sunrun

Florida

NEM is working for the Sunshine State

September 2020

Florida Solar + Storage

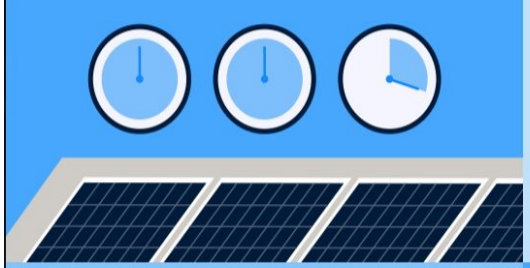
sunrun

The national leader in solar, storage, & home energy management.

Leading industry since 2007

22 states + DC & Puerto Rico

More than a quarter million customers nationwide



On average, every
2.3 minutes
a new system is installed

Sunrun customers have saved over
$300 million
on electricity bills

And produced
5 billion
kWh of clean energy

More than
5,000

Brightbox home batteries are providing back up power during outages.

The solar installer is the fastest growing job in America.

Sunrun alone has created more than
4,000
jobs & thousands more through our partners.

Sunrun solar offerings to Florida families

Just announced entry into select areas of FP&L after piloting (Sept 9, 2020)

COVID-19 Impacts on the U.S. Solar Industry

Due to COVID-19, the U.S. will install just 3 gigawatts (GW) of solar capacity in Q2 2020.

↓ 37% less solar capacity installed than pre-COVID forecasts

The deployment losses for Q2 2020 are equivalent to powering 288,000 homes and $3.2 billion in economic investment.

Impact of COVID-19 on 2020 U.S. Solar Deployment

Baseline Forecast

COVID-19 Impact

Covid-19 has damaged Florida's Solar Industry

- 5,617 job losses (down 22%) erasing years of job growth
- Significant decrease in amount of solar installed in Florida
- Loss of an estimated 100+ MW installed in Q2 (21% loss) across the industry.
- Longer installation times due to waits and challenges both with utilities and AHJs

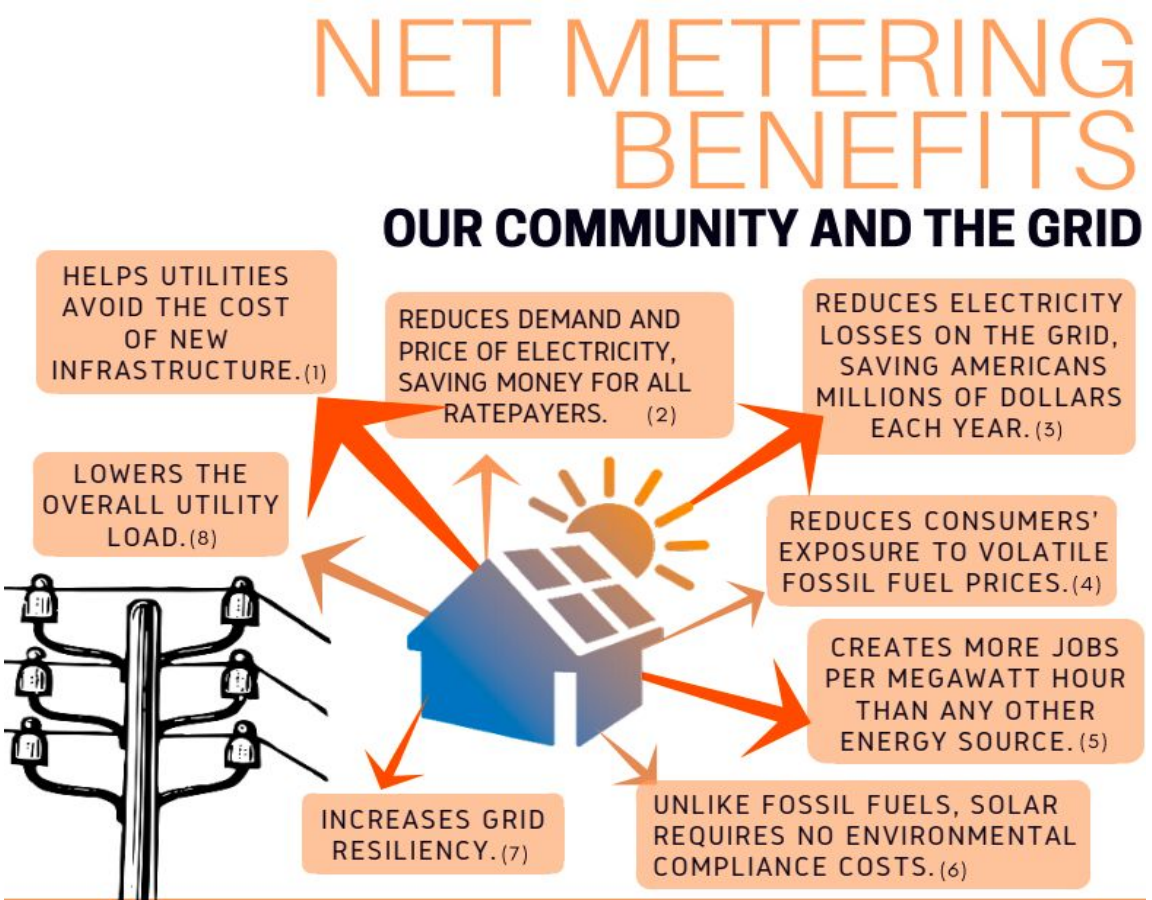
What is Sunrun doing to respond safely?

- Virtual sales instead of in-person visits.
- Working with state and local governments to comply with social distancing rules
- Encourage no-contact and online permitting with local governments.
- Contactless installs including utilizing drone technology for rooftop surveys.

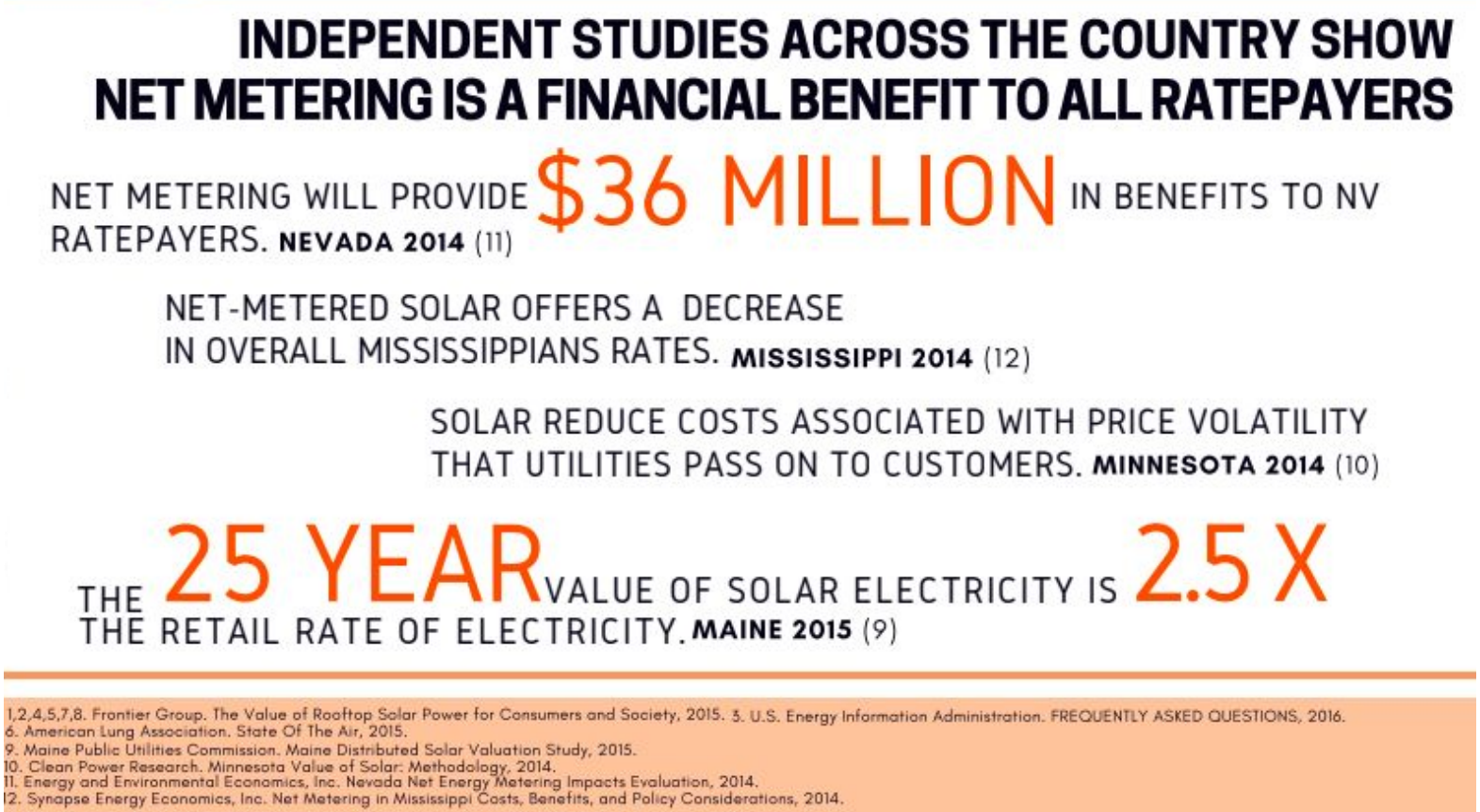
Florida Rooftop Solar Projections from SEIA

Florida Residential	2019	2020	2021	2022	2023	2024	2025
Installations (MWdc)	186	160	164	172	179	198	235
Cumulative (MWdc)	421	581	745	917	1,096	1,294	1,529
FL resi kWh/kWdc/year	1,421	1,421	1,421	1,421	1,421	1,421	1,421
Resi PV GWh	598	825	1,058	1,303	1,557	1,838	2,172
FL total IOU Resi Sales (GWh)	75,442	75,442	75,442	75,442	75,442	75,442	75,442
Resi PV % of total resi GWh sales	0.8%	1.1%	1.4%	1.7%	2.1%	2.4%	2.9%

Benefits of Rooftop Solar & NEM



Net Metering is benefiting ALL ratepayers

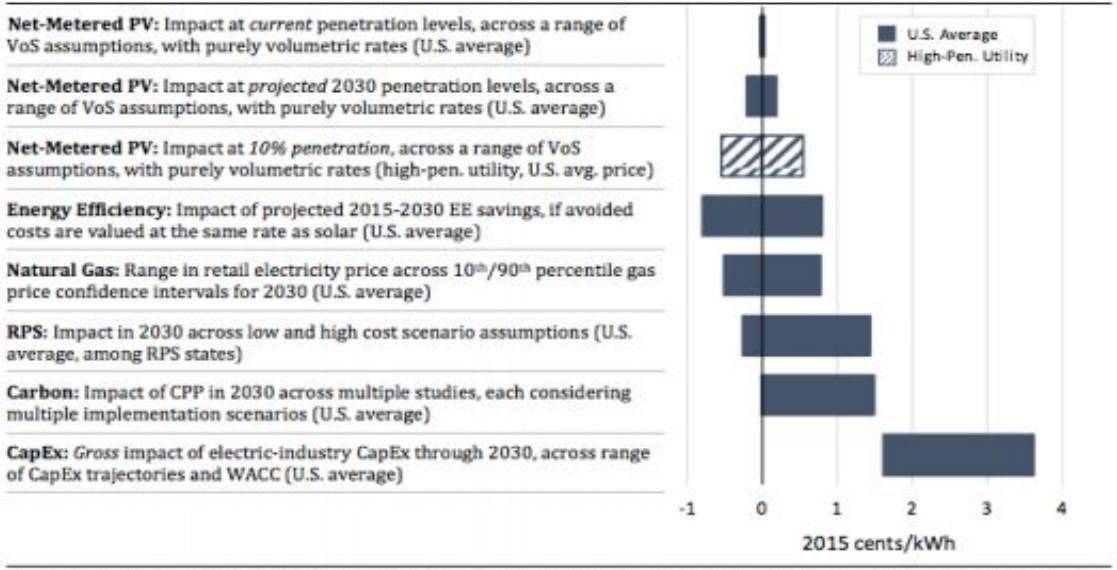


NEM evaluation? Adoption rates are key.

- **National regulatory guidance.** NARUC's Manual on DER Rate Design and Compensation recommends at 10% penetration may justify evaluation and change of rate designs like NEM.
- **Penetration is Key.** The NH Commission relied on NARUC manual & made clear penetration levels are key to understanding when solar rate design should be discussed. NH Commission found there were no material impacts from NEM until 10% penetration was reached.
- **Full examination of costs AND benefits.** Any changes that occured should only be done after a complete examination of costs and benefits.
- **Need enough capacity to complete cost & benefit study.** Iowa Utilities Board found 1% NEM penetration did not provide enough capacity to do a full cost and benefit analysis, and found NEM should continue.

NEM evaluation? Adoption rates are key.

The effects of residential solar on retail electricity prices are significantly smaller than other utility expenditures.



Notes: Current net-metered PV penetration equal to 0.4% of total U.S. retail electricity sales, as of year-end 2015. Projected 2030 net-metered PV penetration is 3.4%, based on Cole et al. (2016). VoS assumptions range from 50% to 150% of average cost-of-service. Please refer to the main body of the report for further details on how the ranges shown here were derived.

Figure 2. Indicative ranges for potential effects on average retail electricity prices

A January 2017 Lawrence Berkeley National Lab (LBNL) report found that future utility capital expenditures on network upgrades and generation are expected to raise consumers' electricity prices far more than distributed solar.

LBNL estimates a 1.6-3.6 cent/kWh increase in U.S. average retail electricity prices in 2030 as a result of future utility capital expenditures, compared to a .2 cent/kWh increase **or decrease** in retail utility prices in 2030 from projected rooftop solar levels.

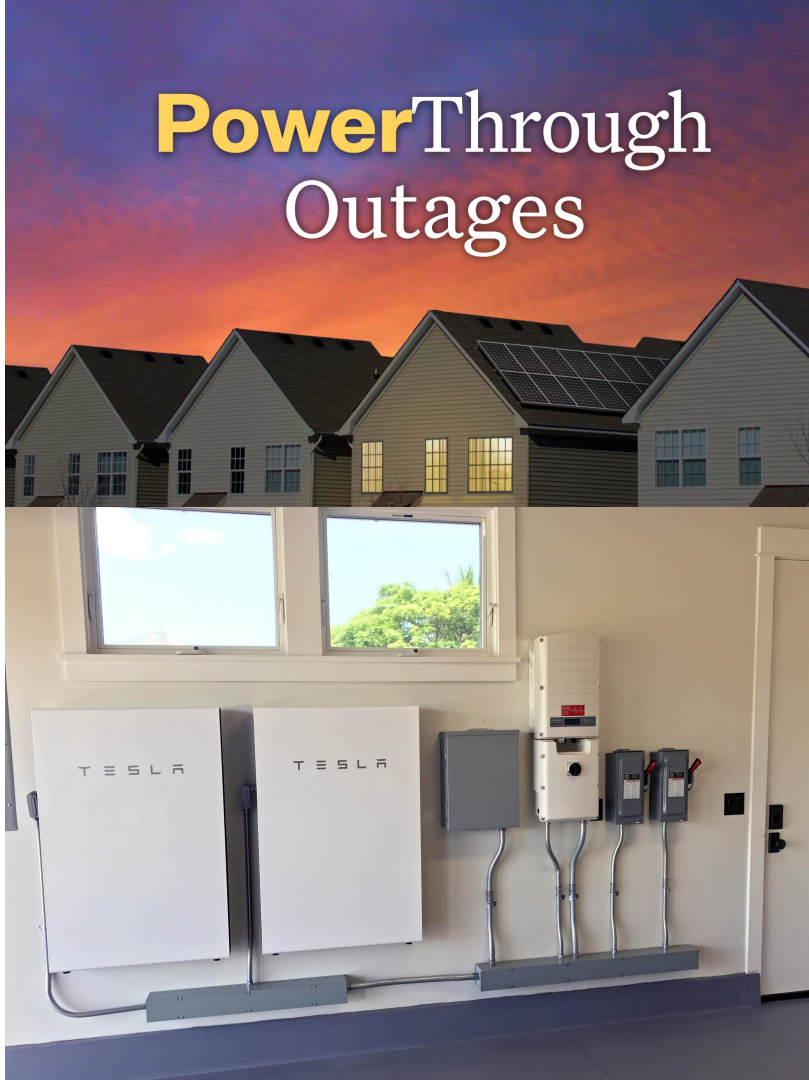
Once Solar Adoption Rates hit Threshold: Cost *and* Benefit Analysis of Solar Models

Act 62 in South Carolina can serve as one model: Legislatively directed, passed after years of stakeholder engagement, lays out critical factors:

1. Aggregate impact of customer-generators on the electrical utility's long-run marginal costs of generation, T, & D
2. Cost of service implications of customer-generators on other customers within the same class, including an eval of whether customer-generators provide adequate rate of return to the electrical utility compared to otherwise applicable rate class when, for analytical purposes only, examined as a separate class within a cost of service study.
3. Value of DER generation according to the methodology approved by the commission; (*Avoided Energy*, *Energy/Line Loss*, *Avoided Capacity*, *Ancillary Services*, *T&D Capacity*, *Avoided Criteria Pollutants*, *Avoided CO2 Energy Cost*, *Fuel Hedge*, *Utility Integration & Interconnection Costs*, *Utility Admin Costs*, *Environmental Costs*).
4. **Direct and indirect economic impact** of the net energy metering program to the State, and
5. Any other information the commission deems relevant. [*environmental*, *resiliency*, *etc*]

NEM supports resiliency: Enables battery adoption

- Sunrun installed first Tesla Powerwall in North America in 2016. Expanded to offer battery solutions in all states.
- Powerwall offers solution for whole home backup solutions.
- Deployed **over 10,000** Brightbox solutions nationwide
- Solar+Batteries is an elegant solution to weather related outages, but need NEM as foundation for deployment.



Home batteries accelerate transition to consumer-centered resources.

Power outages are increasing in frequency and home batteries enable backup power for customers.

Distributed home solar and batteries are more nimble and cost effective than continuing to over-invest in bulky centralized infrastructure.

How does Sunrun Brightbox help me power through outages?

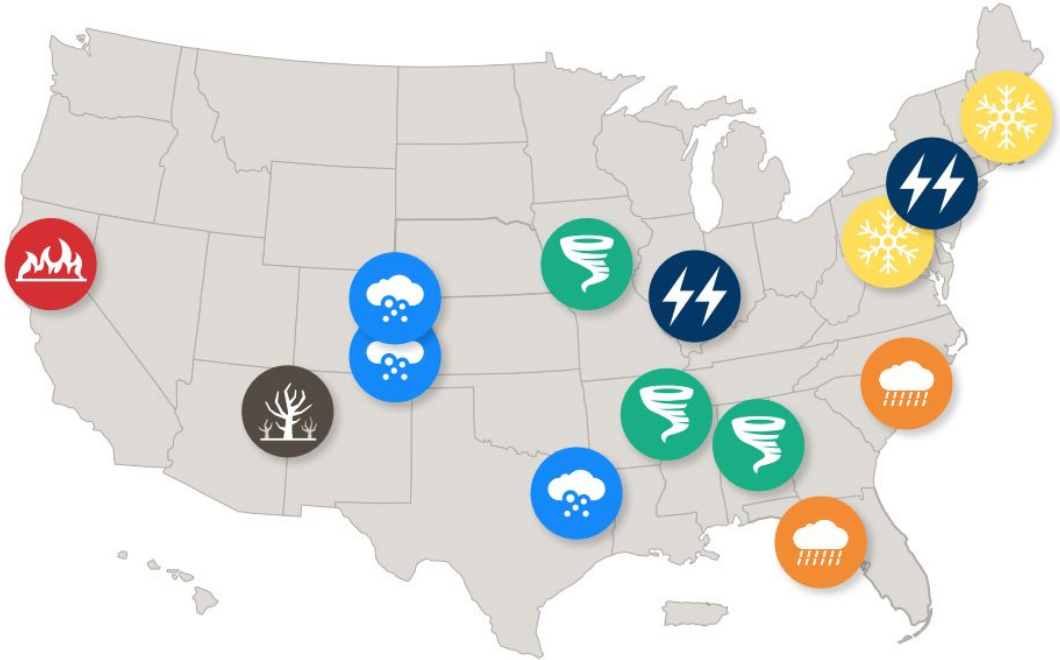
Throughout the day, your solar energy system powers your home and keeps your battery charged. Now, if there is an outage in the night, Brightbox can power the things you care about most for up to **10 hours*** or until the sun comes up again.

Talk to your Sunrun Consultant to learn which rooms and appliances you can back up today.

* Backup time estimates are based on a fully charged battery and typical use of standard appliances, lights, and outlets.

Customers want reliable and resilient energy

Billion-Dollar Extreme Weather Disasters In The US, 2018



Western Wildfires
California Firestorm, Summer-Fall

Plains Droughts
Southwest/Southern, 2018

Hail Storms
Rockies & Plains, August 6-7

Tornadoes & Severe Weather
Central & Eastern, July 19-22
Southern & Eastern, April 13-16
Southeastern, March 18-21

Severe Weather
Central & Eastern, May 13-15
Central Northeastern, May 1-4

Hurricane
Hurricane Florence, September 13-16
Hurricane Michael, October 10-11

Winter Storm
Northeast, March 1-3
Northeastern & Eastern, January 3-5

This map denotes the approximate location for each of the **14 separate billion dollar weather and climate disasters** that impacted the United States during 2018.

Sunrun's Brightbox solar and battery product serves a range of utility and customer needs

Sunrun is delivering solar + batteries to thousands of residential customers with Brightbox. This turnkey solution can be aggregated as a grid resource.

Back-Up Power
(Island during Outage)

Grid Services
(Capacity, Voltage Active/Passive)

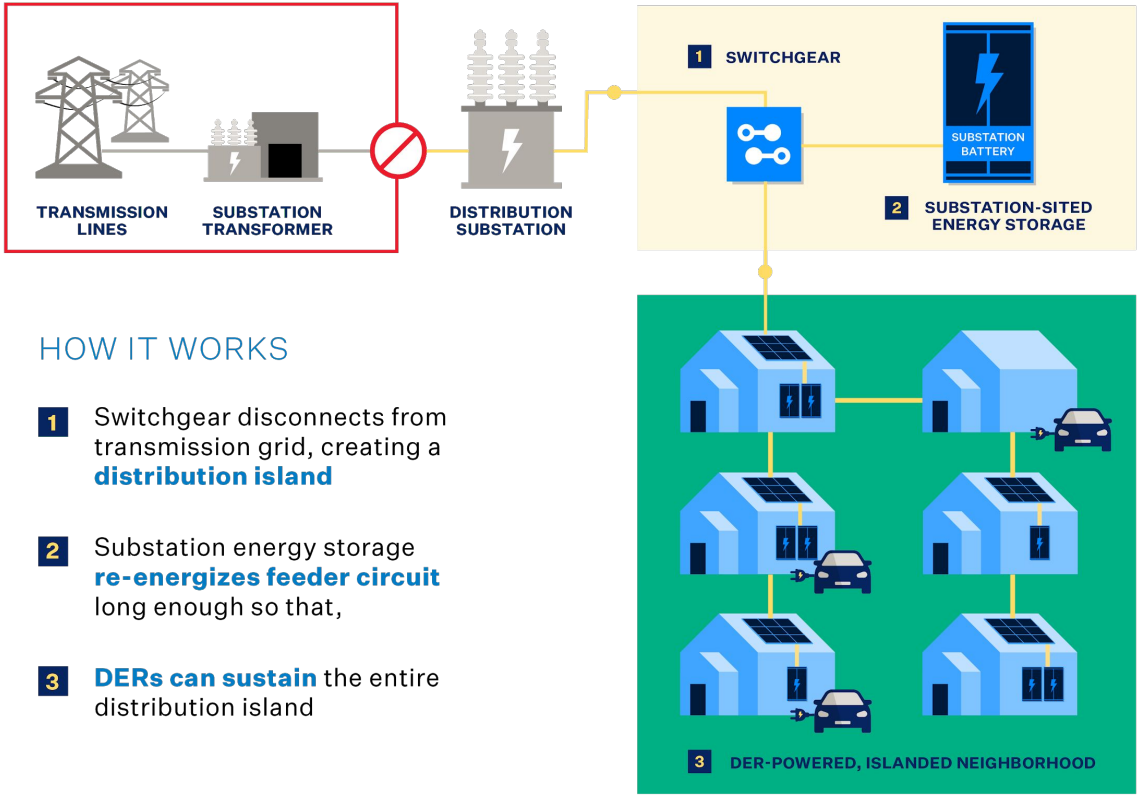
Bill Management
(TOU, CPP, Hourly)

Energy Self Supply

Brightbox solves for market and customer needs:

- HI: Backup Power and Solar Self Supply
- CA: Backup Power, TOU Bill Management, Grid Services
- FL: Backup Power
- Puerto Rico: Backup Power, Donated systems on fire stations for 24/7 power, possible future grid service asset

Neighborhood Grid Concept



HOW IT WORKS

1. Switchgear disconnects from transmission grid, creating a **distribution island**
2. Substation energy storage **re-energizes feeder circuit** long enough so that,
3. **DERs can sustain** the entire distribution island

Next Frontier: Clean Neighborhood Grids

Proposed Solution

- Majority of electricity to be from renewables that are **generated and stored on-site**
- Ability to **share power and support the local needs** within the distribution network
- Ability for feeders to **temporarily disconnect at the substation**, and stay powered

Benefits

- **Individuals:** Clean, local, and resilient power
- **Utility:** Continued service to ratepayers even during transmission outages
- **Society:** Increase adoption of rooftop solar and battery storage will reduce carbon emissions, grow the economy, and empower communities

Thank You.

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