CleanEnergy States Alliance

Energy Storage for Peak Demand Reduction:

A New Incentive Program by Efficiency Maine

September 28, 2023

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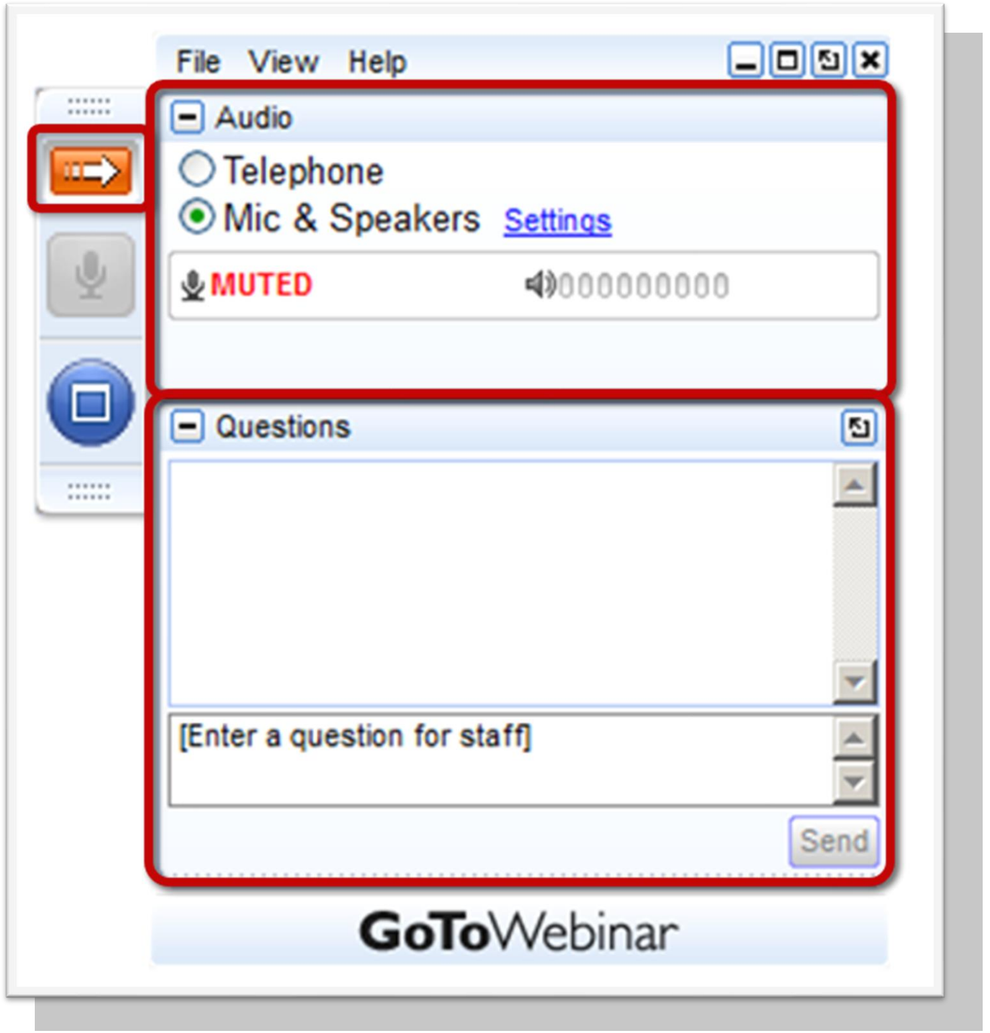

Celebrating 20 Years of State Leadership

Clean Energy States Alliance

The Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy.

CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

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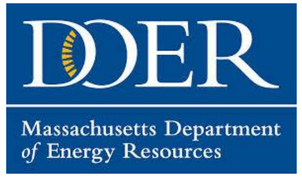
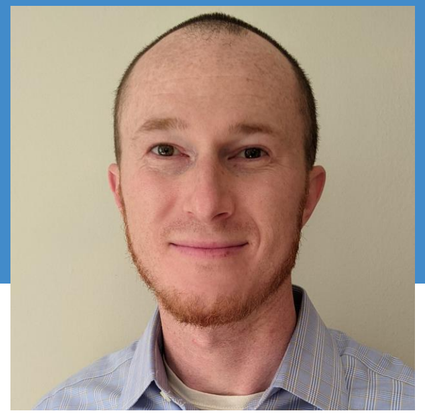


Webinar Speakers



Jesse Remillard
Senior Program Manager, Efficiency Maine

Ryan Collins
Senior Consultant, DNV, Custom Program Delivery Team

Justin Pizzolato
Project Manager, DNV, Custom Program Delivery Team

Todd Olinsky-Paul
Senior Project Director, Clean Energy States Alliance

CleanEnergy States Alliance

todd@cleanegroup.org

www.cesa.org

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Domestic Lithium: What The US Government is Doing to Increase Supply (10/10)

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Energy Storage Incentive Program

September 28, 2023

Why Energy Storage?

Reduce demand costs, support renewables, and improve resiliency

Agenda

1. Introduction to energy storage
2. Program incentives, eligibility and process
3. Coincident peak (CP) rate structure from CMP
4. Example demand cost scenario
5. Discussion

Link to program description - https://www.efficiencymaine.com/energy-storage-system-projects/

Introduction to Energy Storage

Types of Energy Storage

- Batteries (lithium chemistries)
- Thermal storage
- Flywheels

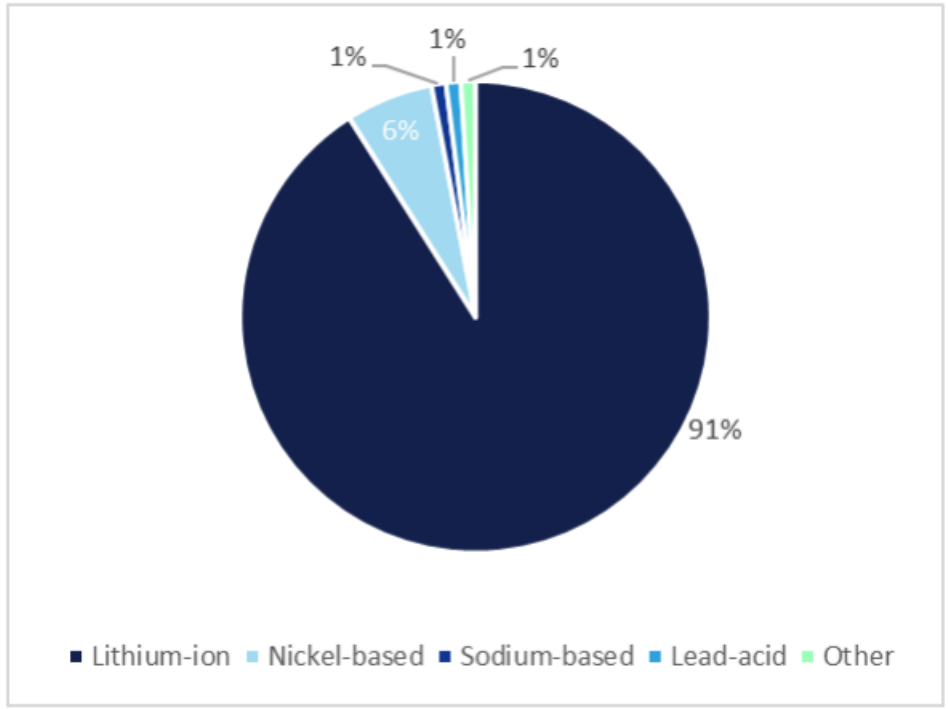
Battery Costs – per kWh or per kW

- $400/kWh to $1,000/kWh – Powerwall at about $750/kWh

Energy Storage Applications

- Demand management applications
- Resiliency – backup power
- Renewables integration
- At some point in the future – energy applications

Figure 2-1. Large-Scale Battery Storage Capacity by Chemistry[4]



Rank	Company	2022 Market Share
#1	CATL	34%
#2	LG Energy Solution	14%
#3	BYD	12%
#4	Panasonic	10%
#5	SK On	7%
#6	Samsung SDI	5%

Sources: https://www.masscec.com/sites/default/files/documents/ACES%20DNV%20Q4%20Aggregated%20Report_revised_clean.pdf
https://www.visualcapitalist.com/the-top-10-ev-battery-manufacturers-in-2022/

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Energy Storage System (ESS) Program Opportunity Notice (PON)

Incentives

- Performance incentive based on reduction of load during summer peak demand hours
- Awards of $1,000/kW of eligible capacity with 5-year contract
- Distributed as 5 yearly payments of $200/kW made at the end of each performance season

Performance Criteria

- Performance season – June, July, August and September
- Performance measured as average kW reduction over 15 qualifying 3-hr deployments
- Qualifying deployments are those where ISO NE load is within 15% of peak summer load (installed capacity or ICAP Tag hour)
- Customer and vendor responsible for deployments

Distributed energy resource management (DERMS) businesses can predict peaks based on weather forecasts and models based on historical data

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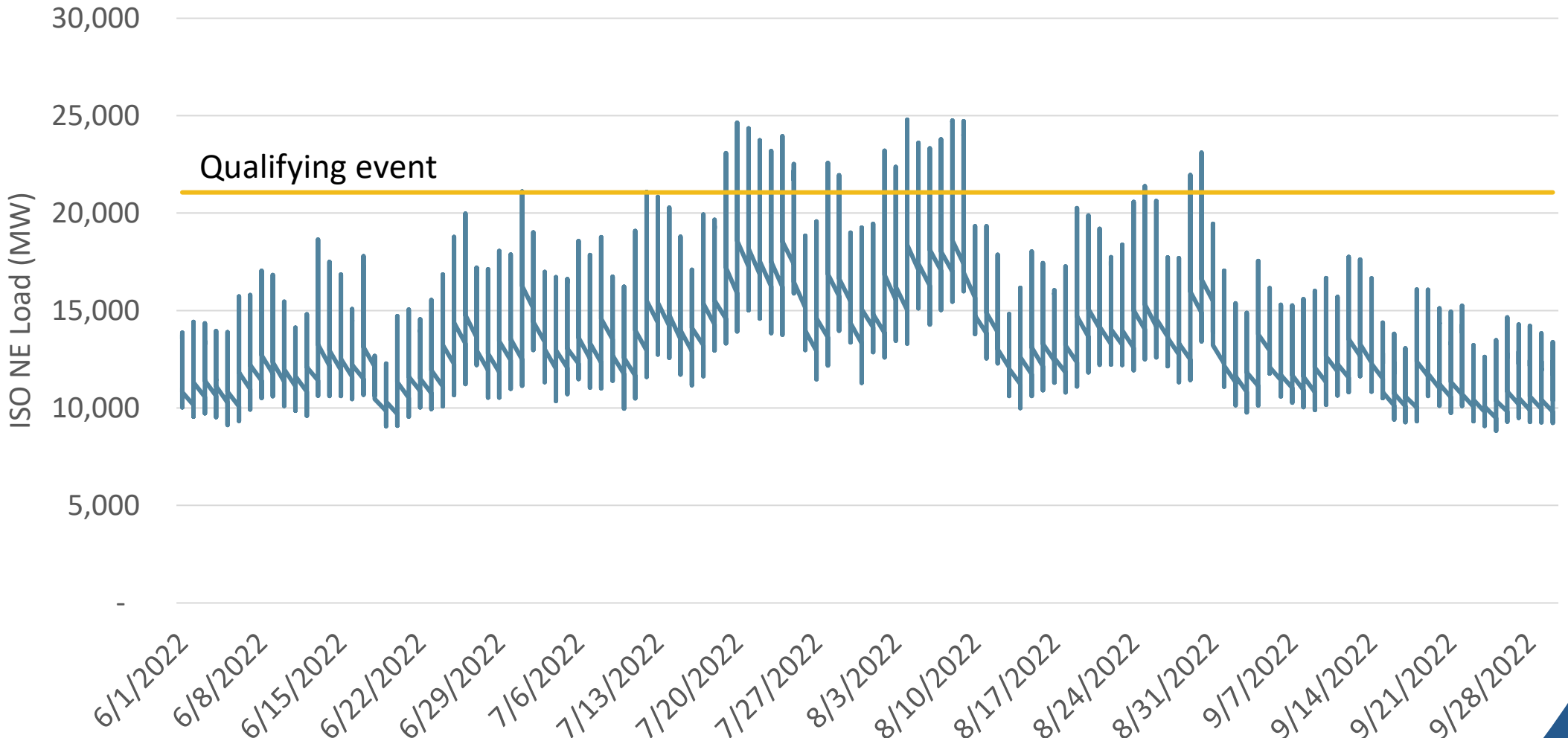
ISO NE Qualifying Events = 22 for 2022



Source: https://www.iso-ne.com/isoexpress/web/reports/load-and-demand/-/tree/sys-load-eei-fmt

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Eligibility

- All demand metered customers eligible (CMP MGS rate and up)
- KW reductions must be behind the meter or reductions in grid supplied power
- System size at least 20 kW and awards capped at 3 MW ($3M for 5 year award)
- Systems must have 10 yr warranty
- Must be able to collect and transmit 15 min interval data
- Preapproval required

Best Candidates

- Electric service with consistent summer daytime loading
- Secure outdoor space for siting in proximity to electric panel
- Desire for resilience and openness to coincident peak rate structures

How Do I Proceed?

1. Contact energy storage system vendor to assess facility energy use, siting, and interconnection
2. Vendor provides project proposal
3. Establish financing approach
4. Apply for Efficiency Maine incentive

Application

1. Technical and financial proposal
    - Proposal from vendor
    - System specifications and siting plan
    - Facility electric usage data
2. Management and resource adequacy
    - Internal approvals
    - Project installation plan
    - Financing approach

Coincident Peak (CP) Rate Structure

CMP optional targeted service rate: B-CPT coincident peak transmission

VS

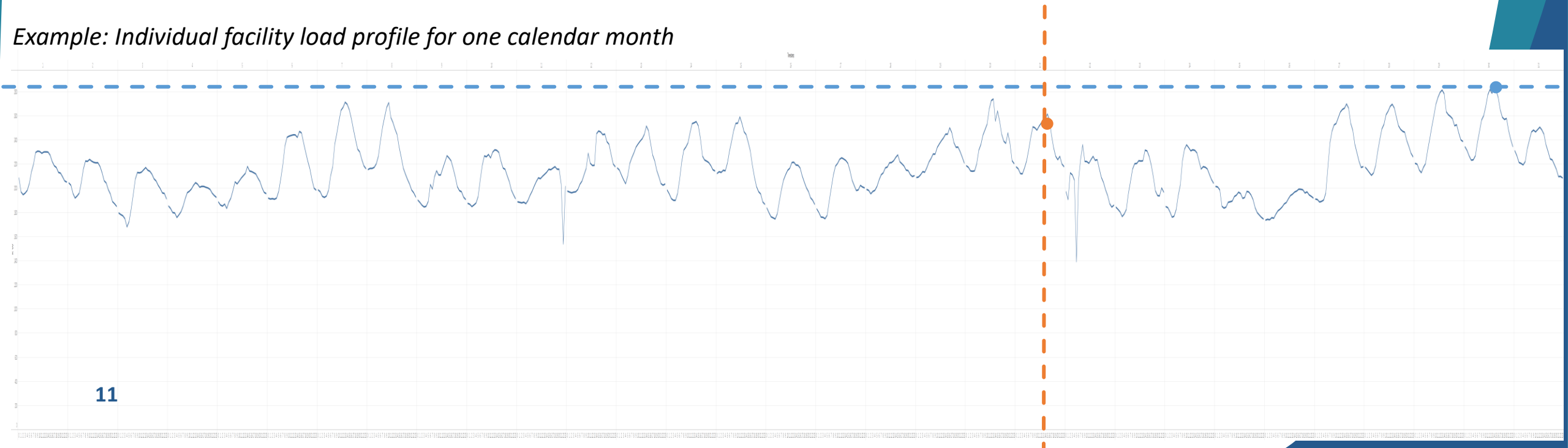
MGS, IGS or LGS

Defining terms

- Regional Network Service (RNS) Peak: Utility transmission network's monthly hour of highest load

- **Non-coincident peak (NCP):** a facility's maximum demand (kW) in a month (MGS, IGS, and LGS rates)
- **Coincident peak (CP):** the demand (kW) at a facility during the monthly RNS peak hour (B-CPT rate)

Example: Individual facility load profile for one calendar month



How CP rates change price signals

	Large Rate Class (CMP)**	Medium Rate Class (CMP)
Status quo*	$20/kW NCP	$16/kW NCP
Coincident peak rate*	$5/kW NCP + $19/kW CP	$4/kW NCP + $19/kW CP

**approximate prices*

***for simplicity, combining on-peak and shoulder components of non-coincident peak under the assumption that they are roughly equal in kW*

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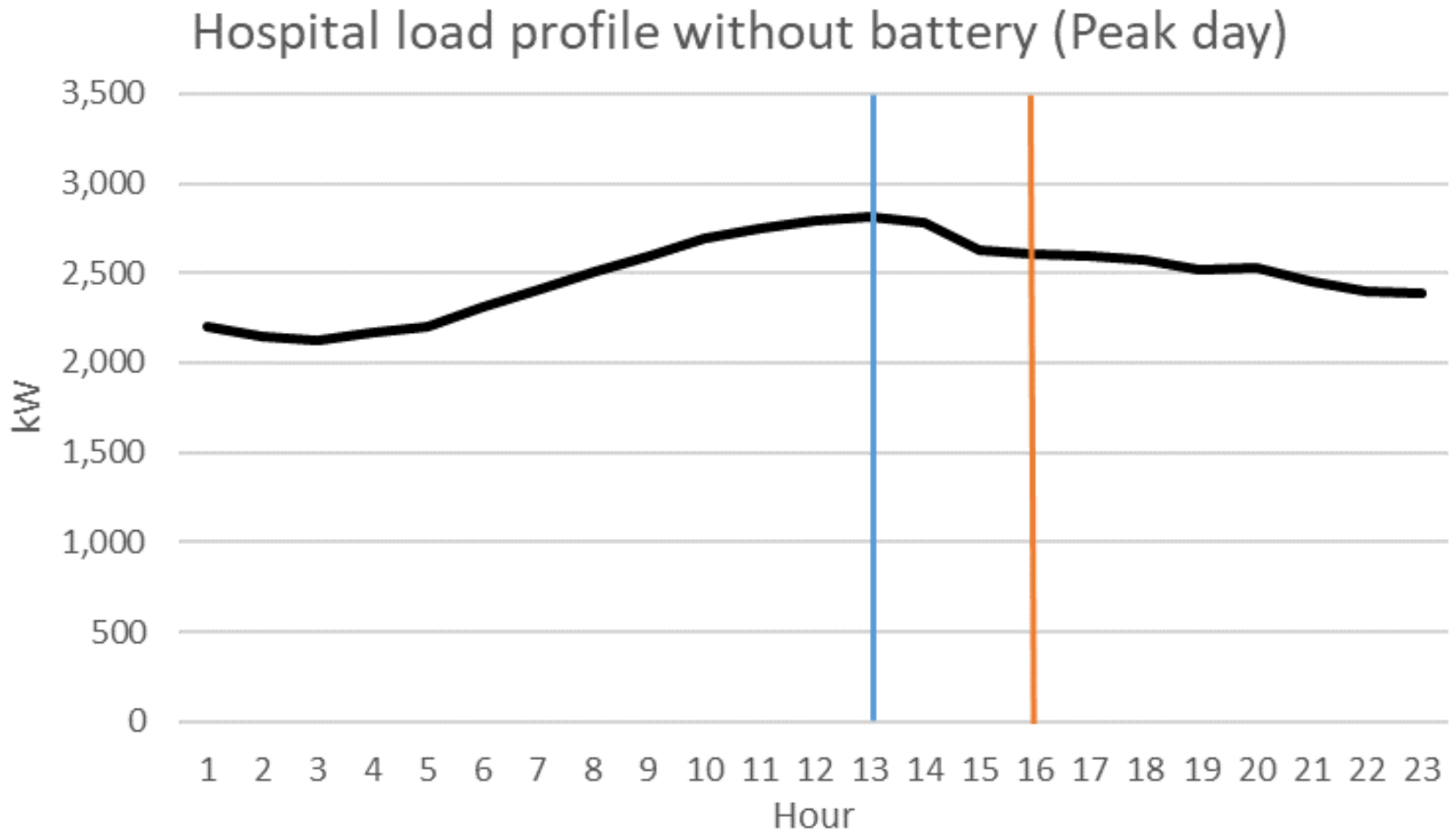
Example Demand Costs

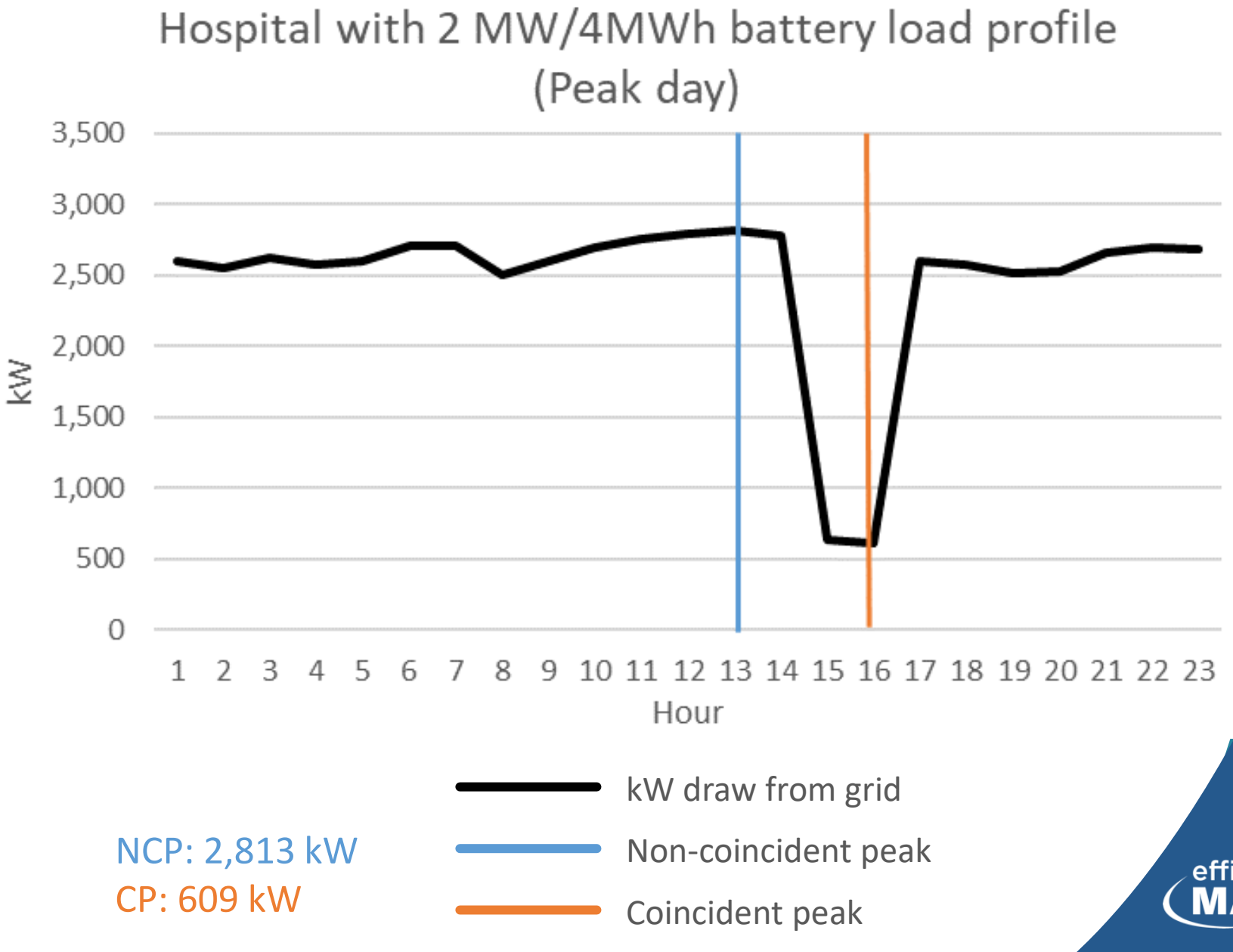
Baseline load profile

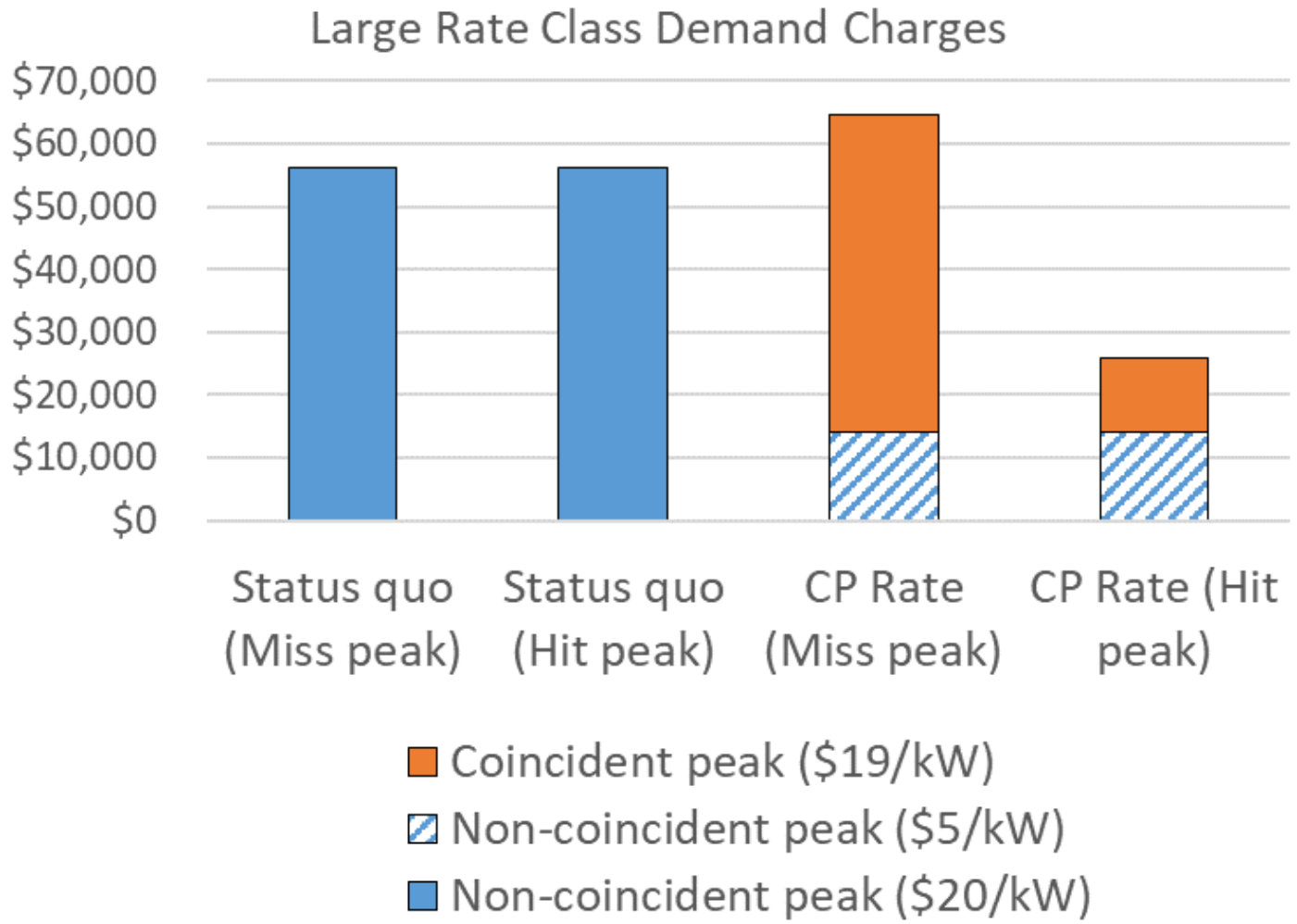


NCP: 2,813 kW

CP: 2,609 kW

Load profile with successful battery dispatch



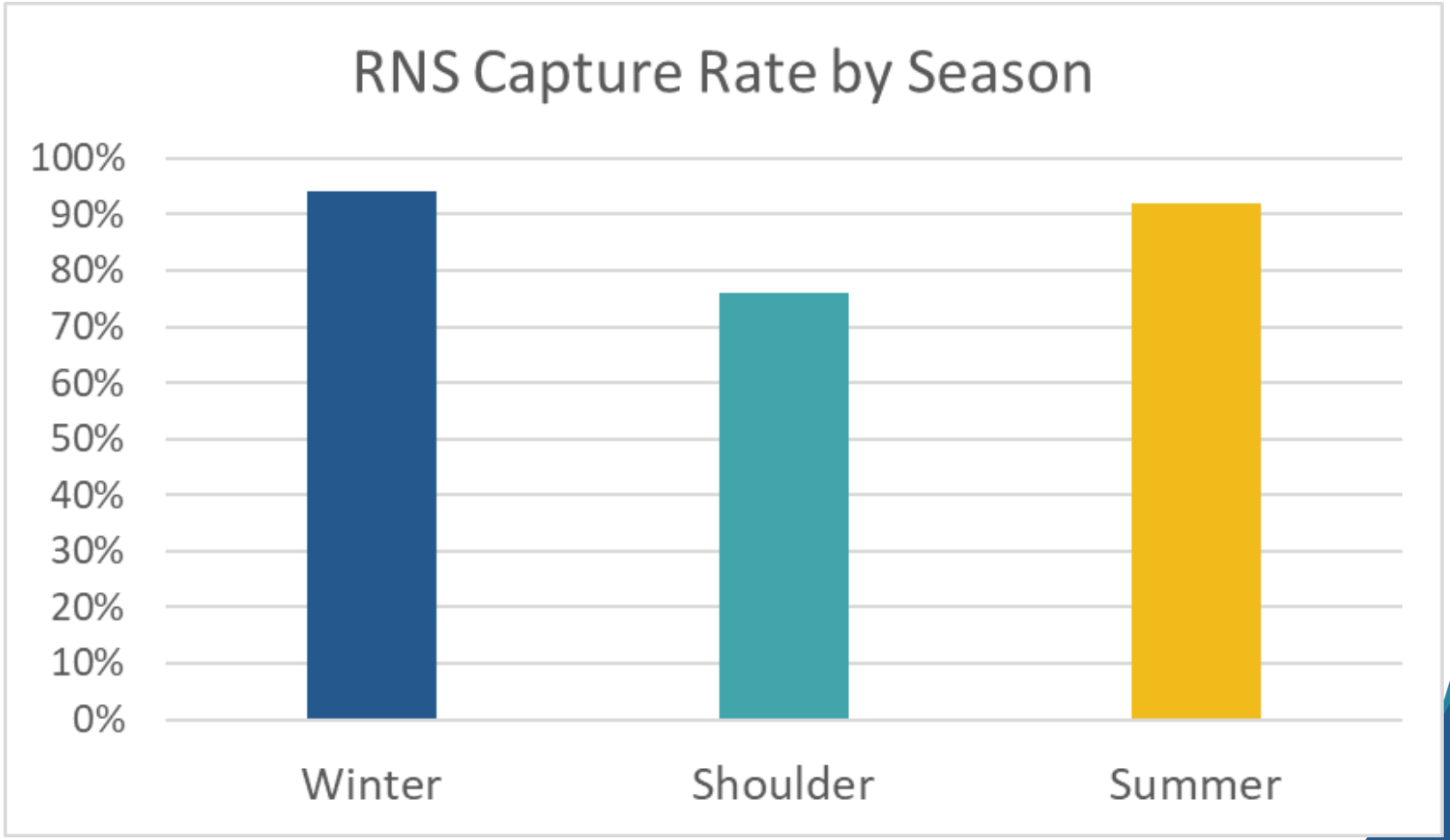


Example cost savings = $30k for successful month

ACES Energy Storage Study (Massachusetts)

- Apr 2019-Oct 2021
- 7 Participants
- 4 to 6 monthly discharges
- RNS Capture Rate =

$$\frac{\text{\# of successful peak hits}}{\text{\# of months attempted}}$$



Source: https://www.masscec.com/program/advancing-commonwealth-energy-storage-aces

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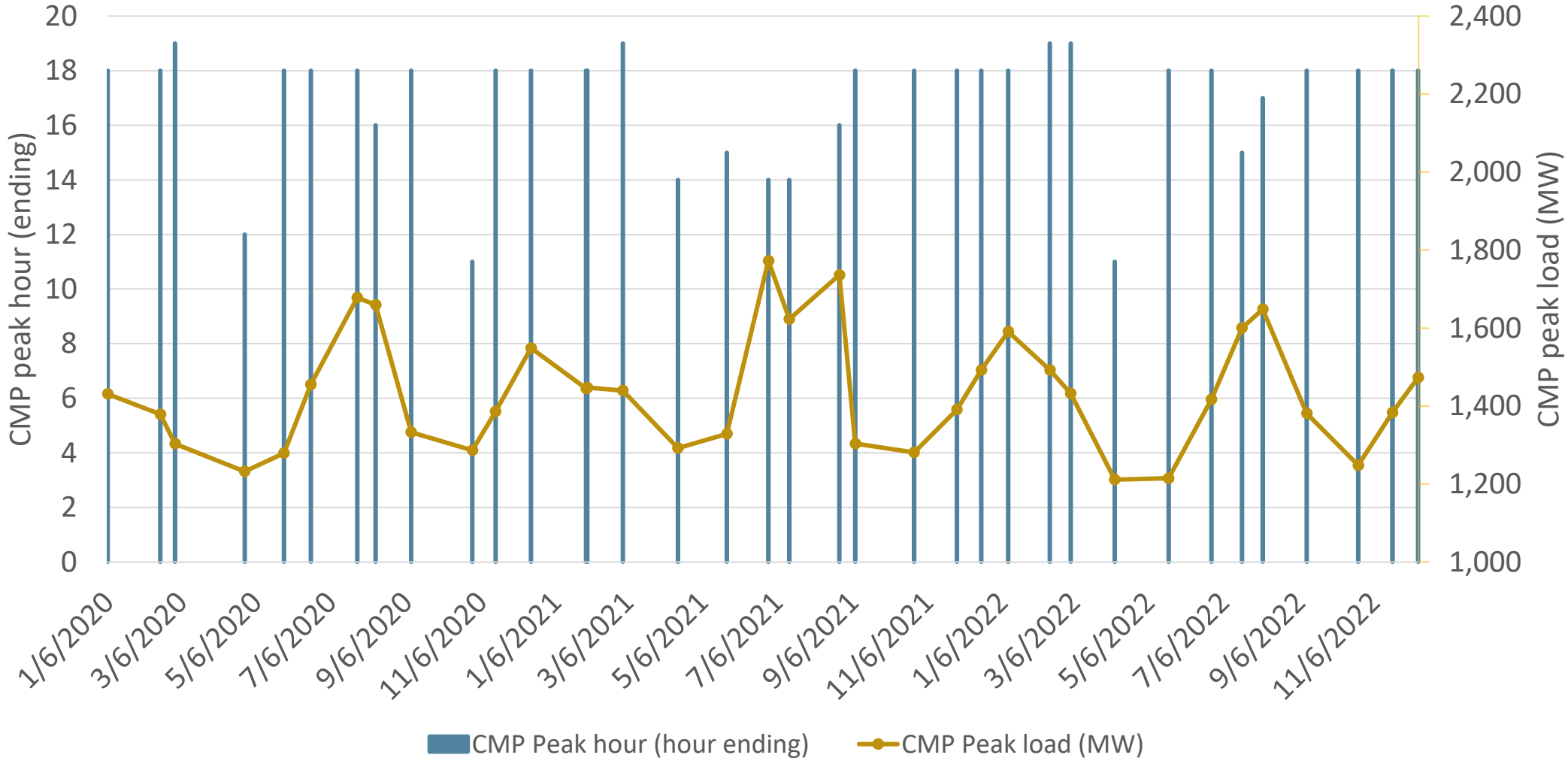
Historical CMP Transmission (RNS) Peak Hours



Source: https://www.cmpco.com/w/rns-downloads

Example Simple Payback (Hypothetical)

- Facility peak load = 700 kW, facility coincident load = 600 kW
- Battery size 500 kW x 3 hrs = 1,500 kWh
- Battery cost = $750 per kWh, or $1,125,000 total cost
- Potential incentive over 5 years = $500,000
- ITC tax credit (30%) = $337,500
- Net cost after incentives and tax credits = $287,500
- Potential demand cost savings = (700 kW * $20/kW – (700 * $5/kW+ (600-500) * $19/kW)) *12 months * 75% hit rate = $77,400/yr
- Simple payback = 3.7 yrs after tax credit and incentives

Note: for illustrative purposes only

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Q&A

For additional questions about the ESS PON, please contact:

Jesse Remillard, Efficiency Maine Custom Programs Manager

- 207-368-2558
- Jesse.remillard@efficiencymaine.com

Justin Pizzolato, Custom Program Delivery Team Lead

- 207-358-7952
- Justin.Pizzolato@DNV.com