



Behind-the-Meter Battery Market Study

Findings from Business & Residential Applications in San Diego

Bryan Jungers Senior Research Manager E Source



Key Findings

Customer cost savings were lower than theoretical savings in all cases.

Residential customers have no inherent economic incentive to install batteries, but do anyway.

Business customers can save a lot of money on their utility bills with solar + storage (~ 50%).

Payback times for business customers were on the order of 5 to 10 years; decades for residential.

Solar is delivering the large majority of total solar + storage value for both Res & Biz customers.

Customers over-estimated likelihood to buy batteries; vendors under-reported sales numbers.



Behind the Meter Battery Energy Storage System M&V Study

Study Results Report with Addendum 1

AUGUST 1, 2019

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A Cutting-Edge Field Study

A two-phase study culminating in a 300+ page report

Assessed DR and DCM savings potential of 27 battery systems (5.3 MW)

DR results:

- Out of 8 DR events, half achieved > 1 MW (20%) curtailment
- Average curtailment = 690 kW; typical = 1.18 kW; max = 2.7 MW
- Two DR events (25%) experienced **negative** curtailment values
- Regularly, batteries were found recharging during DR events

DCM results:

- 20 systems performed relatively well, achieving **91% of estimated savin**gs
 - A total of \$225,808 in utility demand charges saved over 5 months
- The remaining 7 systems performed poorly, capturing only 20% of savings
 - Only \$21,729 in utility demand charges saved over 5 months



Anomalous Battery Behavior





Lingering Questions After the Pilot



How did customer savings compare to theoretical?

How does the presence of solar influence savings?



How do customer rate plans influence savings?



How big is this market, and where's it headed?

Scope & Components of Market Study





Res. Had Nearly 20X Installs, ³/₄ the Capacity



Source: E Source; data from SDG&E



Non-Residential More Sensitive to Incentives



Source: E Source; data from SDG&E and SGIP

ETCCCEMERGING TECHNOLOGIES

Solar & Storage Show Significant Synergies



Source: Lumidyne Consulting

Residential BESS Economics Not Attractive



Non-Res: Storage + Existing PV Most Attractive



Significant BTM Battery Growth Through 2030



13x growth in adoption forecast Ö between 2019-2030

Ö Minimal adoption in residential standalone systems expected

Ö Non-residential adoption expected to be mostly stand-alone systems (~74%)



2030 Adoption by ZIP Code



Thank you for your time & consideration!

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This project was funded by the California Emerging Technologies Program.

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The market study report can be found at <u>https://www.etcc-ca.com/reports/behind-</u> <u>meter-battery-market-study</u>

The field study report can be found at <u>https://www.etcc-</u> <u>ca.com/reports/commercial-behind-meter-battery-energy-storage-system-mv-study</u>