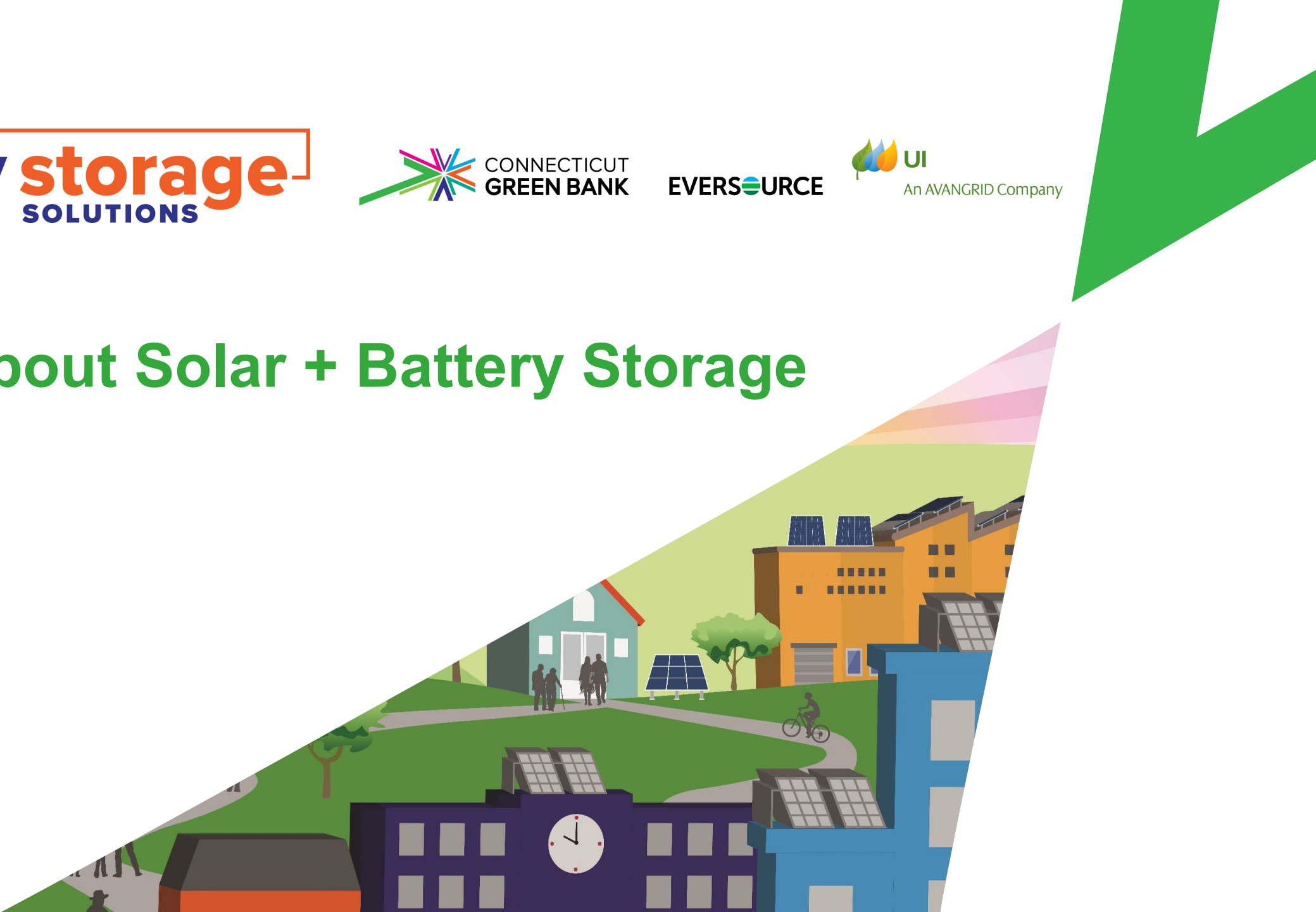




Learn about Solar + Battery Storage

10/10/2023



Agenda



- Batteries 101
- Why Does Connecticut Need Energy Storage?
- How Does Energy Storage Solutions Work?
- Questions



Before we begin...



What are Home Batteries?

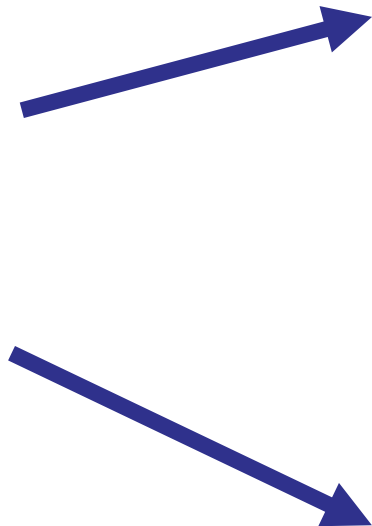


Refrigerator for approximate size comparison



All batteries shown have a capacity of about 12-18 hours of home backup. Additional electrical equipment not shown.

Why Home Batteries?



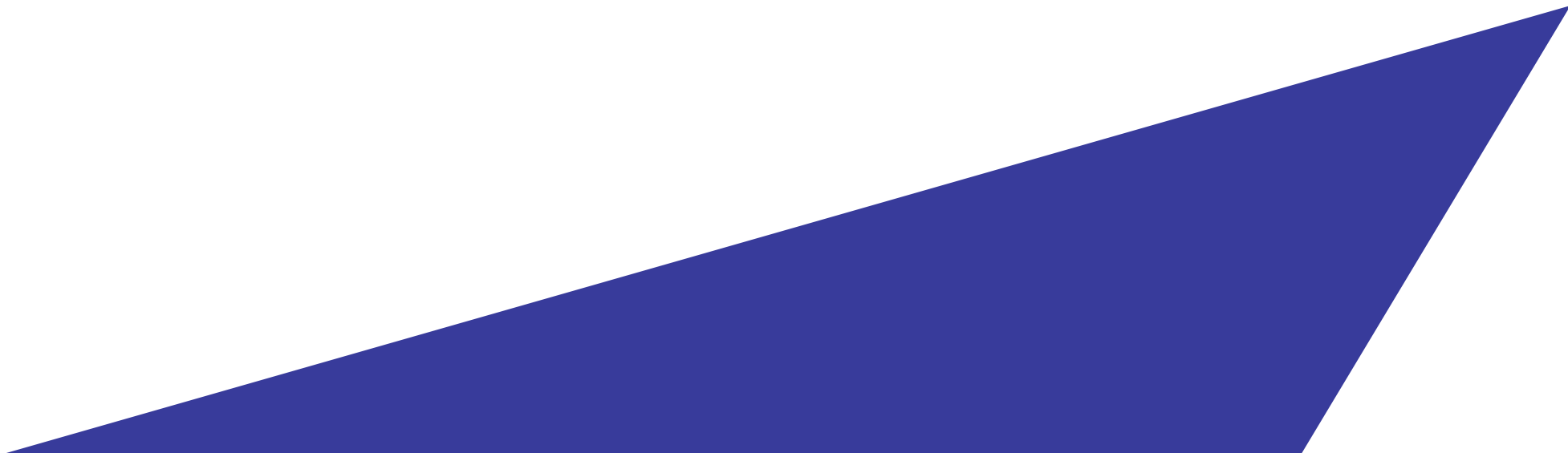
Smooth out peak demand for the grid



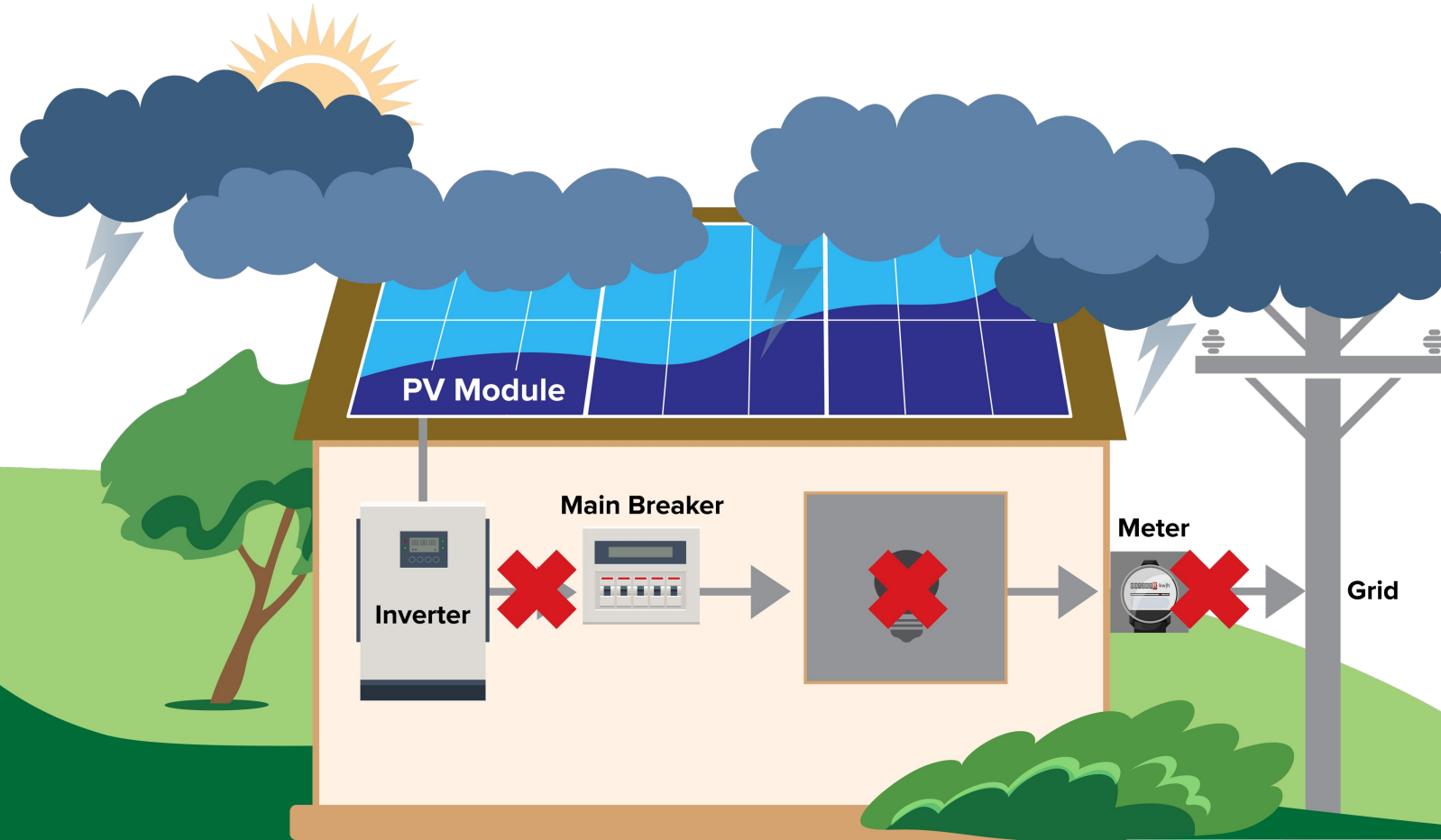
Provide on-site backup power when needed



Batteries 101



Solar Panels Turn off During a Power Outage

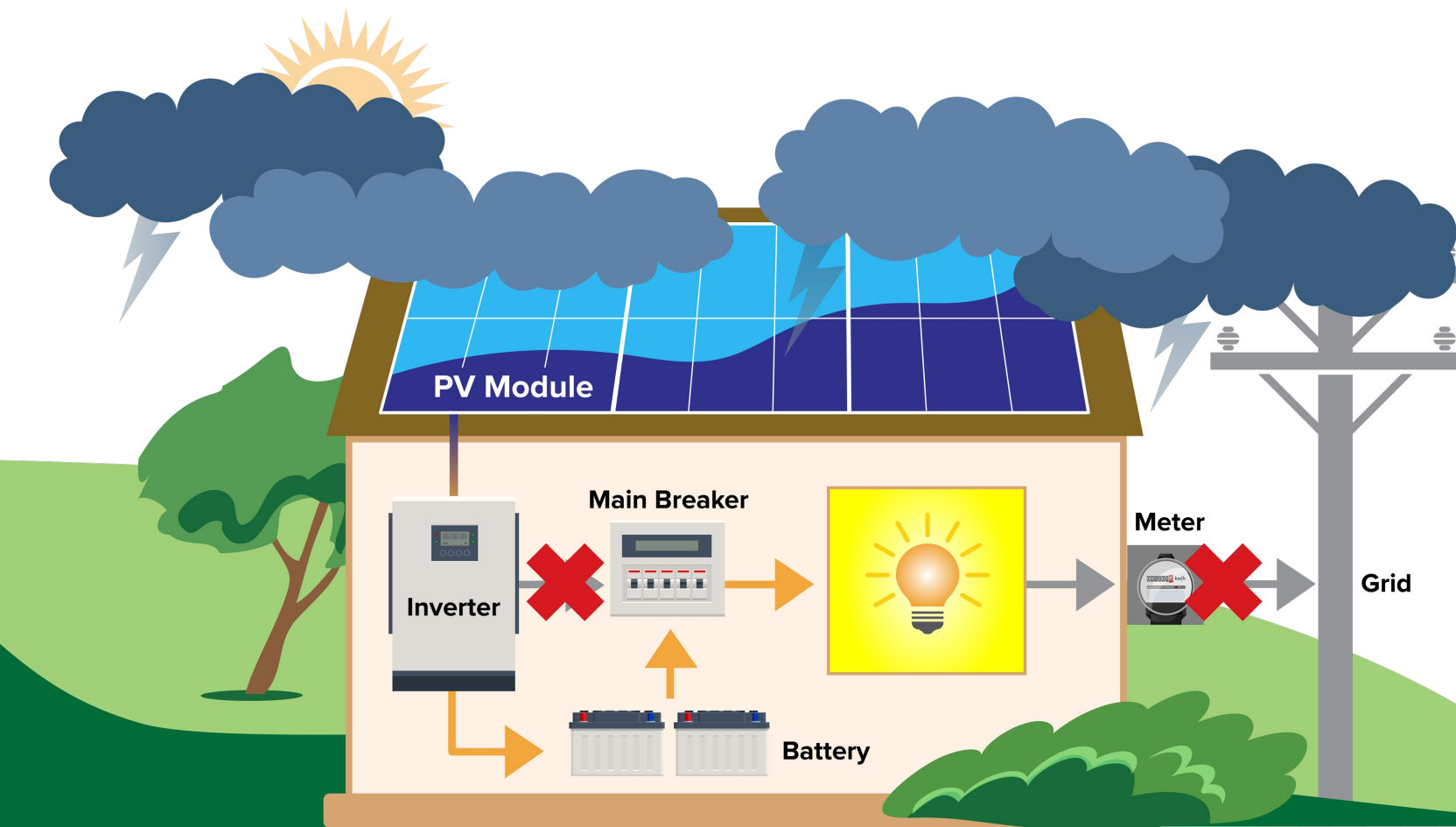


Solar panels are not designed to power your home when the grid goes down! This is for two reasons:

1. It is dangerous for your solar panels to put electricity on the grid when line workers may be fixing power lines.
2. The power output from solar panels isn't steady enough to reliably run everything in your home (clouds, tree shading, etc.)

Solar + Home Batteries Stay Connected

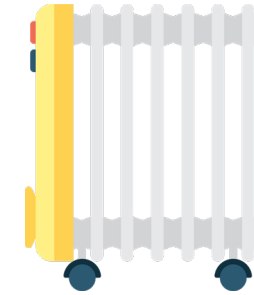
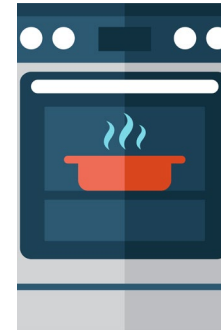
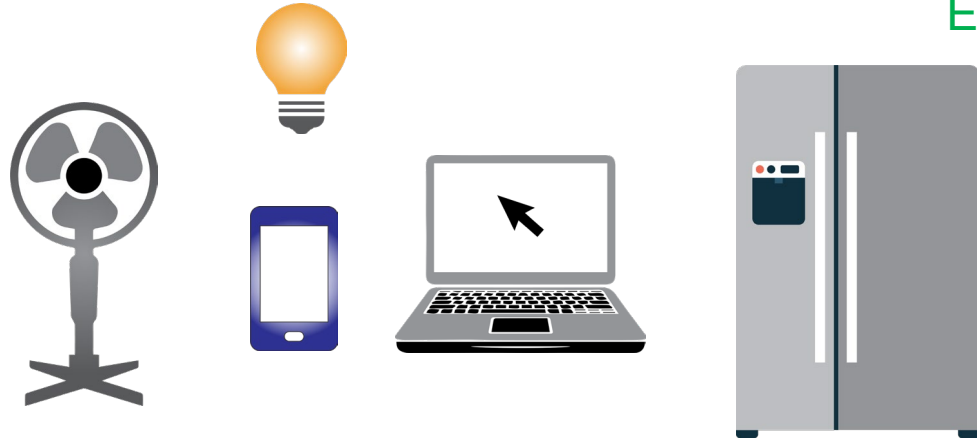
You can charge your home battery using your solar panels, safely disconnect from the grid during a power outage, and run your home on battery power for several hours... and recharge using the sun!



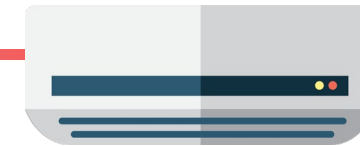
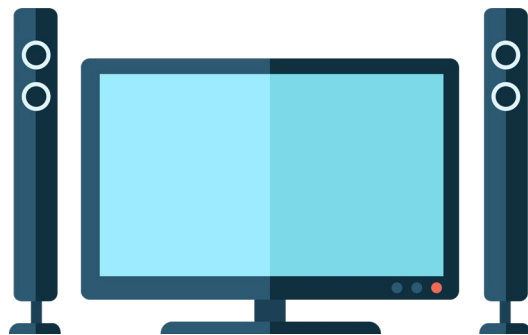
When the grid goes down in a power outage, the solar panels and battery will automatically switch over to backup mode – no action needed from you!

What Can Home Batteries Power?

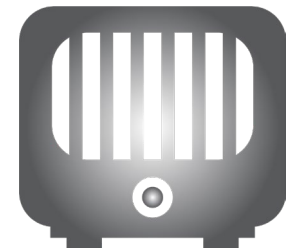
Essentials



Low Demand



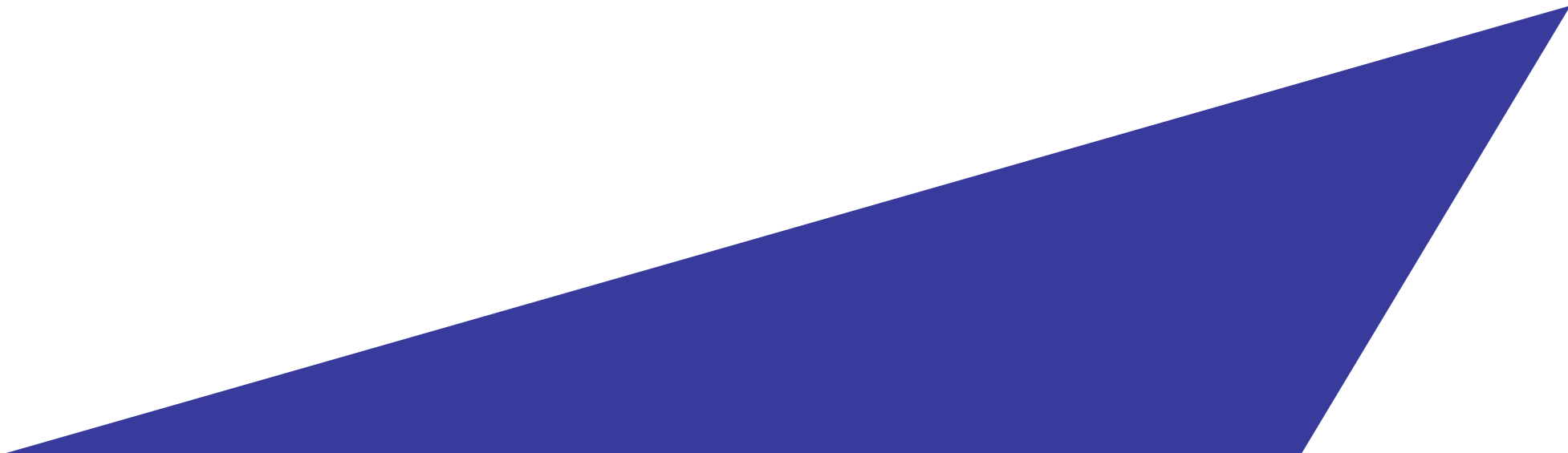
High Demand



Nice to Have

*Assuming 8 kW / 18 kWh

How Will Your Battery Perform in Energy Storage Solutions?



Program Design

- Customer Categories:
 - Residential customer classes: Standard, Underserved, and Low-Income Households
 - Commercial/industrial customer classes: Small, Medium, Large
- Systems installed through this program may receive two incentives:

Program Element	Design Item	Summer	Winter
Upfront Incentive (Passive Dispatch)	Events per Season	All non-holiday weekdays (~60)	N/A
	Months	June, July & August	N/A
	Event Duration	5 Hours	N/A
	Anticipated Dispatch Window	3 PM to 8 PM	N/A
Performance-Based Incentive (Active Dispatch)	Events per Season	30 to 60	1 to 5
	Months	June through September	November through March
	Event Duration	1 - 3 hours	1 - 3 hours
	Anticipated Dispatch Window	9 AM to 9 PM (All Days)	9 AM to 9 PM (All Days)



Average system size:	8 kW / 18 kWh
Cost before incentives:	\$31,500
Upfront Rebate:	\$3,600 to \$7,500
30% Federal Tax Credit:	\$7,200 to \$8,370
10 Years of Performance Incentives:	\$3,750 to \$5,900 (est)

Net Cost of Backup Power: \$9,730 to \$16,950

Talk to an Eligible Contractor to see what you qualify for!

Source: [Energy Storage Solutions residential project data](#) Jan 2022 - June 2023

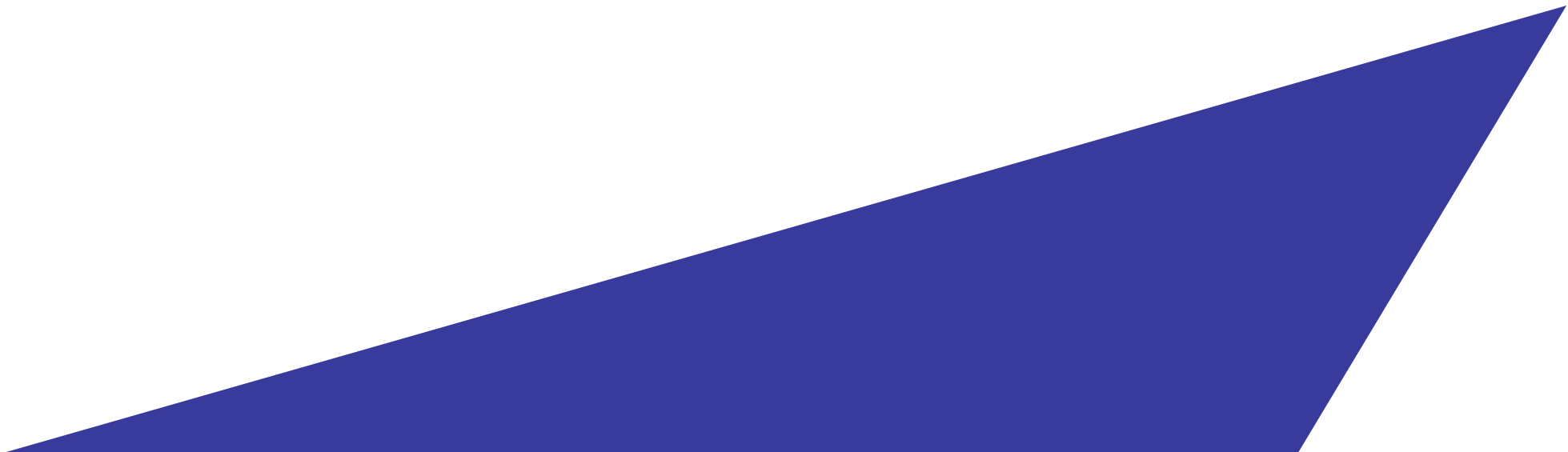
Get Started



Energy Storage Solutions

- www.energystoragect.com
 - Find an Eligible Contractor
 - Learn about the Program
 - Explore program data
- Is your preferred contractor not on the list? Email us at energystorage@ctgreenbank.com

Questions?



Home Batteries vs Generators - Benefits

Low cost

Portable

**Professional
installation for home
backup**



Silent

No fuel or emissions

**Store and use your
solar energy**

On standby



High output

Mid-range price

Plumbed fuel supply

On standby



Incentives available

Home Batteries vs Generators - Drawbacks

Buy / transport fuel

Loud / Dangerous emissions

Requires maintenance

Low output

Not on standby

No incentives



Upfront cost

Professional installation

Interconnection and permitting

Not portable



Fuel supply / cost

Professional installation

Permitting

Requires maintenance

Not portable

No incentives



Year 2 Residential Incentive Levels

Upfront Incentive Levels (Installed 2022-2024)*

Capacity Block (MW)	Standard	Underserved	Low-Income
<i>Participation Level</i>	60%	30%	10%
10	\$200/kWh	\$300/kWh	\$400/kWh
15	\$170/kWh	\$300/kWh	\$400/kWh
25	\$130/kWh	\$300/kWh	\$400/kWh

Performance Incentive Levels (Installed 2022-2024)

Summer, Years 1-5	Winter, Years 1-5	Summer, Years 6-10	Winter, Years 6-10
\$200/kW	\$25/kW	\$115/kW	\$15/kW

*Residential Upfront Incentive Capped at \$7,500

Total Incentives between \$15,000 and \$20,000

What Can Battery Storage Power?

Device	Load (W)	Service from Battery
Refrigerator	400	33 hours 45 minutes
Central air conditioning	3300	4 hours 5 minutes
Central heating/Gas furnace blower fan	600	22 hours 30 minutes
Clothes washer	700	19 hours 17 minutes
Desktop computer with monitor	200	67 hours 30 minutes
EV - Level 1 Charging	1400	9 hours 39 minutes
Fans	100	135 hours 0 minutes
Chest Freezer	500	27 hours 0 minutes
Electric water heater	4500	3 hours 0 minutes
Internet	10	1350 hours 0 minutes
Laptop	100	135 hours 0 minutes
Incandescent Light Bulb	100	135 hours 0 minutes
Standard LED Light	10	1350 hours 0 minutes
Microwave	1300	10 hours 23 minutes

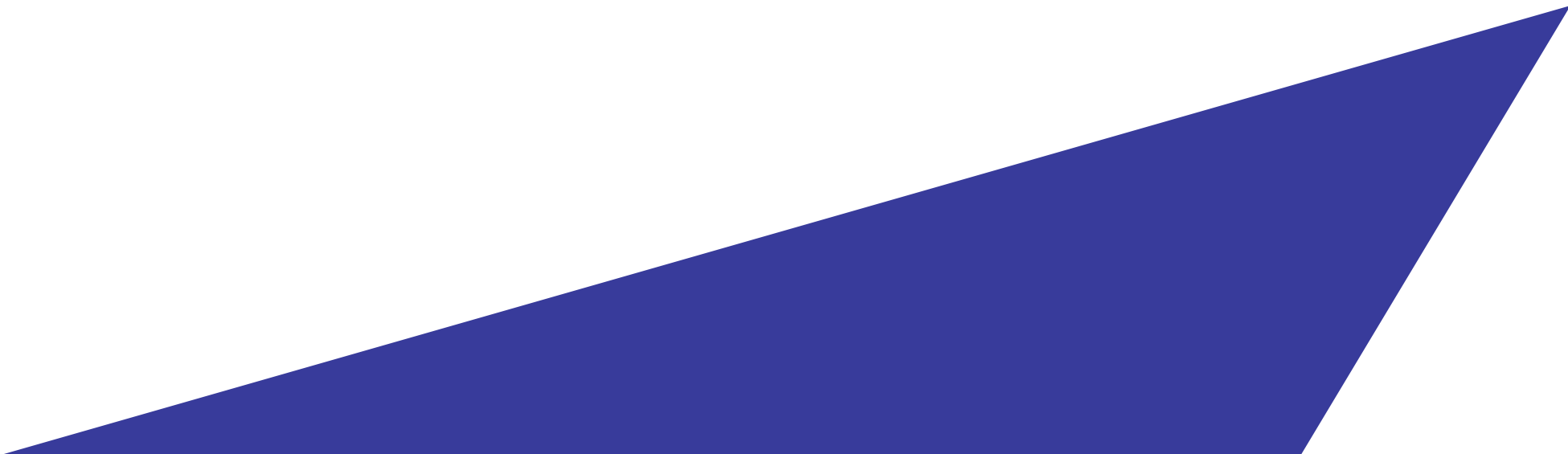
*Assuming one 5 kW, 13.5 kWh battery system. Source: Guidehouse, 2021

What Can Battery Storage Power?

Device	Load (W)	Service from Battery
Window AC	1400	9 hours 39 minutes
Cell phone charger	10	1350 hours 0 minutes
Electric Oven	1800	7 hours 30 minutes
Electric Stove	1800	7 hours 30 minutes
Sump pump	700	19 hours 17 minutes
TV, LCD	100	135 hours 0 minutes
Cable box	100	135 hours 0 minutes
Video game console	100	135 hours 0 minutes
Water pump	700	19 hours 17 minutes
Clothes dryer	3600	3 hours 45 minutes
Ductless minisplit	600	22 hours 30 minutes
Ground source heat pump	2900	4 hours 39 minutes
Heat pump water heater	4500	3 hours 0 minutes
Well pump	700	19 hours 17 minutes

*Assuming one 5 kW, 13.5 kWh battery system. Source: Guidehouse, 2021

Why Does Connecticut Need Energy Storage?



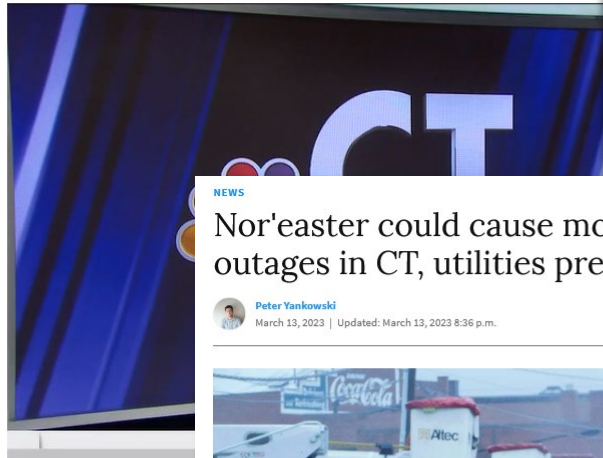
1. Power Outages

Best of 2020: CT keeps losing power when storms strike. But that doesn't have to happen.

CONNECTICUT POWER OUTAGES

Over 185,000 People in Conn. Still Without Power Days After Tropical Storm Isaias

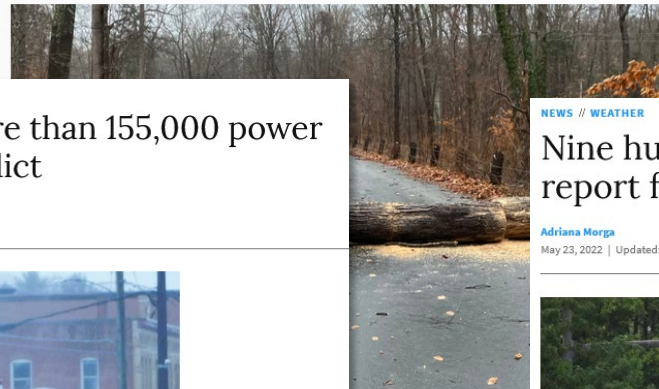
Published August 8, 2020 - Updated on August 8, 2020 at 11:30 pm



Eversource said on Saturday the

LATEST HEADLINES

CT storm brings more than 100,000 power outages; Eversource says restoration could take days



Sign up for email newsletters

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by Jan Ellen Spiegel

December 30, 2020 @ 12:03 am



NEWS

Nor'easter could cause more than 155,000 power outages in CT, utilities predict



Peter Yankowski

March 13, 2023 | Updated: March 13, 2023 8:36 p.m.



A prolonged nor'easter with strong winds that could last days is expected to cause more than 125,000 power outages in Connecticut, Eversource says.

Jack Sheedy/Hearst Connecticut Media

NEWS // WEATHER

Nine hurricanes expected in the U.S. this season, report forecasts

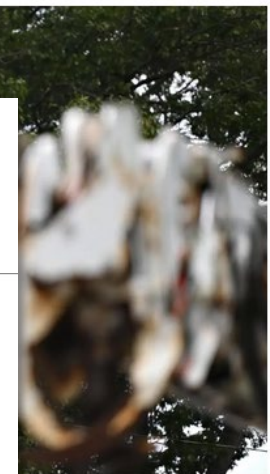
Adriana Morga

May 23, 2022 | Updated: May 26, 2022 4:07 p.m.



A pedestrian crosses the street with an umbrella as Tropical Storm Henri hits Stamford, Conn. Sunday, Aug. 22, 2021. Henri was downgraded from a hurricane to a tropical storm as the storm took a turn eastward before hitting land.

Tyler Sizemore/Hearst Connecticut Media

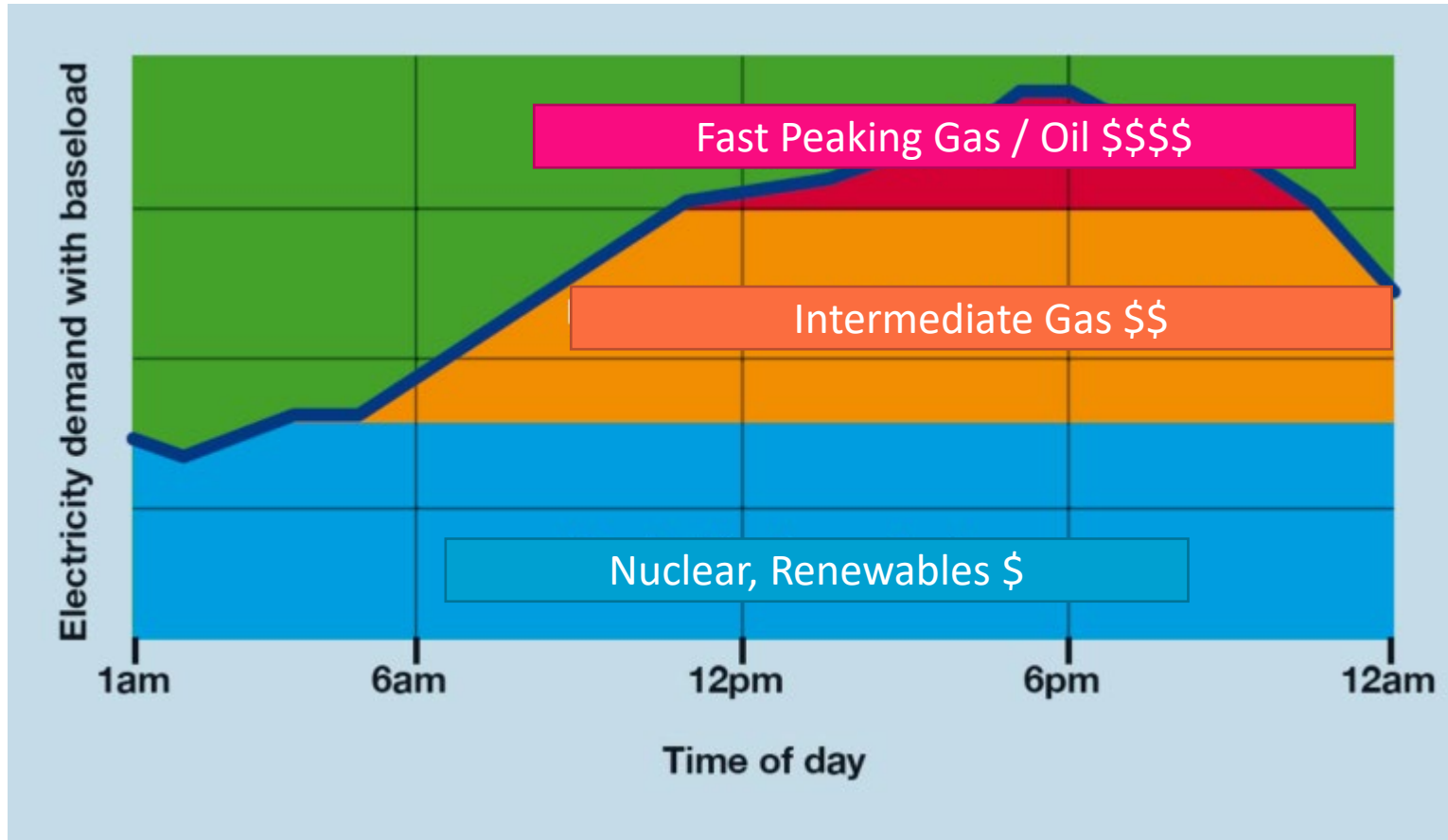


g Main Street in Rocky Hill two s of thousands of Connecticut

2. Electrification Demands Grid Services



2. Rising Costs and Emissions

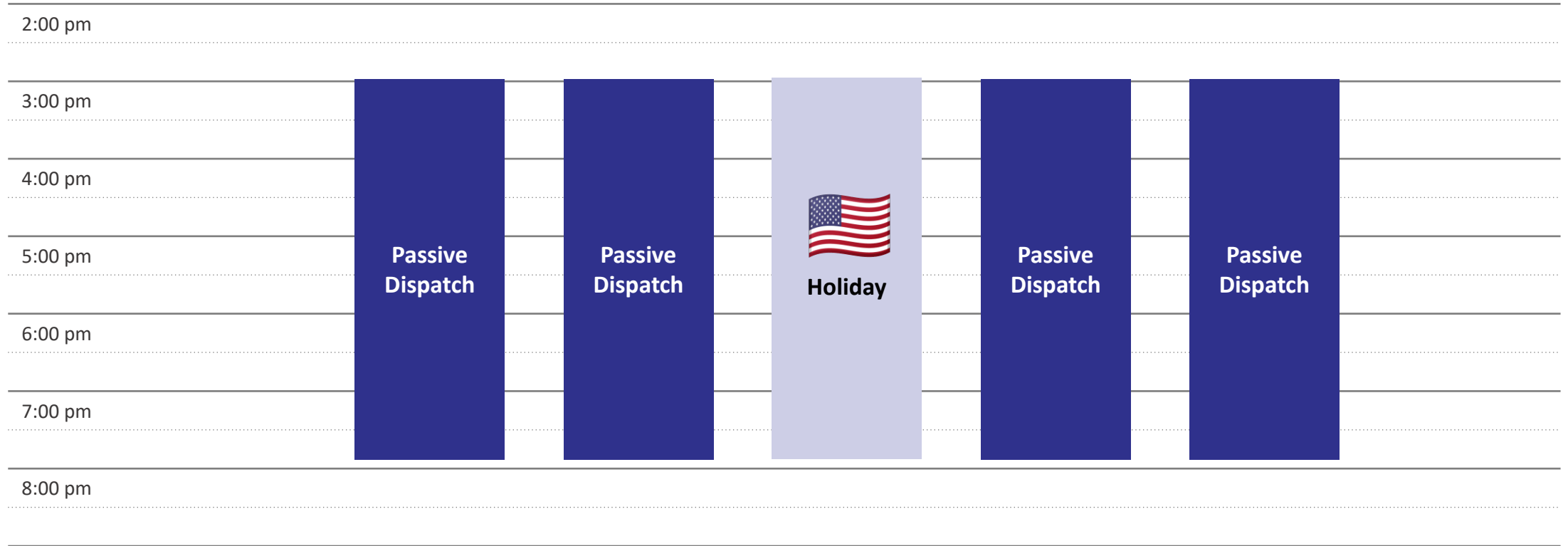


High emission

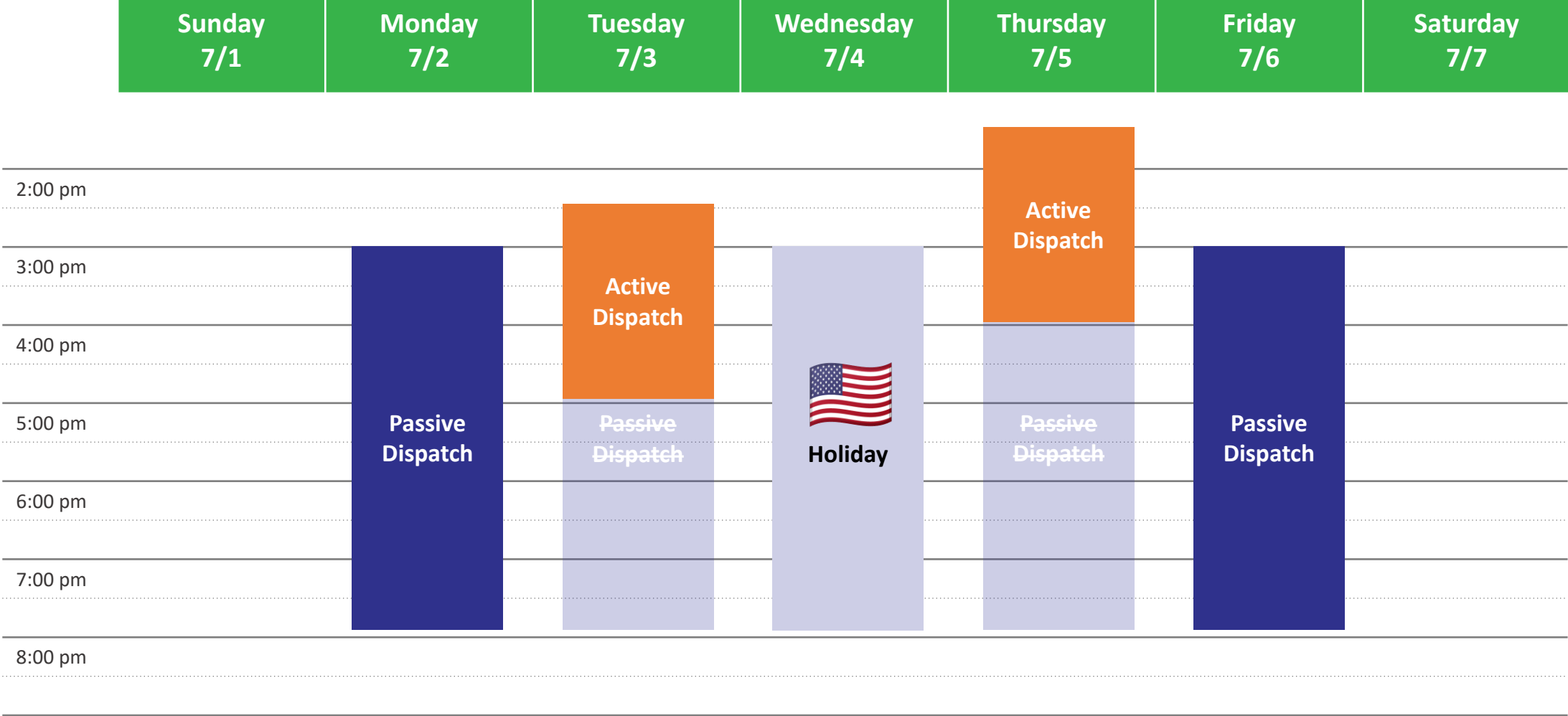
Low / zero emission

Passive Dispatch

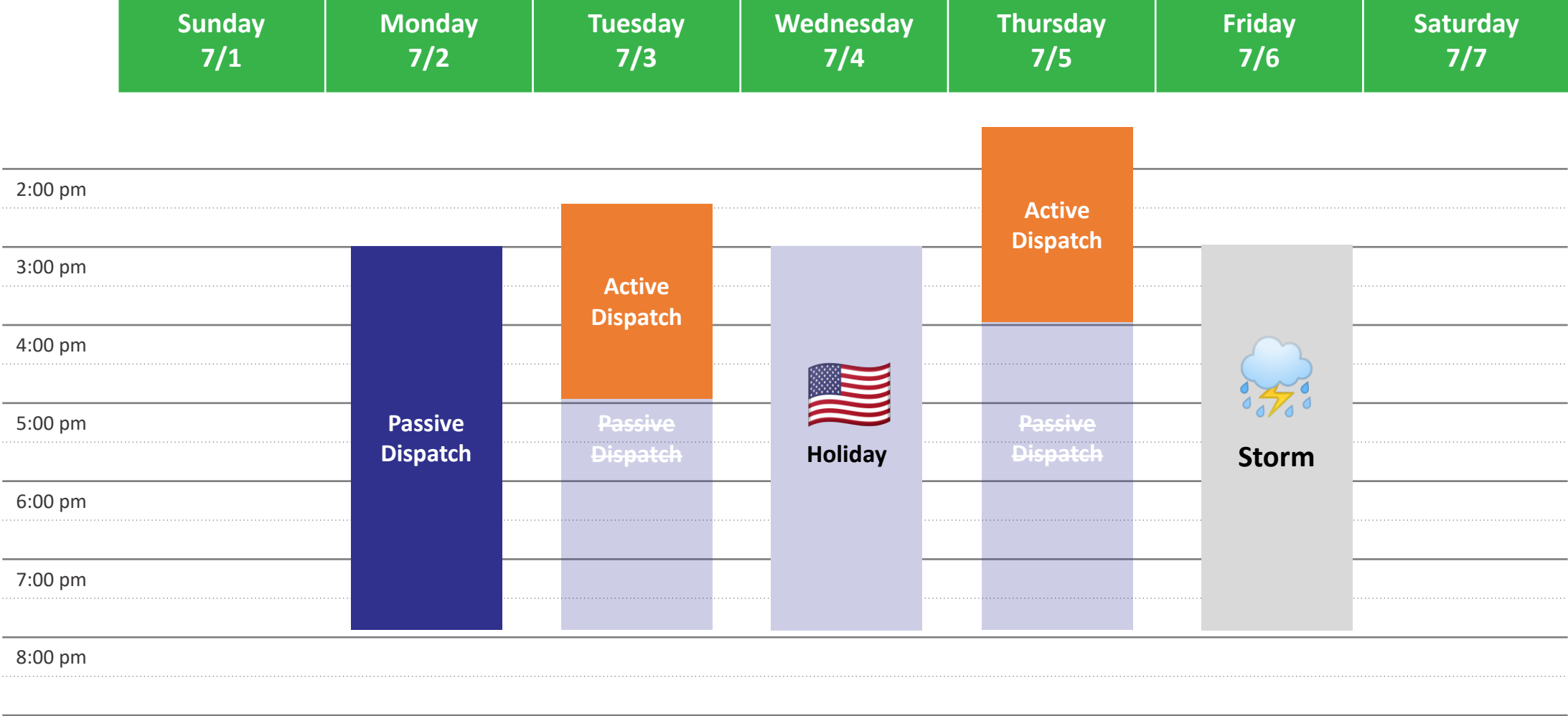
Sunday 7/1	Monday 7/2	Tuesday 7/3	Wednesday 7/4	Thursday 7/5	Friday 7/6	Saturday 7/7
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Passive and Active Dispatch



Passive and Active Dispatch and Storm



What Do Batteries Cost?

