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Introducing Energy Storage Solutions

For Homes in Eversource and UI Territories

July 12, 2022

Agenda



- Poll
- Energy Storage Overview
- Energy Storage Solutions
- Why Batteries?
- Benefits and Costs
- How to Get Started
- Questions



Poll

What brings you here today?

- Pairing my existing solar PV system with storage
- Adding a new solar system and storage
- Energy storage without solar
- Other reason





In the event of an outage, what electrical devices are most important to you?

- Refrigerator/freezer
- Heating/Cooling
- Medical devices
- Lighting
- Entertainment (TV, video games, computer)



What is Energy Storage?

Energy Storage comes in many forms

Purpose: to store energy generated now and use it later

Why was Energy Storage Solutions Created?



Climate & Environment Climate Solutions Global warming World impacts Global emissions Extreme heat

CAPITAL WEATHER GANG

Extreme heat pushes highs over 110 in Texas as power grid nears brink

The Electric Reliability Council of Texas projects record-high demand as temperatures skyrocket

By <u>Matthew Cappucci</u> July 11, 2022 at 11:46 a.m. EDT



Temperatures reached record-highs on July 10 in Texas driving up a demand in power, straining the state's power grids. (Video: The Washington Post)

Why was Energy Storage Solutions Created?



What is Battery Energy Storage?



What isn't Battery Energy Storage?

Ineligible Technologies







Why Energy Storage for You?

- 1. Resiliency
- 2. Produce and consume your own energy with solar PV
- 3. Reduce on-peak electricity charges*
- 4. Get reimbursed for your capacity when you're not using it

*If you are on a time-of-use rate

What Can Battery Storage Power?



Nice to Have

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

Battery Storage vs Generator - Benefits

Low upfront cost

Portable



Silent No fuel or emissions Store and use your solar PV energy On standby

Incentives available

High output Natural gas or propane On standby

Battery Storage vs Generator -Drawbacks

Buying and transporting fuel



Not on standby

Upfront cost Professional installation Interconnection and permitting Not portable **Higher lifetime cost**

Professional installation with fuel Permitting Requires maintenance

Not portable

Benefits Beyond Backup (Incentives)

Residential Upfront Incentive Levels

Upfront Incentive Levels (Installed 2022-2024)

Capacity Block (MW)	Standard	Underserved	Low-Income	Weighted
Participation Level	60%	30%	10%	Average
10	\$200/kWh	\$300/kWh	\$400/kWh	
15	\$170/kWh	\$255/kWh	\$340/kWh	\$196.55/kWh
25	\$130/kWh	\$195/kWh	\$260/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			

Passive Dispatch Only

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00 pm	//1	//2	//3	//4	//5	//6	
1:00 pm							
2:00 pm							
3:00 pm							
4:00 pm							
5:00 pm		Passive	Passive		Passive	Passive	
6:00 pm		Dispatch	Dispatch	Holiday _	Dispatch	Dispatch	
7:00 pm							
8:00 pm							
9:00 pm							

Passive and Active Dispatch

 Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
7/1	7/2	7/3	7/4	7/5	7/6	7/7



Passive and Active Dispatch - Storms

	Sunday 7/1	Monday 7/2	Tuesday 7/3	Wednesday 7/4	Thursday 7/5	Friday 7/6	Saturday 7/7
					8		
1:00 pm					00700		
2:00 pm		Dispatch Notice for 7/3 Sent		Dispatch Cancellation Notice Sent			
3:00 pm							
4:00 pm							
5:00 pm		Passive	Active	Pay ive	Pa ve	Passive	
		Dispatch	Dispatch	Di p. tch	Dir Jaich	Dispatch	
6:00 pm				······			
7:00 pm							
8:00 pm							

9:00 pm

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Financial Example – Small Batterv System

kW	kWh	Total BESS Cost	Affordable MFH	
5	13.5	\$ 12,000.00	No	

Estimate does not include ITC / solar, FCM, or demand management benefits.

Residential Battery System – 5 kW / 13.5 kWh							
	Sta	indard Rate	Une	derserved	Lo	w-Income	
Upfront Incentive	\$	2,700.00	\$	4,050.00	\$	5,400.00	
Upfront Incentive Method		Rate * kWh		Rate * kWh		Rate * kWh	
10 Year Nominal PBI Estimate	\$	6,469.88	\$	6,469.88	\$	6,469.88	
PBI Estimation Method		Average kW		Average kW		Average kW	

	Maximum	DoD	909	6	PBI ass	umes all
Performance-Based Incentive	Participat	Participation		6	events are 3 hours	
	Summer		Winter		Total	
Year 1	\$	729	\$	91	\$	820
Year 2	\$	729	\$	91	\$	820
Year 3	\$	729	\$	91	\$	820
Year 4	\$	729	\$	91	\$	820
Year 5	\$	729	\$	91	\$	820
Year 6	\$	419	\$	55	\$	474
Year 7	\$	419	\$	55	\$	474
Year 8	\$	419	\$	55	\$	474
Year 9	\$	419	\$	55	\$	474
Year 10	\$	419	\$	55	\$	474
	Estim	ated To	tal Nominal	PBI	\$	6,470

*Estimate is for a **standalone** battery system purchase (not paired with PV). Federal ITC does not apply to standalone systems. Total cost is estimated. Assumes full participation of 100% of battery capacity in every event.

Financial Example – Medium Battery System

kW	kWh	Total BESS Cost	Affordable MFH
10	27	\$ 24,500.00	No

Estimate does not include ITC / solar, FCM, or demand management benefits.

Residential Battery System – 10 kW / 27 kWh						
	Sta	ndard Rate	Un	derserved	Lo	w-Income
Upfront Incentive	\$	5,400.00	\$	7,500.00	\$	7,500.00
Upfront Incentive Method		Rate * kWh		\$7,500 cap		\$7,500 cap
10 Year Nominal PBI Estimate	\$	12,939.75	\$	12,939.75	\$	12,939.75
PBI Estimation Method		Average kW		Average kW		Average kW

	Maximum	DoD	90%		PBI as	sumes all
Performance-Based Incentive	Participat	ion	90%	1	events	are 3 hours
	Summer		Winter		Total	
Year 1	\$	1,458	\$	182	\$	1,640
Year 2	\$	1,458	\$	182	\$	1,640
Year 3	\$	1,458	\$	182	\$	1,640
Year 4	\$	1,458	\$	182	\$	1,640
Year 5	\$	1,458	\$	182	\$	1,640
Year 6	\$	838	\$	109	\$	948
Year 7	\$	838	\$	109	\$	948
Year 8	\$	838	\$	109	\$	948
Year 9	\$	838	\$	109	\$	948
Year 10	\$	838	\$	109	\$	948
	Estimated Total Nominal PBI				\$	12,940

*Estimate is for a **standalone** battery system purchase (not paired with PV). Federal ITC does not apply to standalone systems. Total cost is estimated. Assumes full participation of 100% of battery capacity in every event.

Financial Example – Large Battery System

kW	kWh	Total BESS Cost	Affordable MFH
20	54	\$ 47,000.00	No

Estimate does not include ITC / solar, FCM, or demand management benefits.

Residential Battery System – 20 kW / 54 kWh						
	Sta	indard Rate	Un	derserved	L٥	w-Income
Upfront Incentive	\$	7,500.00	\$	7,500.00	\$	7,500.00
Upfront Incentive Method		\$7,500 cap		\$7,500 cap		\$7,500 cap
10 Year Nominal PBI Estimate	\$	25,879.50	\$	25,879.50	\$	25,879.50
PBI Estimation Method		Average kW		Average kW		Average kW

	Maximum	1 DoD		90%	PBI as	sumes all	
Performance-Based Incentive	Participa	Participation		90%		events are 3 hours	
	Summer		Winter		Total		
Year 1	\$	2,916	\$	365	\$	3,281	
Year 2	\$	2,916	\$	365	\$	3,281	
Year 3	\$	2,916	\$	365	\$	3,281	
Year 4	\$	2,916	\$	365	\$	3,281	
Year 5	\$	2,916	\$	365	\$	3,281	
Year 6	\$	1,677	\$	219	\$	1,895	
Year 7	\$	1,677	\$	219	\$	1,895	
Year 8	\$	1,677	\$	219	\$	1,895	
Year 9	\$	1,677	\$	219	\$	1,895	
Year 10	\$	1,677	\$	219	\$	1,895	
	Estimated Total Nominal PBI				\$	25,880	

*Estimate is for a **standalone** battery system purchase (not paired with PV). Federal ITC does not apply to standalone systems. Total cost is estimated. Assumes full participation of 100% of battery capacity in every event.

Get Started

How to Participate

- <u>www.energystorageCT.com</u>
- Find a Contractor or talk to your solar contractor
- Do your research think about essential devices

• Get a HES Audit

Eligible Technologies

https://energystoragect.com/submitted_ess_system_status_list/

- Generac PWRcell
- SunPower SunVault
- Enphase Encharge
- Fortress Battery + Sol-Ark Inverter
- HomeGrid Battery + Sol-Ark Inverter

Questions?

Appendix

Energy Storage Solutions Resources

- www.ctgreenbank.com/energy-storage-solutions/
- www.uinet.com/EnergyStorageSolutions
- www.eversource.com/
- www.energizeCT.com

Homeowners interested in learning more sh	ould complete the form below.	
Name (Required)		
First	Last	
Address (Required)		
Street Address		
Address Line 2		
	Connecticut 🗸	
City	State	
ZIP Code		
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Interested home & business owners should complete the Energy Storage Solutions interest forms to stay in the loop

Customer Classes

Customer Class	Passive Dispatch	Active Dispatch
Residential	 Will receive upfront incentives Must participate in all passive dispatch events 	 Will receive performance incentives Must participate in all active dispatch events
Commercial – Fully Enrolled	 Will receive upfront incentives Must participate in all passive dispatch events 	 Will receive performance incentives Must participate in all active dispatch events
Commercial – Active Dispatch Only	Will not receive upfront incentivesWill not participate in passive dispatch events	 Will receive performance incentives May participate in active dispatch events
Priority Customers – Residential & Commercial	 Will receive upfront incentives Will participate in all passive dispatch events unless participating in ISO-NE market dispatches 	 Will receive performance incentives Will participate in all active dispatch events unless participating in ISO-NE market dispatches
Transfer Customers – Residential & Commercial	Will not receive upfront incentivesWill not participate in passive dispatch events	 Will receive performance incentives Must participate in all active dispatch events

1 Customers eligible to participate in ISO-NE Markets as defined in Section 8

^[2] Customers with BESS installed prior to January 1, 2022. Transfer Customer BESS must meet all Program requirements to be eligible.

Program Design

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

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