

Rulemaking No.: 20-11-003

Exhibit No.: Oracle-01

Witness Charlie Buck

Commissioner Marybel Batjer

ALJ Brian Stevens

**OPENING PHASE 2 PREPARED TESTIMONY OF
ORACLE UTILITIES**

Rulemaking 20-11-003
2021 Extreme Weather Event Reliable Electric Service

September 1, 2021

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5 **I. INTRODUCTION**

6 Oracle Utilities (formerly Opower, Inc.; now “Oracle”) has delivered Opower’s behavioral
7 energy efficiency, demand response, and customer engagement services to over one hundred
8 electric and natural gas utilities across ten countries and thirty-five states, including California.
9 To date, these programs have saved nearly 30 terawatt-hours of energy. In 2020 alone, the
10 Opower behavioral energy efficiency program is projected to drive over 350 GWh of savings
11 across the three electric IOUs. Oracle appreciates this opportunity to provide input on the
12 Commission’s Order Instituting Rulemaking on Emergency Reliability (OIR). Oracle’s
13 testimony is based on the 12+ years of behavioral DSM experience contained in the Opower
14 platform, which has been implemented by more than 100 utilities around the world.

15
16 On November 30, 2020, Oracle submitted comments to the Commission in this OIR,
17 recommending the authorization of a Behavioral Demand Response (BDR) program for
18 residential customers.¹ The following testimony outlines this proposal once more, in accordance
19 with ALJ Stevens’ Ruling issued via e-mail on August 11, 2021. In addition to this proposal,
20 Oracle offers its comments on portions of the Staff Concepts document issued via e-mail Ruling
21 on August 16, 2021.

22
23
24 **II. SECTION 1: PROPOSAL FOR A RESIDENTIAL BEHAVIORAL**
25 **DEMAND RESPONSE PROGRAM**

26 **General Program Design**

¹ Oracle Utilities. *Comments of Oracle Utilities on Order Instituting Rulemaking on Emergency Reliability*. November 30, 2020.

1 The proposed Behavioral Demand Response (BDR) program was developed by Opower (now
2 Oracle) and utilizes elements of the Home Energy Reports (HERs) program, which currently
3 drives as much as 60% of total energy efficiency savings in California. Similar to the HER
4 program, BDR is implemented as an *opt-out* program targeted at wide swaths of residential
5 customers to drive peak reductions through the use of behavioral messaging instead of monetary
6 incentives. BDR employs day ahead and/or day-of communications to customers through e-mail,
7 phone and SMS (if opted into text), urging them to take specific actions that are personalized
8 based on their actual energy consumption to reduce energy usage during specified hours. Shortly
9 after each event, customers are informed as to how much they reduced their consumption
10 compared to their neighbors during the event, which drives continued reductions during
11 subsequent events. These communications also include marketing messages that motivate
12 customers to adopt automated peak reduction measures, such as programmable controllable
13 thermostats for additional demand reductions.

14 The peak demand reductions resulting from this BDR program would be measured utilizing a
15 randomized controlled trial (RCT), the gold standard for measurement and verification of
16 program impacts. Therefore, the impact of the program can be determined within 1-3 weeks of
17 calling an event and with minimal evaluation resources, as the methodology for estimating
18 savings is built into the program design itself. This program design removes the need for
19 complex baseline methodologies to be developed for each individual customer and eliminates
20 free ridership from the program as well.

21 *Program Trigger:*

22 BDR communications can be triggered by any number of events, including Flex Alerts or
23 CAISO alerts, warnings, or emergencies.

24 *Demonstration that BDR will deliver benefits:*

25 BDR has been deployed at more than twelve utilities across the country, including two California
26 utilities, and has achieved statistically significant demand reductions ranging from 1.2-5% of
27 customer peak consumption. An evaluation of PG&E's BDR pilot in 2015 found average
28 demand reductions of 2.4% for customers not currently in the HER program and 1.8%

1 incremental peak reduction for HER program participants.² In real kW reduction numbers, this
2 translates to an average impact of 0.05-0.07 kW per household, which is more than double the
3 estimated impact of the Flex Alert program in Southern California in 2016.³

4 Glendale Water and Power (GWP) has also relied on BDR as their primary demand response
5 program for several years. In the summer of 2018, this program drove 3.3 MW of demand
6 reduction across 33,000 customers and customers reported high degrees of satisfaction with the
7 program.⁴

8 In Texas, CPS Energy, which is a department of the City of San Antonio, TX, utilizes BDR to
9 manage summer peaks, similar to GWP noted above, albeit with far more customers. At CPS,
10 approximately 300,000 customers are auto-enrolled in the BDR program, which generated over
11 20 MW of peak reduction per event on average in the summer of 2020. Earlier, smaller
12 deployments of this program at CPS were shown to drive ~7 MW of peak reduction, as well as
13 energy efficiency savings, from ~122,000 customers.⁵

14 These programs have also been deployed at DTE in Michigan, Hydro Ottawa, Consumers
15 Energy, and through Efficiency Vermont. The image below is a screenshot of these programs
16 from a presentation by E-Source at ACEEE's 2017 Behavior, Energy, and Climate Change
17 (BECC) conference.⁶

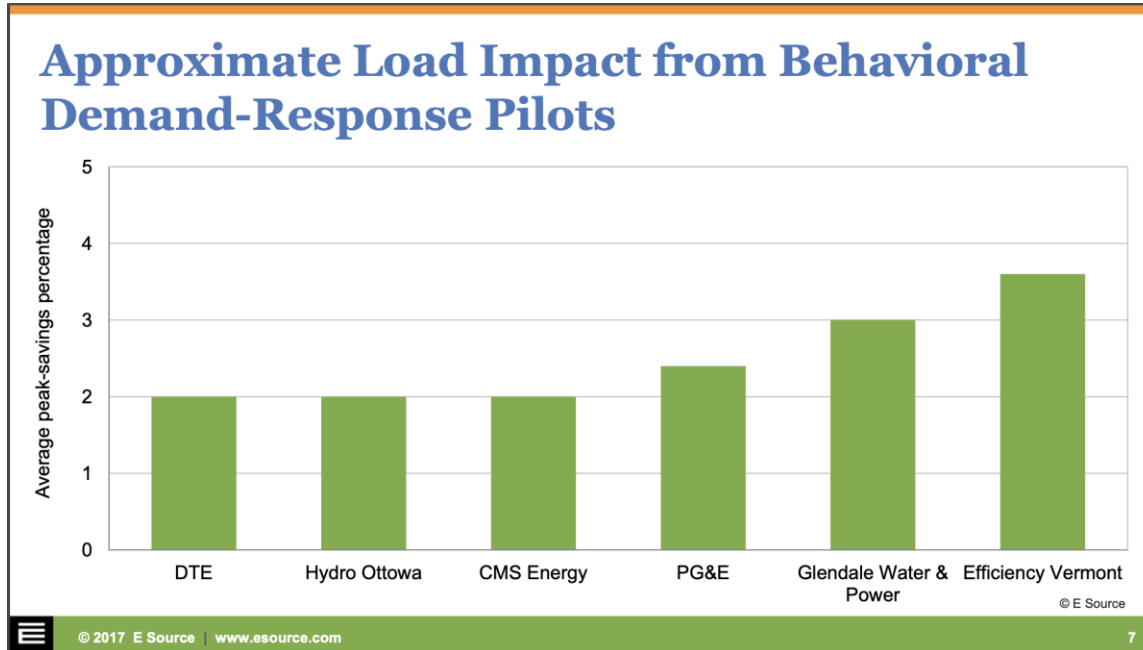
² Cook, Jonathan, et al. *Behavioral Demand Response Study- Load Impact Evaluation Report*. Nexant. January 2016. CALMAC ID: PGE0367.01

³ Buhr, Tami, et al. *Aliso Caynon Marketing, Education, and Outreach Effectiveness Study*. Opinion Dynamics. June 2017. CALMAC Study ID: CPU0171.01

⁴ California Municipal Utilities Association (CMUA). *Energy Efficiency in California's Public Power Sector: 13th Edition*. Page A-45.

⁵ Frontier Energy. *Evaluation, Measurement, and Verification of CPS Energy's FY 2019 DSM Programs*. Pp 122-126.

⁶ https://beccconference.org/wp-content/uploads/2017/10/fitzjarrald_presentation.pdf



14

15 *Program Performance Requirements*

16

17 This BDR program is designed to maximize residential participation on an opt-out basis, and
 18 therefore has very minimally restrictive performance requirements. Specifically, the program
 19 requires that events be called on a day-ahead or day-of basis. Oracle must be notified by 11:00
 20 a.m. of the previous day for day-ahead event triggers and 10:00 a.m. *on the day of* the event for
 21 day-of triggers.

22

23 *Compensation Structure*

24

25 Just like HER programs, BDR is delivered via software-as-a-service (SaaS) licenses which are
 26 purchased by utilities. Such services are normally purchased on a per-household basis, which
 27 varies depending on the scale of the program; however, pay-for-performance models have
 28 emerged for such services and could possibly be employed in this context as well.

29

30 *Program Eligibility and Enrollment*

1
2 Residential customers with a smart meter that generates a minimum granularity of daily reads for
3 whom a utility has at least one meter read during the peak event are eligible for the program. In
4 reality, however, it is not generally cost-effective for utilities to enroll *all* residential households
5 in such a program, as lower-usage households have significantly less potential to drop load and
6 are therefore not as cost-effective to treat as higher-usage homes. It is also necessary to withhold
7 a control group of customers large enough to measure the impact of the program.

8
9 *Measurement and Verification*

10
11 BDR is unique in that it utilizes randomized controlled trials (RCT) to measure the impact of the
12 program. This eliminates bias in measurement and allows for a simpler, more accurate
13 measurement than standard baseline methodologies. It must be noted that impact measurement
14 occurs *at the level of the treatment group*, not the individual household. Since the effects being
15 measured are relatively small, it is not possible to accurately measure the impact at the individual
16 household level.

17
18 **Program Administration**

19
20 There are several characteristics of the proposed BDR program that require it to be administered
21 by the IOUs. Firstly, the mass scale and opt-out nature of the program necessitates a level of data
22 integration with a utility's billing system that is far beyond the scope of one-off data requests.
23 Second, the program relies upon communications to customers that include their individual
24 household level energy usage data which are sent on an opt-out basis. It would not be
25 appropriate, and may not be legal, for a third party to obtain or utilize such information on an
26 opt-out basis. Furthermore, the communications will come from the customers' utility,
27 leveraging the existing relationship between the customer and their utility. Though implemented
28 by a software vendor, BDR programs are always "white-labeled" with the utility's logo in the
29 same manner as Home Energy Reports in the energy efficiency context.

30
31 **Program Marketing, Outreach and Education**

1
2 Since BDR is, in and of itself, a marketing, education and outreach tool, there is no specific
3 ME&O breakout.

4
5 **Program Budget**

6
7 The budget for such a program depends on a number of factors. The most significant of these is
8 scale. The more households a utility desires to reach, the greater the overall cost of the program;
9 however, per-household unit costs decline somewhat with scale as well. Other factors include,
10 number of events (e.g. 5 or 10) and communications channels (e.g. e-mail only, or e-mail plus
11 phone). All that said, for a program serving 1.5-3 million customers, a reasonable budget range
12 would be \$3-5 million per summer season, depending on the aforementioned factors.

13 Administrative costs incurred by a utility administering such a program are also at the discretion
14 of the given utility, and while Oracle cannot speak to specific dollar amounts, these costs would
15 essentially be limited to contract management on the part of the utility, similar to those
16 associated with administering third-party programs in the energy efficiency program context.

17
18 **Implementation Timeline: The Commission Must Act Quickly**

19
20 A large-scale BDR program can be implemented for all of the electric IOUs by June 2022;
21 however, in order for this to occur, the Commission will need to enable any IOU administrators
22 to have contracts in place by the end of December, 2021. A common pathway for Commission
23 decision making has historically been to issue a Decision directing the IOUs to file Advice
24 Letters with specific budgets and activities within 30-90 days, with dispositions issued no less
25 than 30 days following their filing. If the Commission waits until mid-late November 2021 to
26 issue a decision in this matter, and it directs the IOUs to file subsequent Advice Letters at least
27 30 days later, a disposition would not be issued until mid-late January 2022 at the earliest. As a
28 result, contracting would not occur until mid-late February 2022 and implementation work could
29 not begin until March or later. This would result in significant delays to launching the program,
30 as setup for such a large-scale program across multiple utilities will require approximately 5-6
31 months to complete.

1 **In light of this, if the Commission wishes to see a large-scale, opt-out residential program of**
2 **any type (BDR or ELRP, as envisioned by the staff proposal) launch by June 2022, it will**
3 **need to enable utilities to begin contracting for implementation no later than December**
4 **2021.**

5
6 **Program Duration**

7
8 A large-scale BDR program could be implemented for any desired period of time, depending
9 upon how it is used. For example, BDR can be utilized for emergency purposes; however, it can
10 also be used as a general DR program or even as an IDSM program, as SDG&E is currently
11 doing for summer 2020.

12
13 **Estimated Load Impact**

14
15 Extrapolating the results from PG&E's BDR pilot and similar deployments, while applying
16 Oracle's forecasting model, Oracle conservatively estimates load reductions of ~0.02 kW per
17 household reached by the program (lower than the 0.06 kW. The absolute load impact would
18 then be directly related to the number of customers defaulted into the program. In order to
19 maximize the cost-effectiveness and measurability of the program while avoiding treating any
20 customers already enrolled in other DR programs, Oracle would conservatively assume that
21 approximately 50% of all residential customers would receive BDR communications. This would
22 result in an estimated 134 MW of load reduction across the electric IOU territories.

23
24 **Potential Interaction with Existing Programs**

25 Since this would be an opt-out program and not integrated directly into CAISO, there should not
26 be any dual participation issues with other DR programs. In fact, BDR would be utilized not only
27 for immediate and direct load reductions, but also as a marketing channel for other residential
28 DR programs. Once a BDR customer enrolls in any other DR program, whether third party or
29 utility administered, they should be removed from the BDR program entirely. This would occur
30 through a simple data transfer from the utility to the BDR vendor, notifying the vendor to

1 remove the customer from the BDR program. This will prevent any load reductions resulting
2 from opt-*in* programs being attributed to the BDR program.

3 4 **Prior Program Experience in California and Elsewhere**

5 This information is provided in the “Demonstration of Program Benefits” section above.
6

7 **Program Funding and Cost Recovery**

8
9 There are many potential avenues for funding and cost recovery, and Oracle is agnostic as to
10 which is utilized. Whichever funding source is used, however, the critical factor is *timing*. For
11 example, BDR could be funded via the IOU DR portfolios; however, if the funding request were
12 incorporated into the IOUs’ November 2021 DR Applications, approval would not likely occur
13 until well into 2022- too late for summer 2022 implementation. The IOUs could also utilize
14 IDSM funding within the EE portfolios, as SDG&E currently does. This is consistent with the
15 goals of IDSM funding, as BDR has been shown to drive both kW and kWh reductions.
16

17 **Potential Risk of Proposal**

18
19 This program design is well-proven across multiple utilities throughout the country, and
20 therefore, the primary risk is entirely attributable to regulatory timing. As noted above, the
21 Commission must act quickly in authorizing this program if it is to be ready by June 2022. This
22 is not a unique risk to BDR, but likely applies to many different program designs. While Oracle
23 is fully aware of the Commission’s statutory oversight role of ratepayer funded programs, the
24 tension between time-to-market and regulatory processes will be one of the most critical factors
25 determining what measures can be deployed in summer of 2022. If the CPUC waits until late
26 November to issue a Decision, and that Decision requires subsequent regulatory filings from the
27 IOUs such that new programs cannot begin setup work until those filings are approved, there is a
28 very high likelihood that programs like BDR will not be up and ready in June, but would rather
29 be delayed until July or August 2022.
30

1 **III. SECTION 2: ORACLE COMMENTS ON STAFF CONCEPTS**
2 **DOCUMENT**

3 Oracle appreciates Energy Division’s thoughtfulness in proposing potential concepts that might
4 help maintain reliability over the next few years. Oracle currently implements opt-out behavioral
5 DR as well as opt-out peak-time rebate programs throughout the country, and the following
6 comments draw directly from this experience.

7

8 *Opt-out vs. Opt-in Residential DR Program Considerations*

9

10 The Commission is rightly focused on driving widespread load reduction across the residential
11 sector. This customer segment is traditionally underserved by DR programs despite net peaks
12 increasingly being driven by the residential customer base. It therefore makes sense to look
13 toward opt-out program designs, which have been highly successful in the energy efficiency
14 portfolios. In fact, opt-out behavioral programs (i.e. Home Energy Reports) currently drive the
15 majority of energy savings attributable to IOU EE programs. Behavioral DR (BDR) programs
16 such as that proposed by Oracle in the above testimony utilize the same principles as HERs to
17 drive load reductions across millions of residential customers, *without the use of monetary*
18 *incentives*. This is an entirely appropriate use of opt-out program design, as it relies solely on
19 customers’ behavioral responses to direct communications.

20

21 Once monetary incentives are introduced, however, opt-out program designs are notorious for
22 free ridership problems, since it is not generally considered equitable to withhold a control group
23 for impact measurement purposes, as customers in the control group cannot be eligible for
24 incentives. For example, both SDG&E and SCE once administered opt-out Peak Time Rebate
25 (PTR) programs in which customers were paid for load reductions on an opt-out basis. This
26 program design was fundamentally the same as that proposed by Staff for an opt-out residential
27 ELRP program. Evaluations found high levels of free ridership- that is, a significant number of
28 customers who received payments for load reductions were not even aware that the program
29 existed. In effect, this means ratepayer funds were paid out to customers with no attributable
30 impact associated with those payments.

1 Furthermore, accurate measurement of load impacts for an opt-out residential ELRP program
2 would be sub-optimal. While it could be possible to implement a “simple baseline” methodology
3 to residential customers, the accuracy of such measurement would be significantly more biased
4 and imprecise than what is possible with a randomized controlled trial (RCT). Oracle has direct
5 experience implementing both opt-out PTR and opt-out *BDR* (behavior only, without incentives)
6 programs, and while the former *claims* to drive significantly higher savings, there is no way to
7 know how accurate the “simple baseline” methodology is at measuring actual impact. While this
8 is an acceptable and necessary characteristics of opt-*in* programs, which are limited in scope and
9 cannot employ a RCT, utilizing such a measurement method in an opt-*out* context across
10 millions of residential customers exponentially increases the impact of these measurement
11 biases. As a result, *reported* load impacts are highly likely to vary significantly from *actual* load
12 impacts.

13

14 Oracle currently implements an opt-out PTR program for Baltimore Gas and Electric (BG&E),
15 which pays customers \$1.25/kWh for load reductions during events. While stakeholders have
16 been concerned about free ridership in this program, BG&E has taken steps to ensure that
17 awareness of the program is maximized. This is done by pairing the PTR events with *behavioral*
18 messaging, similar to that proposed in the BDR program discussed above. This cannot eliminate
19 all free ridership in the program; however, it at least employs best practices to drive maximum
20 awareness of the program amongst residential customers.

21

22 *Recommendations*

23

24 Oracle recommends the Commission enable the IOUs to move forward with opt-out behavioral
25 DR programs, such as the one proposed by PG&E in its July 2021 testimony (Power Saver
26 Rewards Program) and that being administered by SDG&E this summer via its IDSM budget
27 within the EE portfolios. We further recommend the Commission only make ELRP available to
28 residential customers on an opt-*in* basis, in order to avoid paying customers for load reductions
29 that would have occurred without ratepayer funded payments.

30

1 **IV. CONCLUSION**

2 Oracle appreciates this opportunity to resubmit its proposal for a Behavioral Demand Response
3 (BDR) program for residential customers. These customers have been served with opt-out Home
4 Energy Reports for a decade in California, resulting in hundreds of GWh avoided each year. It is
5 long past time that this approach was adopted for demand reductions as well. At the same time,
6 Oracle urges the Commission to thoroughly consider the significant risks associated with
7 defaulting residential customers into a program like ELRP, as there is near certainty such a
8 program design would repeat the mistakes of prior peak-time rebate programs in California. We
9 look forward to continuing to provide input on this vital matter of maintaining a reliable grid in
10 these challenging times ahead.

11

12

Dated: September 1, 2021

13 Respectfully Submitted,

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STATEMENTS OF QUALIFICATIONS

Charlie Buck

- Q1 Please state your name and business address
- A1 My name is Charlie Buck, and my business address is 475 Sansome St., Flr 15, San Francisco, CA 94111
- Q2 Please describe your present employment
- A2 I am the Director of Regulatory Affairs and Market Development for Oracle.
- Q3 Please summarize your professional background.
- A3 I have worked in regulatory affairs pertaining to demand-side management programs in California for more than 10 years. I have been with Opower since 2014, having been acquired by Oracle in 2016. Prior to that, I was with the Center for Sustainable Energy as a Manager of Regulatory Affairs. I hold a MA in International Environmental Policy as well as a MBA from the Middlebury Institute of International Studies at Monterey.
- Q4 What is the purpose of your testimony?
- A4 The purpose of my testimony is to sponsor Exhibit Oracle-01, the Opening Phase 2 Prepared Testimony of Oracle Utilities.
- Q5 Was Exhibit Oracle-01 prepared by you?
- A5 Yes.
- Q6 Are the statements made in your testimony true and correct to the best of your knowledge and belief?
- A6 Yes.
- Q7 To the extent that Exhibit Oracle-01 contains expressions of opinion, do they represent your best professional judgement?
- A7 Yes.
- Q8 Do you adopt Exhibit Oracle-01 as your sworn testimony in R.20-11-003?
- A8 Yes.
- Q9 Does this conclude your statement of qualifications?
- A9 Yes.