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Expanding Peak Hours

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ICAPWG/MIWG/PRLWG
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Purpose

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- Further discussion of the Expanding Application of Peak Hour Forecast project.
- Market Design Proposal presented by NYISO at the ICAPWG meeting on July 27, 2021.
- This project will continue from the Market Design Concept Proposed and determine what changes are needed to implement an alternative to the way that capacity obligations are allocated to Load Serving Entities (LSEs).
- Findings and resulting suggestions will be reported and discussed with stakeholders.
- The project deliverable will be Market Design Complete and proposal for deployment.

Outline

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- Background
- Update to the Appendix of Peak Load Data
- Answer Market Participants outstanding questions
  - What is the difference between actual and reconstituted load?
  - Can you weight top hours by Loss of Load Expectation(LOLE)?
  - Are there other ways to weight the top hours?
- Weighted top 10 hours
- DPS Staff Proposal
- Previous NYISO Proposal: Peak hour of the Top Three days
- Provide a comparison Weighted, NYISO, and DPS Staff proposals
- Next steps

Background

Date	NYISO WG	Discussion Points and Links to Materials
February 25, 2021	ICAP/MIWG	Kick-off presentation discussion the current process: https://www.nyiso.com/documents/20142/19520392/Expanding%20Application%20of%20Peak%20Hour%20Forecasts%202.25.2021%20ICAPWG%20FINAL.pdf/800c1e4b-6169-7e31-3647-ad417a236221
March 25, 2021	ICAP/MIWG	Discuss potential analyses: https://www.nyiso.com/documents/20142/20226859/Expanding%20Application%20of%20Peak%20Hour%20Forecasts%203.25.2021%20ICAPWG%20FINAL.pdf/5334cd44-5d5f-06d8-f12e-bd294bbcbee1
May 4, 2021	ICAP/MIWG	Discuss load duration analysis: https://www.nyiso.com/documents/20142/21189817/Expanding%20Application%20of%20Peak%20Hour%20Forecasts%205.4.2021%20ICAPWG.pdf/5a2115b3-cd4d-b977-b3de-6fd3115b13a9
June 3, 2021	ICAP/MIWG	Discus process flow and tariff review: https://www.nyiso.com/documents/20142/21942500/Expanding_Application_of_Peak_Hour_Forecasts_6.3.2021_ICAPWG_FINAL.pdf/501b1132-e916-9b67-48b8-8d958bed927d Expanding the Application of Peak Hour Forecasts Appendix Data
June 30, 2021	ICAP/MIWG	Discuss peak load days and weighting: https://www.nyiso.com/documents/20142/22643498/Expanding_Application_of_Peak_Hour_Forecasts_6.30.2021_FINAL.pdf/8c6b7640-a78e-05fd-b47b-448acfd03c5c
July 27, 2021	ICAP/MIWG	Discuss NYISO Market Design Concept Proposal: https://www.nyiso.com/documents/20142/23319404/Expanding_Peak_Hour_Forecasts_7.27.2021_MDCP_FINAL.pdf/18b8258d-a3c8-ec08-a97a-e3fe4c77bc63
August 30, 2023	BPWG	2024 Market Project Candidates: https://www.nyiso.com/documents/20142/39653286/August%2030%20BPWG%20Market%20Project%20Descriptions.pdf/7ade6560-c017-c29a-7ab9-769cd3a4c01e
May 2, 2024	ICAP/MIWG	**Expanding Peak Load Hours Kick-Off** https://www.nyiso.com/documents/20142/44469922/Expanding%20Peak%20Hour%20Forecast%202024%20Kick-off%20-%20Final.pdf/951484d5-e87b-6fd0-1606-2660721683bd

Background

- If the project had been prioritized for 2022, the NYISO would have worked toward a goal of Market Design Complete (MDC) in 2023.
- The project did not get prioritized in 2022.
- DPS Staff put the project forward for consideration as a 2024 project.
- On Wednesday April 27, 2023, DPS Staff presented the project at the BPWG.
- November 14, 2023, BOD Approval decision on NYISO budget proposal
- DPS Staff kicked-off the Expanding the Application of Peak Hour Forecast project at the May 2, 2024 ICAP meeting.

Background

- Revisions to the ICAP load forecast or Installed Reserve Margin (IRM) are not under consideration as part of this project.
- The NYISO and its stakeholders are considering the use of multiple load hours in the Transmission Owner (TO) ICAP obligation allocation to LSEs as part of this project.
- Actual load data would be used to identify the peak load hours, as opposed to the reconstituted load data.
  - Final Special Case Resource (SCR) load reduction data would not be available in time to be used to identify multiple peak load hours.
  - Actual load data is used today when identifying the peak load hour.

Updated Appendix

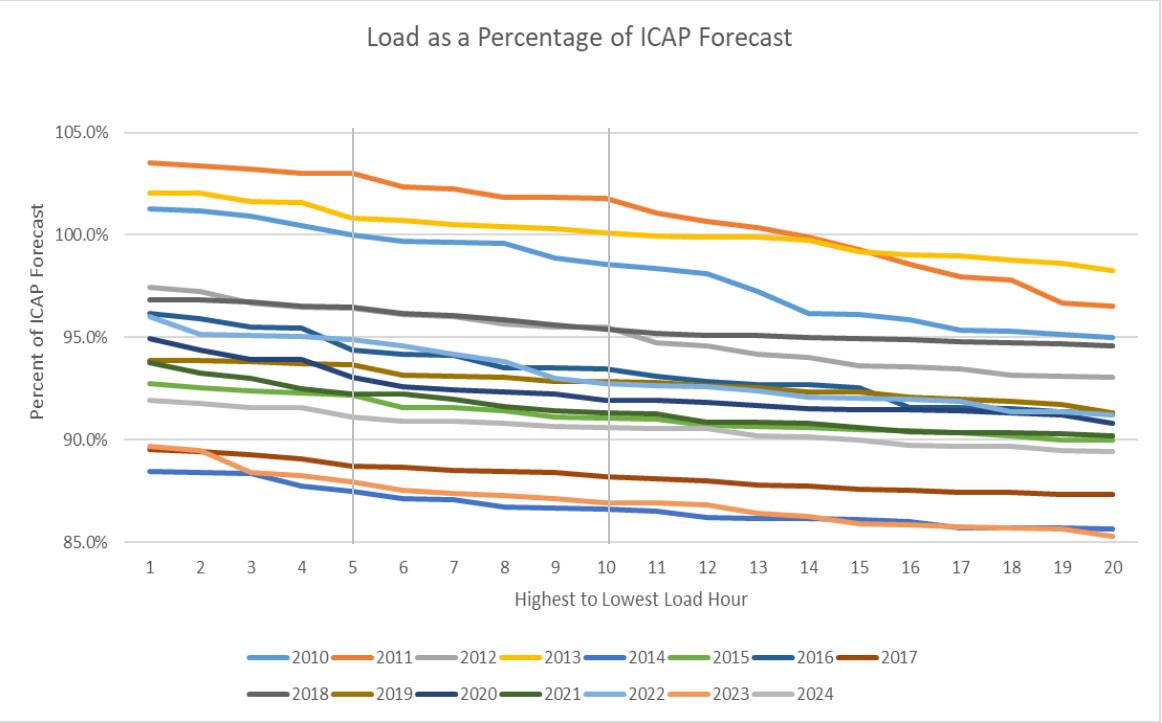
Updated Appendix: Load Duration Curve Analysis

Load Duration Curve Analysis Data

- The NYISO conducted a load duration curve analysis using previous hourly load data from 2010 to 2019.
  - This load data was not reconstituted with the estimated Special Case Resource (SCR) response.
- For each hour, the NYISO calculated the hourly load as a percentage of the ICAP load forecast for the applicable year.
- DPS Staff updated the analysis to include 2020 to 2024.
- In 2020, the NYISO pursued revision of the peak load forecast process. As a result of these revisions the peak load hour may only occur on a non-holiday weekday in July or August.
  - If the peak load day occurs outside of this timeframe, then the next highest load is selected until arriving upon a peak load that occurrence during a non-holiday peak day in July or August. (In 2021 and 2023 the peak hour occurred outside the July/August window.)

Decline from Peak – Load as Percentage of ICAP Forecast

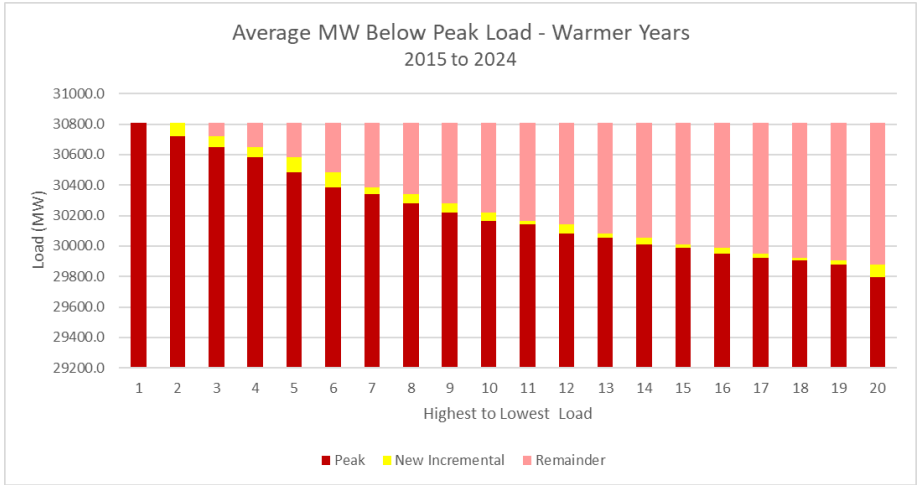
- In the years where the peak load is higher than the ICAP forecast (2010, 2011, 2013) the top peak hours show a decline around the 5th hour.
- Around the 10th hour most years show a drop and flattening out of load.

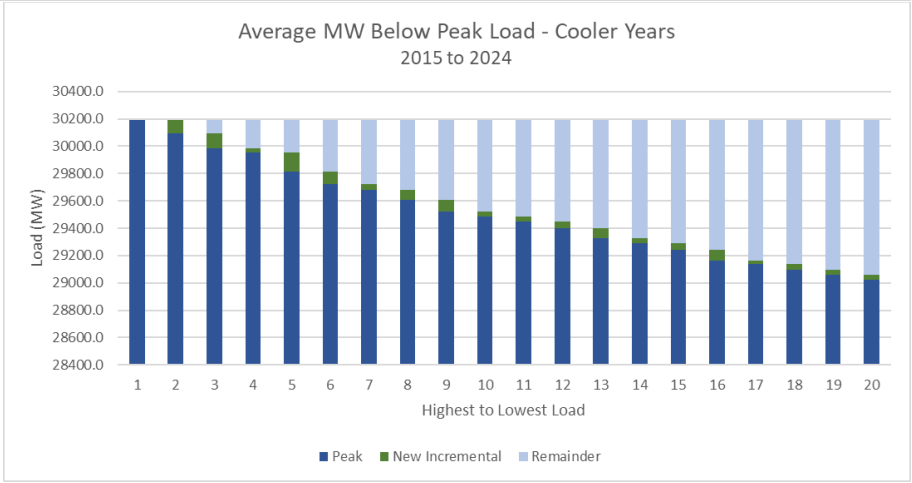


Decline from Peak MW

- **The charts at the right show the decline in the average MW when stepping from the first highest load hour to the 20th highest load hour for warmer and cooler years.* The Original analysis looked at 2010-2019 this updates to 2015 to 2024.**
  - A relatively steep decline is present around the 5th hour and decline moderates around 10th hour.
  - Average difference from peak at 5th hour is 321 MW in warmer years vs. 375 MW in cooler years.
  - Average difference from peak at 10th hour is 643 MW in warmer years vs. 700 MW in cooler years.

*The table on the next slide defines warmer and cooler years by Combined Temperature and Humidity Index (CTHI).



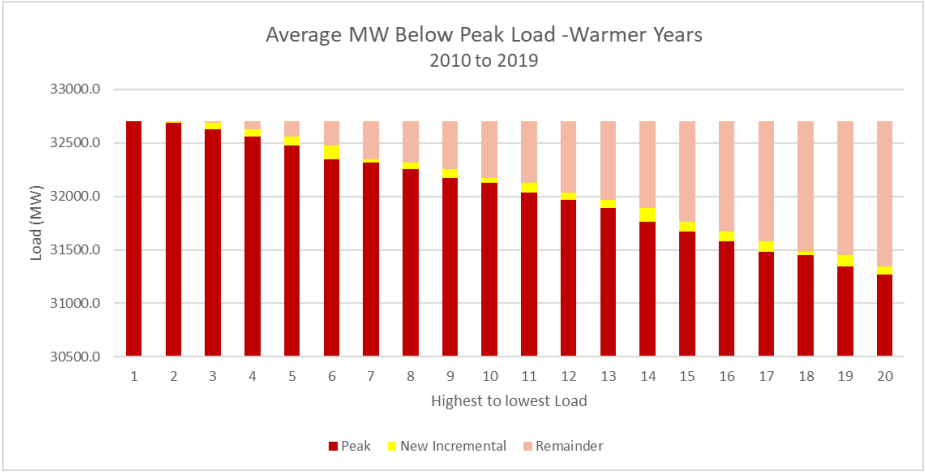


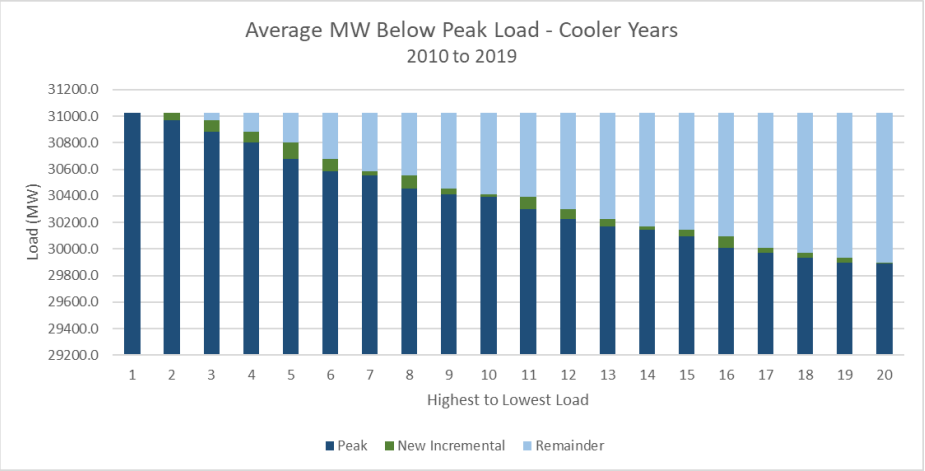
Decline from Peak MW

Previous 2010 -2019

- **The Original analysis looked at 2010-2019**
  Again, a relatively steep decline is present around the 5th hour.
  - Average difference from peak at 5th hour is 233 MW in warmer years vs. 349 MW in cooler years.
  - Average difference from peak at 10th hour is 582 MW in warmer years vs. 633 MW in cooler years.

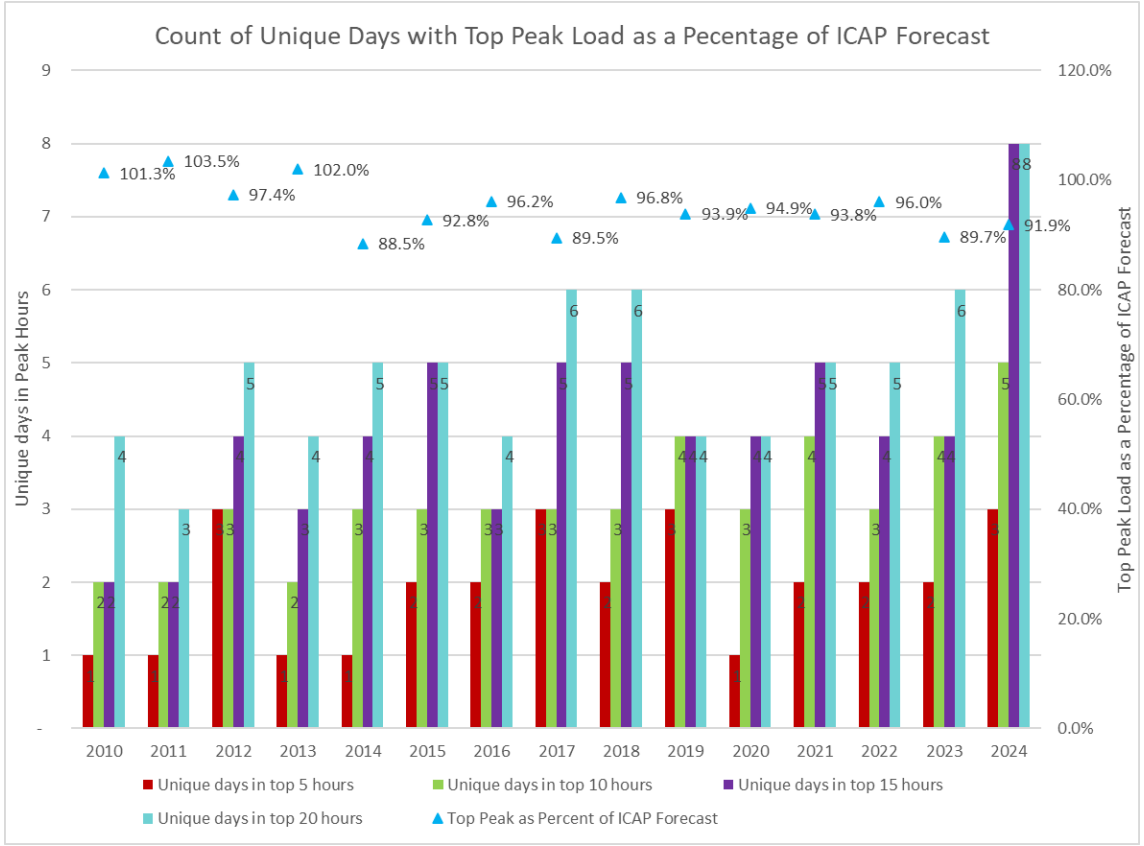
Year	NYCA Peak Day CTHI	Percentile	Above / Below 50th
2010	86.7	88%	A
2011	87.74	95%	A
2012	83.26	37%	B
2013	86.56	87%	A
2014	80.54	6%	B
2015	82.95	32%	B
2016	83.41	39%	B
2017	80.38	5%	B
2018	84.59	60%	A
2019	84.96	66%	A
2020	84.19	73%	A
2021	83.94	74%	A
2022	83.6	46%	B
2023	82.3	24%	B
2024	84.1	14%	B





Days in the Top Load Hours

- The secondary axis shows the top peak load as a percentage of ICAP forecast for each analysis year.
  - The primary axis shows a count of unique days over the top 20 peak load hours by year.
- There are at most three unique days in the top five load hours, five unique days in top 10, eight unique days in the top 15 and eight unique days in the top 20.
  - Only in 2010, 2011, and 2013 are there less than three days in the top 10 hours.
  - Additionally, the majority of peak load hours occur during weekdays.

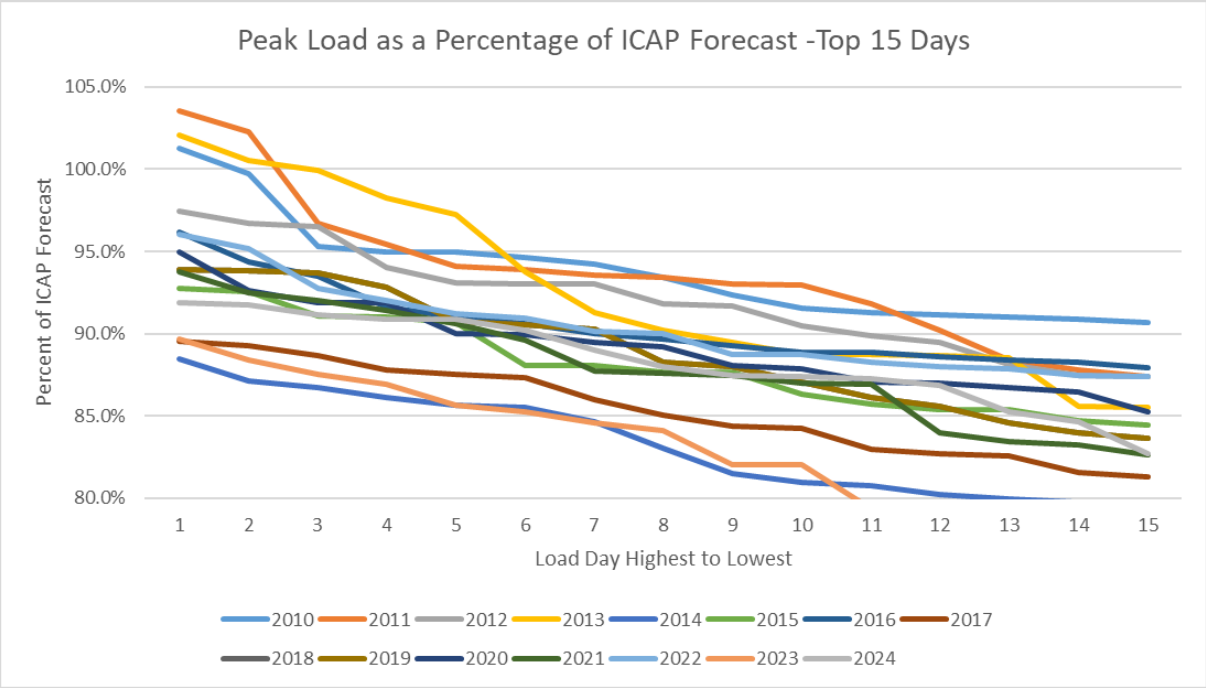


Top Peak Load Days

The chart at the right shows the top load days as a percent of the ICAP forecast.

- The top few peak load days, instead of peak load hours, could be identified by the NYISO.

This chart shows a steep decline around the third peak load day.



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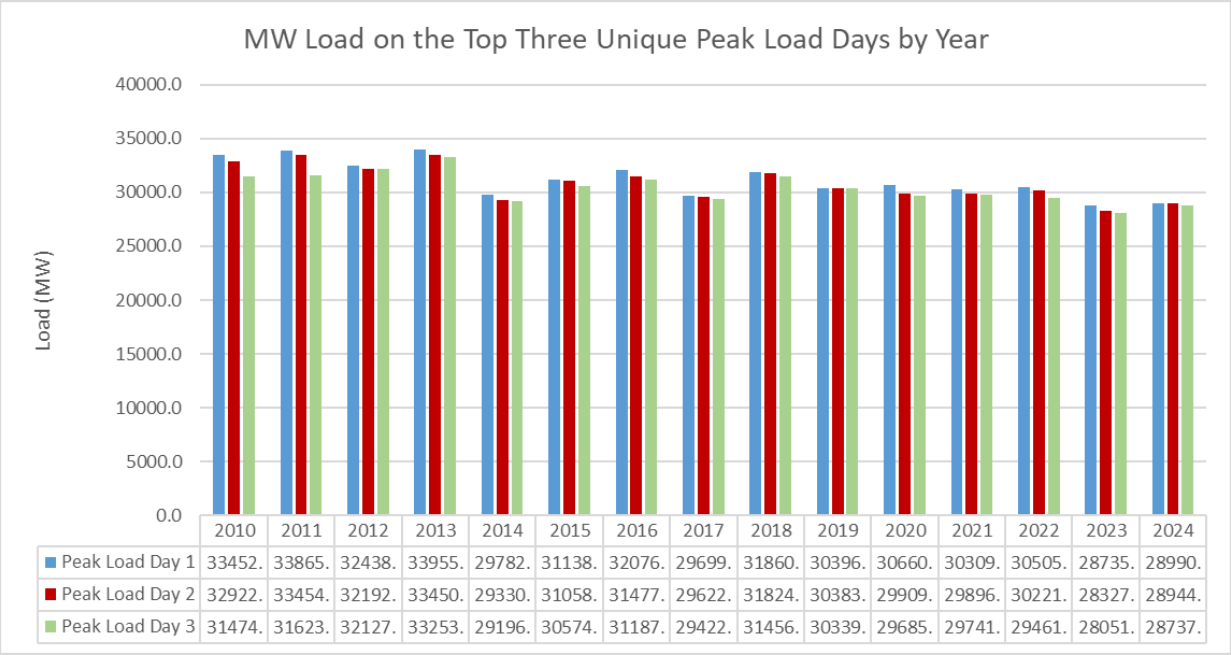
Top Peak Load Days

The chart at the right shows NYCA coincident peak load MW from the top three peak load days on non-holiday weekdays in July and August for each year.

- The MW load is shown for each year and the peak load below the x-axis.

The load generally is similar for each of the top three peak load days.

- The differential between the 1st and 3rd peaks range between 57 MW and 2,242 MW.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Peak Load Day 1	33452.	33865.	32438.	33955.	29782.	31138.	32076.	29699.	31860.	30396.	30660.	30309.	30505.	28735.	28990.
Peak Load Day 2	32922.	33454.	32192.	33450.	29330.	31058.	31477.	29622.	31824.	30383.	29909.	29896.	30221.	28327.	28944.
Peak Load Day 3	31474.	31623.	32127.	33253.	29196.	30574.	31187.	29422.	31456.	30339.	29685.	29741.	29461.	28051.	28737.

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Updated Appendix : NYCA Coincident Peak Load

Parties had been interested in including the Non-Coincident Zonal peaks in the allocation of ICAP. In the majority of the 15 years shown below, zonal Non-Coincident peak hours fall within the top ten peak hours. Note that in the years where the peak exceeded the ICAP forecast, zonal peaks were coincident with the NYCA peak hour.

Observation (Peak Load Hour)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	7/6/2010 16:00	7/22/2011 15:00	7/17/2012 16:00	7/19/2013 16:00	9/2/2014 14:00	7/29/2015 16:00	8/11/2016 16:00	7/19/2017 16:00	8/29/2018 16:00	7/20/2019 16:00	7/27/2020 17:00	8/26/2021 16:00	7/20/2022 17:00	7/28/2023 17:00	7/8/2024 17:00
2	7/6/2010 15:00	7/22/2011 14:00	7/17/2012 17:00	7/19/2013 15:00	9/2/2014 13:00	9/8/2015 16:00	8/11/2016 15:00	7/19/2017 15:00	8/29/2018 15:00	7/20/2019 17:00	7/27/2020 16:00	8/26/2021 17:00	8/8/2022 17:00	7/28/2023 18:00	7/10/2024 17:00
3	7/6/2010 14:00	7/22/2011 12:00	7/18/2012 13:00	7/19/2013 14:00	9/2/2014 15:00	9/8/2015 15:00	8/11/2016 17:00	7/21/2017 15:00	8/3/2018 16:00	7/29/2019 16:00	7/27/2020 15:00	8/26/2021 15:00	7/20/2022 18:00	7/27/2023 17:00	7/10/2024 16:00
4	7/6/2010 17:00	7/22/2011 16:00	6/21/2012 16:00	7/19/2013 13:00	9/2/2014 12:00	7/29/2015 17:00	8/11/2016 14:00	7/21/2017 16:00	8/3/2018 17:00	7/21/2019 17:00	7/27/2020 18:00	8/13/2021 16:00	7/20/2022 16:00	7/28/2023 16:00	7/8/2024 18:00
5	7/6/2010 13:00	7/22/2011 13:00	7/17/2012 15:00	7/19/2013 12:00	9/2/2014 16:00	7/29/2015 15:00	8/12/2016 14:00	7/20/2017 15:00	8/29/2018 14:00	7/29/2019 17:00	7/27/2020 14:00	8/26/2021 14:00	8/8/2022 18:00	7/27/2023 16:00	7/9/2024 17:00
6	7/7/2010 15:00	7/22/2011 11:00	7/18/2012 12:00	7/19/2013 17:00	7/1/2014 15:00	9/8/2015 17:00	8/12/2016 15:00	7/21/2017 14:00	8/29/2018 13:00	7/21/2019 16:00	7/20/2020 17:00	8/13/2021 17:00	8/8/2022 16:00	7/6/2023 17:00	7/15/2024 17:00
7	7/7/2010 14:00	7/21/2011 16:00	6/21/2012 17:00	7/18/2013 16:00	7/1/2014 14:00	9/8/2015 14:00	8/11/2016 13:00	7/20/2017 13:00	8/29/2018 17:00	7/20/2019 18:00	7/20/2020 16:00	8/12/2021 16:00	8/8/2022 15:00	7/28/2023 19:00	7/16/2024 17:00
8	7/7/2010 16:00	7/22/2011 17:00	7/18/2012 14:00	7/18/2013 15:00	7/2/2014 12:00	7/29/2015 14:00	8/12/2016 16:00	7/20/2017 14:00	8/3/2018 15:00	7/20/2019 15:00	7/20/2020 15:00	8/13/2021 15:00	7/20/2022 15:00	7/27/2023 18:00	7/10/2024 15:00
9	7/7/2010 13:00	7/21/2011 17:00	7/17/2012 14:00	7/18/2013 14:00	7/1/2014 13:00	7/20/2015 15:00	7/22/2016 16:00	7/19/2017 14:00	9/5/2018 16:00	7/29/2019 15:00	7/20/2020 14:00	8/11/2021 17:00	8/8/2022 14:00	7/28/2023 15:00	7/9/2024 16:00
10	7/7/2010 17:00	7/21/2011 15:00	7/17/2012 18:00	7/19/2013 11:00	7/2/2014 13:00	7/20/2015 16:00	8/12/2016 13:00	7/20/2017 12:00	8/3/2018 18:00	7/30/2019 17:00	7/3/2020 15:00	8/12/2021 15:00	8/9/2022 17:00	7/5/2023 17:00	7/8/2024 16:00
11	7/6/2010 12:00	7/21/2011 14:00	6/21/2012 15:00	7/17/2013 16:00	7/2/2014 14:00	8/17/2015 16:00	7/22/2016 17:00	7/19/2017 17:00	9/5/2018 17:00	7/30/2019 16:00	8/10/2020 17:00	8/11/2021 16:00	7/20/2022 19:00	7/6/2023 16:00	7/15/2024 18:00
12	7/6/2010 18:00	7/21/2011 18:00	6/21/2012 18:00	7/18/2013 17:00	7/1/2014 16:00	7/20/2015 14:00	8/12/2016 17:00	7/21/2017 13:00	7/2/2018 15:00	7/21/2019 18:00	8/10/2020 16:00	8/12/2021 14:00	7/20/2022 14:00	7/27/2023 15:00	7/16/2024 16:00
13	7/7/2010 12:00	7/22/2011 18:00	7/17/2012 13:00	7/18/2013 13:00	7/2/2014 15:00	7/3/2015 16:00	7/22/2016 15:00	6/13/2017 15:00	7/2/2018 14:00	7/30/2019 14:00	7/3/2020 14:00	8/26/2021 18:00	8/8/2022 13:00	7/6/2023 18:00	8/1/2024 17:00
14	7/7/2010 18:00	7/21/2011 13:00	6/20/2012 16:00	7/17/2013 15:00	9/2/2014 11:00	8/17/2015 17:00	8/12/2016 12:00	6/13/2017 14:00	8/6/2018 16:00	7/21/2019 15:00	7/27/2020 19:00	8/13/2021 14:00	8/8/2022 19:00	7/5/2023 18:00	8/1/2024 18:00
15	7/6/2010 11:00	7/22/2011 10:00	7/18/2012 11:00	7/17/2013 17:00	7/8/2014 15:00	8/17/2015 15:00	8/11/2016 18:00	6/12/2017 16:00	8/3/2018 14:00	7/20/2019 14:00	7/27/2020 13:00	8/25/2021 17:00	7/21/2022 18:00	7/5/2023 16:00	7/10/2024 18:00
16	7/6/2010 19:00	7/21/2011 12:00	6/20/2012 17:00	7/17/2013 14:00	7/8/2014 14:00	7/29/2015 18:00	8/13/2016 14:00	6/13/2017 16:00	8/29/2018 12:00	7/30/2019 15:00	7/20/2020 13:00	8/25/2021 16:00	8/9/2022 16:00	7/6/2023 15:00	7/10/2024 14:00
17	7/7/2010 11:00	7/21/2011 19:00	7/18/2012 15:00	7/18/2013 12:00	7/2/2014 11:00	7/20/2015 17:00	8/11/2016 12:00	7/20/2017 16:00	7/2/2018 16:00	7/29/2019 18:00	7/3/2020 16:00	8/13/2021 18:00	7/21/2022 17:00	7/27/2023 19:00	7/8/2024 19:00
18	9/2/2010 15:00	7/22/2011 19:00	6/21/2012 14:00	7/18/2013 18:00	7/23/2014 14:00	7/3/2015 17:00	8/13/2016 15:00	6/12/2017 15:00	8/6/2018 17:00	7/30/2019 13:00	7/20/2020 18:00	8/12/2021 17:00	7/20/2022 13:00	7/28/2023 14:00	7/9/2024 18:00
19	9/2/2010 16:00	7/12/2011 16:00	8/3/2012 15:00	7/19/2013 18:00	7/23/2014 15:00	7/20/2015 13:00	8/12/2016 18:00	6/13/2017 13:00	9/4/2018 16:00	7/29/2019 14:00	7/3/2020 17:00	8/26/2021 13:00	8/9/2022 15:00	7/17/2023 17:00	7/16/2024 15:00
20	9/1/2010 16:00	7/21/2011 20:00	7/17/2012 19:00	7/15/2013 16:00	7/8/2014 13:00	7/29/2015 13:00	7/22/2016 14:00	8/22/2017 14:00	9/4/2018 17:00	7/20/2019 13:00	8/10/2020 15:00	8/11/2021 15:00	8/4/2022 17:00	7/13/2023 17:00	7/16/2024 14:00
Top Peak as Percent of ICAP Forecast	101.3%	103.5%	97.4%	102.0%	88.5%	92.8%	96.2%	89.5%	96.8%	93.9%	94.9%	93.8%	96.0%	89.7%	91.9%
NYCA Coincident Peak	7/6/2010 16:00	7/22/2011 15:00	7/17/2012 16:00	7/19/2013 16:00	9/2/2014 14:00	7/29/2015 16:00	8/11/2016 16:00	7/19/2017 16:00	8/29/2018 16:00	7/20/2019 16:00	7/27/2020 17:00	8/26/2021 16:00	7/20/2022 17:00	7/28/2023 17:00	7/8/2024 17:00
G-J Non-Coincident Peak	7/6/2010 16:00	7/22/2011 15:00	7/18/2012 12:00	7/19/2013 16:00	9/2/2014 15:00	7/20/2015 16:00	8/11/2016 16:00	7/20/2017 15:00	9/6/2018 15:00	7/17/2019 15:00	7/28/2020 14:00	8/27/2021 14:00	8/9/2022 17:00	7/27/2023 17:00	7/16/2024 17:00
J Non-Coincident Peak	7/6/2010 16:00	7/22/2011 11:00	7/18/2012 14:00	7/19/2013 16:00	9/2/2014 15:00	7/20/2015 17:00	8/11/2016 16:00	7/20/2017 15:00	9/6/2018 16:00	7/17/2019 17:00	7/28/2020 15:00	8/27/2021 16:00	8/9/2022 16:00	7/27/2023 16:00	7/16/2024 17:00
K Non-Coincident Peak	7/6/2010 16:00	7/22/2011 15:00	6/21/2012 16:00	7/18/2013 16:00	9/2/2014 15:00	7/20/2015 16:00	8/12/2016 16:00	7/20/2017 15:00	8/29/2018 16:00	7/21/2019 17:00	7/28/2020 15:00	8/14/2021 16:00	8/9/2022 17:00	7/28/2023 17:00	7/16/2024 17:00

MP Outstanding questions

What is the difference between actual and reconstituted load?

This was addressed in the NYISO presentation of the project on June 3, 2021.

The peak hour load received from the TOs is net of certain production.

- Demand reductions from SCRs, EDRP resources, DSR Aggregations and the output of any local generator that participate in NYISO's SCR program are added back into the peak hour load.
    - Reductions of EDRP resources and SCRs resulting from TO-administered DR programs occurring during the TD and NYCA peaks are added back, but load reductions by resources only participating in the TO programs will not be added back
- Specific municipal generating units that participate in the NYISO Capacity Market are also added back into the load.
- There is currently no adjustment to add back generation from resources not participating in the wholesale markets.
    - For example, there is no adjustment to the load for rooftop solar outside of the wholesale markets.

What is the difference between actual and reconstituted load?

In 2021 the NYISO recommended the use of actual load

- Actual load data would be used to identify the peak load hours, as opposed to reconstituted load data.
  - Final Special Case Resource (SCR) load reduction data would not be available in time to be used to identify multiple peak load hours.
  - The load duration curve analysis discussed at the May 4, 2021, ICAPWG has been updated to use actual load data instead of reconstituted load and has been included as an appendix to this presentation.
  - Actual load data is used today when identifying the peak load hour.

Can you weight top hours by Loss of Load Expectation?

NYISO recommended against using LOLE from the IRM to weight ICAP obligations because the peak load scenarios used in the IRM may not match observed values (July 27, 2021 ICAPWG)

- It is possible to update the analysis using the 2024 MARS model.
  - Because we cannot baseline to the earlier analysis we cannot provide assurances that the updated analysis uses same methodology as in 2021.
  - The MARS model used for the IRM is designed to capture extreme cases and days with high LOLE are usually not indicative of expected load.
  - Importantly, there are many other factors besides the load and load shape that impact system LOLE, and these can change from year to year. Only a few of these were directly related to load.

Are there other ways to weight the top hours?

There are many ways to weight top hours. I chose to weight the top ten hours by their difference from the 11th hour load.

- With this method, if there is a large variation in the load over the top ten hours, the top hours will be more heavily weighted.
- If there is little differential between the top hour and the 11th hour (a flat peak) then the top hours would receive a more even weighting.
- I use the 11th hour to make sure the 10th hour gets some weight. This typically will not be a lot unless there is a large drop in load after the 10th hour.
- If the top ten hours all happen in two days, the top ten hours over at least three days rule, could underweight the 10th hour. This is because the 10th hour would be the next highest hour in a separate day, further down the load curve and the 11th hour would have to be the hour after it.

Are there other ways to weight the top hours?

Here are the calculated weightings for 2010 to 2024. Note 2010, 2011, and 2013 a years where the to ten peak hours happened in two days, column with an “A” are calculated using top 10 hours over at least 3 days rule.

Calculation Weights with Difference from hour 11																		
Calculation of differences	**2010**	**2010 A**	**2011**	**2011 A**	**2012**	**2013**	**2013 A**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
1	967.8	2028.9	798.6	2287.0	890.7	702.2	713.9	655.6	595.1	1012.0	470.0	537.6	345.3	975.0	799.0	1071.0	882.0	428.3
2	919.4	1980.5	750.0	2238.4	834.7	701.6	713.3	630.4	514.8	933.0	440.9	534.9	344.7	788.0	638.0	787.0	816.0	382.3
3	847.6	1908.7	700.0	2188.4	644.2	571.7	583.4	614.6	467.0	797.0	392.9	501.2	331.8	640.0	560.0	769.0	474.0	318.7
4	692.2	1753.3	638.6	2127.0	579.8	548.3	560.0	408.4	432.0	772.0	320.7	443.0	287.8	639.0	386.0	763.0	426.0	317.5
5	547.7	1608.8	636.4	2124.8	556.6	299.5	311.2	316.1	394.8	413.0	193.3	411.6	287.1	358.0	313.0	707.0	322.0	175.6
6	438.0	1499.1	416.2	1904.6	459.7	258.5	270.2	204.1	201.0	348.0	191.2	320.4	120.3	224.0	313.0	604.0	198.0	107.5
7	421.3	1482.4	387.2	1875.6	420.1	197.0	208.7	179.3	190.8	342.0	140.0	281.6	104.3	175.0	231.0	478.0	156.0	102.8
8	403.0	1464.1	241.8	1730.2	299.3	164.6	176.3	70.2	144.1	124.0	115.7	217.7	78.8	132.0	114.0	370.0	109.0	80.8
9	162.2	1223.3	239.5	1727.9	256.9	127.6	139.3	52.4	31.5	123.0	92.4	132.7	21.4	103.0	45.0	116.0	60.0	25.3
10	72.3	51.4	224.5	45.1	249.4	61.0	11.7	32.8	29.8	110.0	34.5	63.1	16.8	0.0	3.0	27.0	9.0	6.5
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sum of Differences	5471.5	15000.5	5032.8	18249.0	5191.4	3632.0	3688.0	3163.9	3000.9	4974.0	2391.6	3443.8	1938.3	4034.0	3402.0	5692.0	3452.0	1945.3
Weighting of hour 1	18%	14%	16%	13%	17%	19%	19%	21%	20%	20%	20%	16%	18%	24%	23%	19%	26%	22%
Weighting of hour 2	17%	13%	15%	12%	16%	19%	19%	20%	17%	19%	18%	16%	18%	20%	19%	14%	24%	20%
Weighting of hour 3	15%	13%	14%	12%	12%	16%	16%	19%	16%	16%	16%	15%	17%	16%	16%	14%	14%	16%
Weighting of hour 4	13%	12%	13%	12%	11%	15%	15%	13%	14%	16%	13%	13%	15%	16%	11%	13%	12%	16%
Weighting of hour 5	10%	11%	13%	12%	11%	8%	8%	10%	13%	8%	8%	12%	15%	9%	9%	12%	9%	9%
Weighting of hour 6	8%	10%	8%	10%	9%	7%	7%	6%	7%	7%	8%	9%	6%	6%	9%	11%	6%	6%
Weighting of hour 7	8%	10%	8%	10%	8%	5%	6%	6%	6%	7%	6%	8%	5%	4%	7%	8%	5%	5%
Weighting of hour 8	7%	10%	5%	9%	6%	5%	5%	2%	5%	2%	5%	6%	4%	3%	3%	7%	3%	4%
Weighting of hour 9	3%	8%	5%	9%	5%	4%	4%	2%	1%	2%	4%	4%	1%	3%	1%	2%	2%	1%
Weighting of hour 10	1%	0%	4%	0%	5%	2%	0%	1%	1%	2%	1%	2%	1%	0%	0%	0%	0%	0%

Are there other ways to weight the top hours?

The NYISO put forward the following in 2021 regarding weighting:

- One of the goals of the Expanding Application of Peak Hour Forecasts project is to reduce volatility in the ICAP allocation to LSEs when using a single peak load hour.
  - Weighting the top peak load days would mean that volatility could still skew the allocation to hours with a higher weight.
- It is therefore more appropriate to use an equal weighting of the identified peak load hours to allocate ICAP obligations to the LSEs.

DPS Staff goal is to provide a better signal to the demand side of the market of what capacity costs are caused by their behavior, and better allocate capacity cost to the cost causer.

- Weighting the hours in their proportion to peak load, magnifies the importance of peak hours but does so in a cost causative way.
- Weighting may diminish the importance of non-coincident peak hours.

Proposals

DPS Staff Proposal

- The DPS Staff proposes to use the top ten NYCA coincident peak load hours ~~on a least three unique peak load days,~~ with the identification of these peak load days to include only non-holiday weekdays in July and August, consistent with design conditions.
  - This approach is intended to provide a better allocation of capacity cost to LSE and a more representative rate element to allocate capacity costs to retail customers.
  - In most years, the top ten hours will occur in 3 or more days. But when the top ten hours occur on two days, all zones tend to peak at the same time. The three day rule dilutes the weight of the peak and chooses an hour that may not be representative.
- The top ten peak load hours used in the allocation would be ~~equally~~ weighted in proportion to their contribution relative to the peak hour.
- If adopted by stakeholders, DPS Staff proposes that the change to the allocation methodology go into effect with the May 2026 Capability Period. This will give TOs time to implement and test needed billing changes.

DPS Staff Proposal - Example

The NYISO Forecast the 2024 Peak Load MW, then determines the ICAP requirement for TOs and then determines their UCAP requirement based on their share of the Peak Load Forecast.

Summer 2024

Transmission Owner	Forecasted Peak Load MW	ICAP MW Requirement	UCAP MW Requirement
Metering Authority - Central Hudson Gas and Electr	1,023.9	1,249.2	1,084.2
Metering Authority - Consolidated Edison of NY	12,636.4	15,416.4	13,379.9
Metering Authority - Long Island Power Authority	5,021.2	6,125.9	5,316.6
Metering Authority - New York Power Authority	503.3	614.0	532.9
Metering Authority - New York State Electric & Gas	3,086.1	3,765.0	3,267.7
Metering Authority - Niagara Mohawk	6,688.2	8,159.6	7,081.7
Metering Authority - Orange and Rockland Utilities	1,111.7	1,356.3	1,177.1
Metering Authority - Rochester Gas and Electric	1,470.8	1,794.4	1,557.3
Total	31,541.6	38,480.8	33,397.4

Fictious Example of three LSE making up O&R Load

Peak load hours Summer 2023	LSE 1	LSE 1 Weighted	LSE 2	LSE 2 Weighted	LSE 3	LSE 3 Weighted	Total	Weighted Total	Weighting based on Diff from hr 11
7/28/23 17:00	300	77	360	92	452	115	1,112	284	25.6%
7/28/23 18:00	290	69	420	99	284	67	994	235	23.6%
7/27/23 17:00	250	34	390	54	570	78	1,210	166	13.7%
7/28/23 16:00	350	43	350	43	281	35	981	121	12.3%
7/27/23 16:00	360	34	380	35	420	39	1,160	108	9.3%
7/6/23 17:00	340	20	380	22	253	15	973	56	5.7%
7/28/23 19:00	330	15	440	20	202	9	972	44	4.5%
7/27/23 18:00	340	11	400	13	260	8	1,000	32	3.2%
7/28/23 15:00	300	5	340	6	328	6	968	17	1.7%
7/5/23 17:00	400	1	200	1	366	1	966	3	0.3%
Total	**3,260**	**308**	**3,660**	**384**	**3,417**	**373**	**10,337**		1
Average	326.0	307.7	366.0	384.2	341.7	373.3	1,033.7	1,065.2	
LSE allocated UCAP 2023	371.2	340.0	416.8	424.6	389.1	412.5	1,177.1		

The TOs calculate the LSEs share of the UCAP requirement based on their load during the top ten load hours.

LSE1's UCAP requirement = O&R UCAP requirement X $\frac{LSE1's\ Weighted\ Average\ Load\ over\ top\ 10\ hour}{Weighted\ Average\ Total\ Load\ ove\ top\ 10\ hours}$

LSE1's UCAP requirement $= 1{,}177.1\ X\ \frac{307.7}{1{,}065.2}$ = 340 MW

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NYISO Recommendation (from July 27,2021 ICAPWG)

- **The NYISO proposes to use the NYCA coincident peak load from the highest load hour on each of the top three unique peak load days, with the identification of these peak load days to include only non-holiday weekdays in July and August, consistent with design conditions.**
  - As previously discussed, up to three unique peak load days are historically present in the top 5 peak load hours.
  - This approach is intended to balance concerns that the incentive to reduce load during peak hours will be reduced with the desire to have that incentive apply to more peak load days.
- **Actual load data would be used to identify the peak load hours, as opposed to reconstituted load data.**
- **The top three peak load days used in the allocation would be equally weighted.**
  - If there is broad stakeholder consensus that a weighting of the top three peak load days used in the ICAP allocation to LSEs is desirable, then the NYISO will work with stakeholders within the next phase of this market design to develop a more appropriate methodology

Compare Results from Proposals

Fictious Example of three LSE making up O&R Load

Peak load hours Summer 2023	LSE 1	LSE 1 Weighted	LSE 2	LSE 2 Weighted	LSE 3	LSE 3 Weighted	Total	Weighted Total	Weighting based on Diff from hr 11
7/28/23 17:00	300	77	360	92	452	115	1,112	284	25.6%
7/28/23 18:00	290	69	420	99	284	67	994	235	23.6%
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7/28/23 16:00	350	43	350	43	281	35	981	121	12.3%
7/27/23 16:00	360	34	380	35	420	39	1,160	108	9.3%
7/6/23 17:00	340	20	380	22	253	15	973	56	5.7%
7/28/23 19:00	330	15	440	20	202	9	972	44	4.5%
7/27/23 18:00	340	11	400	13	260	8	1,000	32	3.2%
7/28/23 15:00	300	5	340	6	328	6	968	17	1.7%
7/5/23 17:00	400	1	200	1	366	1	966	3	0.3%
Total	**3,260**	**308**	**3,660**	**384**	**3,417**	**373**	**10,337**		1
Average	326.0	307.7	366.0	384.2	341.7	373.3	1,033.7	1,065.2	
LSE allocated UCAP 2023	371.2	340.0	416.8	424.6	389.1	412.5	1,177.1		
Top 3 Days	890		1,130		1,275		3,295		
LSE allocated UCAP 2023 Top 3 Days Method	317.97		403.71		455.42				
LSE allocated UCAP 2023 Top 10 Method	371.24		416.79		389.07				
LSE allocated UCAP 2023 Weighted Top 10 Method	340.04		424.56		412.49				
LSE allocated UCAP 2023 Current Method	317.65		381.18		478.27				

Next Steps

- Next Steps
  - Gather feedback from market participants
  - Return to ICAPWG with feedback from MP
  - Move to Market Design Complete
    - An MDC milestone will require the NYISO and its stakeholders to collaborate to finalize the market design and corresponding draft tariff language revisions.
    - These tariff revisions are anticipated to include detailed on number of peak load days utilized, as well as calculation for the LSE ICAP obligation allocation.