

## “Bundled EE + DR Measures” Issue Statement

With the launch of the new measure development process to 3Ps, a high probability exists that new measure types will be submitted. Ideally, new measure types should be vetted proactively to recommend how these measures must be documented and to provide clarity on key considerations. Starting these discussions before the new measure development process begins may limit delays, categorize new measure ideas quickly, and improve our ability to evaluate new measure proposals consistently.

One potential new measure type is a “bundled EE + DR measure.” A bundled EE + DR measure is the combination of at least one EE measure and a least one demand response (DR) measure for which EE savings are developed and that are offered to end users as a single offering. Examples of bundled EE + DR measures include the smart thermostat and a heat pump water heater + DR controller (new for PG&E).

Demand response and energy efficiency are bifurcated in California; DR is currently distinguished from energy efficiency in regulatory proceedings and thus have different metrics and funding streams. Among many considerations, conventions on how cost effectiveness of DR-only and EE + DR measures should be evaluated is required to ensure that benefits can be quantified appropriately.

The objective of this white paper is to summarize key considerations and propose recommendations that will facilitate standardization/consistency.

### **General comments**

*AS: DR only measure/workpaper; no values but procedural*

- *GB: Deemed numbers do exist and are used for automated demand response (ASWB and Energy Solutions); kW values*
  - o *Ratio: demand response kW per facility peak demand for HVAC and Lighting*
  - o *Currently in use*
  - o *Limited to small and med bus (under 499kW)*
  - o *Table of values (25kW bins); submitted to IOUs for approval*
  - o *Does not count towards efficiency goals*
- *JP: Would IOU honor values for TI payout; -> Yes.*
- *AS: Deemed values used for planning; expected reduction*
- *Smart thermostat workpaper – Previously included EE and DR*

**Target Audience**

*Who cares about this problem? Who are we trying to persuade? Who will be able to take action?*

- POU's – important but from a different context (value from supply side resource) DR still in development (focus on shedding); future more on shifting load.
- DR Aggregators
- Consider Title24 – DR enablement (GB)
- Developers, architects/engineers, contractors (AS)
- CCAs (DH)

**Potential Research / Analysis Approach**

*What is the analysis approach to the research that needs to be done to devise one or more potential solution(s)?*

- Look for lowest hanging fruits based on market sector, building type, vintage, and climate zone. (AS)
  - Create suggested bundles for each combination of these permutations
- Who to contact at other IOUs to understand how IOUs evaluate DR? Already asked at PG&E. (Chas)
  - DR Load Impact Protocols adopted in D.0804050 (April 2008) and modified in D1004006 (JH)
  - Demand Response Measurement & Evaluation Committee (DRMEC) authorized in D 0306032 and formalized in D0611049 to have oversight of DR studies. DRMEC includes CPUC, CEC, IOUs reps. (JH)
  - Possible contacts are Leslie Willoughby @ SDG&E, Prapti Gautam @ SCE, Gill Wong @ PG&E. (DH)
  - DR Load Impact Protocols provide general guidelines. Actual EM&V has evolved based on past EM&V lessons learned. (DH)
- PG&E is leading next Title 24; (GB) Kelly Cunningham/PG&E is leading this effort; Energy Solutions is helping to author case reports. (AP)
- Combined EE-DR cost-effectiveness calculation methodology. (DH)

**Potential Data Sources (Primary and Secondary)**

*What are the data sources that will be analyzed? Is the data accessible?*

- Other jurisdictions? DR Aggregators?
  - List of aggregators on CPUC website (JH)
  - Aggregator-managed program for each IOU is CBP (capacity bidding program). Past CBP evaluations are all available to the public. (DH)
- Title24 – DR enablement
- IDSM?
  - As a specific area of focus, IDSM has essentially dissipated (DH)
- LBNL DR Research Center – check recent publications/DR potential study
- Home Energy Upgrade EM&V studies

## Key Technical & Policy Considerations and Challenges

*What are the barriers to address this problem? What are the barriers to completing this white paper? Any timeline considerations?*

- Calculation Approach: Deemed, Hybrid, Custom?
  - The realization rate could be low as Henry (PG&E) mentioned that they were experiencing this issue in the Home Energy Upgrade Program when using modeled approach—although slightly better when using custom approach. (AS)
- Marketing and Feasibility: Creating measure bundles that are able to reach a wide range of customers could be difficult. There is no “one-size” fits all so there should be different bundle types for different application types—as a start maybe you can start with one type: retrofit or new construction. (AS)
- Coincident Peak and End Use Load Shape:
  - The DR coincident peak savings will vary and deemed savings will most likely not be a good option. Additionally, you would need to lock down the coincident peak savings on a per utility and possibly per circuit basis—this would also be dependent on each year. (AS)

## Cost Effectiveness

- With focus on electrification, interest on TOU, there is a need to capture true benefits when needed; now benefits could be either EE or DR. It will be easier if don't have to parse out the value. (AP)
  - With TOU becoming the default rate, TOU is the new baseline. Does that affect C/E? (DH)
- EE is not evaluated the same as DR. DR has C/E requirements at the program not the measure level. Should this change?
- There should be C/E for IDSM; the value for DR kW should be higher since the avoided cost would be higher during DR events. Ex: programmable thermostat; if the same device does both – then deal with overlap. (AP)
- Traditional C/E should be reviewed (cost avoidance value); need load flexibility rather than shed. (AS)
  - LBNL sub-classifies DR as shape, shift, shed, and shimmy. Do we now have four forms of flexible load? (DH)
- Look at combined EE-DR cost-effectiveness. Currently use full IMC for both EE and DR; combining will share cost and savings parsing is combined. (AP) This is a potential research topic. (DH)
- Look at T 24 calc for TDV-kBtu/hr; Smart Thermostat with cooling temperature reset will have a very different load shape. Need to borrow concept from EE to use for DR (GB)
- What metric from PUC/CET should we use? Can we merge POU and IOU C/E? This is a load shift/over-generation issue. (MC)
- When we evaluate C/E, should we consider current system vs forward-thinking concept? (MV)
- The CEC TDV and the IOU test will produce very different results; installers care about T24 that is needed during installation; owners care about how it operates (AP)

- Consider a standard way to parse out value; incentives are based upon actual, but it can be hard to parse it out and adds to complex approach. More programs will use if easier process.
- Parsing out impact of EE/DR, be careful not to double count impacts, especially if supported by different efforts. For example, EE programs will install smart thermostat; DR will look at who has one already. Trying to evaluate incremental. Evaluate DR on a performance basis. Just starting a program: Bring your own Tstat. Make sure that not overclaiming. (AS)
- EMS is handled the same with same strategies. EMS is a control system that is optimized for other uses, but now has a DR event (with specific control). There should be an incremental impact. What the incremental impacts could be for systems (lighting, HVAC, etc.) is driven by algorithms.
- Utility vertically integrated vs utility that is distribution only will value DR differently.
- Flexible DR not incentivized in the same way as traditional DR; need to find a way to “value” it. (GB) Flexibility will maximize the value; loss in the way that the value translates to the customer; need alignment between the needs of the customer and the program to get maximum benefit. (AS)
- Does Conservation Voltage Reduction (CVR) fit into this? (DH)

#### Changing Needs

- The DR event window historically the same (interest in shed primarily; some shift), Now other needs are emerging, BUT needs are emerging/changing are faster than programs and rules. (GB)
- The time window may move; what is EE vs DR is harder to distinguish. A thermostat temperature reset is already available for both; it may be more appropriate to deal with together. (AP)
- Some customers may not be able to take advantage of DR programs equally. (W-WW customers are one example because of grandfathered tariff rates.) We need to ask the question about whether this situation may exist for a given DR measure to understand if any exclusions to the measure need to be stated clearly. (MV)

#### Other Impact Parameters

- Considerations for other impact parameters (EUL) not important. However, could be important for technology enablement incentive, but not for DR benefit. For DR, may be considered life/availability on a daily basis rather than in years.
- Considerations for NTG impacts? (AS) Technology adoption based upon EE, not by DR. (AP) The thermostat started with DR, now its an EE measure. Would need to look at NTG differently, adjust if EE & DR combined together.
  - NTG is a non-issue usually for DR. DR adoption does not occur naturally. Theoretically, it could only occur when everyone is on RTP rates. (DH)

	<u>Examples/Case Studies</u>
<p><b>Availability of Resources to Complete Whitepaper</b>  <i>Are enough people able and willing to contribute to the development of this white paper? List subcommittee members here.</i></p>	<ul style="list-style-type: none"> <li>• Lighting – ability to put EE and DR together; some pilot programs existing now</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Champion: Martin Vu</li> <li>• Subcommittee members and attendees of April 8<sup>th</sup> meeting include:                      Armen Saiyan, Jonathan Pera, Greg Barker, Charles Ehrlich, Martin Vu, Abhijeet Pande, Dave Hanna</li> </ul>
<p><b>Value/Potential Impact</b>  <i>Rate the impact on the CA EE/IDSM industry (high, med, low) and describe. Is the impact commensurate with level of effort/costs required?</i></p>	<ul style="list-style-type: none"> <li>• Could increase market penetration of EE measures and DR measures (AS)</li> <li>• Studies on overgeneration impact; flexible DR rather than traditional DR (over generation and under generation) (MV)</li> </ul>