February 8, 2023

EEAC

Active Demand Reduction Update

WE ARE MASS SAVE®:

Summer 2022 Performance

Updates for 2023 Summer

Summer 2022 was…

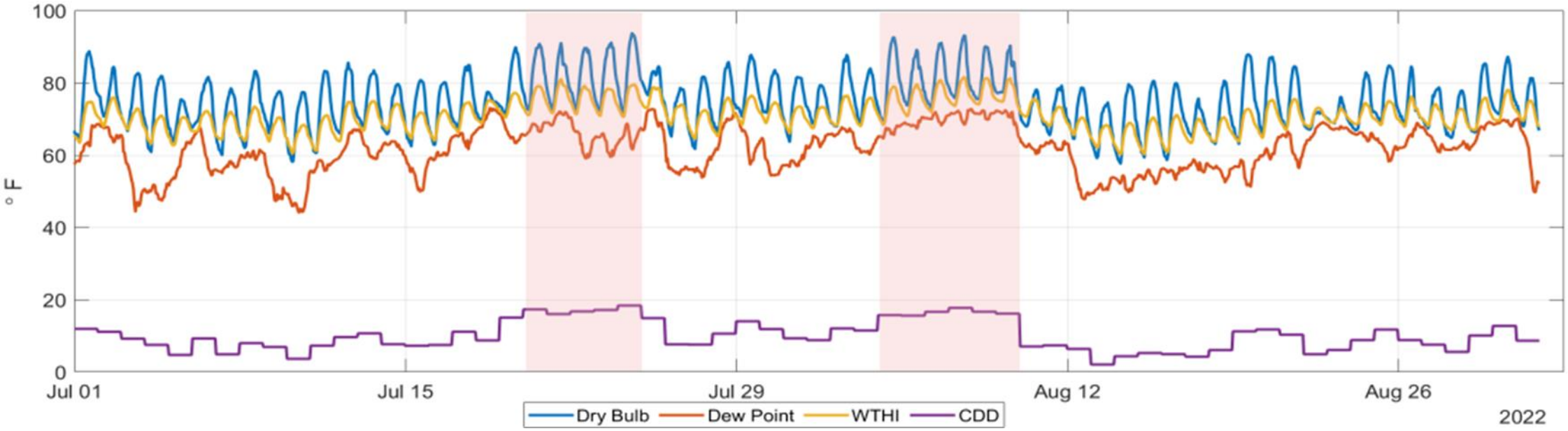
A long time ago…

Well above normal temperatures during two heatwaves

Weather and load forecasts were accurate

Summer 2022 Weather

- Two notable heat-waves occurred during this past summer season, during which observed weather neared or exceeded the CELT 2022 summer 50/50 peak weather expectation
  - July 20 - 24
  - August 4 - 9
- All of the top peak demand days for summer 2022 occurred during these two periods
- Plot below illustrates 8-city weighted dry bulb temperature, dew point temperature, three day weighted temperature-humidity index (WTHI), and daily cooling degree days (CDD)



Source: ISO NE, https://www.iso-ne.com/static-assets/documents/2022/09/lf2022-summerpkrev.pdf

Overview of ConnectedSolutions Strategy Types

ConnectedSolutions

Curtailment Service Providers

Mostly Commercial and Industrial Customers

Targeted Dispatch
(Infrequent Summer Peak Shaving)

Daily Dispatch
(Frequent Summer Peak Saving)

Technology and Vendor Agnostic Approach includes:

HVAC, lighting controls, building management systems, process loads, scheduling, batteries, thermal storage, V1G, V2G, etc.

Direct Load Control

Mostly Residential & IE and Small & Medium Business Customers

Thermostats

1. Alarm.com
2. Ecobee
3. Emerson Sensi
4. Honeywell
5. Lux
6. Nest
7. Radio Thermostat
8. Vivint

Battery Inverters

1. Enphase
2. Generac
3. Outback
4. Sol-Ark
5. SolarEdge
6. SunPower
7. Tesla

EVs

1. BMW
2. Ford
3. GM
4. Honda
5. Tesla

EVSEs

1. ChargePoint
2. Juice Box
3. SolarEdge

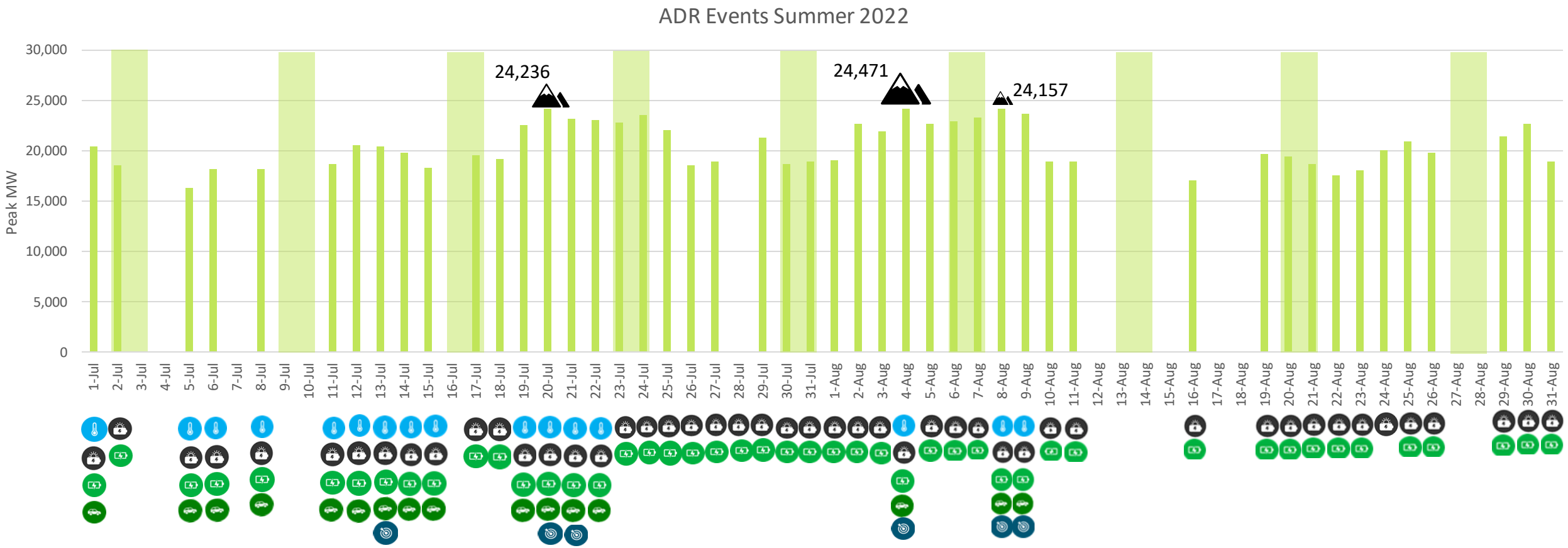
Pending DPU Approval

Some Participating Curtailment Service Providers

CPower, Direct Energy, enel X, icetec, IPKeys Power Grid, nrg, voltus

Summer 2022 Events

Targeted Dispatch =	Resi Battery =	Daily Dipatch =	Electric Vehicle =	Thermostat =	Peak Hit =	Weekend =



Forecasting and Calling Events

We hit the top **10 peaks**, and **49** of the top **63 daily peaks**.

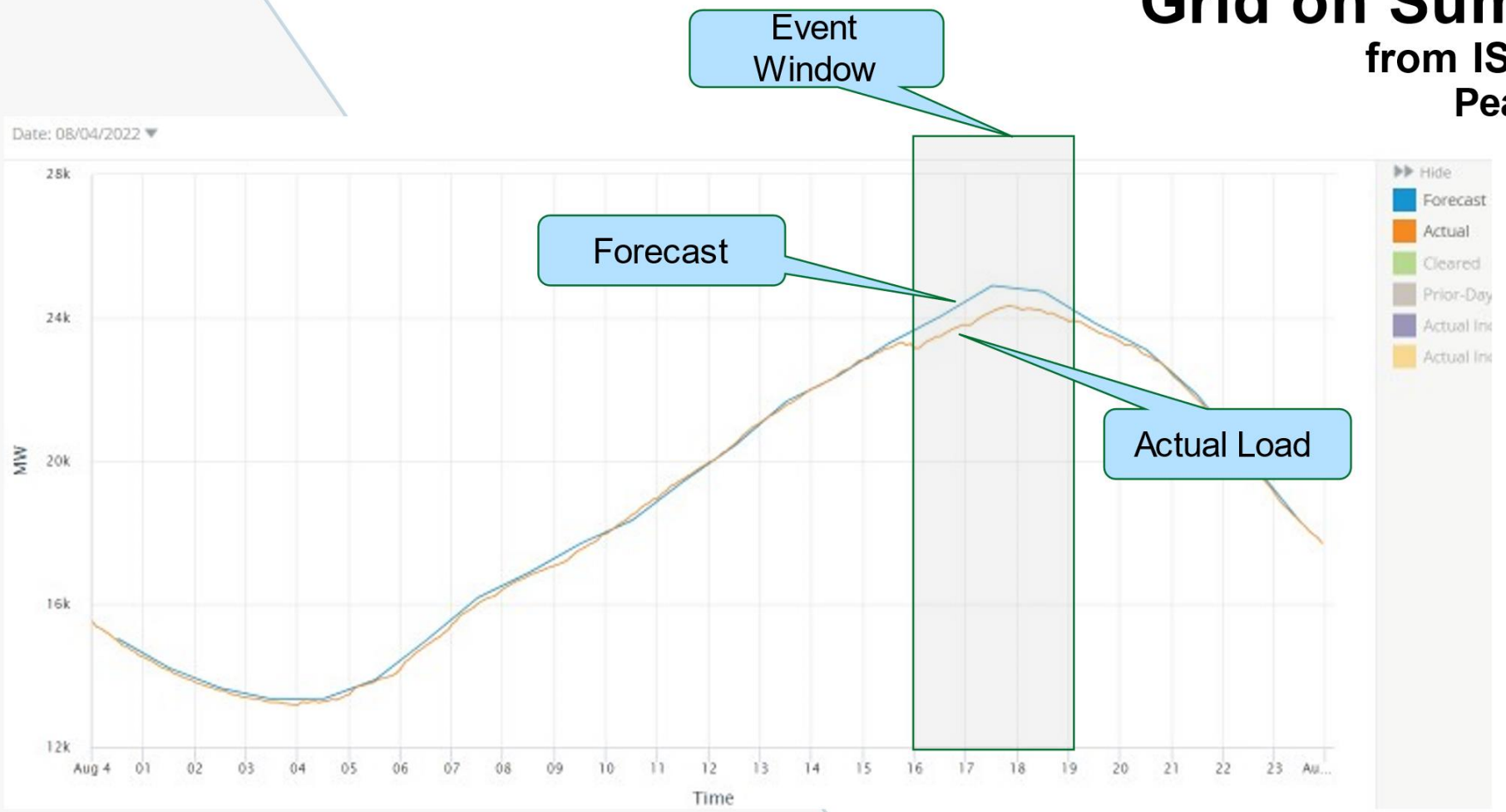
Event Start	Event End	Hour Ending	Hit Peak?	Peak MW	Peak #
8/4/2022 16:00	8/4/2022 19:00	17:00	Yes	24,471	1
7/20/2022 16:00	7/20/2022 19:00	18:00	Yes	24,236	2
8/8/2022 16:00	8/8/2022 19:00	17:00	Yes	24,157	3
8/9/2022 16:00	8/9/2022 19:00	13:00	Yes	23,717	4
7/24/2022 17:00	7/24/2022 19:00	18:00	Yes	23,620	5
8/7/2022 16:00	8/7/2022 19:00	18:00	Yes	23,350	6
7/21/2022 16:00	7/21/2022 19:00	15:00	Yes	23,246	7
7/22/2022 16:00	7/22/2022 19:00	18:00	Yes	23,049	8
8/6/2022 16:00	8/6/2022 19:00	18:00	Yes	22,925	9
7/23/2022 17:00	7/23/2022 19:00	18:00	Yes	22,833	10

With this, we learned that we need to shift the timespan that we can call events. Especially as solar is further adopted and peak timings start shifting.

Impact of ADR Offerings

Effect on the ISO-NE Grid on Summer Peak

from ISO-NE website
Peak Day 8/4/2022



* From ISO-NE.com

Performance by strategy type

Sector/Technology	Planned participants	Enrolled participants	2022 Planned (MW)	2022 Enrolled (MW)	2022 Performed (MW)	% Enrolled/ Performed
IE DLC	**1,619**	**1,329**	**1.08**	**0.95**	**0.80**	**84%**
Thermostats	1,619	1,329	1.08	0.95	0.80	84%
Resi DLC	**84,709**	**64,196**	**71.22**	**64.47**	**42.13**	**65%**
EV	1,541	459	0.81	0.05	0.10	200%
EVSE	460	656	2.30	0.10	0.11	108%
Storage	3,568	2,903	16.64	19.66	6.73	34%
Thermostats	79,140	60,178	51.47	44.66	35.19	79%
Grand Total	**86,328**	**65,525**	**72.30**	**65.42**	**42.93**	**66%**

Sector/Technology	Planned participants	Enrolled participants	2022 Planned (MW)	2022 Enrolled (MW)	2022 Performed (MW)	% Enrolled/ Performed
C&I						
Targeted	**871**	**898**	**124.10**	**157.87**	**116.97**	**74%**
Tech Neutral	867	890	123.60	156.77	116.16	74%
Storage	4	8	0.50	1.10	0.81	74%
Daily	**107**	**78**	**19.00**	**16.78**	**9.15**	**54%**
Tech Neutral	25	51	5.00	6.80	2.80	41%
Storage	82	27	14.00	9.98	6.35	64%
Grand Total	**978**	**976**	**143.10**	**174.65**	**126.12**	**72%**

Source: 2022 Q4 Quarterly Report, Biannual KPI #1

Summary of 2022 ADR Performance

Thermostats

- Thermostats continue to experience significant growth in enrollment
  - Performance was lower compared to 2021

Battery Storage/Daily Dispatch

- Residential batteries are also a growing source of enrolled capacity
  - Performance was much lower compared to 2021
- While there continues to be interest in BTM commercial battery installation, the number of completed and enrolled projects remains low.
  - Performance was slightly lower compared to 2021

Targeted dispatch

- Targeted dispatch represents the largest amount of enrolled capacity, but capacity additions have slowed
  - Performance was similar compared to 2021

Updates for 2023

Highlights from December 5th

ADR Stakeholder Meeting

WE ARE MASS SAVE®:

Commercial & Industrial Offerings

Summary of Learnings and Reminders

1. Oversized batteries applying to ConnectedSolutions
2. Recent evaluation of Daily Dispatch offering
3. Shutdown day standards do not appear to be necessary
4. Factoring in negative event days improves performance accuracy
5. Peak window seems to be shifting later
6. PA-specific updates

Residential & Small-Commercial Offerings

Summary of Learnings and Reminders

1. Offers for EVs and EVSEs are evolving
2. Need to simplify Direct Load Control (DLC) battery offering enrollment flow
3. Calling day-of events improves accuracy
4. Current number of thermostat events may not be adequate

Questions?

WE ARE MASS SAVE®:
BERKSHIRE GAS An AVANGRID Company
Cape Light Compact
EVERSOURCE
Liberty
nationalgrid
Unitil