDG&E will give priority to ESS capable of at least 50 cycles per year”
- For the ESSEPC option, how do we obtain approval to visit the sites?
  - Most sites do not require an approval to visit by SDG&E. The site list/maps that will be provided will be clear on the properties as to which sites can be visited with or without approval. Those entities that met the deadline for the expression of interest, that have executed an NDA, and have passed commercial viability screening will be provided with this information

Energy Storage Q&A (19/19)

- With regard to the 2014 All Source RFO, I would like to know, for the project described here, which RFO contract type would be appropriate in which to submit the project into the RFO. Project Description: A 2 MW battery storage project combined with a 2 MW solar PV project. The solar project would be used to charge the batteries
  - Assuming the battery is not used to serve any pre-existing behind-the-meter customer load and the battery is dispatchable, the RFO contract type would be the storage agreement, which is a tolling contract. Solar output in excess of charging (and not used to serve load) may be purchased through the renewable PPA template. If the battery is not dispatchable, but is only used to firm up the delivery profile of the solar plant and remove the intermittency of the solar resource, SDG&E will provide any shortlisted bidder with an RPS PPA template for use with unit firm deliveries

General Q&A Session

Distributed Generation (DG) 1/2

- Bidder is looking for more clarity on the question/answer below : The site control specified in section A, paragraph 12 from the DG RFO document seems overly restrictive for a DG asset for initial delivery as late as 2022. Is SDG&E open to evaluating offers that are not able to demonstrate site control at the time of the bidding?
  - Respondents must have, at time of bidding, site control for the duration of the contract term proposed in their offer. Site control may be evidenced by documentation of:

    a. direct ownership;

    b. a lease; or

    c. an option to lease or purchase upon contract approval. The option must bran exclusive option to the Bidder that will last until the completion of the RFO cycle
- Bidder is looking for clarification as to whether fuel cells, micro CHP, and natural gas generators qualify and be considered within the DG category in this RFO?
  - As stated in the DG conformance document, respondents that believe their resource will fall into the DG category should contact SDG&E at their earliest convenience to discuss the nature of their resource so that SDG&E may provide guidance as to the proper product type. In general, any generation resource that meets the criteria for a specific product type other than DG should fill out the bid forms for that product type (ie: CHP for the CHP resource and conventional for the natural gas generator). Projects that interconnect at distribution voltage and do not meet the criteria for one of the specific product categories may qualify for the RFO as a DG resource. SDG&E would need to discuss specifics in order to give a definitive answer. Also, please note the 'Participation Criteria' within the DG conformance document (section 2.0, A starting on page 14). With regard to small, conventional generation resources – note that the GHG emissions of the resource must be equal to or less than the California Air Resources Board default emission factor of .428 metric tons of CO2e per MWh – (see See: http://www.ccdsupport.com/confluence/display/calhelp/Reporting+Form+Instructions ; scroll down to the row that has "Electric Power Entities" in far left column and click on the link titled: "Updated 2013 EFs.xls (Updated 8/8/2014 Rev 2). Within the spreadsheet, '2013 EFs' tab, scroll down to row 355 titled "Unspecified --- retail Provider Replacement Poer, per 95111(c)(3)(C)(2), column P)

Distributed Generation (DG) 2/2

- Is there any sort of expression of interest required deadline (date) for DG technologies? I understand there was one for storage, is there any deadline or registration that would prevent us from proposing a project by the Jan 5, 2015 offer deadline?
  - Please refer to DG RFO schedule on the webpage, http://www.sdge.com/sdge-2014-request-offers-seeking-dg-power-purchase-agreements In short, there is no requirement to provide an expression of interest in the DG product type

Renewables Q&A

- If the proposed contract term is greater than 15 years, will SDG&E still consider the offer to be conforming?
  - Yes, SDG&E will consider all contract terms. Some portion of the term must encompass the entirety of calendar year 2022. SDG&E is expressing a preference for renewables contract terms of 12 years or less

Evaluation Q&A (1/9)

- **How does the LCBF / NMV analysis work?**
  - SDG&E evaluates and ranks offers based on LCBF principles. The LCBF analysis evaluates both quantitative and qualitative aspects of each offer to estimate its value to SDG&E's customers and its relative value in comparison to other offers. The valuation of an offer takes into account cash flow components for both benefits and costs. The primary quantitative metric used in SDG&E's LCBF process is a NMV calculation. The NMV calculation is a quantification of the value of an offer when compared to a set of price benchmarks for capacity, electrical energy, ancillary services, natural gas, and Green House Gas ("GHG") compliance. Additionally, SDG&E may consider portfolio effects (costs or benefits) associated with the Offer on the portfolio. These benefit and cost components are netted and discounted to yield a Net Market Value (NMV) for each offer. The NMV of an Offer is compared to the NMV of other offers to determine whether that offer is one of the highest ranked. The economic evaluation normalizes the MW size differences of offers by finding the most attractive NMV per MW of capacity ("Least Cost")

Evaluation Q&A (2/9)

- How will SDG&E be considering 'qualitative' factors?
- Qualitative factors and benefits will be used to determine projects that are the "Best Fit" for SDG&E's portfolio. SDG&E may use these factors to determine advancement onto the short list or evaluate tie-breakers, if any. Qualitative factors may include, but are not limited to:
  - PROJECT / RESOURCE / PROGRAM VIABILITY
    - SDG&E is seeking experienced companies and development teams to develop and operate DR resources that are innovative, effective and reliable. Another aspect of project viability will include the program's ability to contribute to meeting the Local Capacity Requirement. SDG&E works with the CAISO in modeling resource and program portfolios to ensure SDG&E's LCR is met. For energy storage only, 'commercially available' technology may be procured in accordance with P.U. Code section 2835 and following sections
  - SUPPLIER DIVERSITY
    - SDG&E encourages Diverse Business Enterprises ("DBEs"), "Women-Owned Businesses" or "Minority-Owned Businesses" or "Disabled Veteran Business Enterprises" as defined in G.O. 156, to participate in this RFO. Furthermore, SDG&E encourages developers to utilize DBEs during various stages of project development and construction. As a part of G.O. 156, SDG&E will require developers to identify, verify and report their DBE contractors/subcontractor spending if any. Additional information on SDG&E's DBE program can be found at: http://www.sempra.com/about/supplier-diversity/ and http://www.cpuc.ca.gov/puc/supplierdiversity/Like other qualitative factors, in the event of a tie between two Offers, SDG&E will consider a Respondents status as a DBE and or a Respondent's plan to utilize the services of DBEs during project development. SDG&E's DBE Program representatives will provide a presentation during the pre-bid conference. DBEs can request additional information by contacting SDG&E at vendorrelations@semprautilities.com
  - LOADING ORDER RANKING
    - SDG&E seeks resources in accordance with the loading order described in the Energy Action Plan. SDG&E will give preference to higher loading order ranked resources.
    - See http://www.thesupplierclearinghouse.com/eligibility/default.asp for the definition of a DBE

Evaluation Q&A (3/9)

- How will SDG&E balance the loading order with the LCBF / NMV results?
  - SDG&E will rank conforming offers based on the outcome of the LCBF / NMV modeling. SDG&E may use these factors to determine advancement onto the short list or evaluate tie-breakers, if any
- What discount rate is SDG&E using for the bids?
  - 7.79%
- What forward energy and capacity prices is SDG&E using?
  - This information is proprietary
- Where would you add a rendering (visual)?
  - This information is requested in several sections of the project description form for each resource (for example, sections P and Q in the conventional project description form)
- Are submittals limited to SDG&E forms only?
  - Yes, SDG&E will not be able to pull data via our automated process from other forms. If a bidder would like to provide additional information, this can be added to the available open fields. If that is insufficient please email the RFO inbox

Evaluation Q&A (4/9)

- Please explain the energy benefit calculation.
  - The energy benefit is equal to the market value of the expected generation profile for the resource/program. For example, a profile of 100 MWh and a corresponding market price of $50/MWh would provide an energy benefit of $5,000
- Does the valuation start at 2017, or at COD? Will a project with COD in 2017 be evaluated differently than on with COD in 2019?
  - The valuation will start at COD, and the results of the valuation depend on the project attributes and forward price curves applicable over the term of the proposed contract
- Is there a preference for projects starting prior to 2022?
  - SDG&E does not have a preference. All projects will be modeled according to the proposed term, and discounted to a 2017 base year for comparison purposes

Evaluation Q&A (5/9)

- Won't discounting like that result in preferential value for projects with a later start date?
  - Projects whose Net Market Value (Benefits minus Costs) is positive will be of greater value to our ratepayers with an earlier start date. Projects whose NMV is negative will be of greater value to our ratepayers with a later start date

Net Market Value Cash-flow Comparison								
	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6	Project 7	Project 8
Discount Rate	7.79%	7.79%	7.79%	7.79%	7.79%	7.79%	7.79%	7.79%
NPV (2017 Base Year)	$372.47	$297.41	($372.47)	($297.41)	$318.79	($318.79)	$430.34	($430.34)
2017	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2018	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$500.00	($500.00)
2019	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$0.00	$0.00
2020	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$0.00	$0.00
2021	$100.00	$100.00	($100.00)	($100.00)	$0.00	$0.00	$0.00	$0.00
2022	$100.00	$100.00	($100.00)	($100.00)	$500.00	($500.00)	$0.00	$0.00
2023	$0.00	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$0.00
2024	$0.00	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$0.00
2025	$0.00	$100.00	$0.00	($100.00)	$0.00	$0.00	$0.00	$0.00

Evaluation Q&A (6/9)

- Project 1 vs. Project 2
  - Both 5-year terms with the same NMV positive cash flows over their term, Project 1 starts in 2018, Project 2 starts in 2021. Project 1, with the earlier start date has a higher NPV, resulting in a higher Quantitative ranking
- Project 3 vs. Project 4
  - Both 5-year terms with the same NMV negative cash flows over their term, Project 3 starts in 2018, Project 4 starts in 2021. Project 4, with the later start date has a higher NPV, resulting in a higher Quantitative ranking
- Project 5 vs. Project 6 vs. Project 7 vs. Project 8
  - All 1-year terms (2022 or 2018). Project 7, with the earliest start date AND positive NPV results in the highest Quantitative ranking. Project 5, with a later start date, but still positive NPV will be ranked next. Project 6 would come next, followed by Project 8

Quantitative Ranking		
1	Project 7	$430.34
2	Project 1	$372.47
3	Project 5	$318.79
4	Project 2	$297.41
5	Project 4	($297.41)
6	Project 6	($318.79)
7	Project 3	($372.47)
8	Project 8	($430.34)

Evaluation Q&A (7/9)

- Is locational value part of the quantitative or qualitative value?
  - SDG&E's quantitative analysis does not include locational value. If SDG&E identifies a project that provides added value because of its location, it may consider this as part of its qualitative analysis
- Can a developer propose additional quantitative characteristics?
  - If there are additional factors not captured in the bid forms that you think SDG&E should consider, please describe them in the open bid form fields or email the RFO inbox
- A suggestion for normalization of NMV metrics:
  - As stated by SDG&E "The economic evaluation normalizes the MW size differences of offers by finding the most attractive NMV per MW of capacity ("Least Cost")."Two additional normalizations are MW range and MWH capability. MW range is the sum of the MW discharge and MW charge capability of a storage project. MWH storage capability is the number of MWH a storage project can discharge from the max to the min storage MWH capability. In comparing storage to non-storage alternatives, the MW range normalization better characterizes the capability of storage to absorb energy as well-as produce energy, a capability that most conventional resources do not provide. In comparing storage alternatives, the MWH capability better considers that storage costs and benefits tend to be proportional to MWH (except for very short-duration storage). To the extent that storage projects with negative net market value are being compared, a larger storage project may have a lower NMV per MW, but a higher NNM per MWH with different ranking among storage projects. SDG&E can easily calculate all three of these normalization metrics and then take all three into account in its quantitative and qualitative rankings
- Will SDG&E consider these additional metrics in its project rankings?
  - SDG&E considered a variety of quantitative metrics prior to issuing the All-source RFO. The metric that most appropriately matches the need identified in our procurement authorization (incremental local capacity), and evaluates that consistently across all resource types is NMV per MW of capacity

Evaluation Q&A (8/9)

- How will Ancillary Service (AS) value be included especially if capacity has greater value than RA value?
  - Ancillary services value will be modeled and included to the degree it is appropriate for a particular resource type and offer
- For ancillary service valuation… Are historical prices used to determine the value?
  - Yes, SDG&E will utilize the ratio of historical AS prices to historical energy prices over a two to three year period to determine the AS valuation
- What is SDG&E preference in terms of contract duration or delivery term? Will the time value of money be considered?
  - Contract term preferences are as indicated in the below table, and yes the time value of money will be considered

Participation and Resource Criteria	**Resource Type**						
	Renewable	**CHP**	**Energy Storage**	**Conventional**	**DG**	**EE**	**DR**
Preferred **Contract Term (Years)**	12 years or less	Up to 7 for Repowered and up to 12 for New and Expanded	3 to 20 years	20 years or less	20 years or less	6 years or less	None stated

Evaluation Q&A (9/9)

- Will the ability to provide effective flexible capacity (EFC) help a storage (or other resource type) bid in the evaluation process?
  - Because EFC cannot be disaggregated from local or system capacity, and since the valuation of EFC does not have a long history, EFC is not being valued as a separate component in SDG&E's evaluation. However, if a resource provides such flexibility, SDG&E's modeling will likely show that resource being dispatched more often and it will likely provide capacity in the hours when it is most highly valued and thereby resources that have significant flexibility will show significant benefits in the evaluation

Interconnection Q&A (1/6)

- Will a project interconnecting at the East County Substation (ECO Sub) be considered within the San Diego Local Subarea for purposes of this All Source RFO?
  - No. See the CAISO "Local Capacity Technical Analysis" for 2015 available at: http://www.caiso.com/Documents/Final2015LocalCapacityTechnicalStudyReportApr30_2014.pdf. To summarize, projects that interconnect within SDG&E's service territory connecting to SDG&E owned transmission or distribution facilities at a point that is at or electrically west of the Miguel or Suncrest substations and electrically south of the San Onofre Nuclear Generating Station 230 kV switchyard bidding as fully deliverable will be considered as being within the San Diego Local Subarea. Projects connecting at the Miguel or Suncrest substations are considered to be Local Area Projects for these purposes
- Who is responsible for payments of interconnection costs and application fees?
  - The Respondent/Project is responsible for interconnection application fees. Non-reimbursable interconnection costs are paid by the Respondent/Project and should be included in the offer price. Reimbursable network upgrade costs that benefit the CAISO grid broadly and are ultimately borne by ratepayers will be considered in the economic evaluation of the offer and should not be included in the offer price
- What does Full Capacity Deliverability Status (FCDS) mean?
  - According to the CAISO Tariff, the FCDS definition is "Full Capacity Deliverability Status entitles a Generating Facility to a Net Qualifying Capacity amount that could be as large as its Qualifying Capacity and may be less pursuant to the assessment of its Net Qualifying Capacity by the CAISO." This means that a project is able to fully deliver all of its rated output on to the transmission system and that the project is eligible to offer and provide resource adequacy. Very often, FCDS requires incremental deliverability network upgrades
- Do Respondents have to obtain an interconnection study before submitting a bid?
  - This depends on the type of resource being offered. Please refer to the RFO documents for each specific resource type

Interconnection Q&A (2/6)

- Do projects have to obtain a deliverability study in order to be eligible for this solicitation?
- SDG&E intends that proposed projects count towards SDG&E's RA obligations. In order to become RA eligible, a new project must apply for a deliverability study to be conducted by the CAISO. Respondents with winning offers must demonstrate that: (1) the project has been assessed for deliverability, (2) an assessment is underway, or (3) the Respondent will request a deliverability assessment through the next available CAISO cluster window. This condition must be met for winning offers that will interconnect at either the distribution or transmission level. For winning bids that result in an executed and approved agreement, during the project development process, the project is required to obtain final interconnection studies (i.e. for transmission level projects, a final Phase II interconnection study report, or for distribution level projects, a final interconnection facilities study report (or equivalent))
- For more information:
- *SDG&E Interconnection Website: http://www.sdge.com/business/interconnection.shtml*
  - Download and review SDG&E Interconnection Handbook
  - Links to CASIO interconnection queue, tariffs and websites
  - Links to SDG&E interconnection queue, tariffs and websites
  - Link to NERC/WECC Reliability Standards
  - Links to Process Summaries
  - Link to SDG&E Self Generation Technologies site
- *CAISO Generation Interconnection Process Contact:*
  - Project Manager: Judy Brown (916) 608-7062, JBrown@caiso.com
- *SDG&E Contact:*
  - Transmission level - Gen. Interconnection Project Manager: Marlene Mishler (858) 654-8640; MMishler@semprautilities.com
  - Distribution level – Customer Generation Manager: Ken Parks (858) 636-5581; KParks@semprautilities.com

Interconnection Q&A (3/6)

- A) Will SDG&E accept bids that don't have deliverability status yet but commit to getting it?
- B) And/or will SDG&E accept bids from facilities that are partially deliverable?
- A) Yes, SDG&E will accept bids that don't have deliverability status yet but commit to getting it. Deliverability study results are not necessary at the time of the bid solicitation, but FCDS is required at the time of commercial operation. Note that Renewable resources are required to provide a Phase 2 study, which typically includes deliverability study results
- B) Pursuant to the LTPP Track 4 decision, SDG&E is only authorized to accept fully deliverable resources (FCDS status). If a developer's project is partially deliverable, SDG&E would only take the portion of the project that is considered fully deliverable
- If a project has an interconnection and is pursuing a deliverability study, would SDG&E consider it?
  - Yes. See response to Question 1 (A) above
- Will preference be given for projects with deliverability, i.e. have deliverability study results?
  - Yes, this is an indication of improved project viability
- Does CHP require the CAISO deliverability process, and if so when does it need to be completed? What if it is behind the customer's meter? At the time of bid submission, a CHP project must submit its Phase I Study if it is connecting to the transmission system (whether it is connecting directly or is behind the meter and selling excess)

Interconnection Q&A (4/6)

- Please elaborate on participation criteria 4-7, is SDG&E saying that the project will not be eligible unless it was entered into the CAISO cluster queue?
  - The transmission interconnection eligibility requirements vary by technology, in order to bid: (a) renewable projects must have a completed Phase II study, (b) CHP projects must have a completed Phase I study, (c) conventional projects must have a completed Phase I study, (d) ES projects must indicate their interconnection study process status and include an estimate of reimbursable system upgrade costs, (e) DG projects must provide copies of completed studies or evidence of the application or an explanation of interconnection status, and (f) EE and DR projects are not required to provide interconnection information
- It appears that a Phase I study is required for a conventional project greater than 20 MW. If this is true, then the project would have already had to submit its interconnection request to the CAISO, is that correct?
  - Yes. If the project is interconnecting at the transmission level, the interconnection process is through the CAISO. CAISO Phase I interconnection studies begin July 1st of each year with completed and final Phase I study results issued by year end
- Do you need interconnection information for DG, ES, and CHP behind the meter?
  - All excess electricity deliveries for sale to SDG&E under this RFO must have interconnection agreements. If the facility connects behind the meter at the distribution level, it must go through the Rule 21 or WDAT process at the level required for the particular resource type. If it connects behind the meter at the transmission level, it must go through the CAISO process at the level required for the particular resource type

Interconnection Q&A (5/6)

- Who performs the FCDS study, and how does it relate to the Fast Track process?
  - The CAISO performs the FCDS study to determine costs to ensure that a project is deliverable. The Fast Track process determines the costs for a project to interconnect to the grid. SDG&E has a Fast Track process for distribution level interconnections and the CAISO has a Fast Track process for transmission level interconnections
- Is there a motion to increase the threshold size for participation in the WDAT Fast Track Process?
  - FERC has proposed to increase the threshold size for participation in the WDAT Fast Track Process: http://www.ferc.gov/whats-new/comm-meet/2013/011713/E-1.pdf. However, under the current Fast Track Process, the current limit for WDAT is 2 MW, and the current limit for Rule 21 is 1.5 MW
- For smaller projects, is there a Fast Track CAISO process for the deliverability study?
  - No. For any proposed interconnection of a new Generating Facility with a Generating Facility Capacity of 20 MW or less wherein the Interconnection Customer desires the CAISO to perform a Deliverability Assessment, the Interconnection Customer shall submit an Interconnection Request to the CAISO under the Generator Interconnection Procedures
- Are the Rule 21 and WDAT studies done at the same time, or one before the other, or is it one or the other?
  - A project may seek an interconnection study through either the Rule 21 process or the WDAT process, not both

Interconnection (6/6)

- If a bidder wanted to go through the fast track process, would they have to pay the entire fee to go through the CAISO deliverability process?
  - The Fast Track and CAISO deliverability processes are separate. A project would have to prove that it will not impact the grid to be eligible for Fast Track. Section 5 of the GIDAP Appendix DD specifies the requirements for Fast Track in detail
  - http://www.caiso.com/Documents/AppendixDD_GeneratorInterconnectionAndDeliverabiltyAllocationProcess_Aug1_2014.pdf
- Would a generator behind the meter with all energy used by the customer need a study, and if so would it qualify for the Fast Track process?
  - This question is under review and a response will be posted shortly
- Will a project interconnecting and delivering power to Boulevard or Eco substations qualify as LCR?
  - No, the project would not qualify. The two substations Boulevard East and ECO are outside the San Diego Local subarea
- The current Local Capacity Requirement RFO specifically states that in order to qualify, a project must interconnect to the West of the Miguel or Suncrest substations, however we believe that we would be able to submit a very competitive offer for incremental solar and wind capacity from the Imperial Valley and ECO substations, respectively. Is there a process for formally requesting a change to the RFO interconnection requirements that could allow us to submit a bid from either of these locations? If so, what is that process or who can we contact to advance this discussion?
  - The CAISO, via its Local Capacity Technical Analysis defines the local capacity areas (please see http://www.caiso.com/Documents/Final2015LocalCapacityTechnicalStudyReportApr30_2014.pdf for the 2015 study). SDG&E's requirement for this RFO is that resources interconnect within the San Diego local sub-area. If the respondent would like to discuss changes to or definitions of these areas, please contact the CAISO

E3 Training
EE and DR Tools

Brian Horii
Energy and Environmental Economics, Inc.

Tools

+ Energy efficiency

- E3 Calculator (SDG&E Custom E3 Calculator v1c5.xlsm)

+ Demand Response

- DR Template (DR Reporting Template SDG&E 10Yr V3c.xlsm)
- A-factor analysis (SDG&E A-Factor v3c.xlsm)

E3 Calculator

- **Similar to standard E3 Calculator used for 2013-2013 program years**
- **Customized for SDG&E's expectations of avoided costs --- therefore not the same as the Commission adopted version**
- **User input process is the same**
  - Inputs only on the "Input" tab.
  - Results are on the "Output" tab.
  - TRC benefit cost ratio is the primary evaluation metric.
  - The E3 Calculator is large, so submissions only require an "export" file that is generated via the "Process Files" button on the Input tab.

E3 Calculator Inputs

- **Top section of the Input tab is for lump sum program-level inputs.**

	B	C	D	E	F	G	H	I
1	**SDG&E 2013 v1c5-Allocs.xls**			Process Files	**Program Budget ($)**			
2					a. Administrative Costs	2013	2014	2015
3	**Proposer General Information**				a.i. Overhead and G&A			
4	Proposer Name				a.ii. Other Admin costs			
5	Program Name				b. Marketing/Outreach			
6	Service Territory			SDG&E	c. Direct Implementation (non incentive)			
7	**First Year of Program Implementation**			2013	c.i. Activity			
8	**Contact Information**				c.ii. Installation			
9	Name				c.iii. Hardware & Materials			
10	Address				c.iv. Rebate Processing and Inspection			
11	ZIP code				d. Total Incentives and Rebates	$ -	$ -	$ -
12	Telephone				e. EM&V			
13	Email				**Total**	**$ -**	**$ -**	**$ -**

Market Adjustments

- **Included in top section. Input choices change depending on user choice in dropdown U4**
  - None: No inputs needed
  - Uniform: Adjustments entered in cells T8:U10
  - Custom: Adjustments entered for each measure in columns AO through AT

	S	T	U
3	**Market Effects Adjustments**		
4	Adjustment type		None
5			
6	Uniform Factors to apply to all measures		
7		Benefit Adj	Cost Adj
8	Participant Inside		
9	Participant Outside		
10	Non-participant		
11	Total Factor	0.0%	0.0%

	S	T	U
3	**Market Effects Adjustments**		
4	Adjustment type		Uniform
5			
6	Uniform Factors to apply to all measures		
7		Benefit Adj	Cost Adj
8	Participant Inside		
9	Participant Outside		
10	Non-participant		
11	Total Factor	0.0%	0.0%

	S	T	U
3	**Market Effects Adjustments**		
4	Adjustment type		Custom
5	**Enter Custom values in columns AO to AT**		
6	Uniform Factors to apply to all measures		
7		Benefit Adj	Cost Adj
8	Participant Inside		
9	Participant Outside		
10	Non-participant		
11	Total Factor	0.0%	0.0%

E3 Calculator Measure Inputs

- **Measure level inputs start in row 17**

	B	C	D	E	F	G	H	I	J
16	Measure Name	DEER RunID	Climate Zone	Target sector	Measure Electric End Use Shape	CZ, Sector, Measure combination found?	Expected Useful Life for New/ROB, RUL for retrofit. (yrs)	Program Type (To look up Net-to-gross Ratio)	Unit Definition (e.g. homes)
17	Text	Text	Coastal		res:DEER:Indoor_CFL_Ltg	TRUE		0.8	Text
18	Text	Text	Inland		NON_res:DEER:HVAC_Split-Package_HP	TRUE		0.7	Text
19	Text	Text	System		NON_res:DEER:HVAC_Split-Package_HP	TRUE		0.7	Text

- **All inputs are unshaded cells**
- **Text indicates informational cells that do not affect calculations**
- **Columns D and F must be selected, and column G should show "TRUE." If Column G shows "FALSE" you likely have an invalid combination of Climate Zone and End Use Shape. SDG&E E3 Calculator does NOT require any input for target sector.**

Costs and Incentives

- Column K is informational for reviewers
- Column L is only incremental cost for new or replace on burnout. If the measure is an early replacement or retrofit, the TOTAL cost should be entered here
- Columns M-P are for rebates and incentives per measure
- Column Q is calculated (not an input)

	K	L	M	N	O	P	Q
16	Program Type (NEW/ROB or Early Repl(RET))	Gross Measure Cost (Total Cost for Retrofit, Incr Cost for New/ROB) ($/unit)	Rebate to end use customer or its assignee ($/unit)	Incentives to entities other than the end use customer or its assignee($/unit)	Direct Install Labor ($/unit)	Direct Install Material ($/unit)	Gross Participant Cost ($/unit)
17	NEW	10	$ 5.00				$ 5.00
18	ROB	200		$ 100.00			$ 100.00
19	RET	1,500	$ 1,000.00				$ 500.00

Performance

- Performance information entered in columns R:Y
- Columns R and U are incremental savings relative to industry or code compliant measure for New/ROB measures. For retrofit applications, enter savings relative to the existing poor efficiency equipment.
- Enter increases in natural gas usage as a negative value in column V. (savings would be entered as a positive value)

	R	S	T	U	V	W	X	Y
16	Gross Unit Annual Electricity Savings (kwh/unit)	Electric Rate Schedule	Demand Scaler	User Entered kW Savings per unit (kW/unit)	Gross Unit Annual Gas Savings (therm/unit)	Gas Sector	Gas Rate Schedule	Gas Savings Profile
17	10	Residential	kWh	0.01	-0.1	Residential	Residential	Winter Only
18	200	Commercial	kWh	0.1				
19	1000	Commercial	kWh	0.4				

Retrofit inputs

- **Also called "Dual Baseline"**
- **Inputs in Cols Z:AE only needed for retrofit measures.**
  - Column Z: Total expected useful life (EUL) of the measure.
  - Column AA, and AC:AE are incremental savings relative to industry or code standard new equipment.
- **Column AG is the EUL for NEW/ROB measures, but the remaining useful life (RUL) for retrofit measures**

	Z	AA	AB	AC	AD	AE	AF	AG
15	Second Baseline (For savings after the RUL)							
16	Total Life. Can be left blank for single baseline measures (Yrs)	Incremental Cost (relative to standard efficiency default device) ($/unit)	Measure Cost Inflation (%/year escalation)	Early retrofit incremental kWh savings (kWh/unit)	Early retrofit incremental kW savings (kW/unit)	Early retrofit incremental Th savings (Th/unit)	Combustion Type	Expected Useful Life for New/ROB, RUL for retrofit. (yrs)
17							Residential Furnaces (<0.3)	20.0
18								24.0
19	24.0	200.0		200.0	0.1			8.0

Implementation Schedule

- **Installation forecast is on a quarterly basis, and is on the far right of the Input tab.**

	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK
15	2016				2017				2018				2019			
16	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
17					100	50	150	100								
18					10	20	100	80								
19					5	10	15	30								

Results

- **Results shows in the "Output" and "Output by Measure" tabs**
- **Primary metric is the BC Ratio for the TRC test**

	B	C	D	E	F	G	H
14	**Cost Effectiveness (Lifecycle Present Value Dollars)**						
15			**Benefits**			Benefit - Cost	
16		Cost	Electric	Gas	Incentives	NPV	B/C Ratio
17	**Program TRC ($)**	$ 63,363	$89,103	($406)	NA	$25,334	1.40
18	**Program PAC ($)**	$ 58,537	$89,103	($406)	NA	$30,160	1.52
19	**Program RIM ($)**	$ 144,167	$89,103	($406)	NA	($55,470)	0.62

- **For more information on the E3 Calculator see E3 Calculator TechMemo 6d.docx here:**
  - https://ethree.com/public_projects/cpuc4.php

Demand Response Tools

- A-Factor Tool is used to determine how to derate the generation capacity value for DR program availability constraints
- DR Reporting template is a customized version of the tool required by the CPUC Energy Division for evaluating DR cost effectiveness

A-Factor Tool

- **A-Factor tool creates monthly availability percentages that are inputs to the DR Reporting Template**
- **Requirements**
  - Specify when the DR program is available
  - Specify how often it can be dispatched, and for how long
- **All inputs are in the A-factor tab, and are indicated by a yellow shaded box**
- **No need to interact with any of the other tabs**

Specifying availability

- **Define up to two seasons**
- **Indicate if dispatches will be allows on Saturdays and Sundays**
- **For each season, define which hours are eligible for dispatch (TRUE) or excluded (FALSE)**
  - This example shows a case where dispatch is only allowed between 7am and 9pm in the months of May through September.

	A	B	C	D	E	F	G	H	I	J
7	**Season Definition**						**Hours available for dispatch of DR**			
8		1 = Summer								
9	Month	2 = Winter					Summer	Winter		
10										
11	January	2			0 to 1		FALSE	FALSE		
12	February	2			1 to 2		FALSE	FALSE		
13	March	2			2 to 3		FALSE	FALSE		
14	April	2			3 to 4		FALSE	FALSE		
15	May	1			4 to 5		FALSE	FALSE		
16	June	1			5 to 6		FALSE	FALSE		
17	July	1			6 to 7		FALSE	FALSE		
18	August	1			7 to 8		TRUE	FALSE		
19	September	1			8 to 9		TRUE	FALSE		
20	October	2			9 to 10		TRUE	FALSE		
21	November	2			10 to 11		TRUE	FALSE		
22	December	2			11 to 12		TRUE	FALSE		
23					12 to 13		TRUE	FALSE		
24					13 to 14		TRUE	FALSE		
25	Dispatch on				14 to 15		TRUE	FALSE		
26	Weekends?				15 to 16		TRUE	FALSE		
27	FALSE				16 to 17		TRUE	FALSE		
28					17 to 18		TRUE	FALSE		
29					18 to 19		TRUE	FALSE		
30					19 to 20		TRUE	FALSE		
31					20 to 21		TRUE	FALSE		
32					21 to 22		FALSE	FALSE		
33					22 to 23		FALSE	FALSE		
34					23 to 24		FALSE	FALSE		
35										
36							Definition acording to prevailing "clock" time			

Define the Dispatch Call Limits

- Enter max calls per Month
- Enter maximum hours per call
- Press the Single Dispatch button to run the analysis. The resulting % of capacity value that can be captured by your DR program is indicated in the gray cell above
- The monthly values are shown in pink, and should be copied to the DR Reporting Template

	Z	AA	AB	AC	AD	AE	AF	AJ
4	Calls per month	5						
5	Hours per Call	15						
6							Total	
7	Single Dispatch				% of Capacity Value Captured		55.8%	
8								

	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
5	Monthly Capture (Copy this to the DR Template)											
6	1	2	3	4	5	6	7	8	9	10	11	12
7	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	3.95%	30.18%	21.67%	0.00%	0.00%	0.00%

Dispatch Call Scenarios

- The far right of the A Factor tab allows you to run Max Calls and Max Hours scenarios.
- Pressing the “Run Batch” button will calculate the total annual value for each combination up to the maximum calls and hours entered in cells BB4:BB5. The values will be based on the availability schedule you entered at the left of the spreadsheet.

Batch Runs

Max calls per month	15	*BatchCalls*
Max hours per call	15	*BatchIterations*

Run Batch

Number of Calls Per Month	Number of Hours Per Call														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0.031	0.060	0.089	0.113	0.136	0.159	0.178	0.196	0.208	0.214	0.217	0.217	0.217	0.217	0.217
2	0.060	0.113	0.155	0.189	0.228	0.265	0.297	0.325	0.342	0.351	0.354	0.354	0.355	0.355	0.355
3	0.089	0.160	0.216	0.249	0.289	0.336	0.375	0.408	0.429	0.439	0.442	0.443	0.443	0.443	0.443
4	0.113	0.199	0.268	0.300	0.342	0.397	0.444	0.481	0.505	0.516	0.520	0.521	0.521	0.521	0.521
5	0.137	0.236	0.310	0.346	0.385	0.443	0.491	0.520	0.542	0.554	0.558	0.558	0.558	0.558	0.558
6	0.160	0.266	0.349	0.387	0.426	0.475	0.518	0.547	0.568	0.580	0.584	0.584	0.585	0.585	0.585
7	0.181	0.295	0.384	0.421	0.460	0.502	0.544	0.572	0.591	0.602	0.606	0.607	0.607	0.607	0.607
8	0.201	0.320	0.417	0.451	0.488	0.526	0.568	0.589	0.608	0.620	0.624	0.625	0.625	0.625	0.625
9	0.221	0.344	0.447	0.477	0.512	0.548	0.587	0.606	0.623	0.634	0.638	0.639	0.639	0.639	0.639
10	0.239	0.367	0.472	0.499	0.532	0.567	0.603	0.619	0.636	0.646	0.650	0.651	0.651	0.651	0.651
11	0.256	0.389	0.496	0.519	0.549	0.585	0.617	0.632	0.645	0.655	0.659	0.660	0.660	0.660	0.660
12	0.273	0.409	0.515	0.538	0.563	0.599	0.631	0.641	0.654	0.663	0.667	0.668	0.668	0.668	0.668
13	0.289	0.428	0.530	0.553	0.577	0.613	0.641	0.650	0.662	0.671	0.675	0.675	0.676	0.676	0.676
14	0.304	0.446	0.543	0.567	0.589	0.624	0.650	0.659	0.669	0.677	0.681	0.682	0.682	0.682	0.682
15	0.318	0.461	0.554	0.579	0.601	0.634	0.658	0.667	0.674	0.681	0.685	0.685	0.686	0.686	0.686

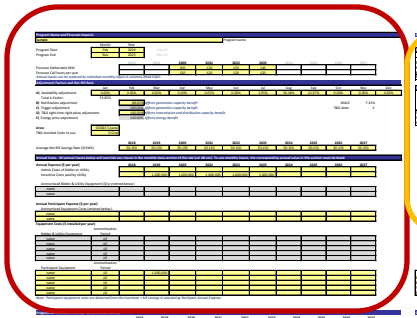
DR Reporting Template

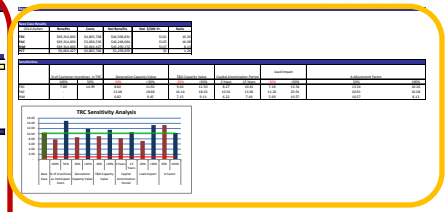
- Calculates cost effectiveness of DR program
- TRC Benefit Cost Ratio is the primary metric
- Each program is entered into a single tab
- Tabs can be added to allow more than one program in the same reporting template
- “Sample” tab is where you enter your DR program information
- To add more programs, press the “Add Program” button on the Summary tab.

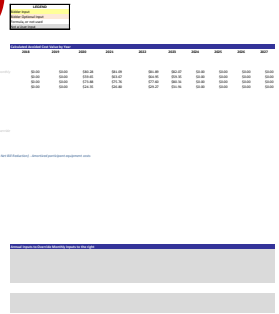
DR Reporting Template Layout

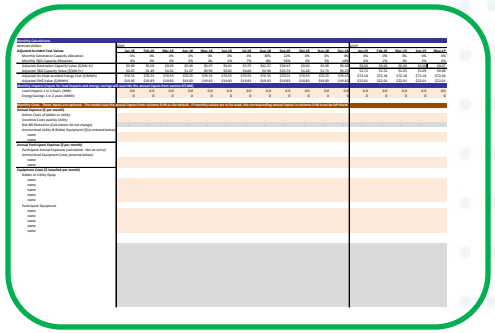
Inputs

Results









Input Overrides

DR Impact and Duration

- **Top section has entries for duration of program, and annual deliverable MW and call hours per year (yellow cells)**

	B	C	D	E	F	G	H	I	J	K	L	M
1	**Program Name and Forecast Impacts**											
2	**Sample**						Program name					
3		Month	*Year*									
4	Program Start	Feb	2020	*Feb-20*								
5	Program End	Nov	2023	*Nov-23*								
6			2018	2019	**2020**	**2021**	**2022**	**2023**	2024	2025	2026	2027
7	Forecast Deliverable MW				100	120	150	140				
8	Forecast Call hours per year				120	120	120	120				
9	*Annual inputs can be replaced by individual monthly inputs in columns AB64:EQ65.*											

- **These values can be overridden with monthly values starting in column AB (pink cells)**
  - Note that the override section has an input for Energy Savings (MWh) instead of Call Hours.

	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
54	**Monthly Calculations**														
55	*Nominal Dollars*	2018												2019	
56	**Adjusted Avoided Cost Values**	**Jan-18**	**Feb-18**	**Mar-18**	**Apr-18**	**May-18**	**Jun-18**	**Jul-18**	**Aug-18**	**Sep-18**	**Oct-18**	**Nov-18**	**Dec-18**	**Jan-19**	**Feb-19**
57	Monthly Generation Capacity Allocation	0%	0%	0%	0%	0%	0%	4%	30%	22%	0%	0%	0%	0%	0%
58	Monthly T&D Capacity Allocation	4%	2%	2%	2%	2%	1%	7%	8%	56%	2%	3%	10%	4%	2%
59	Adjusted Generation Capacity Value ($/kW-Yr)	$0.00	$0.00	$0.00	$0.00	$0.07	$0.01	$5.55	$42.37	$30.43	$0.00	$0.00	$0.00	$0.00	$0.00
60	Adjusted T&D Capacity Value ($/kW-Yr.)	$2.67	$1.49	$1.01	$1.07	$0.96	$0.85	$4.00	$4.96	$33.74	$1.28	$1.71	$6.25	$2.72	$1.52
61	Adjusted On-Peak Avoided Energy Cost ($/MWh)	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$70.55	$72.18	$72.18
62	Adjusted GHG Value ($/MWh)	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$19.83	$22.01	$22.01
63	**Monthly Impacts (Inputs for load impacts and energy savings will override the annual inputs from section D7:M8)**														
64	Load Impacts 1 in 2 Years (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	Energy Savings 1 in 2 years (MWh)	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Adjustment Factors and Bill Rate

- Paste monthly A-factors into row 12
- D14 is 88% if program is notified day ahead, 100% if can be notified same day
- D15 and D17 are left as is
- D16 is 100% if enabling technology that is expected to last 10 years or longer is installed as part of the proposed program; otherwise, D16 is 0%.
- Use the SDG&E provided bill savings rates as guidance. Use a weighted average of those rates if needed.

	B	C	D	E	F	G	H	I	J	K	L	M	N
10	**Adjustment Factors and Bill Rate**												
11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
12	**A)** Availability adjustment	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	3.95%	30.18%	21.67%	0.00%	0.00%	0.00%
13	Total A-Factor:	55.85%											
14	**B)** Notification adjustment		88.00%	*Affects generation capacity benefit*							WACC	7.31%	
15	**C)** Trigger adjustment		100.00%	*Affects generation capacity benefit*							*T&D Area:*	*2*	
16	**D)** T&D right time-right place adjustment		100.00%	*Affects transmission and distribution capacity benefit*									
17	**E)** Energy price adjustment		140.00%	*Affects energy benefit*									
18													
19	**Area:**	SDG&E Coastal											
20	T&D Avoided Costs to use	D Only											
21													
22			**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	
23	Average Bill Savings Rate ($/kWh)		$0.150	$0.150	$0.150	$0.150	$0.150	$0.150	$0.150	$0.150	$0.150	$0.150	

Estimated Bill Rates

- **Use the following class average estimated billing rates for participant bill savings. Use a weighted average across customer classes if necessary.**

SDG&E Estimated Class Average Rates to Use in DR Analysis (cents per kWh)										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	24.37	25.10	25.85	26.63	27.43	28.25	29.10	29.97	30.87	31.79
Small C&I < 20 kW	26.81	27.61	28.44	29.30	30.17	31.08	32.01	32.97	33.96	34.98
Medium & Large C&I	21.56	22.21	22.88	23.56	24.27	25.00	25.75	26.52	27.32	28.14
Agricultural	22.04	22.70	23.38	24.08	24.80	25.55	26.31	27.10	27.92	28.75

Costs

- **Annual Costs are entered in the main input section. If you prefer to use monthly entries, leave the annual inputs blank and enter your monthly values starting in column AB.**

	B	C	D	E	F	G	H	I	J	K	L	M
25	**Annual Costs. All annual inputs below will override any inputs in the monthly data section of this tab (col AB etc). To use monthly inputs, the corresponding annual value in this section must be blank**											
26	**Annual Expense ($ per year)**		**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
27	Admin Costs of bidder or Utility											
28	Incentive Costs paid by Utility			1,000,000	1,000,000	1,000,000	1,000,000	1,000,000				
29												
30	Ammortized Bidder & Utility Equipment ($/yr *entered below*)											
31	*name*											
32	*name*											
33												
34	**Annual Participant Expense ($ per year)**											
35	Ammortized Equipment Costs (*entered below*)											
36	*name*											
37	*name*											
38	**Equipment Costs ($ installed per year)**											
39	Bidder & Utility Equipment	Ammortization Period										
40	*name*	*10*										
41	*name*	*10*										
42	*name*	*10*										
43	*name*	*10*										
44	*name*	*10*										
45	Participant Equipment	Ammortization Period										
46	*name*	*10*		1,000,000								
47	*name*	*10*										
48	*name*	*10*										
49	*name*	*10*										
50	*name*	*10*										
51	*Note: Participant equipment costs are deducted from the incentives + bill savings in calculating Partiipant Annual Expense*											

Monthly Costs

- **Note that the monthly cost inputs are located below and to the right of the annual inputs**
  - For example, the annual participant equipment costs start in row 46 while the monthly inputs start in row 88.

	B	C	D	E	F
25	**Annual Costs. All annual inputs below will override any inputs in the monthly data section of this tab (**				
26	**Annual Expense ($ per year)**		**2018**	**2019**	**2020**
27	Admin Costs of bidder or Utility				
28	Incentive Costs paid by Utility			1,000,000	1,000,000
29					
30	Ammortized Bidder & Utility Equipment ($/yr *entered below*)				
31	*name*				
32	*name*				
33					
34	**Annual Participant Expense ($ per year)**				
35	Ammortized Equipment Costs (*entered below*)				
36	*name*				
37	*name*				
38	**Equipment Costs ($ installed per year)**				
39	Bidder & Utility Equipment	Ammortization Period			
40	*name*	*10*			
41	*name*	*10*			
42	*name*	*10*			
43	*name*	*10*			
44	*name*	*10*			
45	Participant Equipment	Ammortization Period			
46	*name*	*10*		1,000,000	
47	*name*	*10*			
48	*name*	*10*			
49	*name*	*10*			
50	*name*	*10*			

	AA	AB	AC	AD
67	**Monthly Costs. These inputs are optional. The model uses the annual inputs from columns D:M as th**			
68	**Annual Expense ($ per month)**			
69	Admin Costs of bidder or Utility			
70	Incentive Costs paid by Utility			
71	Net Bill Reduction (Calculation do not change)	-	-	-
72	Ammortized Utility & Bidder Equipment ($/yr entered below)			
73	*name*			
74	*name*			
75	**Annual Participant Expense ($ per month)**			
76	Participant Annual Expenses (calculated. Not an entry)			
77	Ammortized Equipment Costs (entered below)			
78	*name*			
79	*name*			
80	**Equipment Costs ($ installed per month)**			
81	Bidder or Utility Equip			
82	*name*			
83	*name*			
84	*name*			
85	*name*			
86	*name*			
87	Participant Equipment			
88	*name*			
89	*name*			
90	*name*			
91	*name*			
92	*name*			

Other Input Notes

These costs are annual $ per year values. Equipment costs are amortized amounts

These costs are total installed costs.
The template will convert them to amortized values.
Do not enter already amortized values here.

	B	C	D	E
25	**Annual Costs. All annual inputs below will override any inputs in the monthly data se**			
26	**Annual Expense ($ per year)**		**2018**	**2019**
27	Admin Costs of bidder or Utility			
28	Incentive Costs paid by Utility			1,000,000
29				
30	Ammortized Bidder & Utility Equipment ($/yr *entered below*)			
31	*name*			
32	*name*			
33				
34	**Annual Participant Expense ($ per year)**			
35	Ammortized Equipment Costs (*entered below*)			
36	*name*			
37	*name*			
38	**Equipment Costs ($ installed per year)**			
39	Bidder & Utility Equipment	Ammortization Period		
40	*name*	*10*		
41	*name*	*10*		
42	*name*	*10*		
43	*name*	*10*		
44	*name*	*10*		
45	Participant Equipment	Ammortization Period		
46	*name*	*10*		1,000,000
47	*name*	*10*		
48	*name*	*10*		
49	*name*	*10*		
50	*name*	*10*		

DR Participant Costs

- **Note that the template assumes the following**
  - Participant expenses ≈ 75%*(Incentives + Net Bill Reduction) - Amortized participant equipment costs.
    - This is why the customer bill savings rate and the amount of MWh reduction (of call hours) is important.
  - Total Participant Cost = Participant Exp + Participant Equipment ≈ 75%*(Incentives + Bill Reduction).
- **TRC Cost ≈ Admin + Bidder & Util Equipment + Participant Exp + Participant Equip**

Please submit your questions by November 14, 2014

to

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