

What's Driving Adoption of BTM Storage in CA?

Taking a Close Look at Drivers, Barriers, and Customer Decision Making

ITRON'S INVOLVEMENT WITH BTM STORAGE

California's Self-Generation Incentive Program

Impact Evaluation



Cost-Effectiveness



Market Characterization

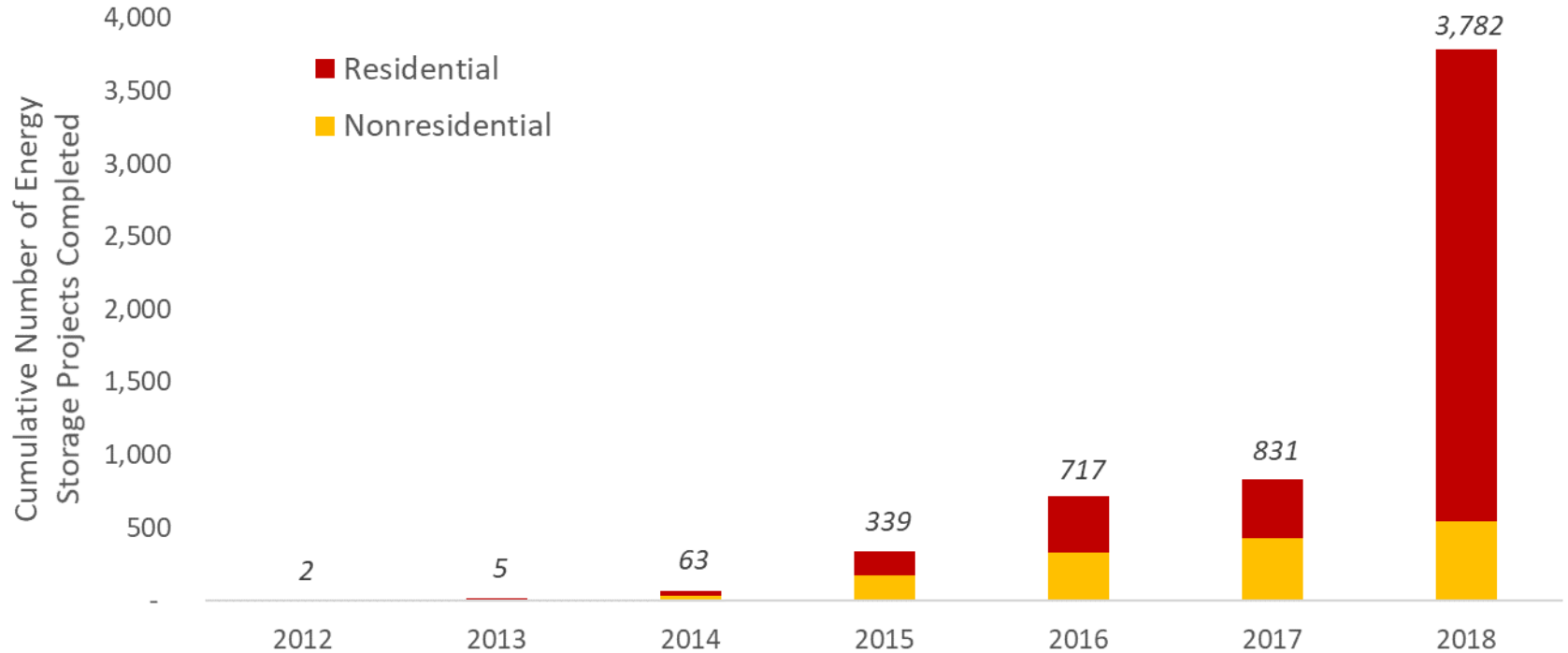


Spring Cleaning: Organizing the Benefits of the BTM Energy Storage Closet – *Brian McAuley, Itron*. IEPEC 2019.

Realizing the Full Capacity of Energy Storage Data: Critical Steps in Evaluating Behind-the-Meter Battery Data – *Mike Heng, Itron*. IEPEC 2019.

BTM ENERGY STORAGE IN CALIFORNIA

Rebated by the Self-Generation Incentive Program



RESIDENTIAL CUSTOMER DEMOGRAPHICS

Web survey, n=765

- » 79% of storage customers reported income greater than \$100,000
- » 74% reported environmental benefits of storage were very important in decision to purchase storage
- » 45% of respondents reported being the first or among the first to try a new product (early adopters)
- » 82% of respondents have a college degree or higher



RESIDENTIAL STORAGE DRIVERS

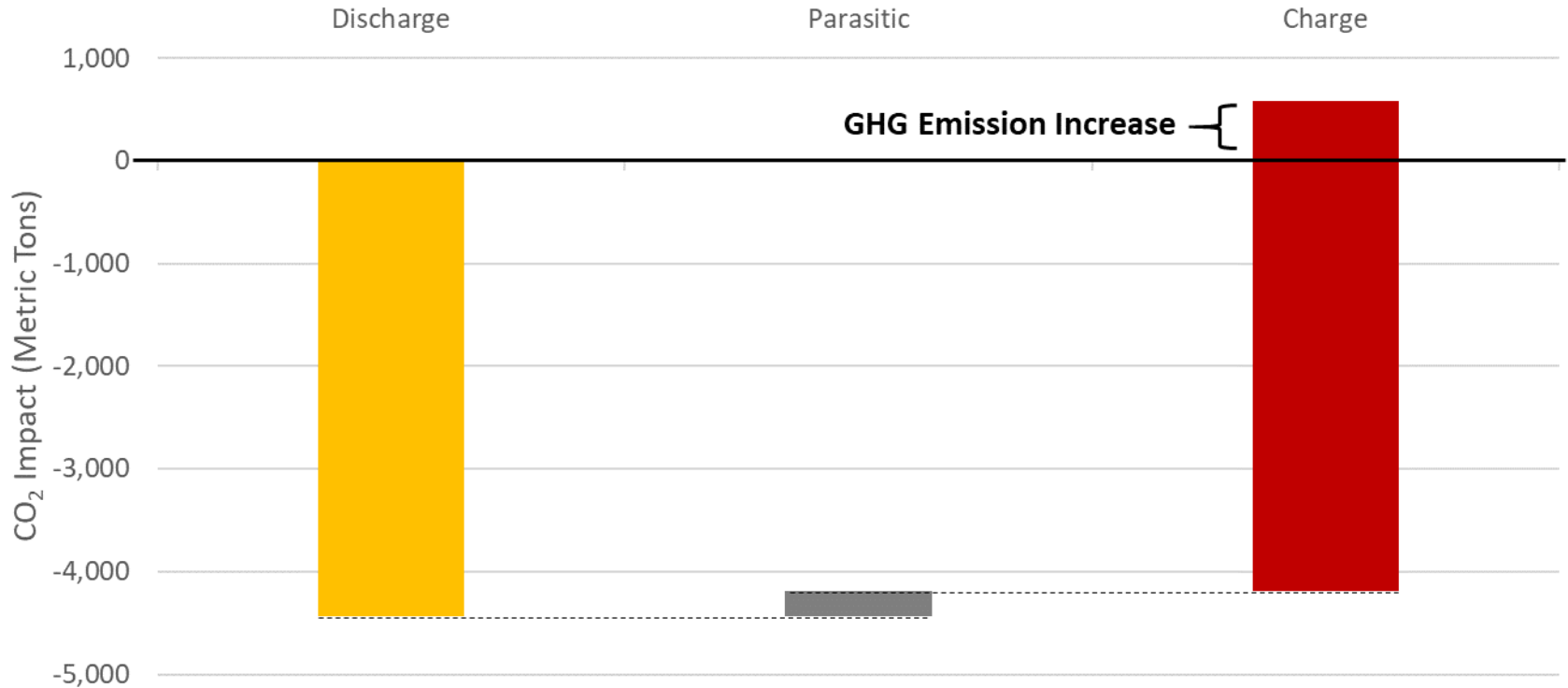
Web survey, n=765

- » To provide resilient backup power for emergencies or outages (45%)
- » To save money on electric bill (31%)
- » For environmental reasons (19%)
- » To become less grid dependent (17%)
- » To respond to time-of-use retail rate price signals (10%)



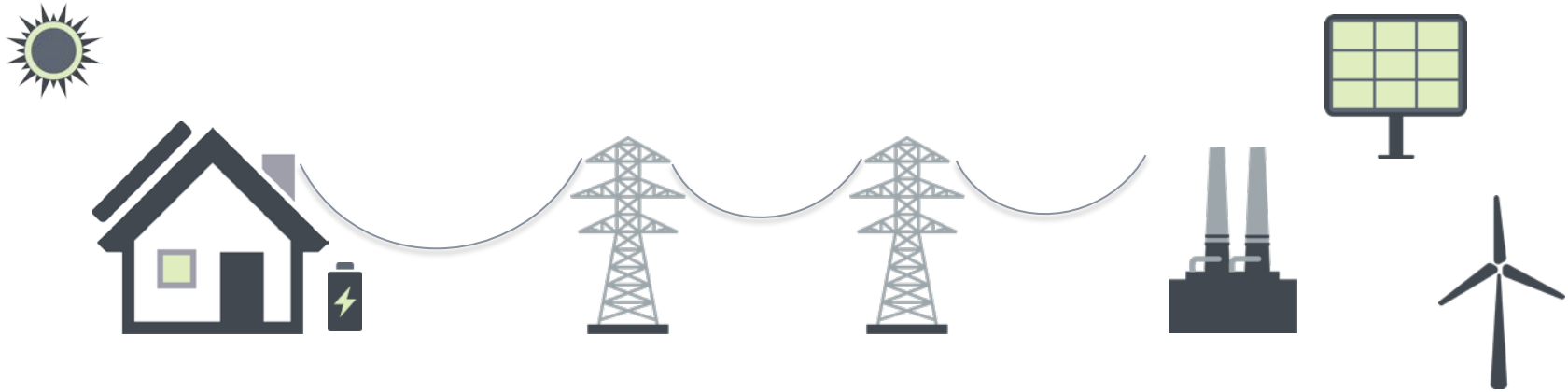
BTM ENERGY STORAGE IN CALIFORNIA

Greenhouse Gas Emissions



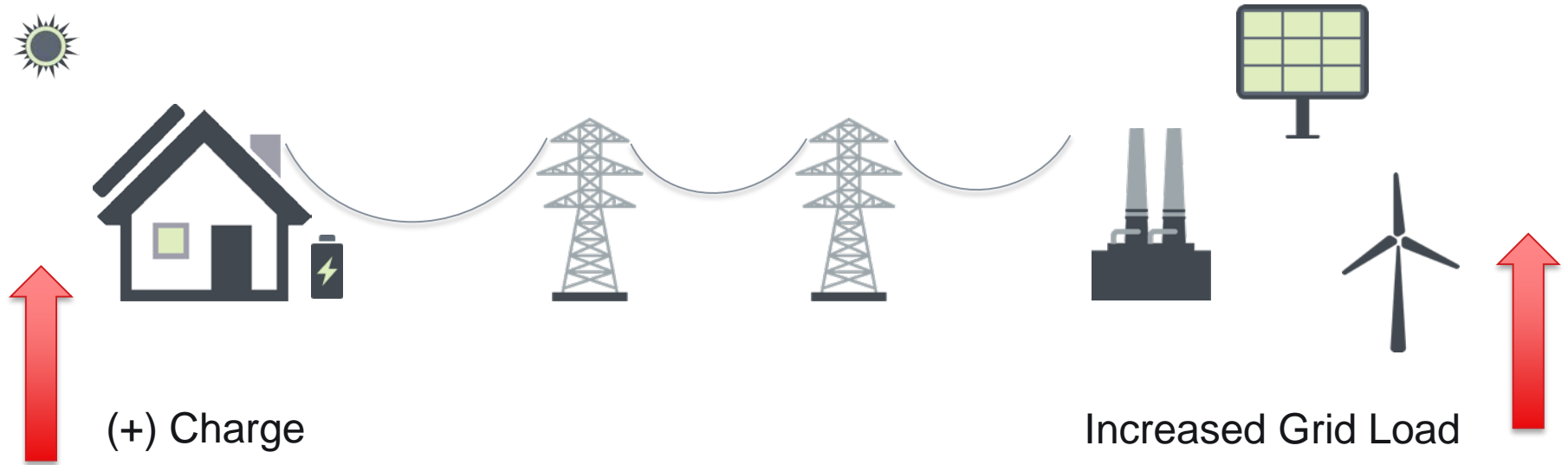
GREENHOUSE GAS IMPACTS

The Importance of the PV Baseline



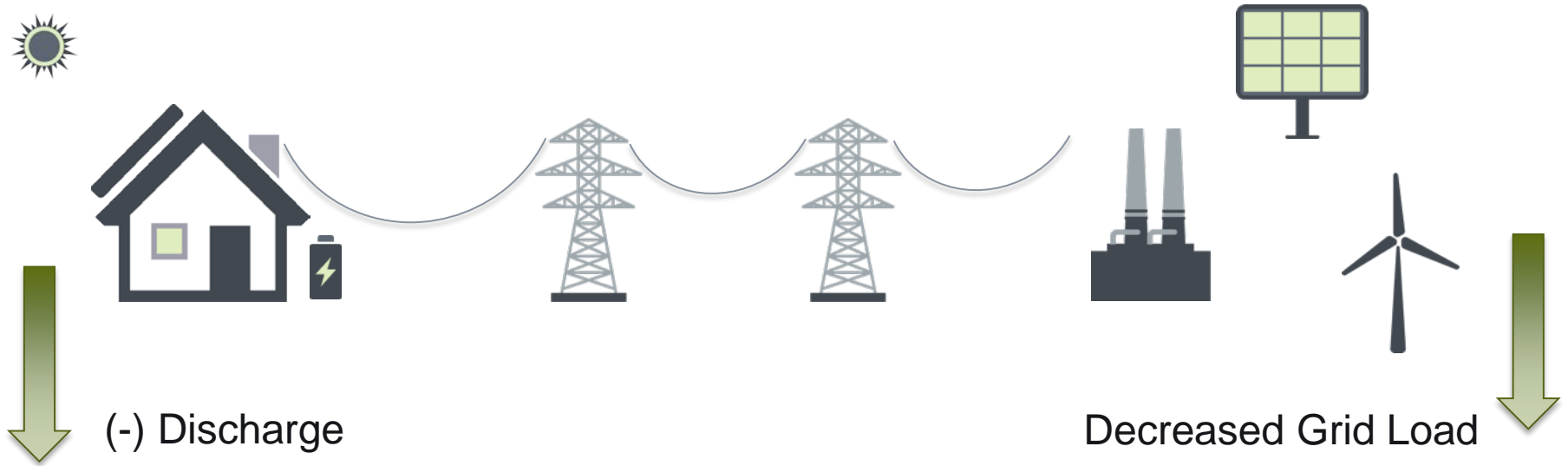
GREENHOUSE GAS ANALYSIS

The Importance of the PV Baseline



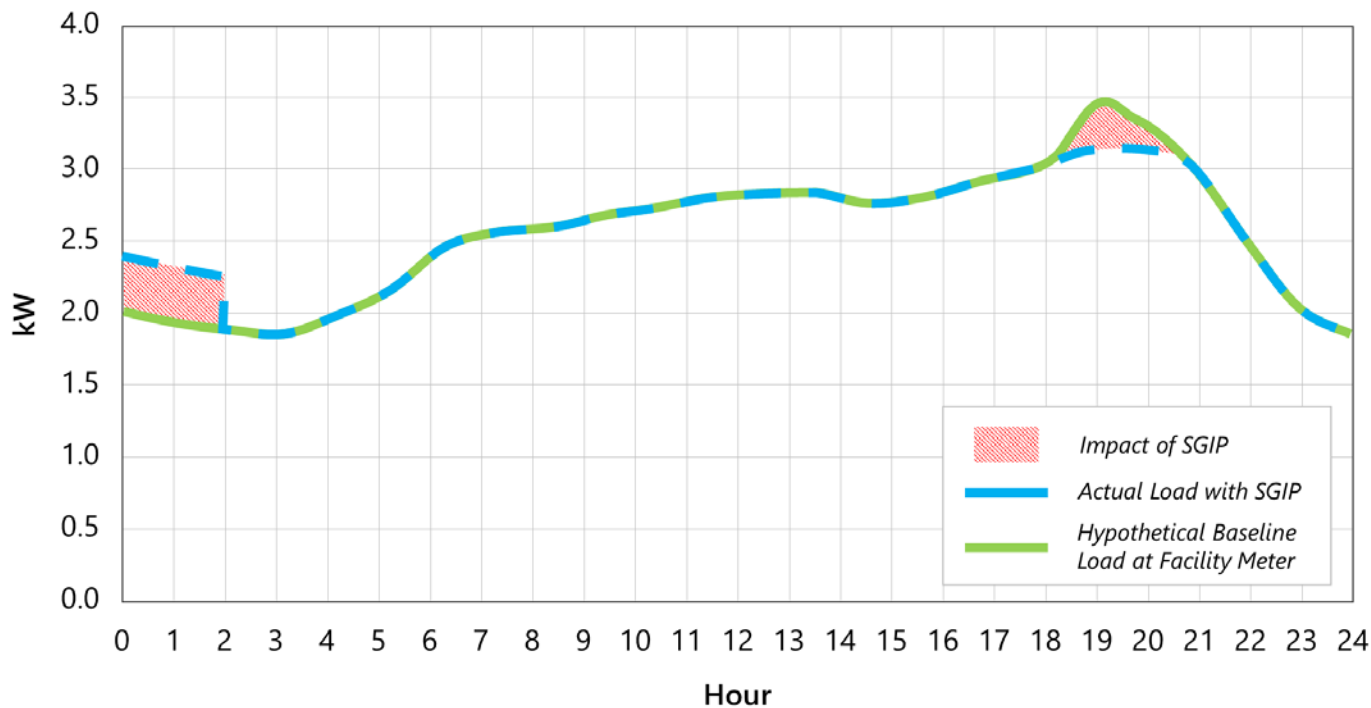
GREENHOUSE GAS ANALYSIS

The Importance of the PV Baseline



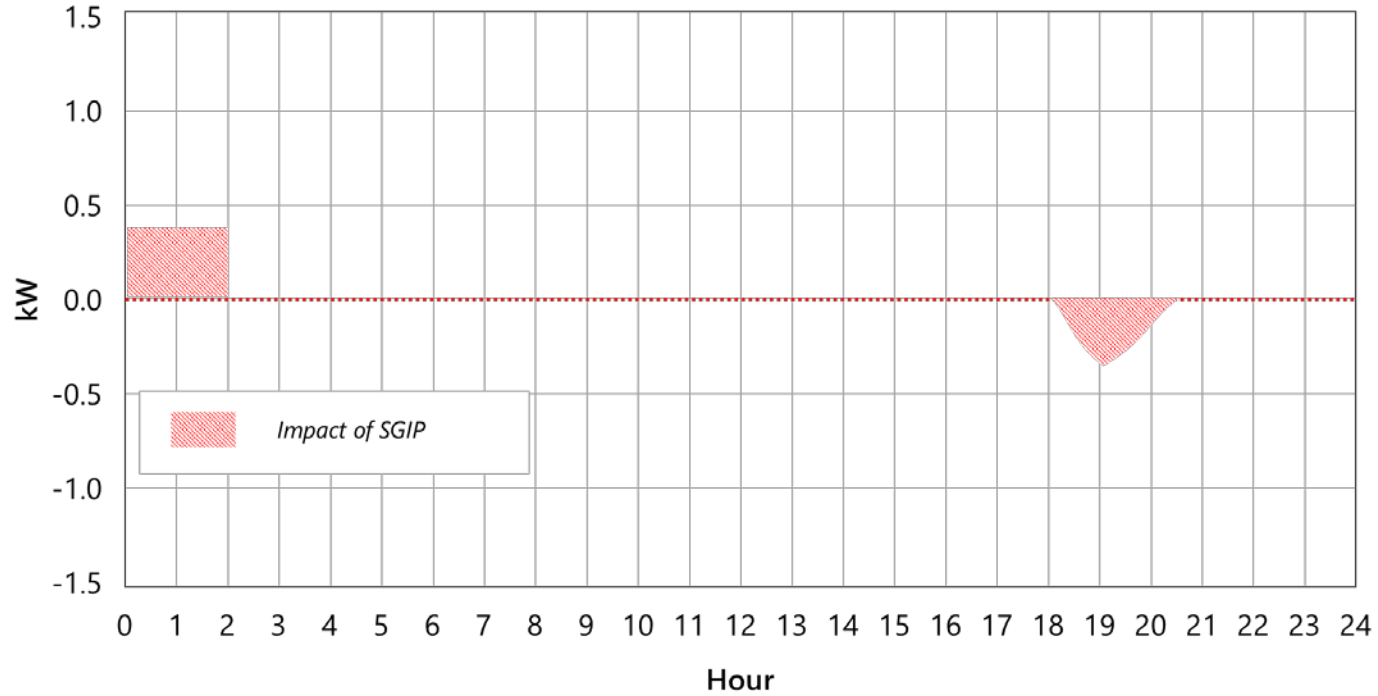
PV BASELINE DISCUSSION

Standalone Storage



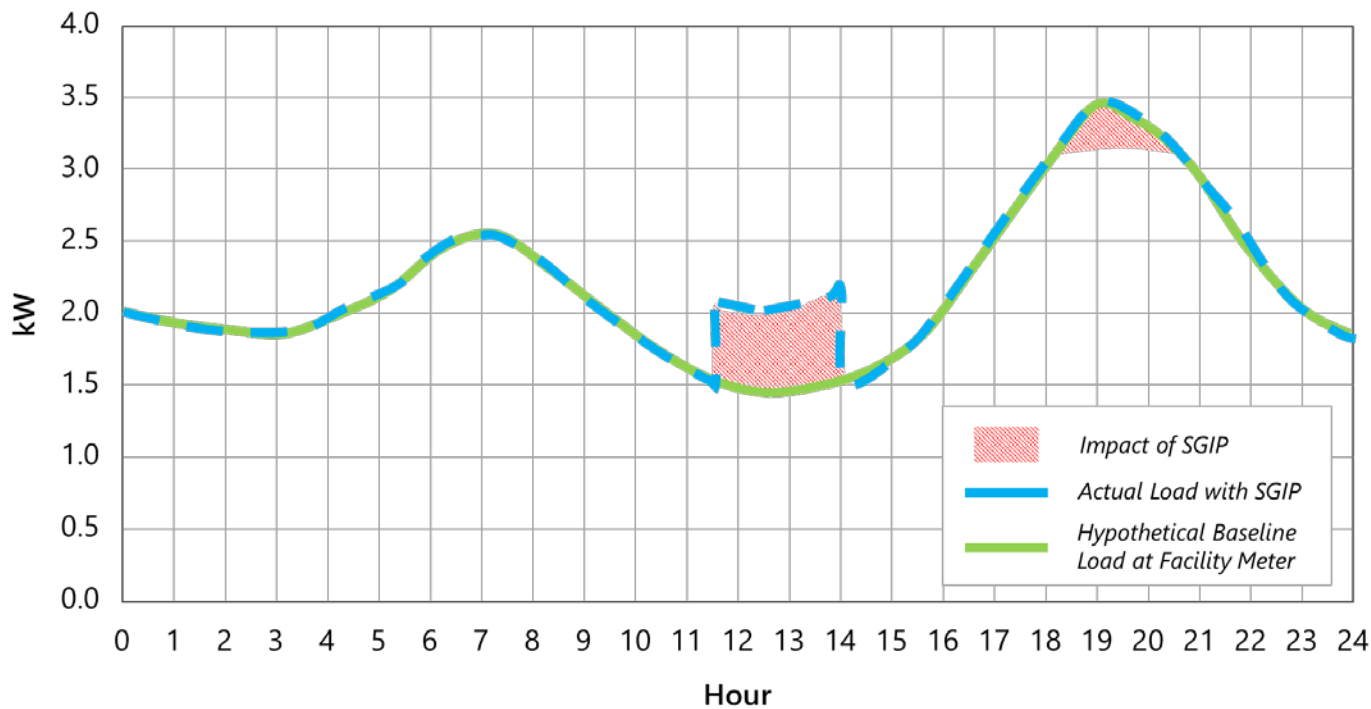
PV BASELINE DISCUSSION

Standalone Storage



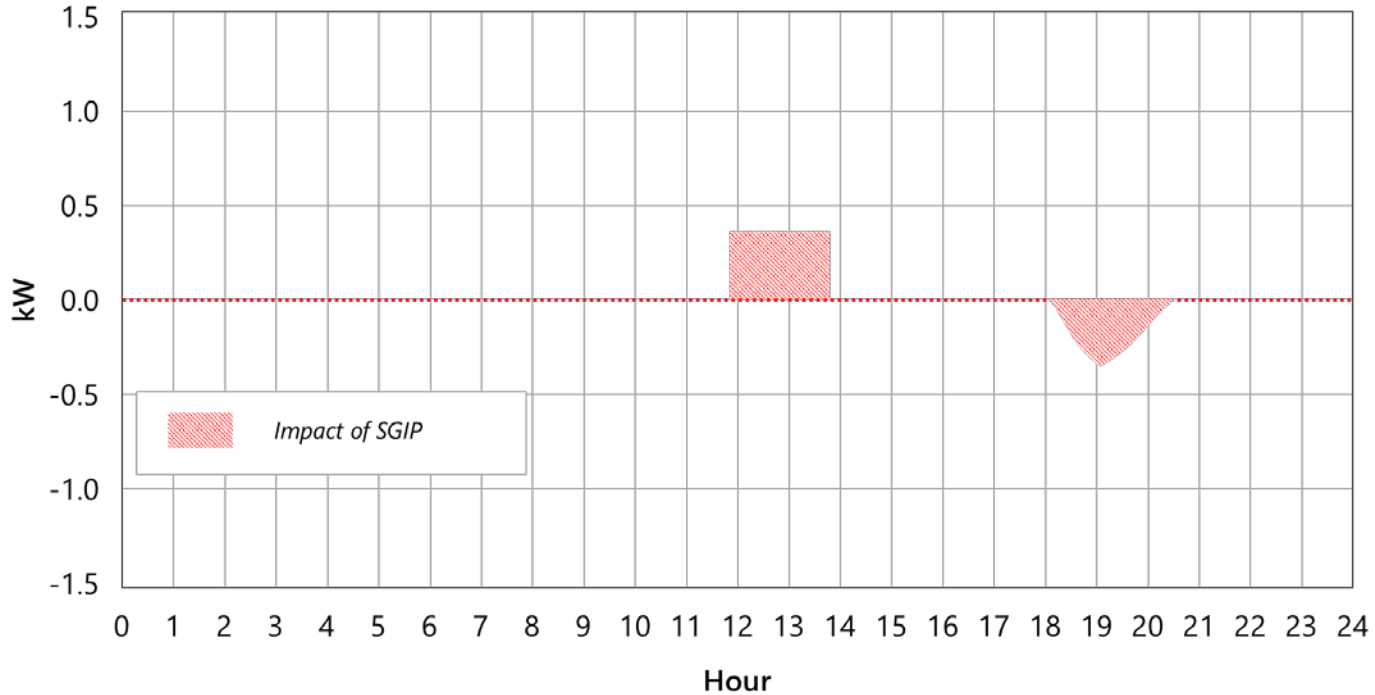
PV BASELINE DISCUSSION

PV Already in Baseline



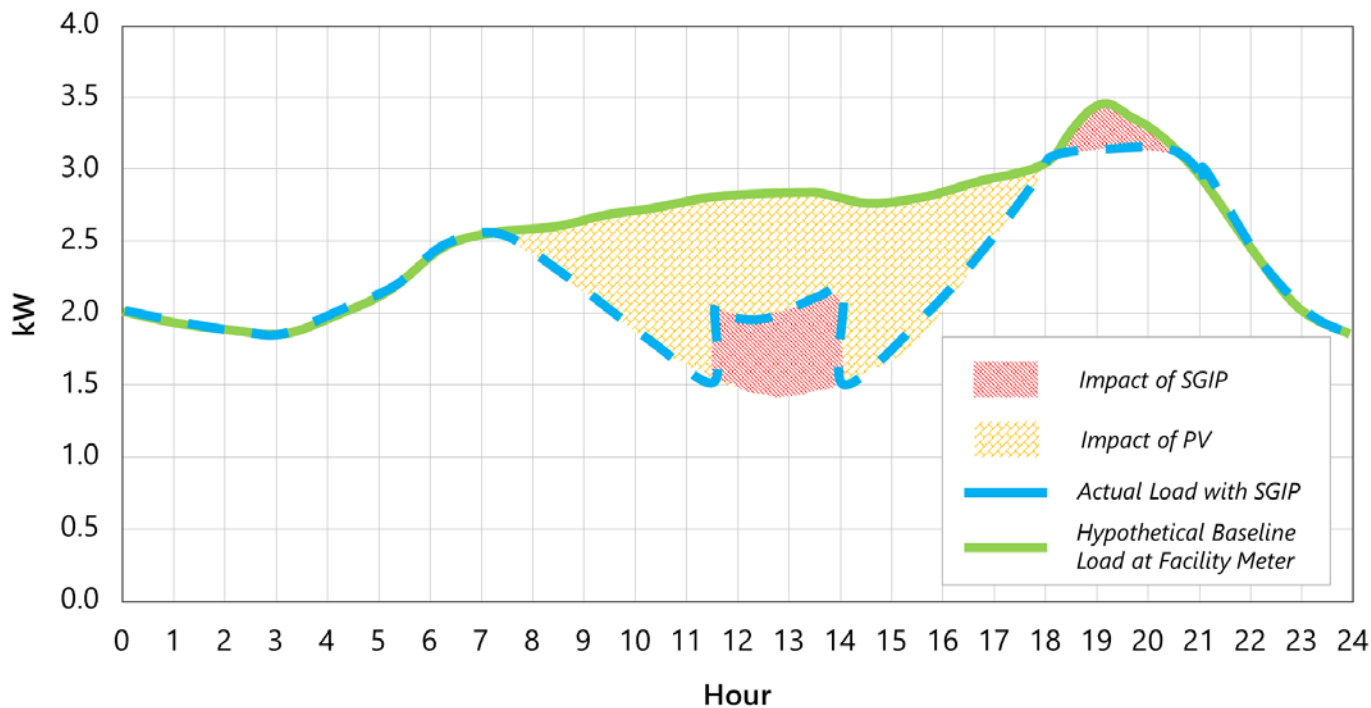
PV BASELINE DISCUSSION

PV Already in Baseline



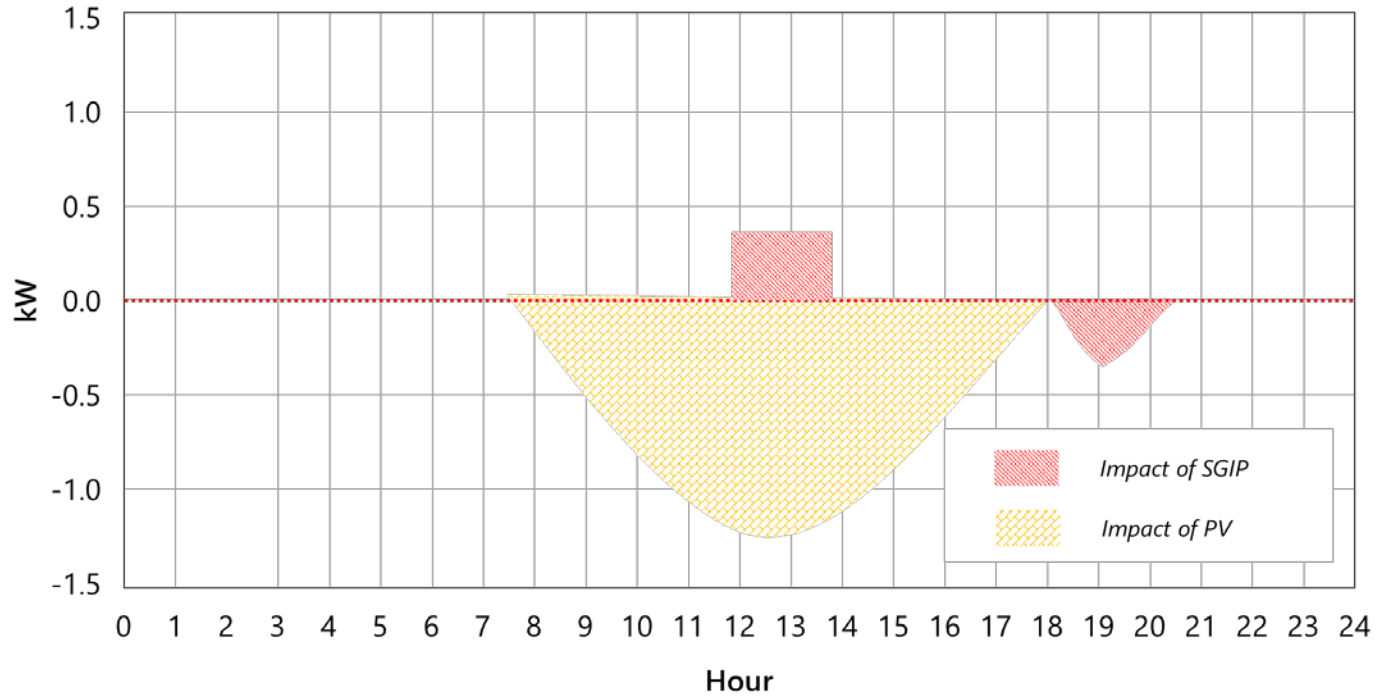
PV BASELINE DISCUSSION

PV not in Baseline



PV BASELINE DISCUSSION

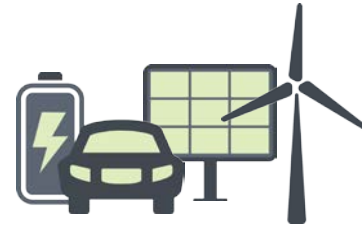
PV not in Baseline



RESIDENTIAL STORAGE AND SOLAR PV

Web survey, n=765

- » Most (99%) residential energy storage systems are installed with solar PV
- » 52% of surveyed residential customers purchased solar and storage at the same time
- » 44% purchased solar first, then decided to install storage
 - Among this group 37% reported that having solar influenced their decision to install storage
- » 3% purchased storage first, then decided to install solar



KEY TAKEAWAYS AND RECOMMENDATIONS

- » The key drivers for residential storage adoption are PV self-consumption and outage protection
 - Customers appear driven by the philosophical ideas of self-consumption rather than the economic implications of reducing reliance on the grid.
- » Increasingly, BTM battery storage projects are being installed on customer locations that are co-located with PV systems.
 - Defining the appropriate PV installation baseline is critical for future impact evaluation studies.

KEY TAKEAWAYS AND RECOMMENDATIONS

- » The GHG reduction potential from standalone energy storage charge/discharge is orders of magnitude lower than the energy and environmental savings potential from solar PV generation.
 - Energy storage programs, like the SGIP, should encourage the adoption of energy storage technologies that enable interconnection of solar PV systems that otherwise would not have been installed.

A person stands on a dark, rocky mountain peak in the foreground, looking out over a vast, hazy mountain range. The scene is bathed in the warm, golden light of a low sun, creating a silhouette effect on the person and the mountains. The sky is a clear, pale blue, and the overall atmosphere is serene and expansive.

OUR VISION

The way we manage energy and water will define this century. By applying knowledge and technology, together we can **create a more resourceful world.**

William Marin
Principal Consultant
William.Marin@itron.com

THANK YOU

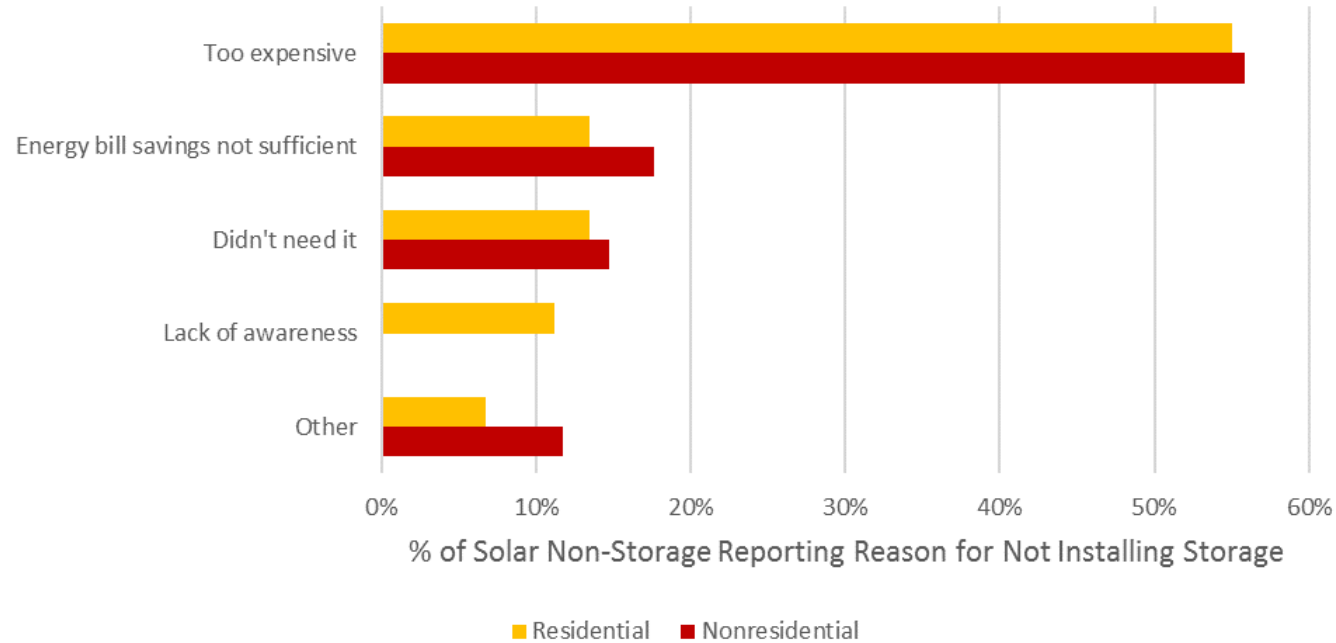


www.itron.com

Appendix

SOLAR NON-STORAGE PARTICIPANT PERSPECTIVE

Web survey, n=157



RESIDENTIAL CUSTOMER THOUGHTS ON COST

- » *“Had the [SGIP] rebate not been offered I would not have purchased it.”*
- » *“Although it doesn’t quite make sense on a pure cost analysis basis, it makes sense to me in our efforts to help society and the planet.”*
- » *“Although it was very expensive, I figure it may pay for itself in reduced line fees and help to use more of my stored solar instead of wasting it.”*
- » On average, surveyed solar non-storage participants expressed a willingness to pay **\$3,800** for an energy storage system that supplies them with power for several days during an electrical outage