OCTOBER 27, 2026| TEAMS

2026 - 2027 Winter Generator Readiness Seminar



AGENDA

1. Opening Remarks – Jon Gravelin
2. Winter Weather Outlook – Mike Fontaine
3. Capacity Outlook – Jon Gravelin
4. Gas/Electric Coordination – Mike Fontaine
5. OP-21 Surveys – Robert Przytula
6. 21 Day Energy Assessment – Robert Przytula
7. Emergency Procedure Review – Jon Gravelin
8. Conclusion and Key Takeaways – Jon Gravelin

Disclaimer

ISO New England (ISO) provides seminars to enhance participant and stakeholder understanding. Because not all issues and requirements are addressed by the seminar, participants and other stakeholders should not rely solely on this seminar for information but should consult the effective *Transmission, Markets and Services Tariff* ("Tariff") and the relevant *Market Manuals*, *Operating Procedures* and *Planning Procedures* ("Procedures").

Seminar examples are provided for illustrative purposes only. Company names and numerical values used are fictitious.

In case of a discrepancy between seminar content provided by ISO and the Tariff or Procedures, the meaning of the Tariff and Procedures shall govern.

Opening Remarks

Winter 2026 - 2027

Jon Gravelin

DIRECTOR, SYSTEM OPERATIONS



Opening Remarks

- First and foremost, vigilant monitoring of fuel inventories is crucial to meeting New England's energy needs, especially during extreme cold weather conditions. A comprehensive understanding of fuel resources and their availability is key to ensuring that our generators continue to operate reliably.
- Equally important is the need for generators to communicate openly with ISO-NE about any limitations on availability. Effective collaboration between generators and ISO-NE is vital for maintaining reliable grid management.
- Main-focus will be on the importance of collaboration during both normal and emergency conditions. The ability to share knowledge, and mange resources is fundamental to the resilience of our energy infrastructure.
- Information shared today will deepen your understanding of the procedures and processes for addressing both abnormal and emergency situations. Together, we can strengthen our preparedness and ensure a reliable energy supply through the winter season.

Winter Weather Outlook

Winter 2026-2027

Mike Fontaine

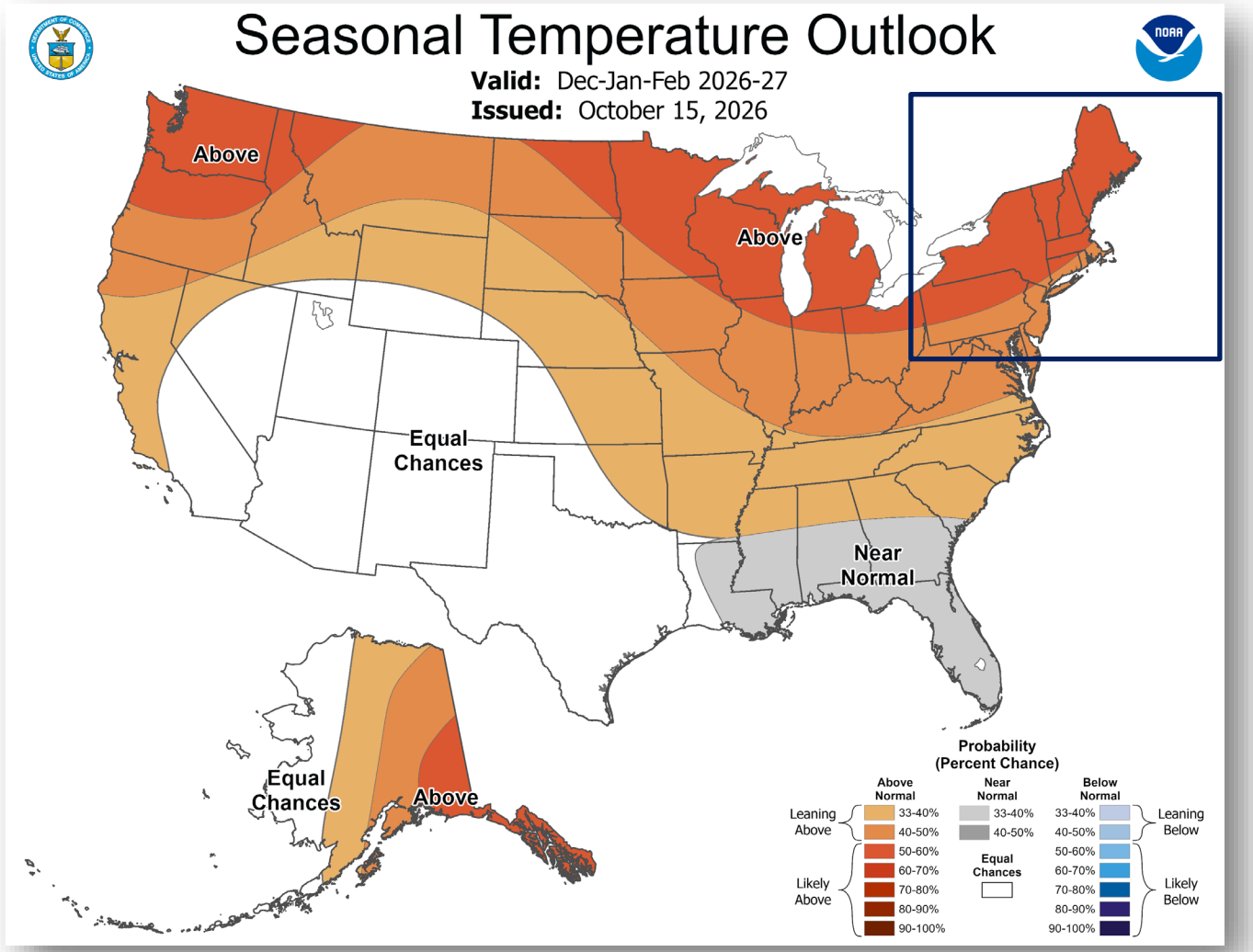
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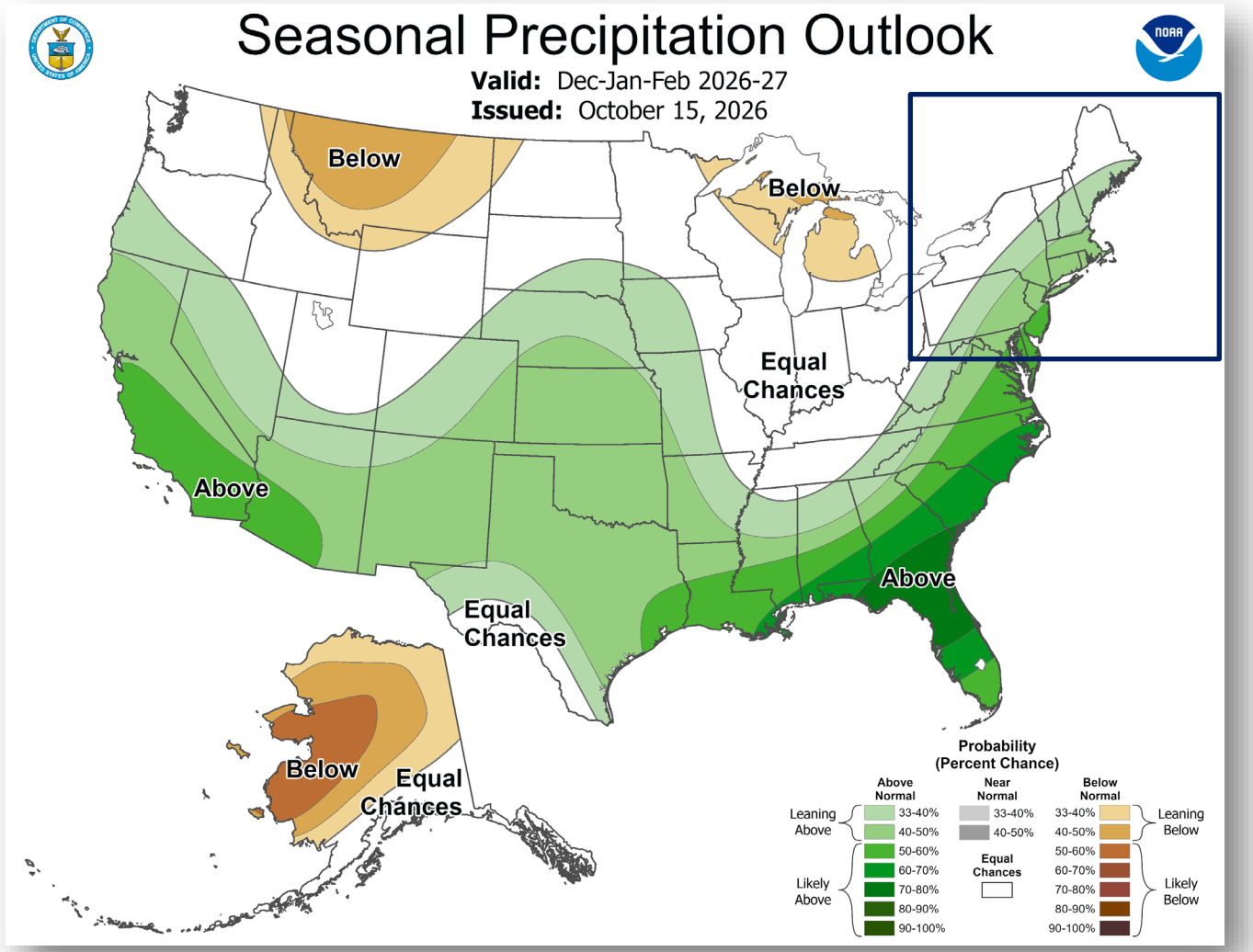
Winter Temperature Outlook

Warmer than normal temperatures are forecast for New England.



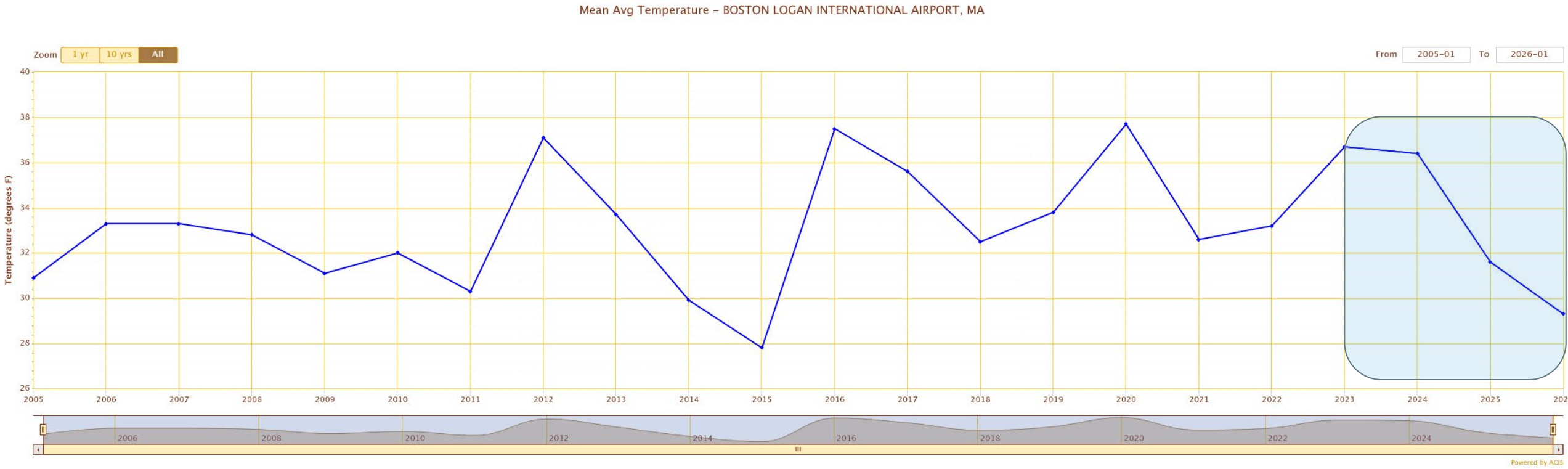
Winter Precipitation Outlook

Near to above normal precipitation for New England.



Boston Winter Temperatures – Mild Trend Interrupted

Even though the mean temperature had been trending milder over the past couple of decades, the winter of 2024-25 was the first since 2015 that the seasonal mean temperature was below normal, -0.9°. And last winter was even colder at -3.2° below normal. [Boston 30yr normal 32.5°]



PRIMARY CLIMATE/WEATHER PATTERNS

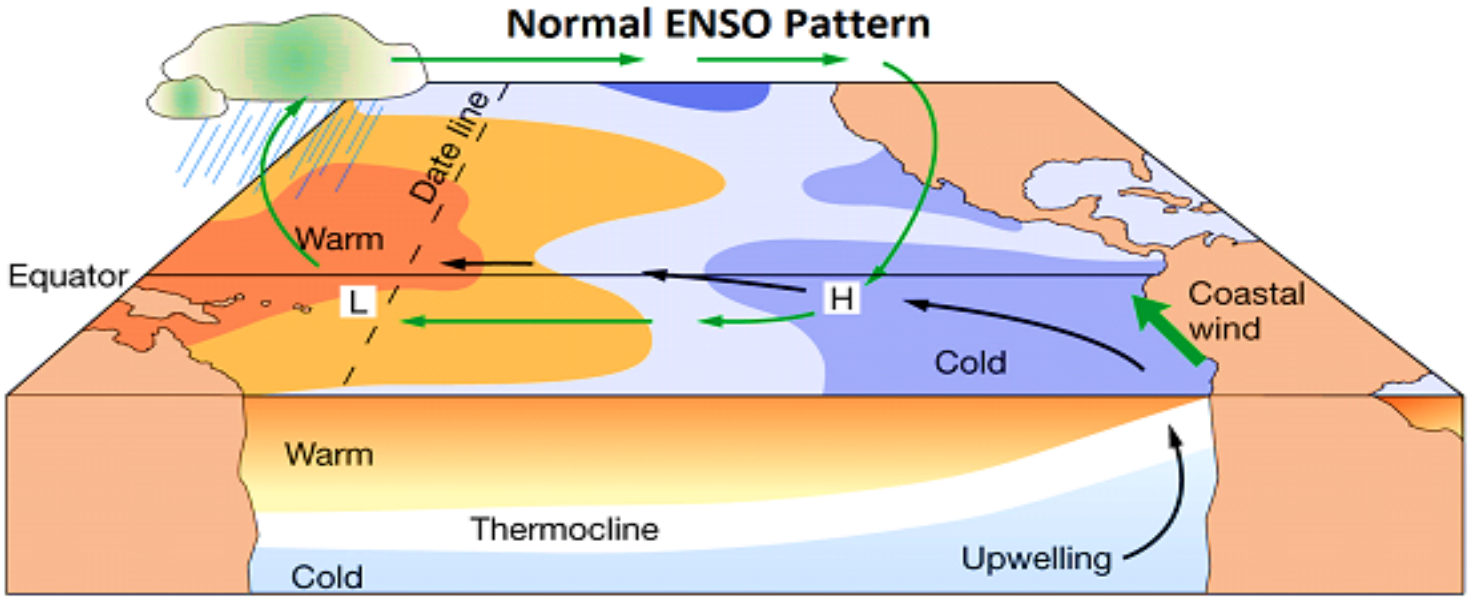
WHICH IMPACT NEW ENGLAND WINTERS

Drivers For A Winter Forecast

El Niño-Southern Oscillation (ENSO)

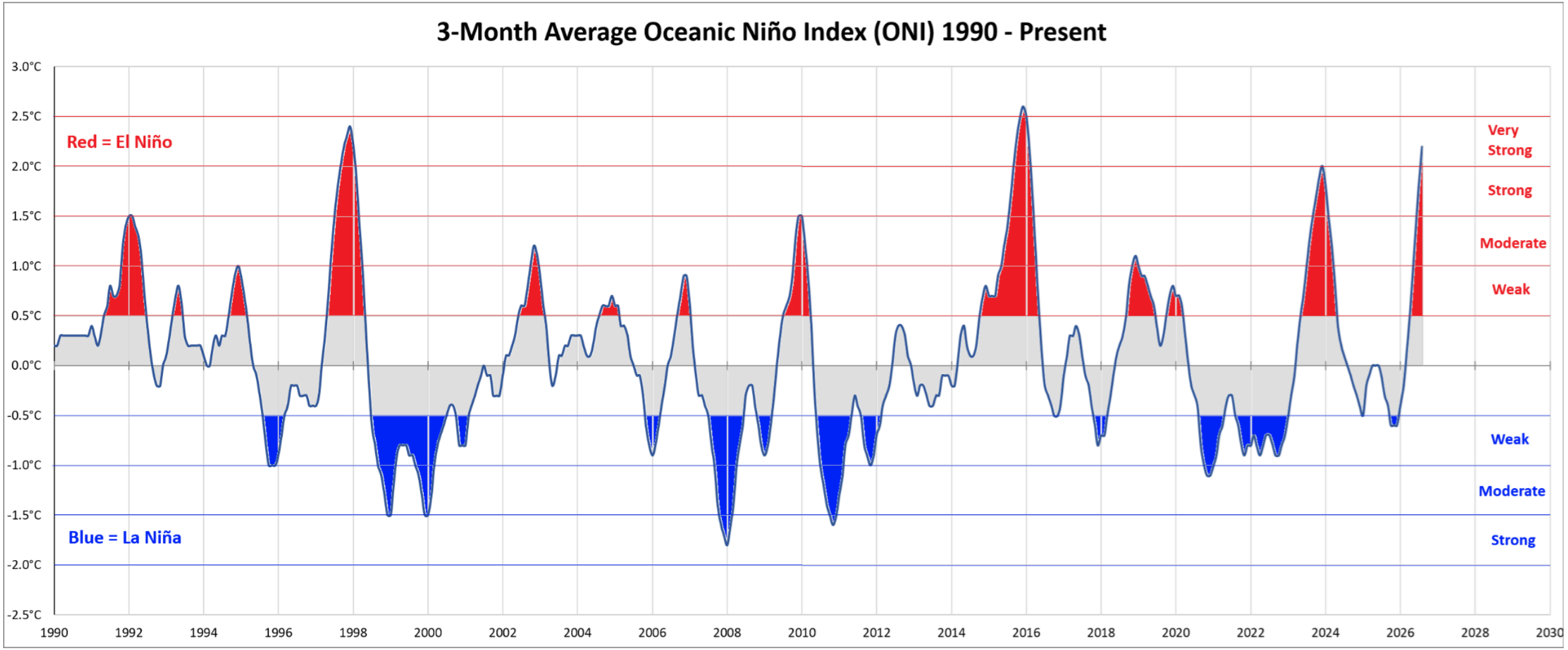
The ENSO is a multi-part circulation pattern across the tropical Pacific Ocean.

In most years, high pressure dominates in the equatorial eastern Pacific Ocean, and general low pressure is observed in the western Pacific region, which results in the easterly trade winds causing warm ocean waters near the equator to accumulate in the west.



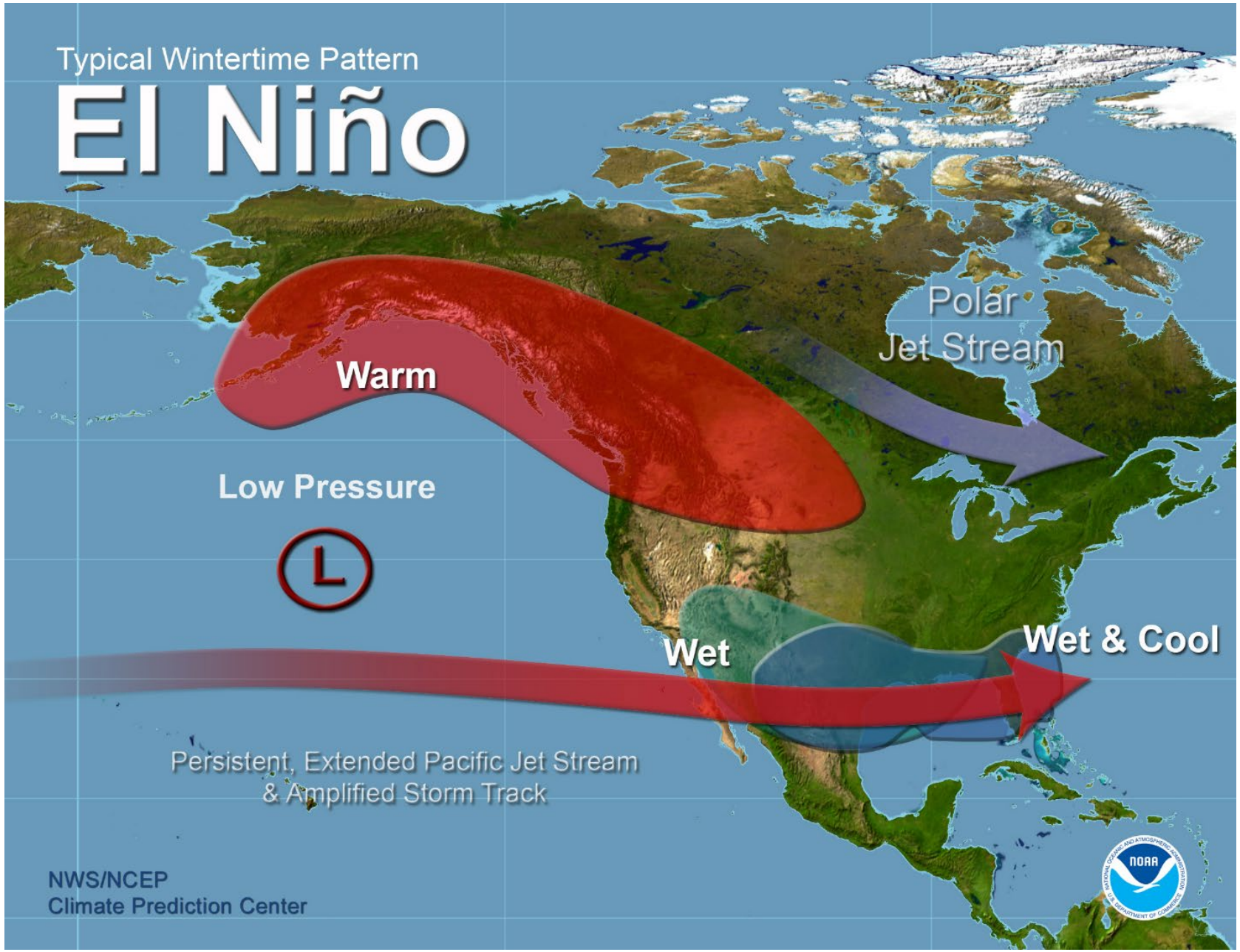
36 Year ENSO History (El Niño Southern Oscillation)

Strong **El Niño** events often cause flooding in parts of North America, while **La Niña** events have caused historical flooding across portions of the West Pacific, particularly Australia



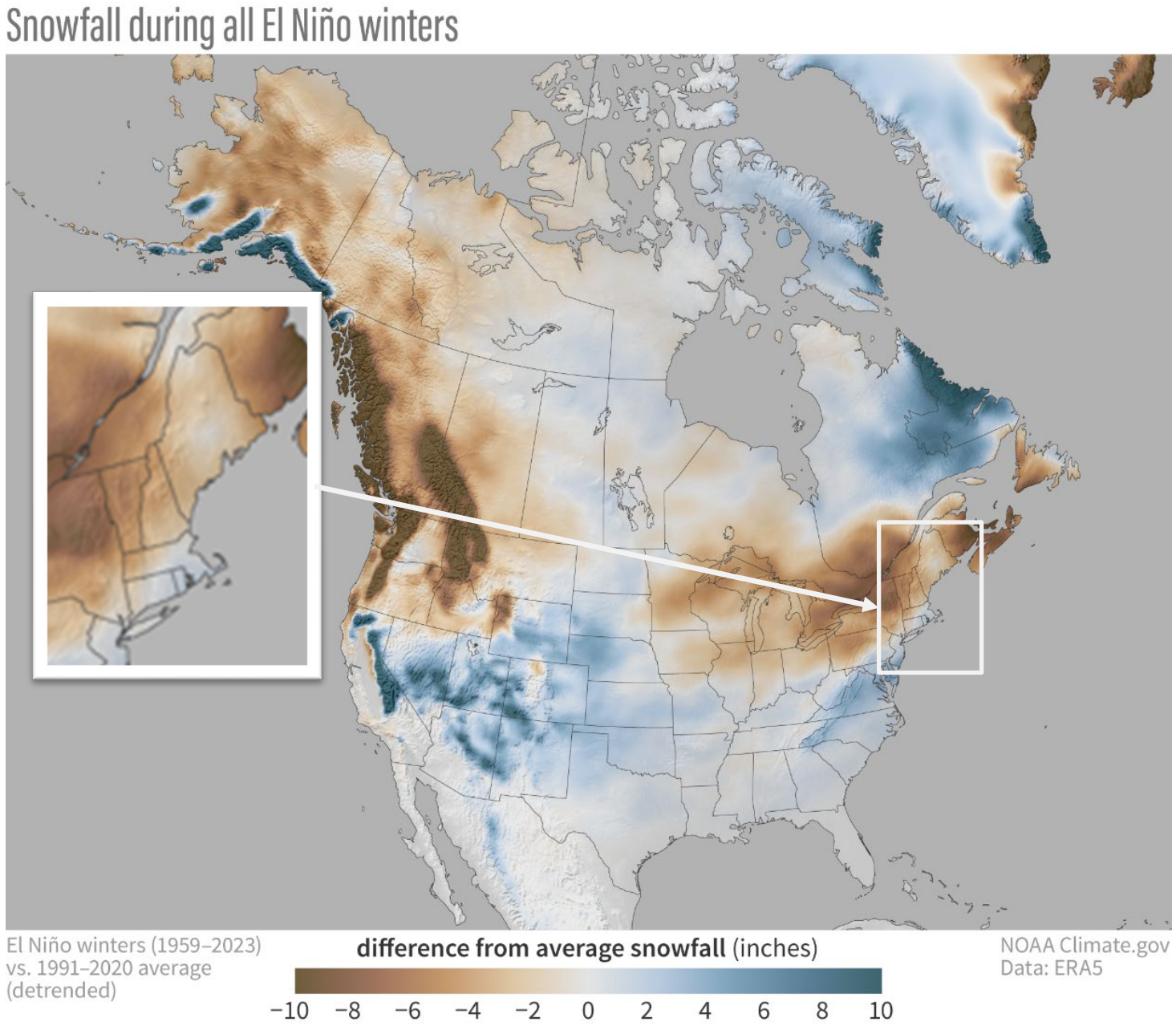
El Niño Conditions:

- Often create an active jet stream with pattern anomalies in North America, particularly across western and southern areas
- The northeast U.S. is subject to variable temperatures, but an increase in winter storm activity



El Niño Snowfall:

- Generally, less snowfall occurs across interior New England during El Niño winters
- Yet, coastal Southern New England may see slightly higher than normal snowfall
- NOTE: Seasonal snowfall forecasts related to El Niño are low skill, and are more influenced by the local storm track at the time of a storm



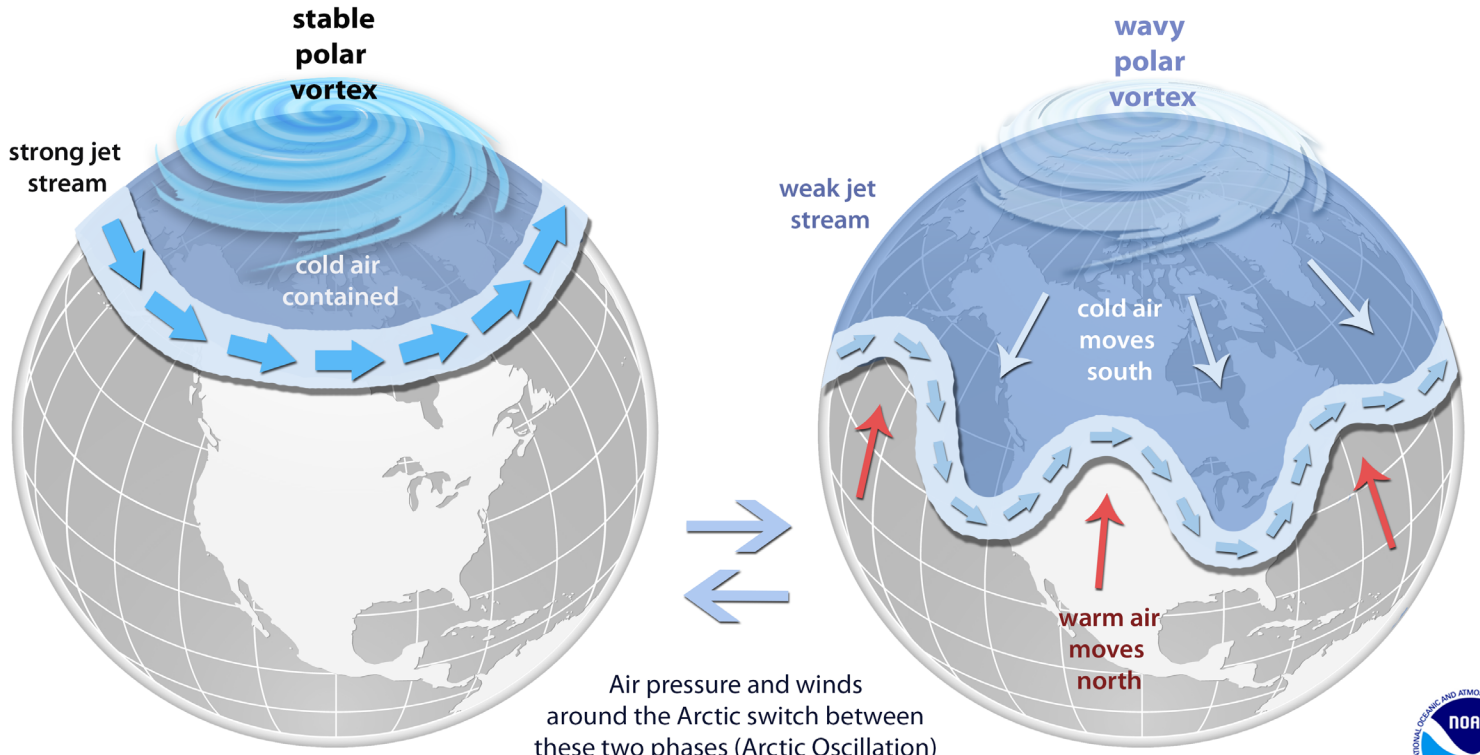
THE POLAR VORTEX

A Major Weather Player in New England Winters

Polar Vortex: Very Important, but Low Predictability Skill

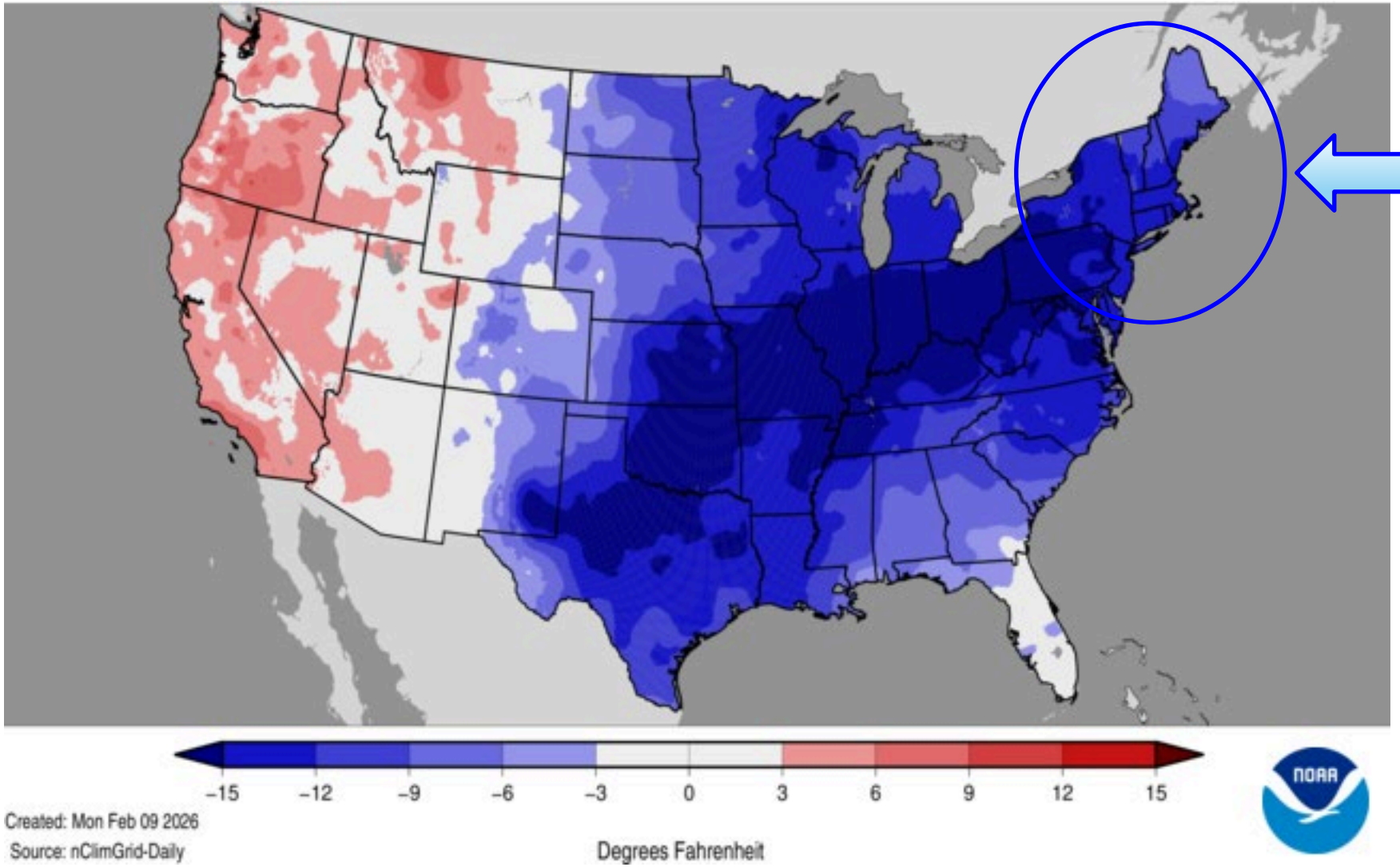
The Science Behind the Polar Vortex

The polar vortex is a large area of low pressure and cold air surrounding the Earth's North and South poles. The term vortex refers to the counterclockwise flow of air that helps keep the colder air close to the poles (left globe). Often during winter in the Northern Hemisphere, the polar vortex will become less stable and expand, sending cold Arctic air southward over the United States with the jet stream (right globe). The polar vortex is nothing new — in fact, it's thought that the term first appeared in an 1853 issue of E. Littell's *Living Age*.



Air pressure and winds around the Arctic switch between these two phases (Arctic Oscillation) and contribute to winter weather patterns.

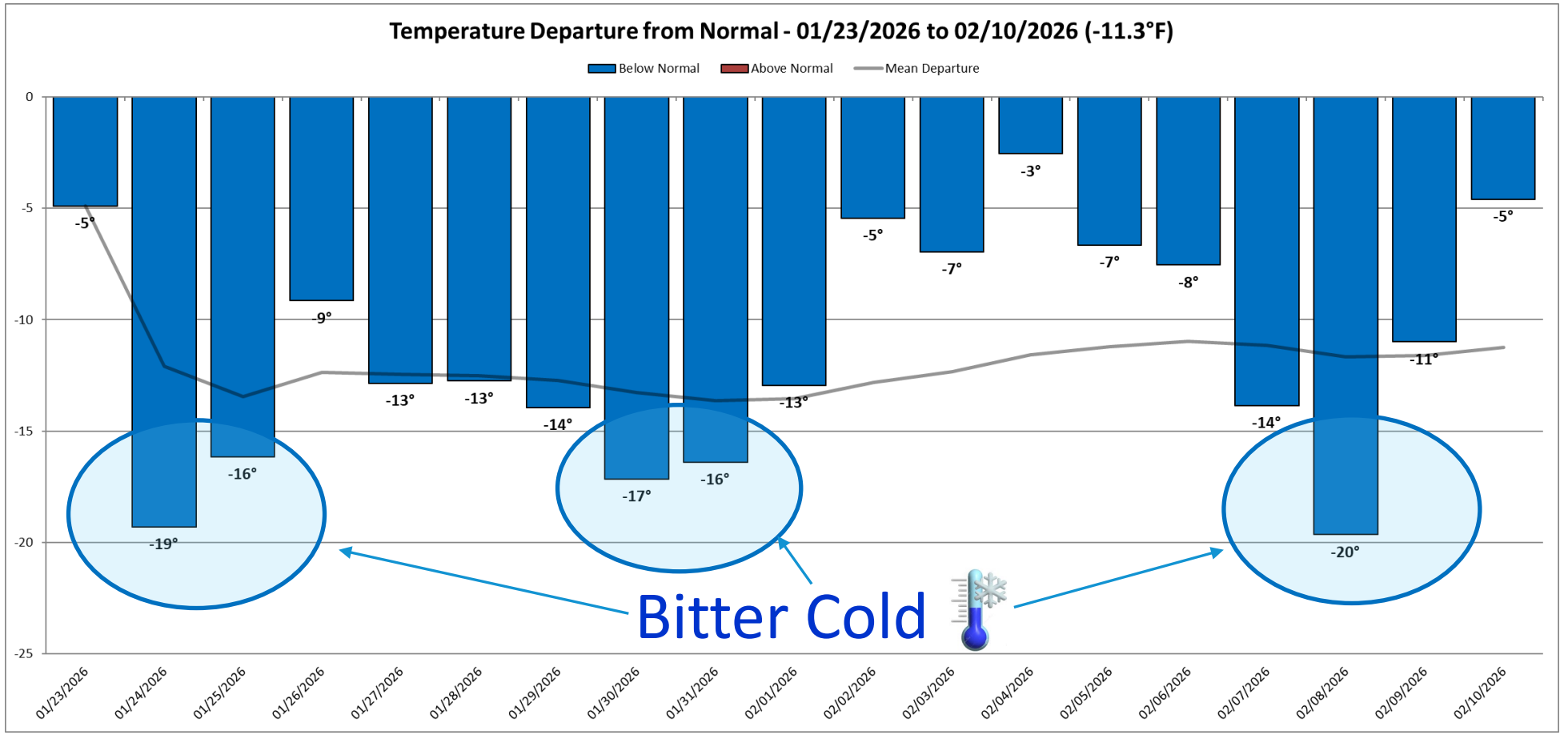
Weak Polar Vortex Potential Impacts: Periods Of Below Normal Temperatures



Arctic Outbreak:
Late January through Early February 2026: 19 Consecutive Days of Below Normal Temperatures Across New England!

Extreme Cold For Extended Periods

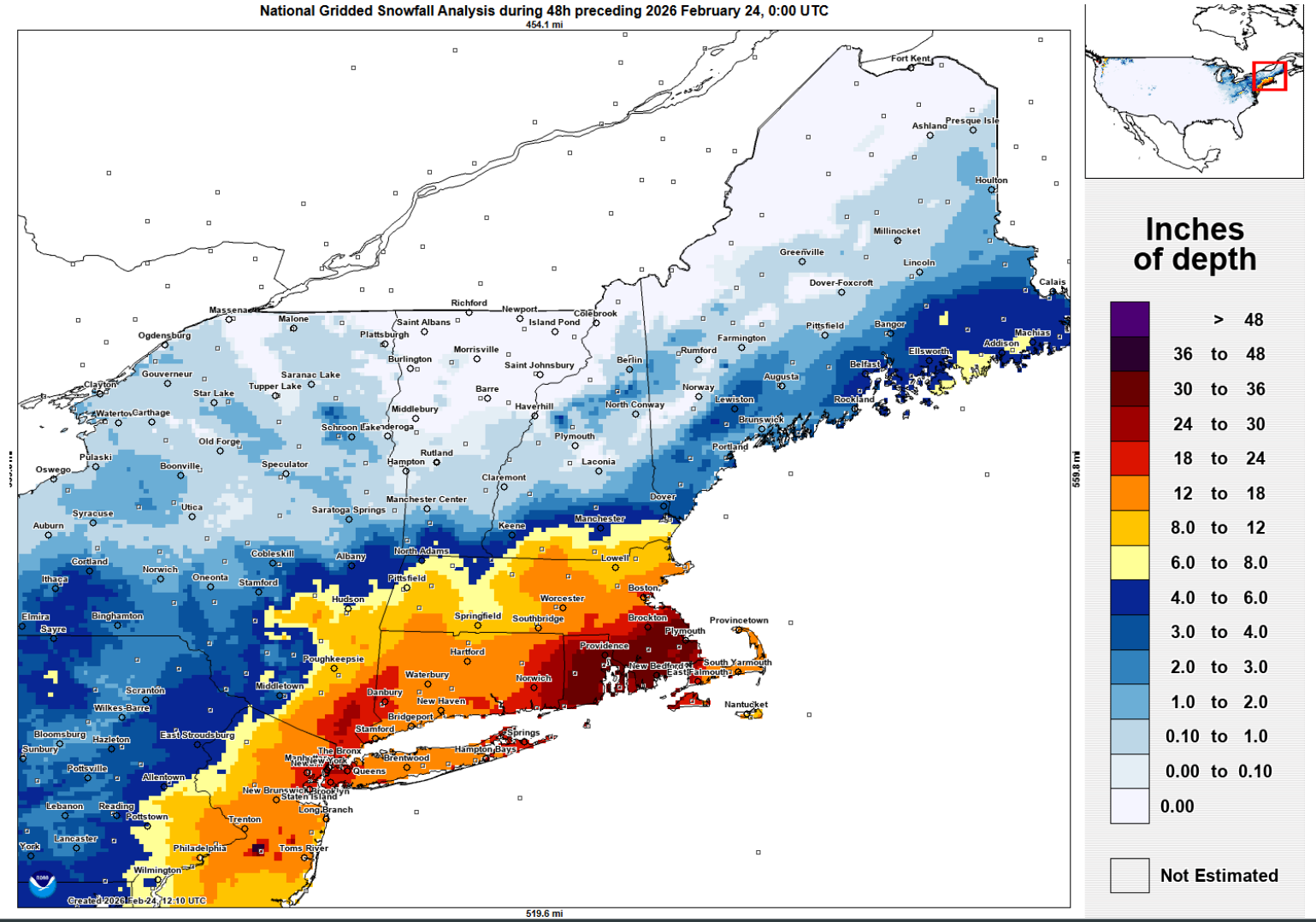
From late January through early February 2026 a major arctic outbreak occurred, with daily average temperatures as much as 20° below normal



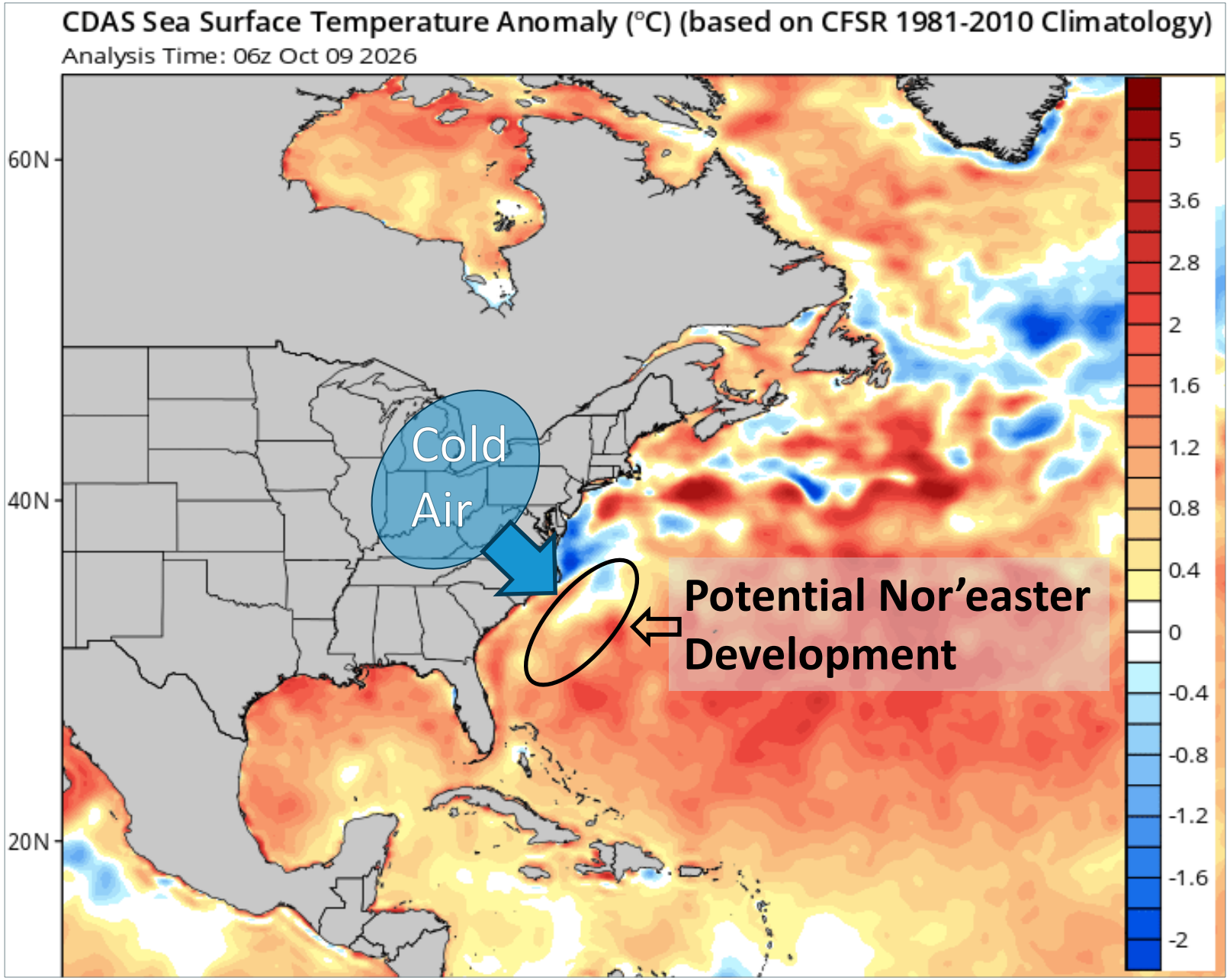
A Weak Polar Vortex Can Also Result in Blizzards & Nor'easters: Winter Storm Hernando - February 23, 2026

Snowfall Totals:

- **Massachusetts: 37" Dartmouth**
- **Rhode Island: 38" Providence**
- **Connecticut: 28" Killingly**
- **New Hampshire: 12" New Ipswich**
- **Maine: 7" Bar Harbor**
- **Vermont: 7" Readsboro**

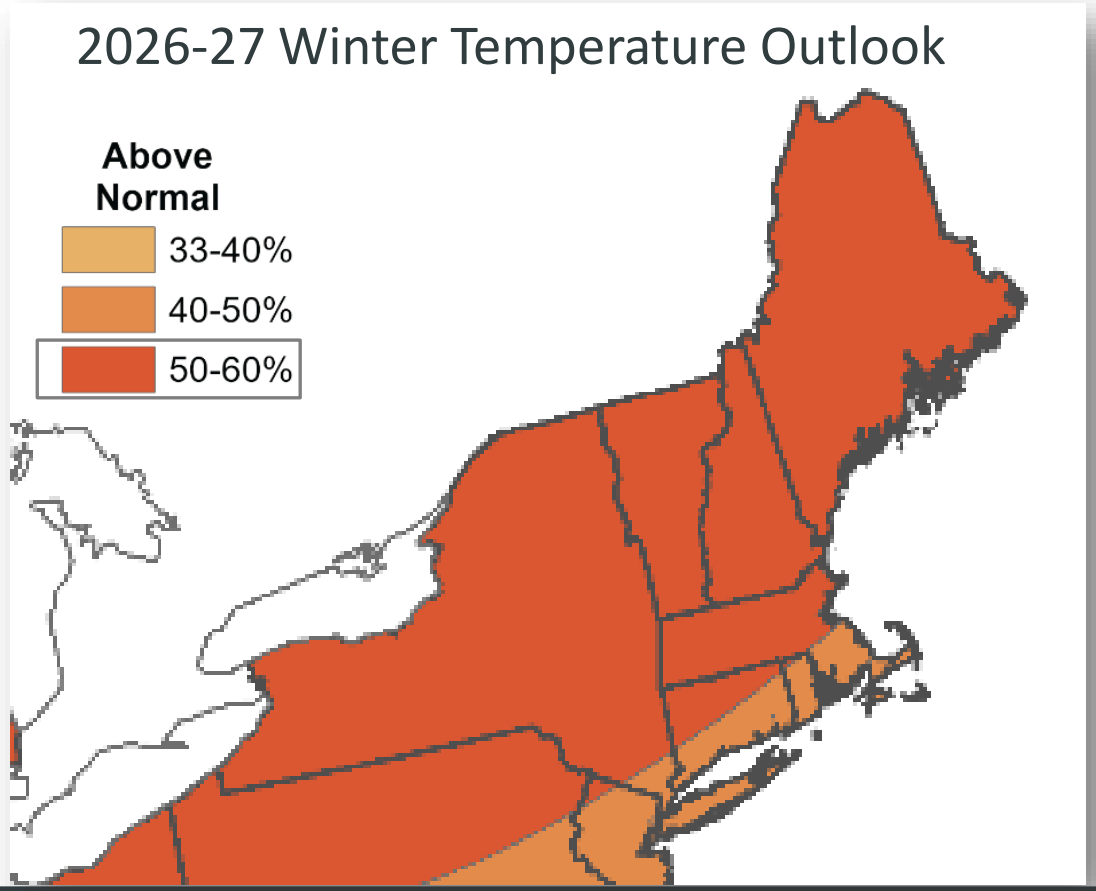


With a probable amplified jet stream due to the very strong El Niño, there is heightened concern for more frequent coastal nor'easter development this winter along the Mid-Atlantic and southeast US coasts



Though the 2026-27 Winter Is Anticipated To Be Warmer Than Normal, That Is Not Definite - Arctic Outbreaks, Cold Snaps And Severe Winter Storms Are All Possible

Will You Be *WINTER READY?*





Capacity Outlook

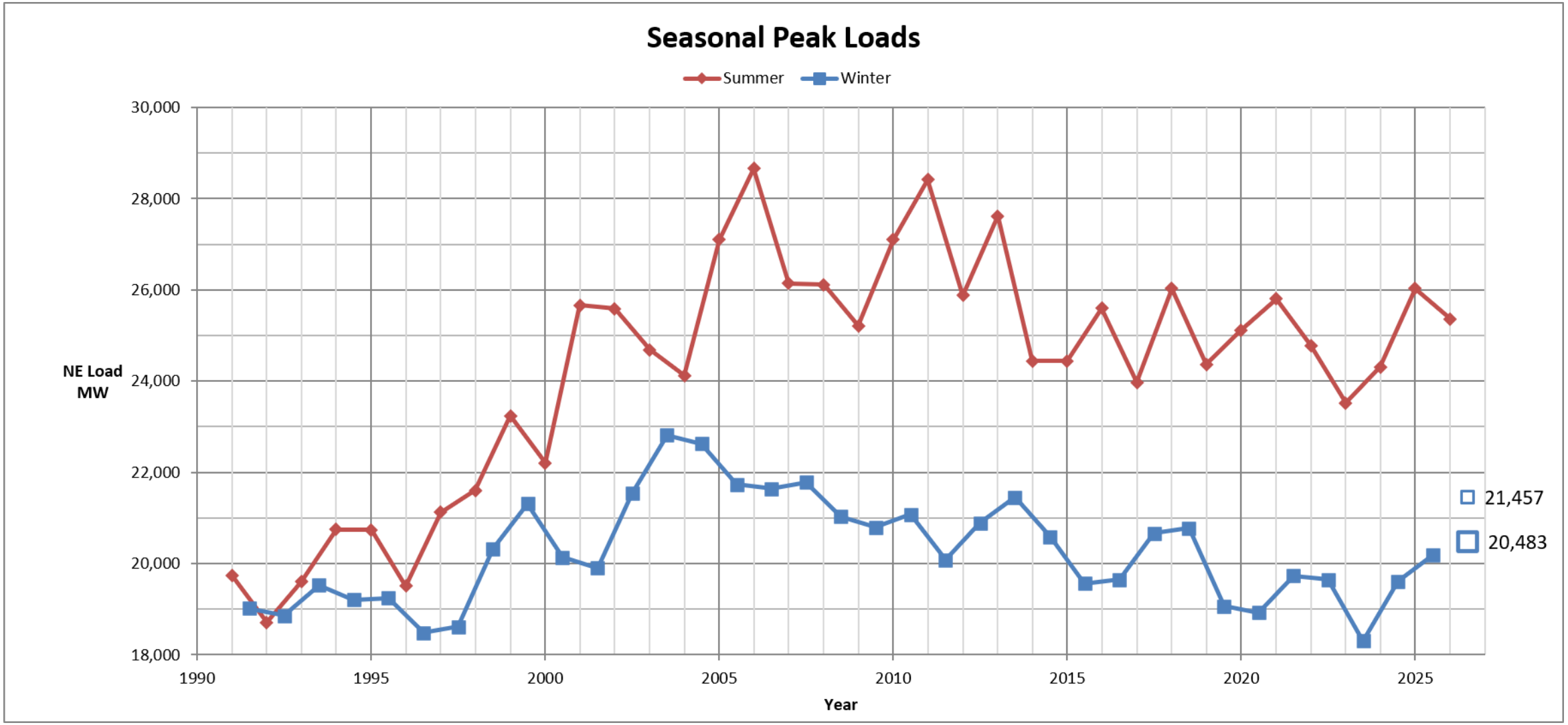
Jon Gravelin

DIRECTOR, SYSTEM OPERATIONS



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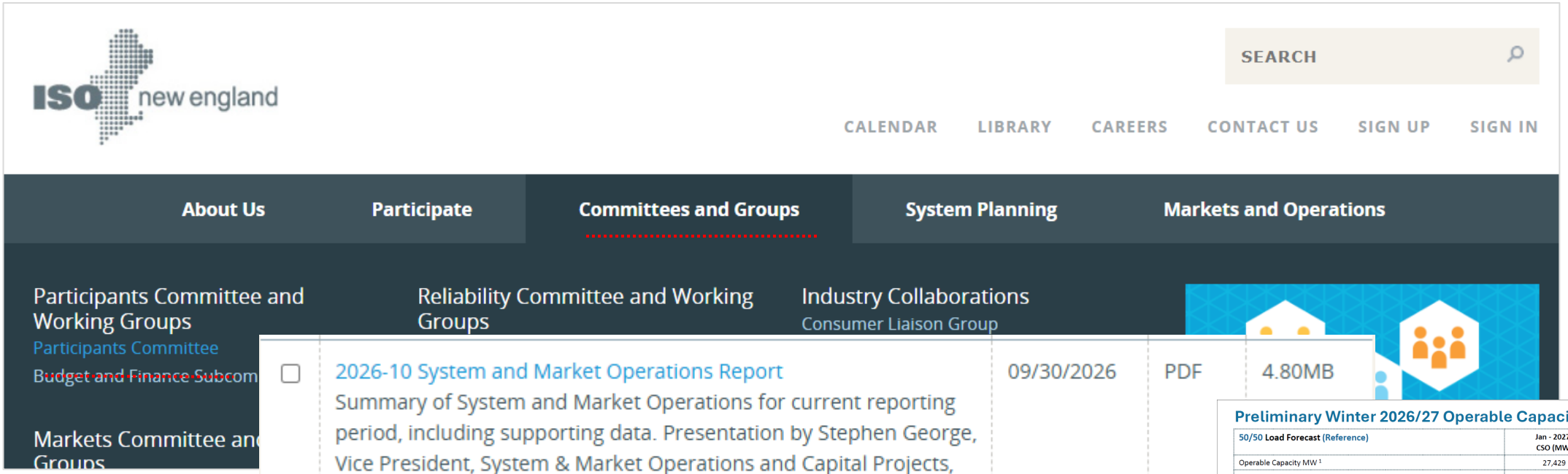
Peak Load Trends

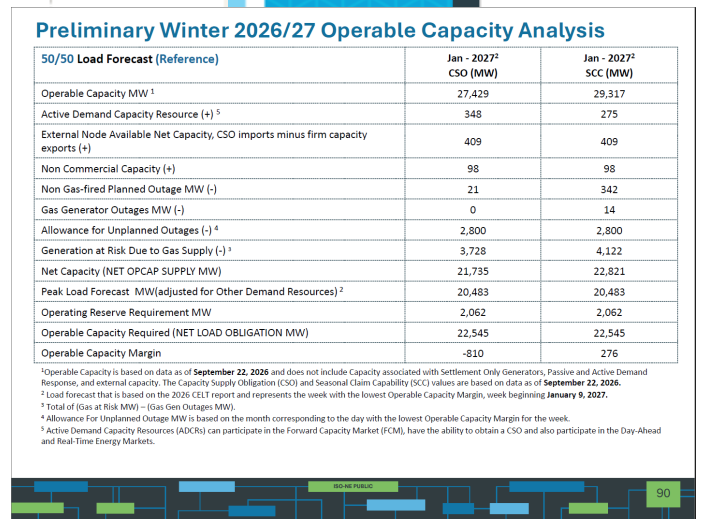


Preliminary Winter Capacity Outlook

- Operable capacity surplus on both the 50/50 and on the 90/10 forecast
  - 50/50 | Surplus: **3,124** MW
  - 90/10 | Surplus: **2,161** MW
- Generator Economic Maximum offers are consistently above CSO; as a result, ISO anticipates adequate capacity for both the 50/50 and 90/10 loads due to the SCC difference
    - Can range from 1,500 to 4,000 MW
    - Approximately **2,750** MW difference between surplus on SCC vs. CSO

Operable Capacity Analysis





Preliminary Winter 2026/27 Operable Capacity Analysis

50/50 Load Forecast (Reference)	Jan - 2027[2] CSO (MW)	Jan - 2027[2] SCC (MW)
Operable Capacity MW [1]	27,429	29,317
Active Demand Capacity Resource (+) [5]	348	275
External Node Available Net Capacity, CSO imports minus firm capacity exports (+)	409	409
Non Commercial Capacity (+)	98	98
Non Gas-fired Planned Outage MW (-)	21	342
Gas Generator Outages MW (-)	0	14
Allowance for Unplanned Outages (-) [4]	2,800	2,800
Generation at Risk Due to Gas Supply (-) [3]	3,728	4,122
Net Capacity (NET OPCAP SUPPLY MW)	21,735	22,821
Peak Load Forecast MW(adjusted for Other Demand Resources) [2]	20,483	20,483
Operating Reserve Requirement MW	2,062	2,062
Operable Capacity Required (NET LOAD OBLIGATION MW)	22,545	22,545
Operable Capacity Margin	-810	276

[1]Operable Capacity is based on data as of **September 22, 2026** and does not include Capacity associated with Settlement Only Generators, Passive and Active Demand Response, and external capacity. The Capacity Supply Obligation (CSO) and Seasonal Claim Capability (SCC) values are based on data as of **September 22, 2026.**
[2] Load forecast that is based on the 2026 CELT report and represents the week with the lowest Operable Capacity Margin, week beginning **January 9, 2027.**
[3] Total of (Gas at Risk MW) – (Gas Gen Outages MW).
[4] Allowance For Unplanned Outage MW is based on the month corresponding to the day with the lowest Operable Capacity Margin for the week.
[5] Active Demand Capacity Resources (ADCRs) can participate in the Forward Capacity Market (FCM), have the ability to obtain a CSO and also participate in the Day-Ahead and Real-Time Energy Markets.

Capacity Outlooks are Useful Planning Tools; Preparation is Critical Given That Unexpected Events Can Occur

- Operable capacity analysis is a forecasted scenario before unexpected events occur
- An example of an implementation of OP-4, Action During A Capacity Deficiency
  - The day began with over 1,900 MW of surplus capacity
  - After generator outages and load running over forecast, the deficiency was over 700 MW
- Always be prepared

H. Total Available Capacity (A+B-C-D+E-F-G)	25,035
I. Peak Load Forecast For Hour Ending 20	20,590
J. Total Operating Reserve Requirement	2,303
K. Capacity Required = I+J	22,893
L. Surplus = (+) Deficiency = (-) (H - K)	2,142
M. Replacement Reserve Requirement	160
N. Excess Commitment Surplus = (+) Deficiency = (-) (L - M)	1,982

NATURAL GAS & PIPELINE OUTLOOK

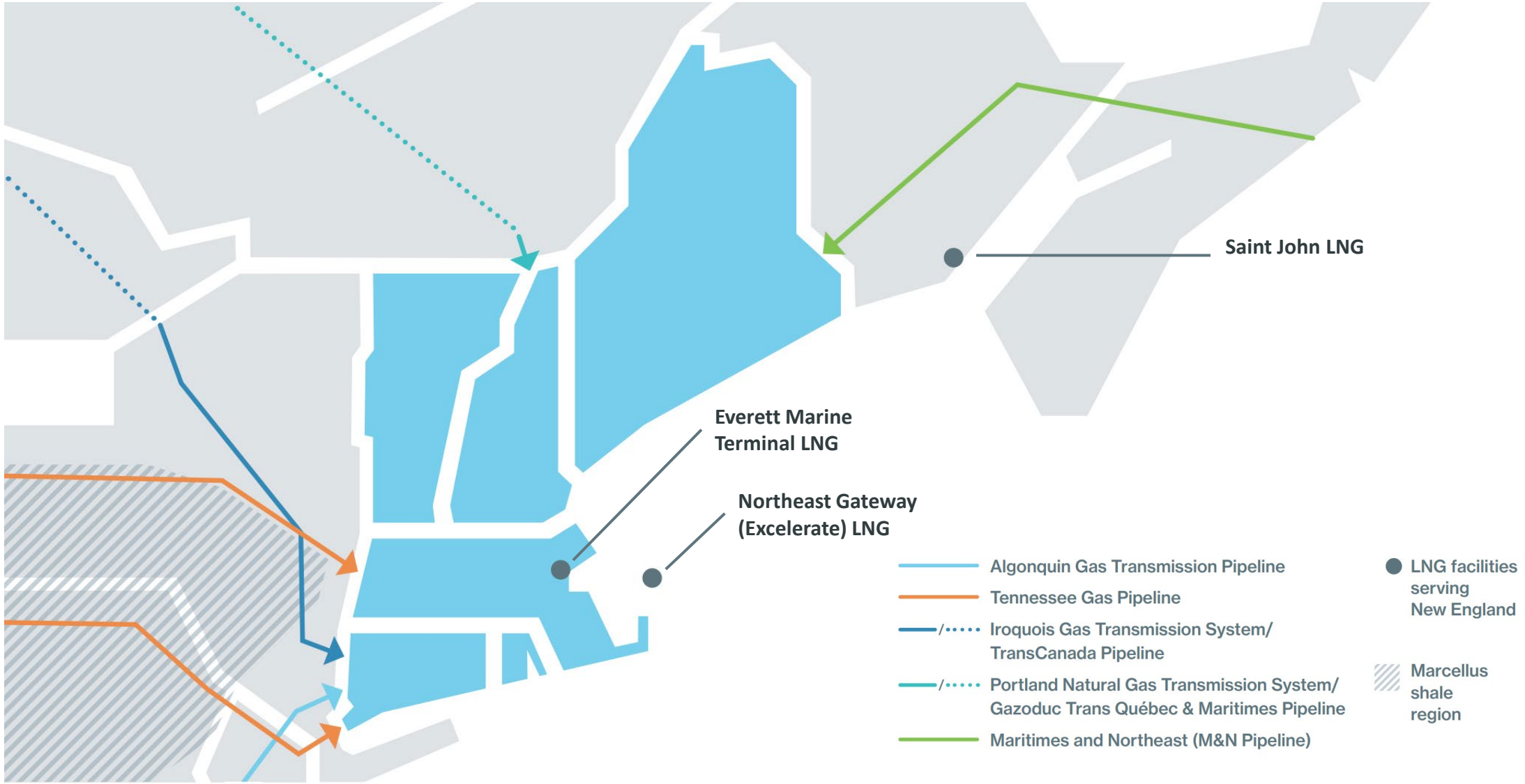
Mike Fontaine

CHIEF METEOROLOGIST

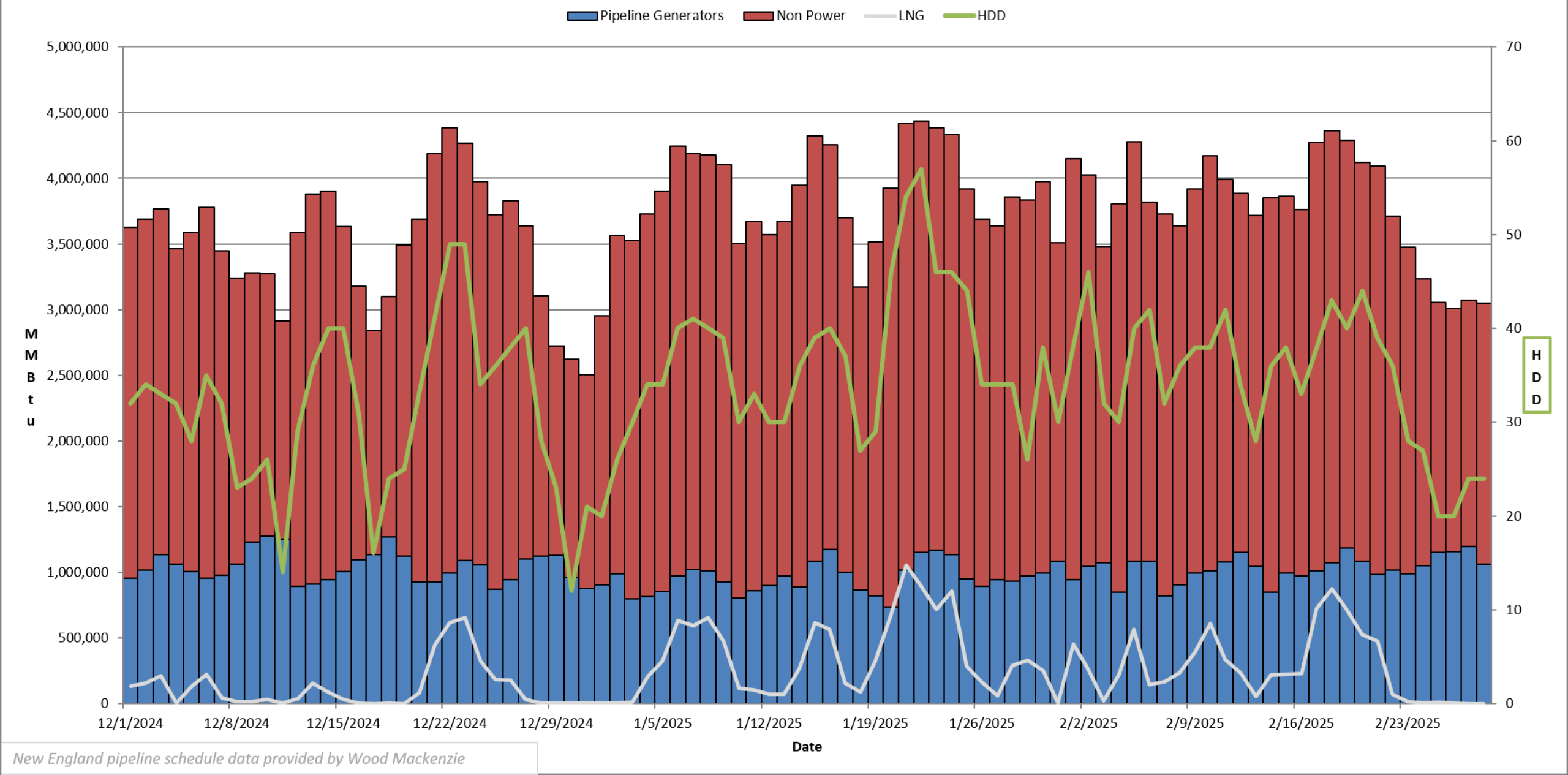


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New England Natural Gas Infrastructure

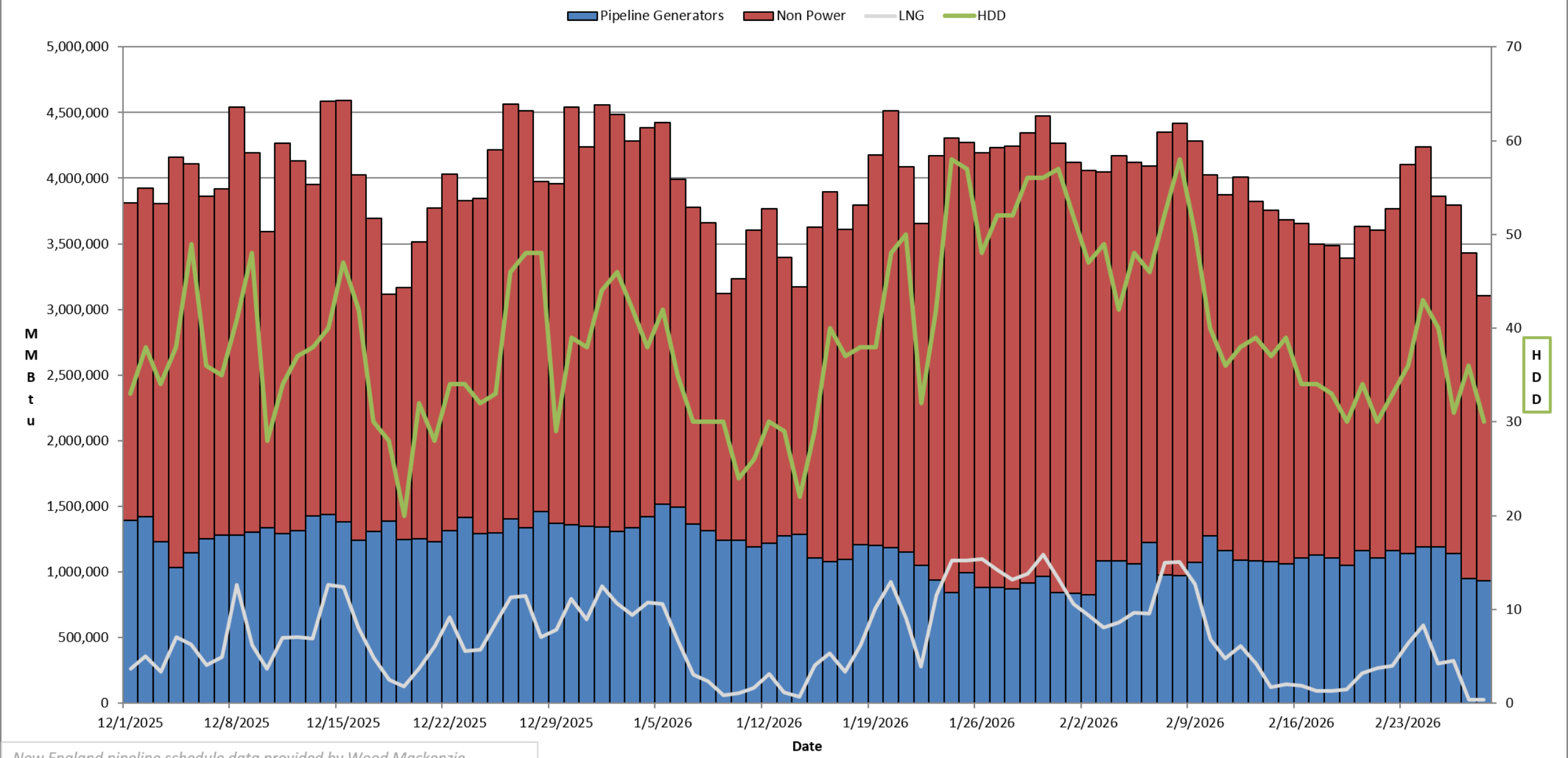


Natural Gas Schedules to Generators vs. Non-Power Use - Winter 2024 - 2025



New England pipeline schedule data provided by Wood Mackenzie

Natural Gas Schedules to Generators vs. Non-Power Use - Winter 2025 - 2026



New England pipeline schedule data provided by Wood Mackenzie

GAS ELECTRIC COORDINATION

Proactive measures taken by ISO and pipelines for system reliability on both interdependent systems

Scheduled Gas to Meet Forecasted Generation

- Comparison of scheduled gas to generation
  - After the Reserve Adequacy Analysis (RAA) process is completed, the ISO Control Room compares the expected dispatch with the scheduled gas for the overlapping gas day and electric day
- Communication under OFO conditions
  - Contacts DEs for every generator that has **insufficient gas** scheduled to their meter to confirm if gas will be scheduled
  - Information provided in the reports, the information from the DE, and information gathered through communication with gas control will be used to determine if supplemental commitments are required to ensure reliability

Timeline – Daily Routine

ISO New England Activity	Time	NAESB Gas Cycle Schedule
Final load forecast published	≤ 09:30	
DAM bid/offer window closes	**10:30**	
DAM results published Re-offer period opens	≤ 13:30	
Re-offer period closes RAA Process begins	14:00	Timely Cycle Nomination Deadline
RAA Process completed	≤ 17:00	
Intraday Re-offer window opens	18:30	
	19:00	Evening Cycle Nomination Deadline

INFORMATION POLICY

Communications between interstate pipeline Gas Control and ISO New England Control Room

FERC Pipeline Communication/Info Policy

- FERC Order 787 explicitly authorizes interstate natural gas pipelines and electric transmission operators to voluntarily share non-public, operational information to promote system reliability and operational planning
- ISO changed the Information Policy effective January 11, 2014, as approved by FERC
- Parties are subject to a No-Conduit Rule that prohibits subsequent disclosure of that information to an affiliate or third party

Sharing Fuel Burn Expectations

- Pipeline specific & resource specific
- Daily report provided to each pipeline operator
  - Hourly gas burn at each meter (expressed in MMBtu)
  - Information is only shared with the associated pipeline
  - Electric day, not gas day

PIPELINE NAME Date: 7/21/2014 Note: Hourly Values Are in Dekatherms

Meter Name	Meter #	LDC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
Plant A	700	N							562	1,748	2,372	2,541	2,541	3,458	3,458	3,458	3,458	3,458	3,458	3,458	3,458	3,458	3,458	3,458	1,178		48,978
Plant B	701	N	1,007	1,007	1,007	1,007	1,007	1,007	1,007	1,250	1,242	1,233	1,233	1,225	1,225	1,217	1,217	1,217	1,217	1,225	1,225	1,233	1,242	1,242	1,250	1,007	27,749
Plant C	702	N	5,122	5,122	5,122	5,122	5,122	5,122	5,122	3,698	5,122	4,352	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	5,122	120,730
Plant D	703	N	2,367	2,367	2,367	2,579	3,257	3,852	4,789	3,681	4,078	3,729	4,789	4,789	4,789	5,090	5,090	5,090	5,090	5,090	5,090	4,803	4,803	4,803	4,803	4,789	101,980
Plant E	704	N					71	212	354	495	637	707	707	707	707	707	1,061	1,061	1,061	1,061	859	859	707				11,973
Plant F	705	N	2,180	2,180	2,180	2,180	2,180	2,180	2,180	3,487	3,444	3,400	3,371	3,327	3,327	3,313	3,298	3,284	3,298	3,327	3,342	3,385	3,429	3,444	3,458	2,180	71,371
Plant G	706	N	1,489	1,489	1,489	1,489	1,489	1,498	1,489	1,064	1,064	1,064	1,454	1,445	1,436	1,427	1,427	1,427	1,427	1,427	1,436	1,445	1,454	1,462	1,471	1,480	33,839
Plant H	707	N							171	342	513	1,256	1,922	1,922	1,922	2,033	2,025	2,042	2,042	2,059	2,067	2,084	2,102	1,948	2,110	1,922	30,481
Plant I	708	N	3,689	3,689	3,689	3,689	3,689	3,689	3,689	3,683	3,689	3,683	3,689	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	4,205	2,096	2,096	2,096	88,905
Plant J	709	N									206	412	412	412	412	497	497	497	532	532	497	446	412	412			6,175
		Total	**15,854**	**15,854**	**15,854**	**16,066**	**16,814**	**17,560**	**19,363**	**19,447**	**22,365**	**22,376**	**25,241**	**26,612**	**26,603**	**27,069**	**27,400**	**27,402**	**27,451**	**27,506**	**27,301**	**27,040**	**26,933**	**23,986**	**21,489**	**18,596**	**542,183**

Sharing Generator Planned Outages

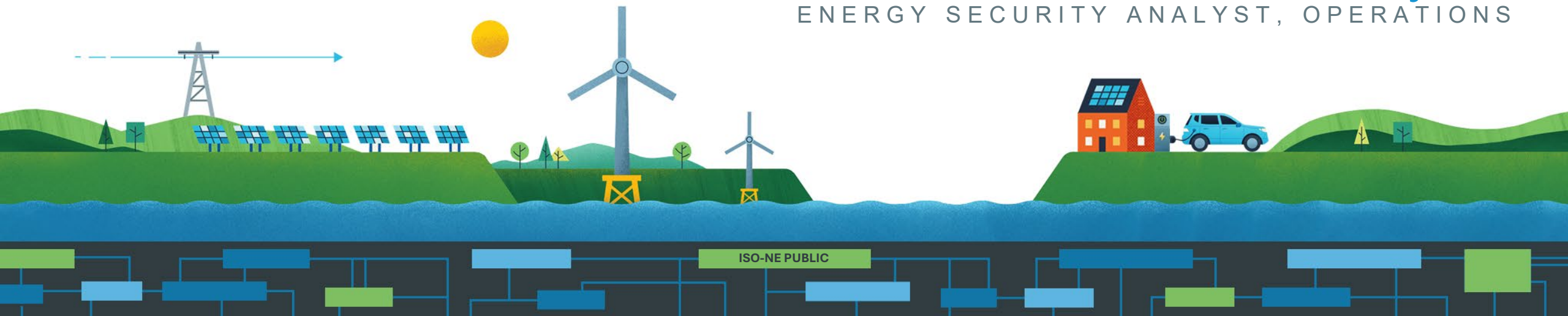
- Provide plant/meter specific outage information to individual pipelines associated with those units; this information is shared on a 6-month forward looking basis in the interest of outage coordination between all parties concerned
- ISO is actively coordinating pipeline and generator outages on a real-time and forward-looking basis

Maintain Awareness and Communicate

- Generator operators and DEs should always know their specific gas (and other fuel supply) situation at all times, including alternatives as necessary
- Pipelines are being transparent and posting updates to the electronic bulletin boards
  - Be sure to follow the updated postings
- Communicate with the ISO whenever fuel supply situation changes so that the ISO has the information necessary to operate the system reliably

Review of OP-21 Surveys

Roberto Przytula
ENERGY SECURITY ANALYST, OPERATIONS



ISO-NE PUBLIC

OP-21 Actions are Intended to Mitigate the Impacts of an Actual or Anticipated Energy Emergency

- An Energy Emergency, as defined in ISO's Operating Procedure No. 21, *Operational Surveys, Energy Forecasting & Reporting and Actions During an Energy Emergency*, is a system condition that may result in the shedding of firm customer load due to an actual energy deficiency

- In contrast to capacity deficiencies, which are typically short-duration over peak load hour(s) and are mitigated primarily through the actions of ISO's Operating Procedure No. 4, *Actions During a Capacity Deficiency* (OP-4), **Energy Emergency conditions are expected to last on the order of days or weeks, not hours**

- One or more of the following may contribute to or cause a regional energy deficiency:
  - Extended periods of very cold weather regionally or nationally
  - Prolonged disruption to one or more of the region's interstate natural gas pipelines
  - Disruptions at the region's large LNG facility
  - Inability to replenish fuel oil supplies
  - Prolonged disruption to one or more transmission facilities that import power into the region

OP-21 Regional Energy Shortfall Threshold

- REST is defined based on the tail 0.25% of total probability of the most severe cases.
- For each tail case, the average normalized energy shortfall is calculated over its worst 72-hour period within a 21-day window.
- The REST magnitude threshold is the probability-weighted average of these normalized energy shortfall within the tail and must be <= 3.0%.
- The REST duration threshold is the probability-weighted average of cumulative shortfall hours within the tail and must be <= 18.0 hours.
- A REST violation occurs only when both the magnitude and duration thresholds are exceeded.

OP-21 Energy Alert and Emergency Actions

Action	Normal	Energy Alert	Energy Emergency
ISO Data Collection Frequency (winter)	Weekly	**Daily**	**Daily**
ISO Forecasting & Reporting (winter)	Weekly	**Daily**	**Daily**
ISO Alert LCCs & RC/BAs	N	**Y**	**Y**
ISO Alert State Regulators & Officials	N	**Y**	**Y**
Report to DOE using DOE-417	N	N	**Y**
Request DF gen switch to fuel not in short supply (voluntary)	N	**N**	**Y**
Implement OP-4, excluding Governor Appeals	N	N	**Y (as needed)**
Implement OP-4, including Governor Appeals	N	N	**Y (as needed)**
Implement OP-7	N	N	**Y (as needed)**
Lead MPs (Fuel & Emissions)	N/A	**Evaluate**	**Evaluate**
Lead MPs & LCCs (Transmission Facilities)	N/A	Evaluate	Evaluate

Overview of OP-21 Surveys

Natural Gas Critical Infrastructure Survey

(annual)

Generator Winter Readiness Survey

(annual)

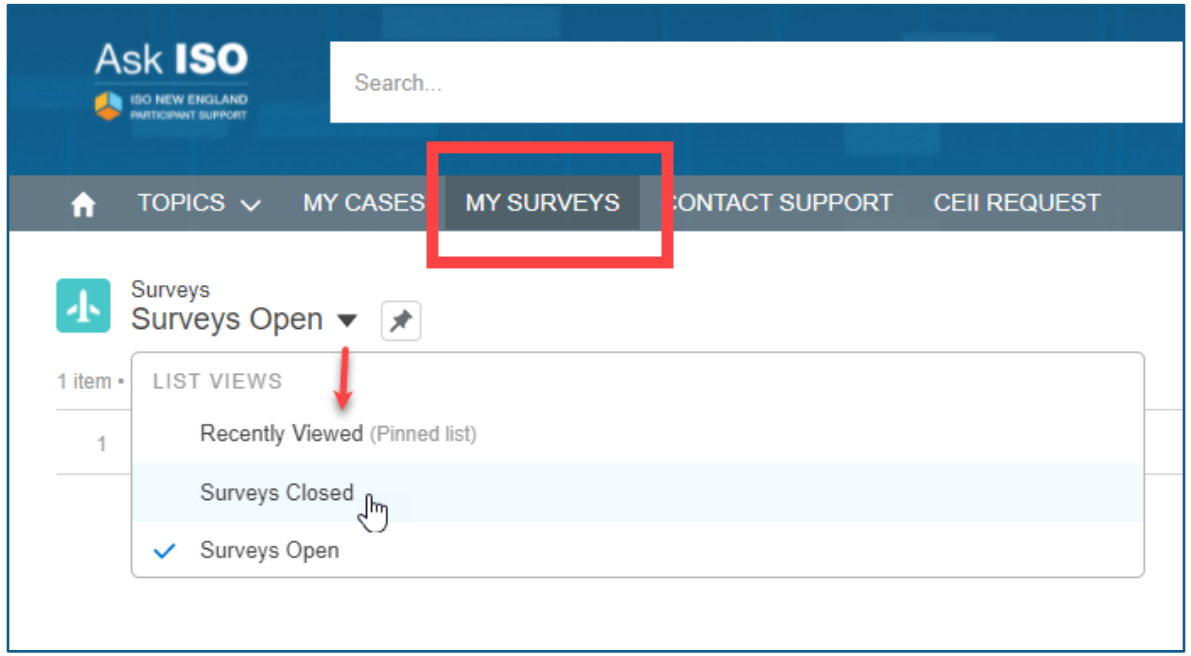
Generator Fuel and Emissions Survey

(weekly/biweekly)

ISO shall treat all submitted responses as Confidential in accordance with the ISO-NE Information Policy

OP-21 Generator Surveys in AskISO

- AskISO (https://iso-ne.my.site.com/) is the platform for Fuel and Emissions Surveys and Winter Readiness Surveys
- Survey submitters receive emails with link when new surveys are requested



See “Generator Survey System in Ask ISO” and “Ask ISO User Guide” User Guide at https://www.iso-ne.com/participate/support/user-guides

Additional materials at https://www.iso-ne.com/participate/support/participant-readiness-outlook/generator-survey-system-project-gss

WINTER READINESS SURVEY

Winter Readiness Survey: Overview

Who:
All non-Settlement-Only generators

When:
- Annual
- Available on AskISO by Nov. 1
- **Due Dec. 1**
  (Tuesday after Thanksgiving)

What:
- Winter preparation activities
- Temperature limits on capabilities
- Protocols during extreme cold
- Training prior to cold weather

Why:
- Provide situational awareness of generator readiness during winter months

FUEL AND EMISSIONS SURVEY

Fuel and Emissions Survey: Overview

Who:
Generators operating on oil, coal, and/or natural gas

When:
At a minimum (more often as needed):
- Due Monday at 4:00 PM ET
- Weekly Dec. – Feb. (winter)
- Biweekly Mar. – Nov. (non-winter)

What:
- Current and maximum oil inventory
- Fuel procurement information
- Environmental/emission limits

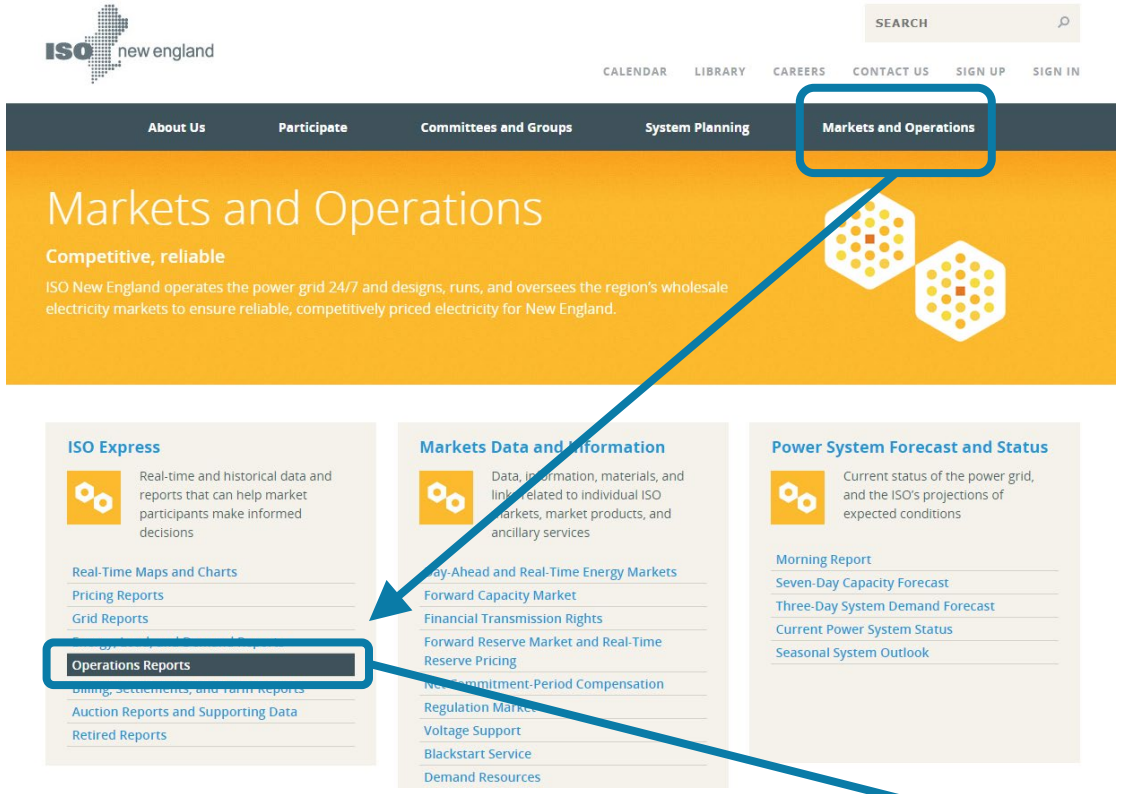
Why:
- Input to regional energy assessment
- Identify potential reliability issues

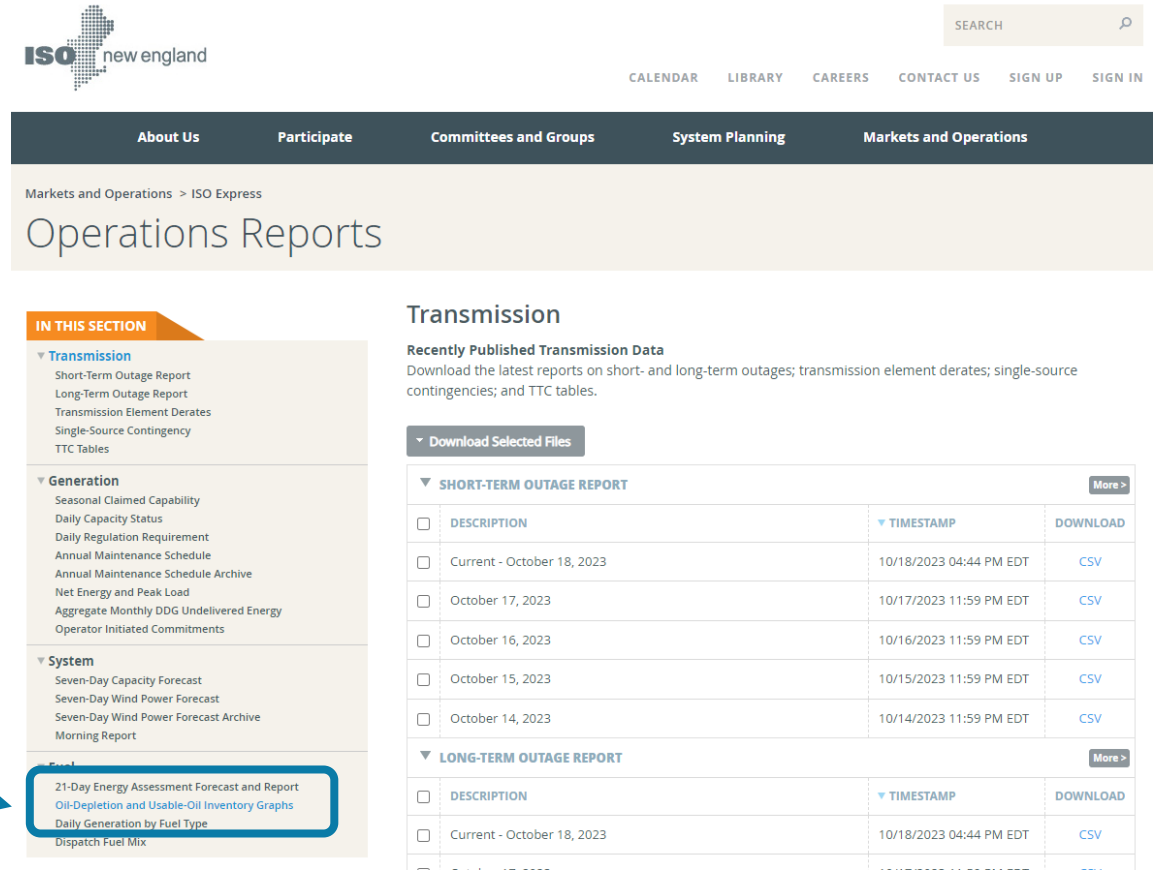
PUBLIC OIL DATA

From OP-21 Generator Fuel and Emissions Surveys

Public Oil Charts: How to Access

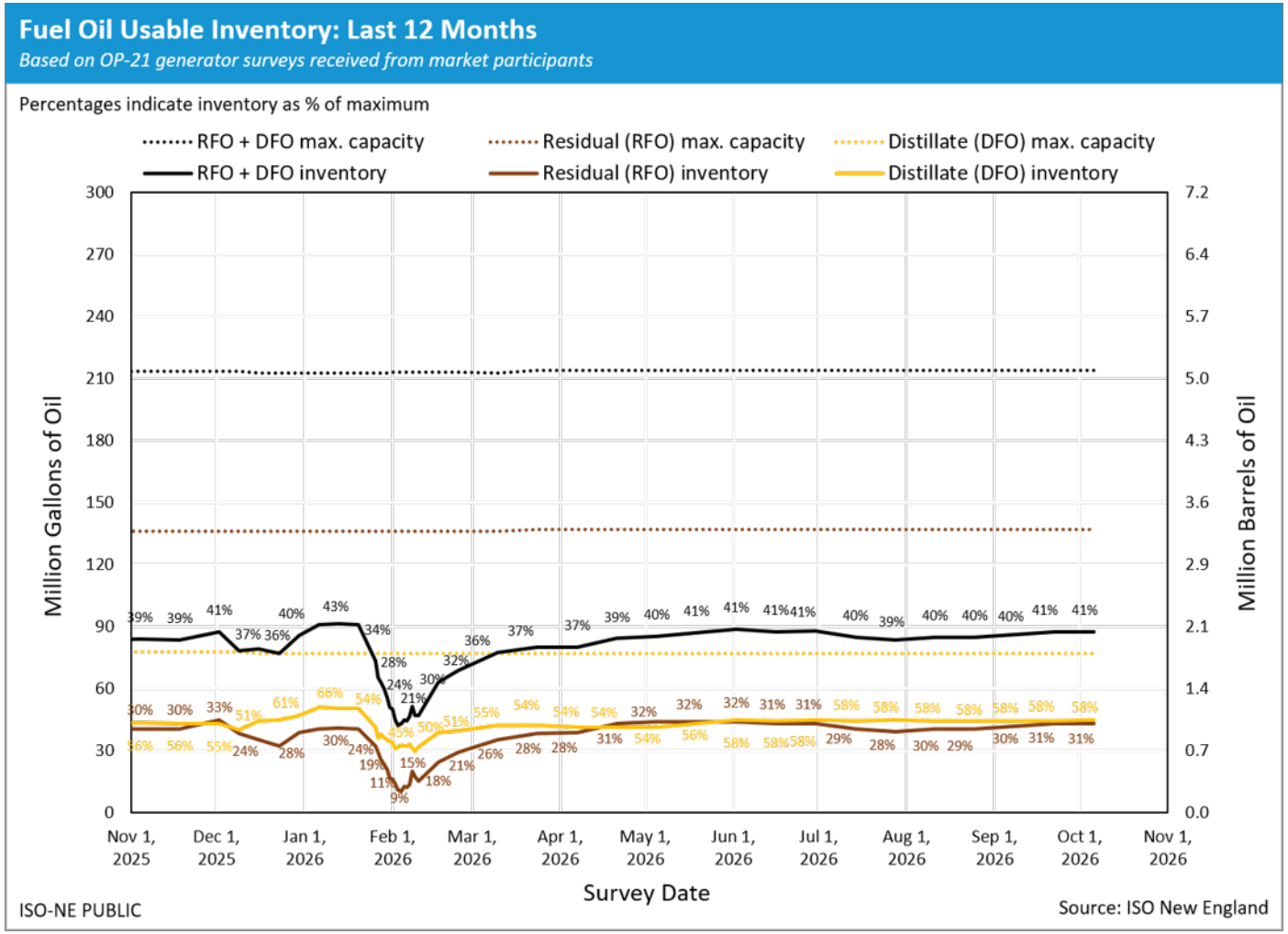
https://www.iso-ne.com/isoexpress/web/reports/operations/-/tree/oil-depletion-graphs





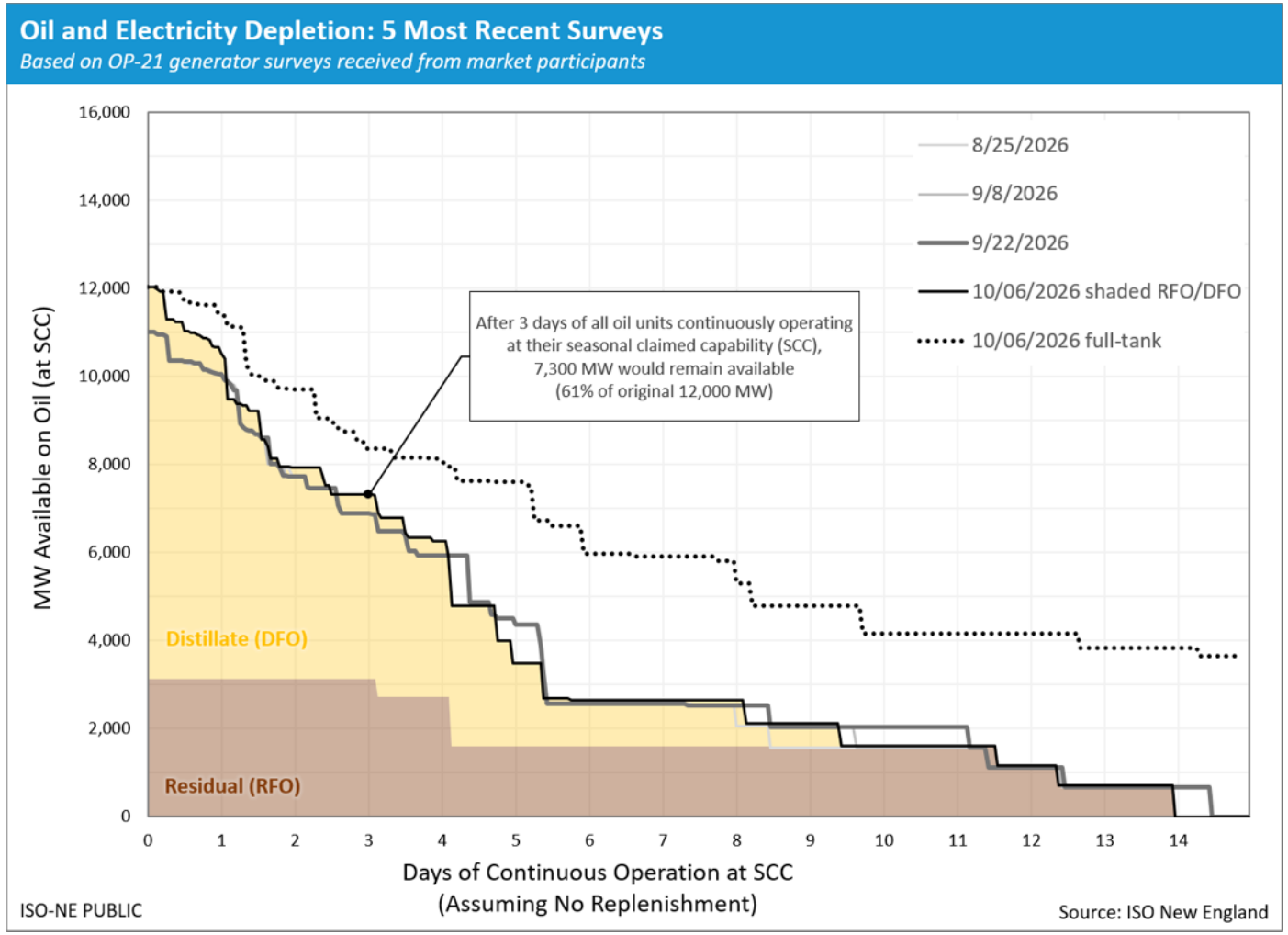
Public Oil Charts: Samples

(sample charts from October 6, 2026)



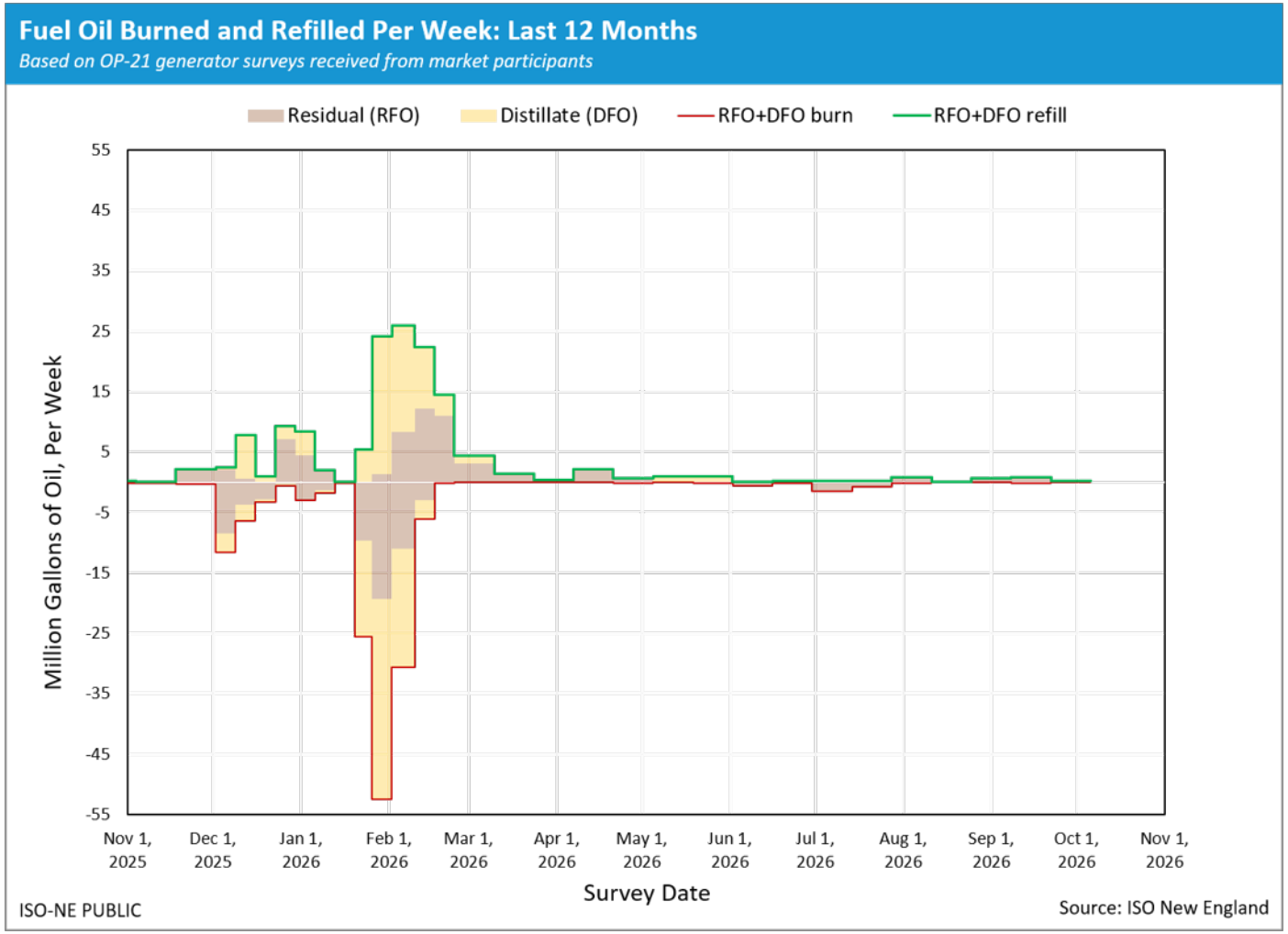
Public Oil Charts: Samples

(sample charts from October 6, 2026)



Public Oil Charts: Samples

(sample charts from October 6, 2026)



21-DAY ENERGY ASSESSMENT

Winter 2026 - 2027

ISO new england

November 29, 2022 – December 19, 2022

21 DAY ENERGY ASSESSMENT:

NORMAL CONDITIONS

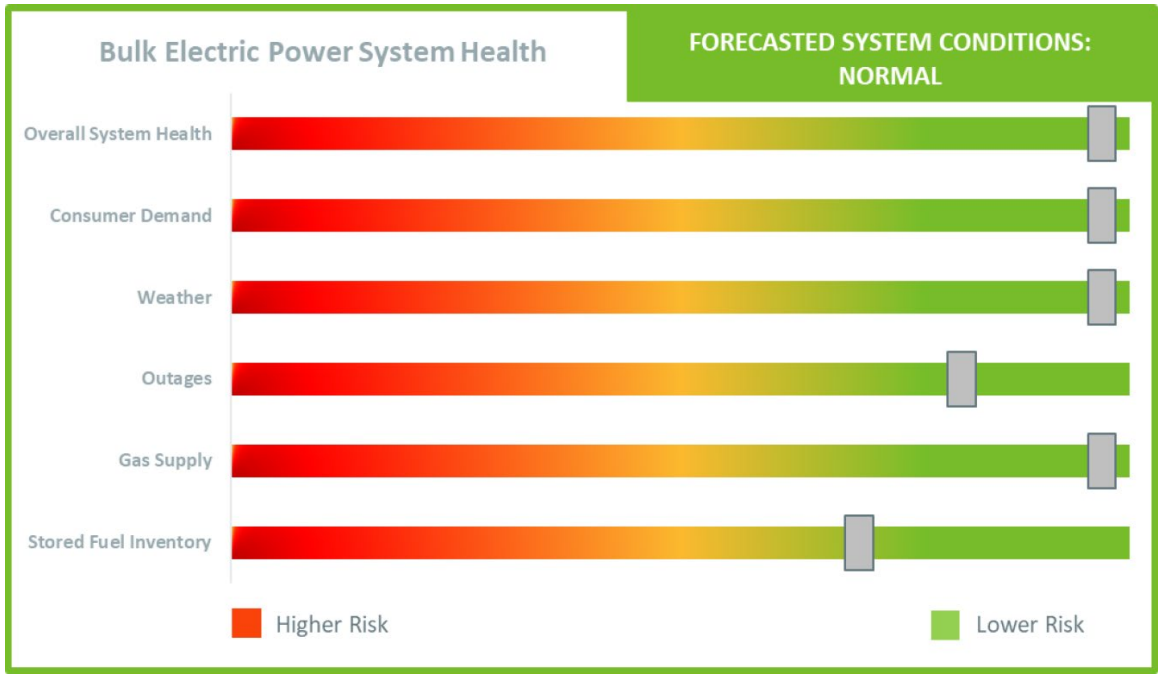


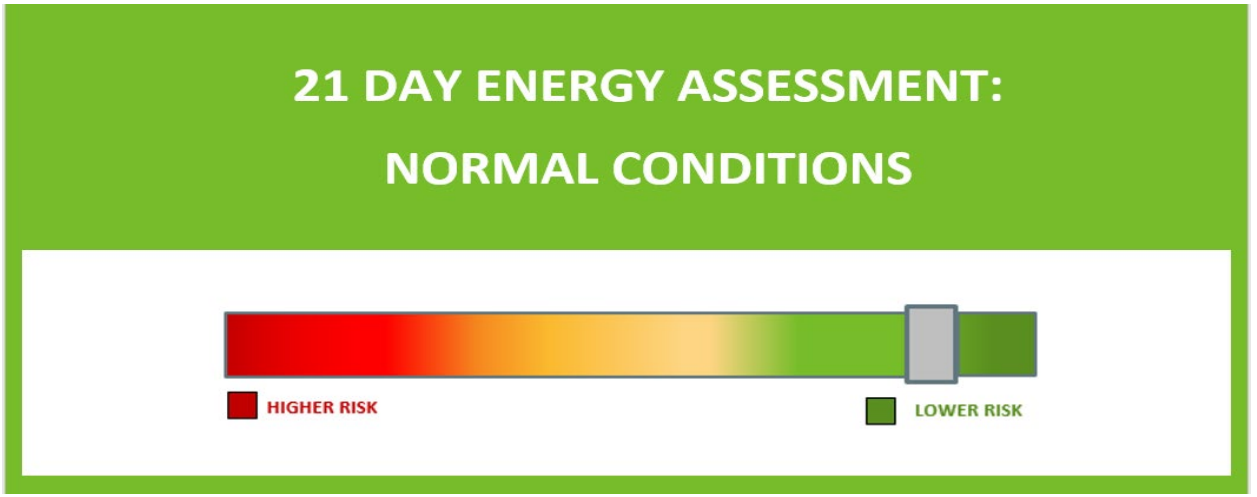
SAMPLE REPORT

SYSTEM CONDITION: NORMAL

SYSTEM CONDITION: ENERGY ALERT

SYSTEM CONDITION: ENERGY EMERGENCY





Normal Conditions

There are no emergency actions forecasted in the upcoming 21 days

Energy Alert

Forecasted EEA 2 and/or Forecasted EEA 3 are anticipated in days 6 - 21

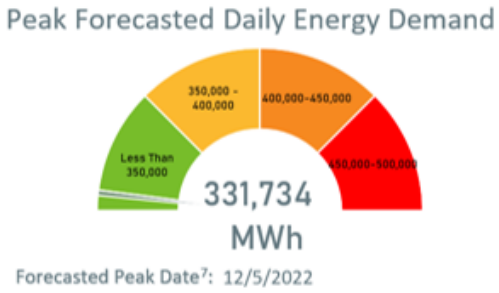
Energy Emergency

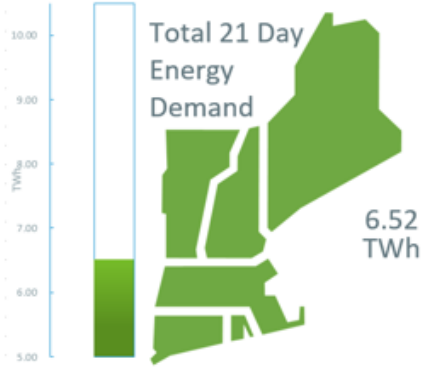
Forecasted EEA 2 and/or Forecasted EEA 3 are projected for 1 or more hours in the upcoming 5 days or controlled power outages are imminent in the 21 day study period

21-Day Energy Assessment
November 15th 2022 – December 5th, 2022

Alert Threshold	Start	Through

Emergency Threshold	Start	Through





Status Summary
Normal Conditions – No emergency actions forecasted.

****SAMPLE REPORT****

21-Day Energy Assessment

November 15th 2022 – December 5th, 2022

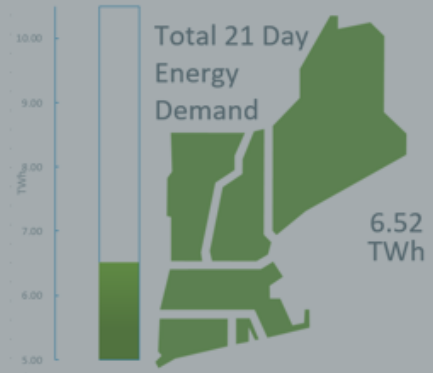
Alert Threshold	Start	Through

Emergency Threshold	Start	Through

Peak Forecasted Daily Energy Demand



Forecasted Peak Date[7]: 12/5/2022



Status Summary
Normal Conditions – No emergency actions forecasted.

Published: Nov. 16, 2022
Next Publication: Nov. 30, 2022*

****SAMPLE REPORT****

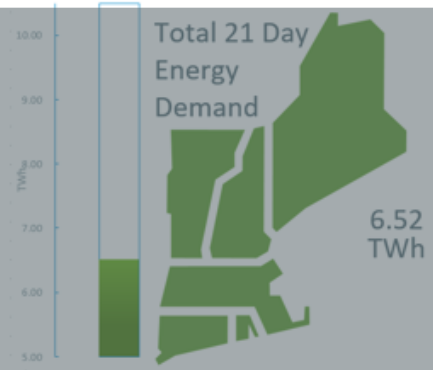
Alert Threshold	Start	Through

Emergency Threshold	Start	Through

Peak Forecasted Daily Energy Demand



Forecasted Peak Date[7]: 12/5/2022



Status Summary
Normal Conditions – No emergency actions forecasted.

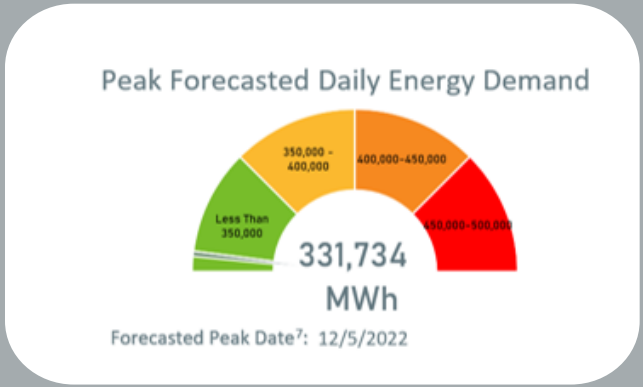
****SAMPLE REPORT****

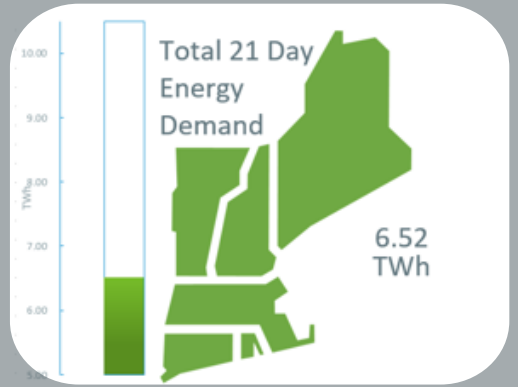
21-Day Energy Assessment

November 15th 2022 – December 5th, 2022

Alert Threshold	Start	Through

Emergency Threshold	Start	Through





Status Summary
Normal Conditions – No emergency actions forecasted.

****SAMPLE REPORT****

21-Day Energy Assessment

November 15th 2022 – December 5th, 2022

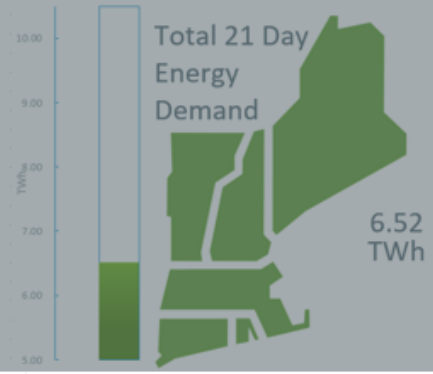
Alert Threshold	Start	Through

Emergency Threshold	Start	Through

Peak Forecasted Daily Energy Demand



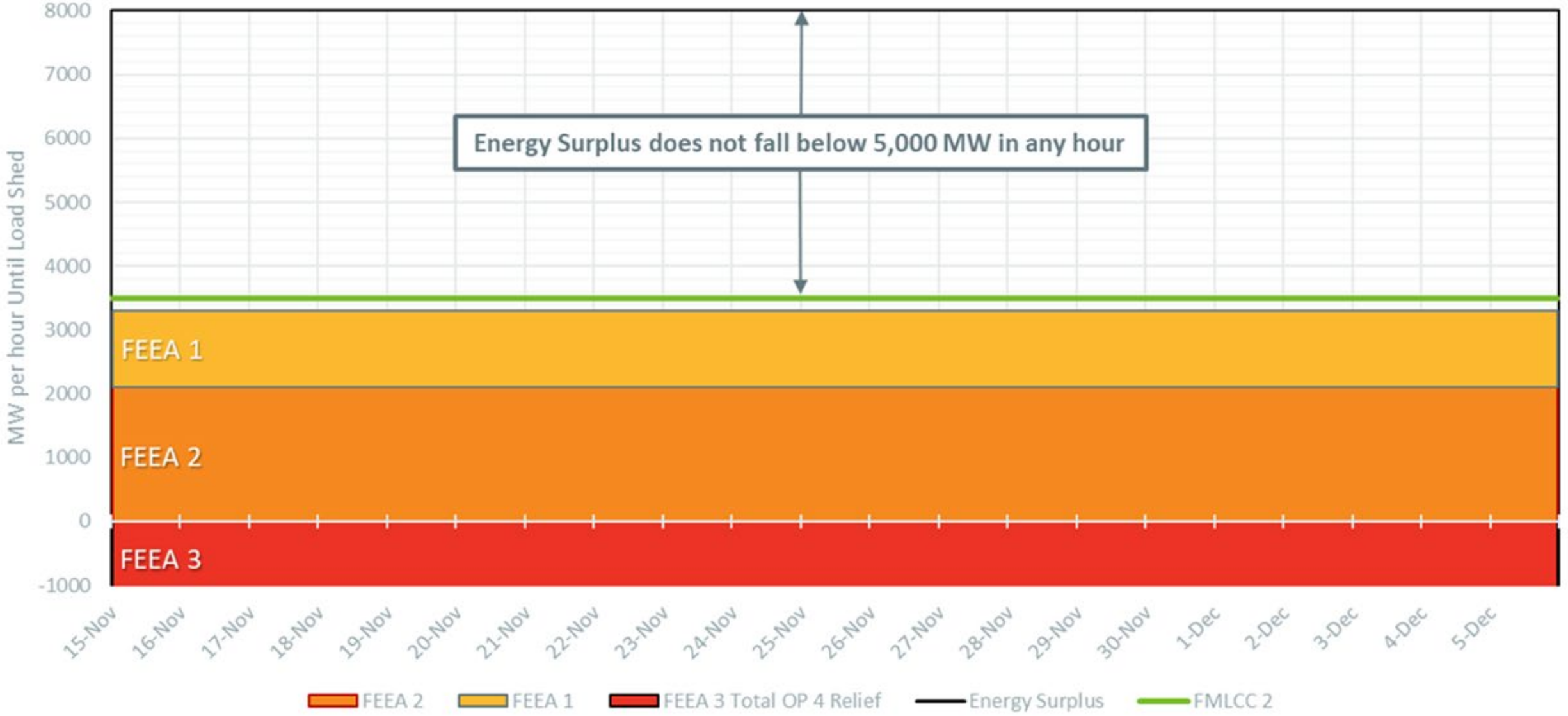
Forecasted Peak Date[7]: 12/5/2022



Status Summary
Normal Conditions – No emergency actions forecasted.

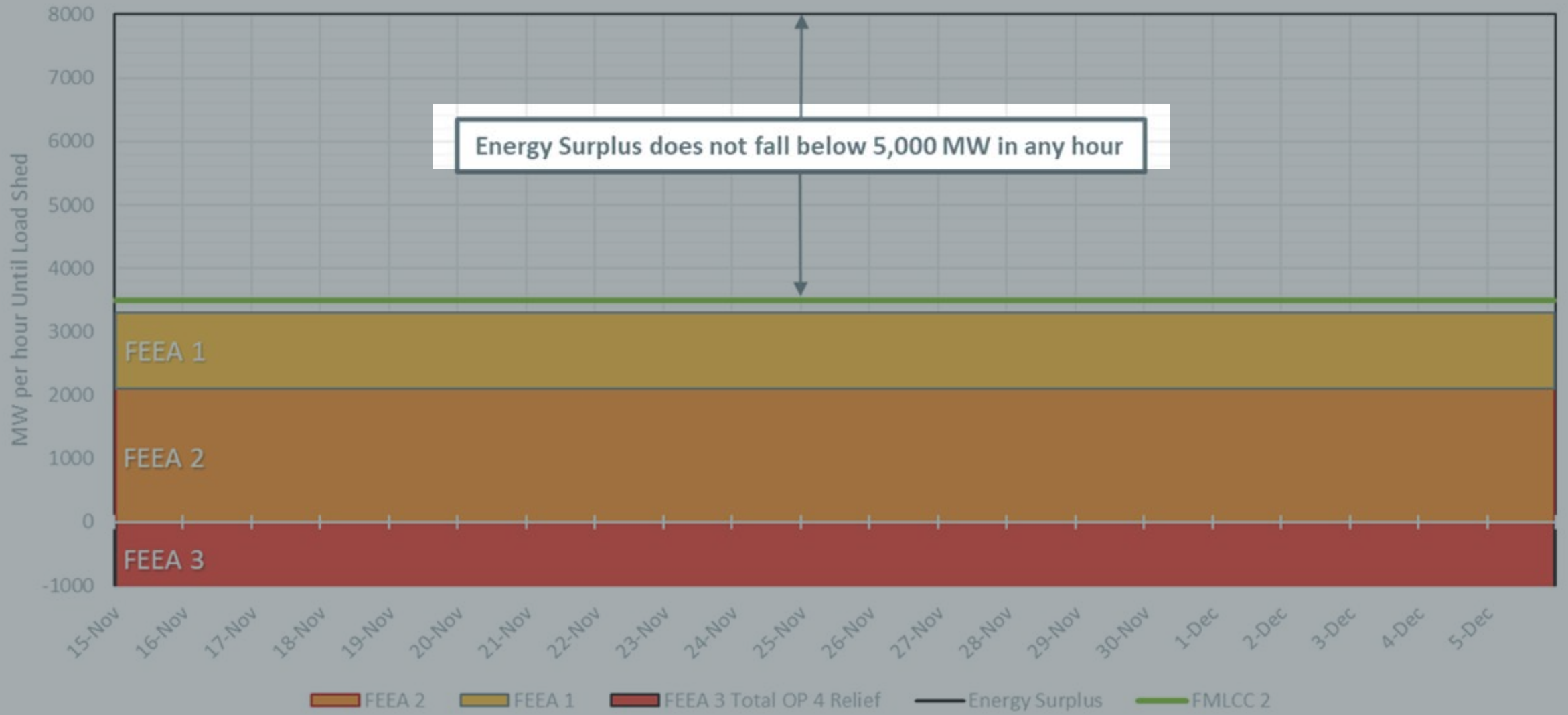
****SAMPLE REPORT****

21 - Day Energy Emergency Forecast

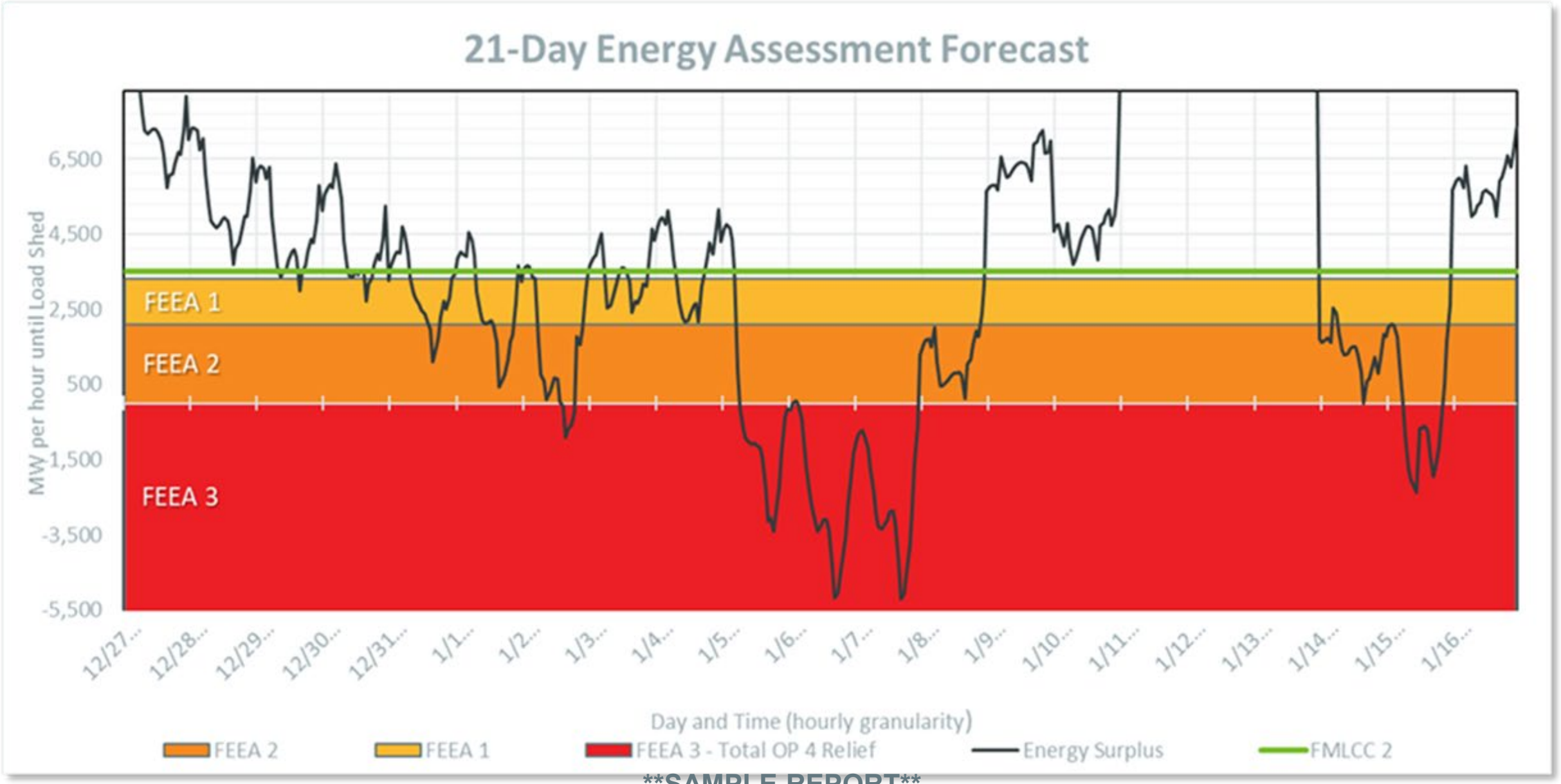


****SAMPLE REPORT****

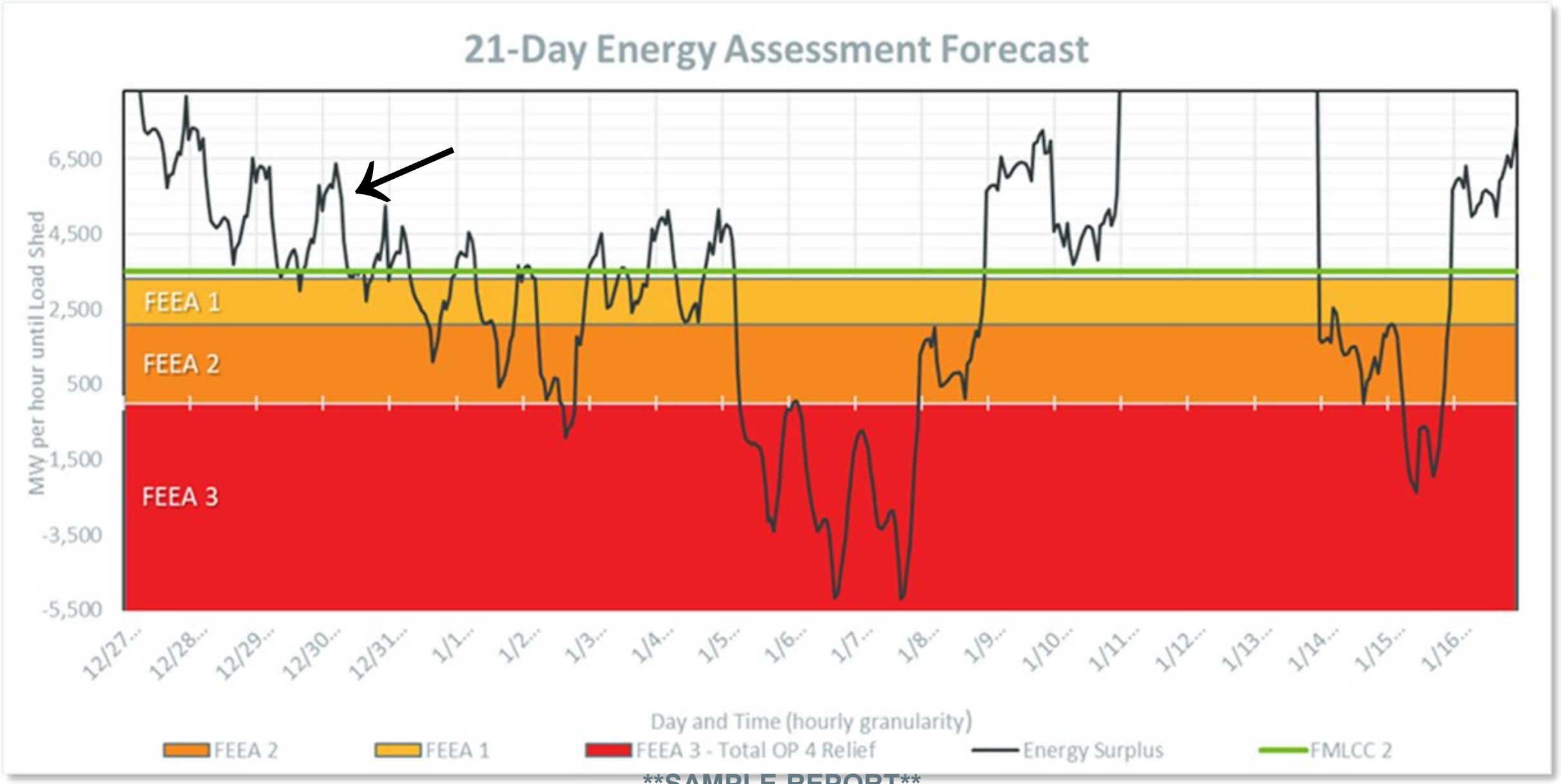
21 - Day Energy Emergency Forecast



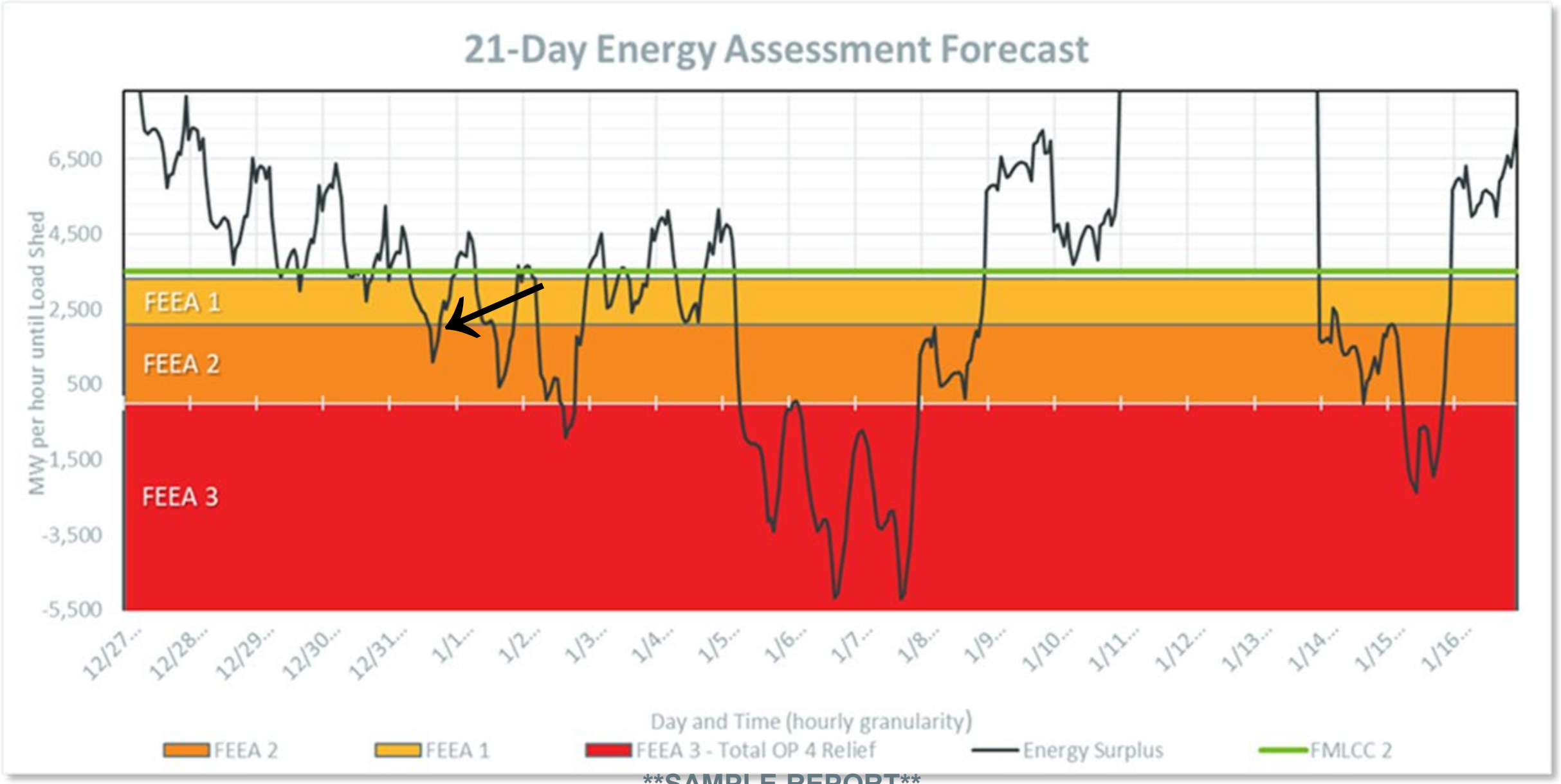
SAMPLE REPORT



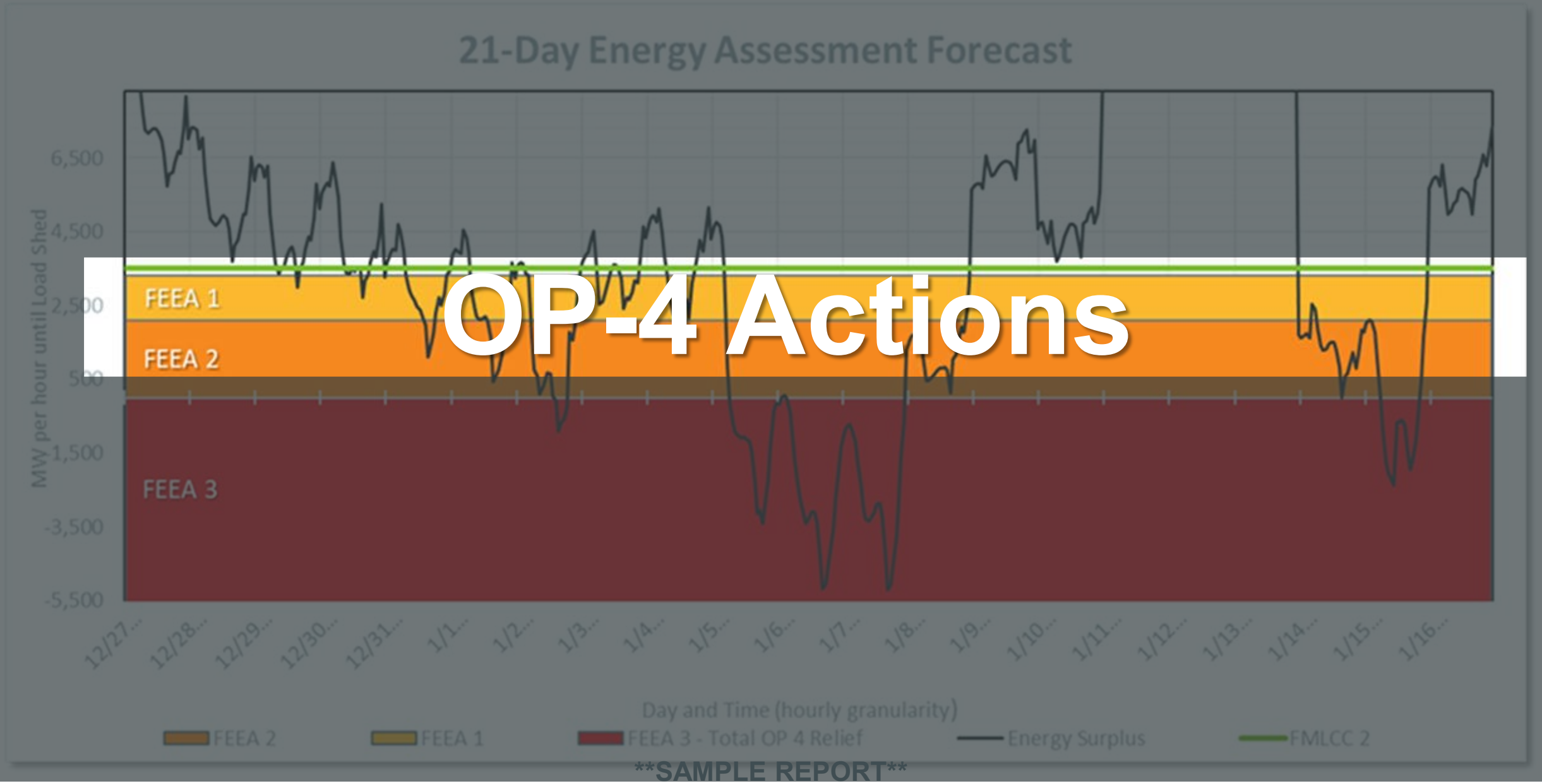
SAMPLE REPORT



SAMPLE REPORT

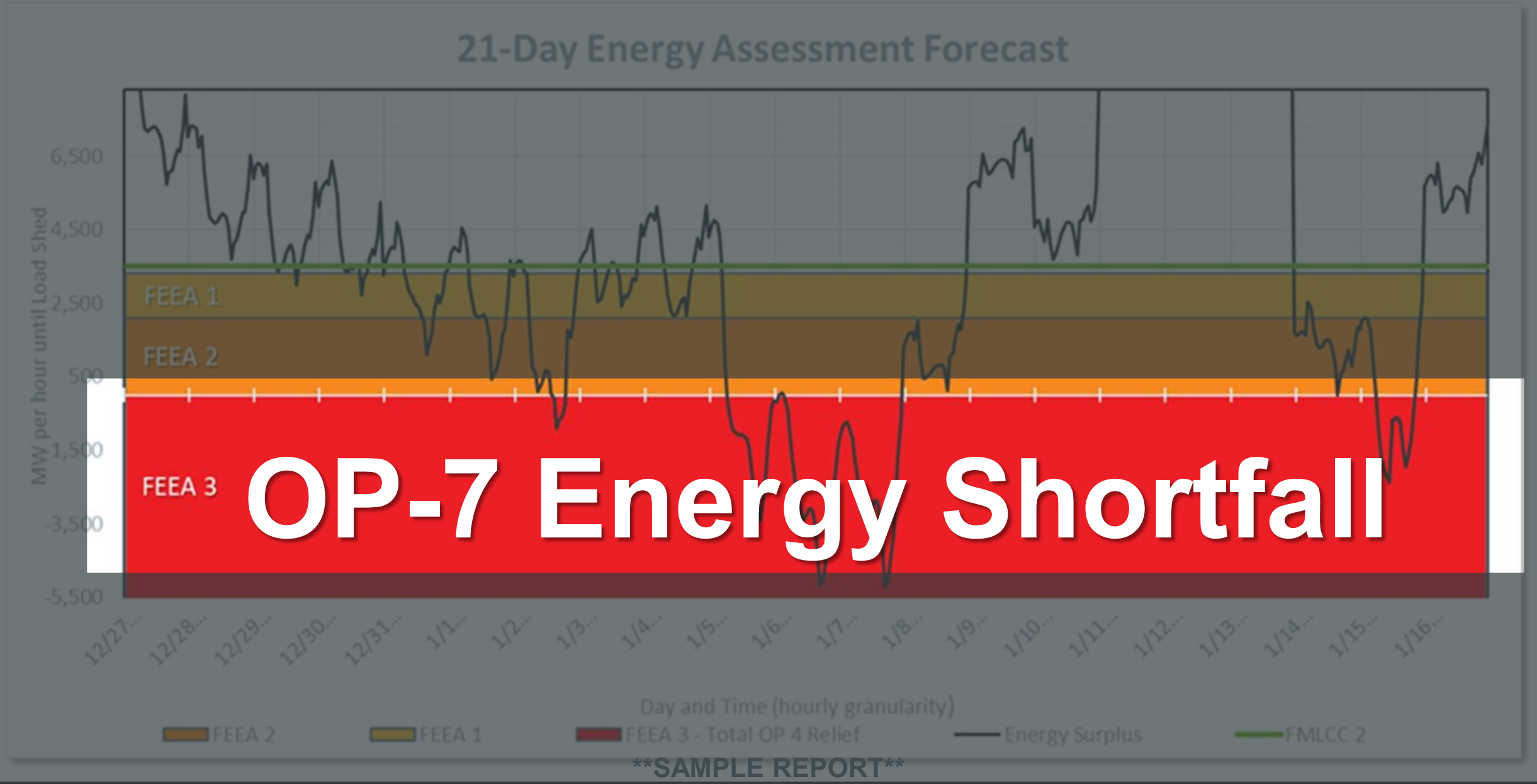


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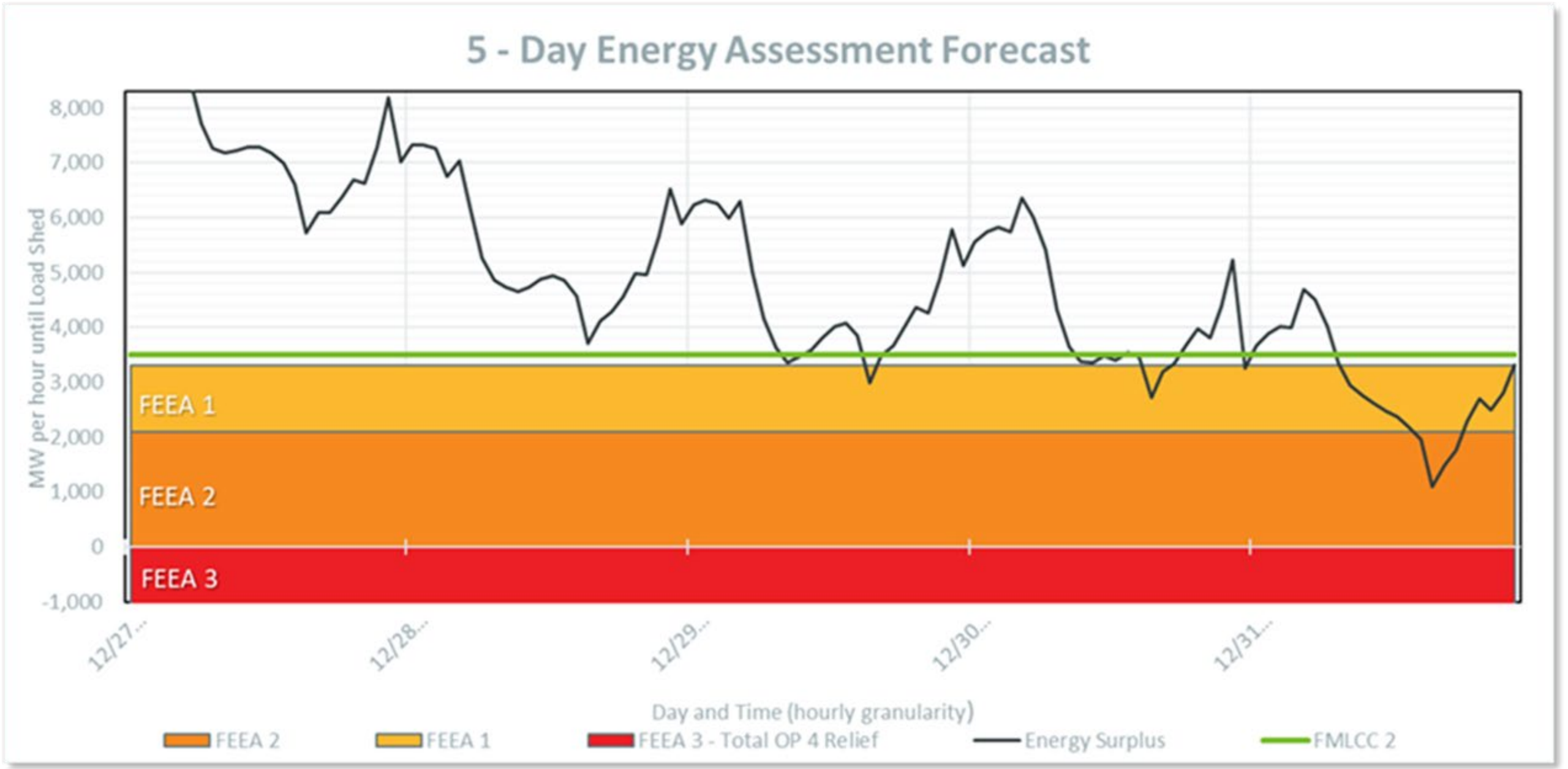
OP-4 Actions

SAMPLE REPORT

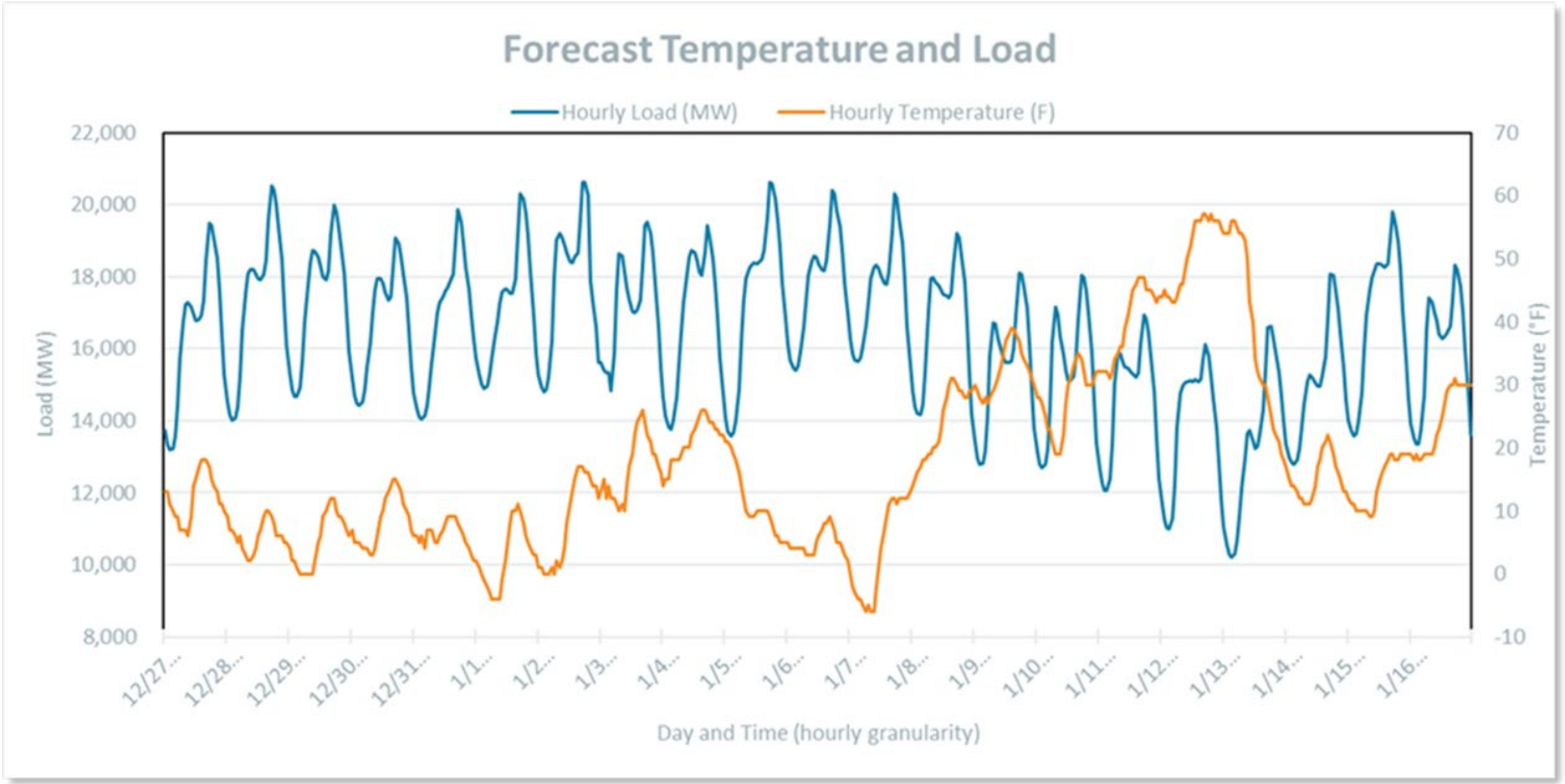


OP-7 Energy Shortfall

SAMPLE REPORT

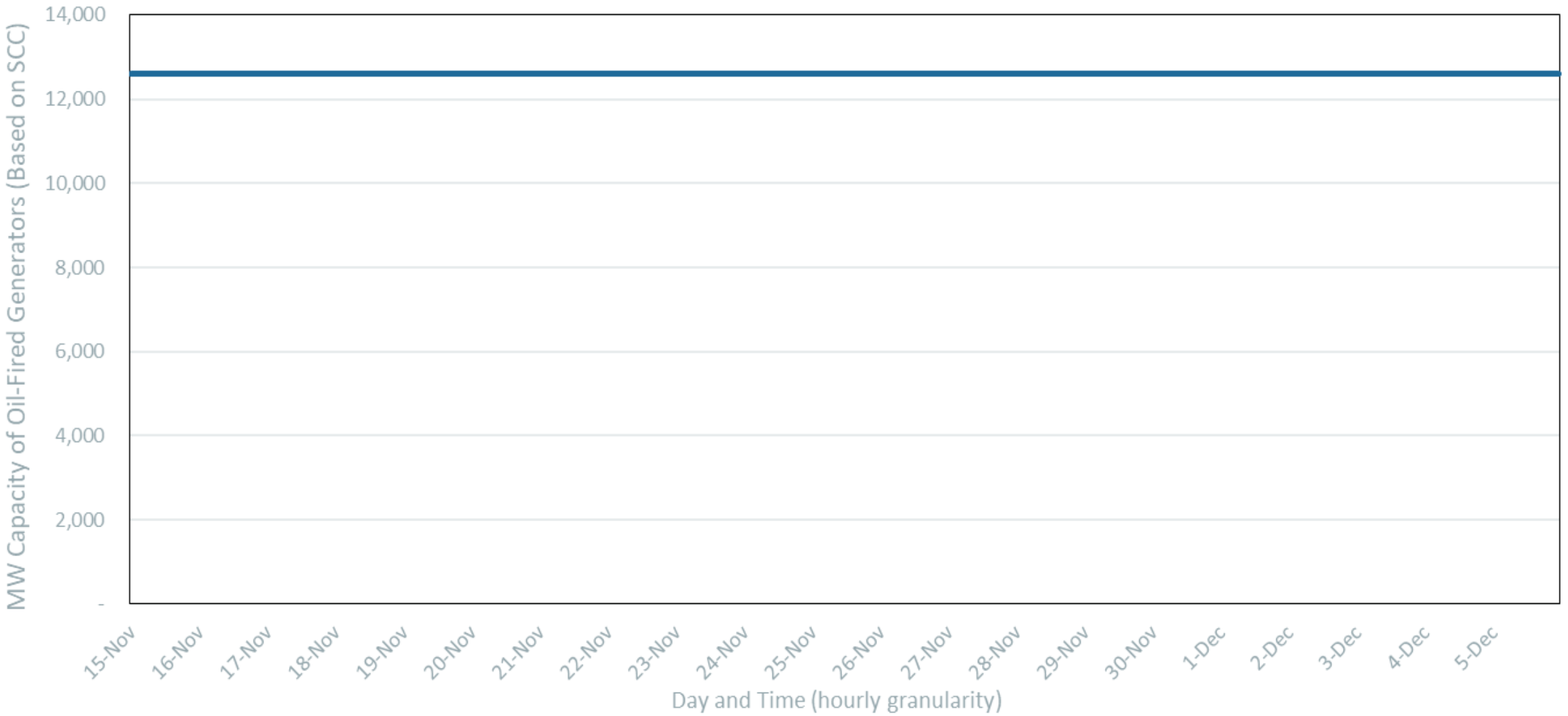


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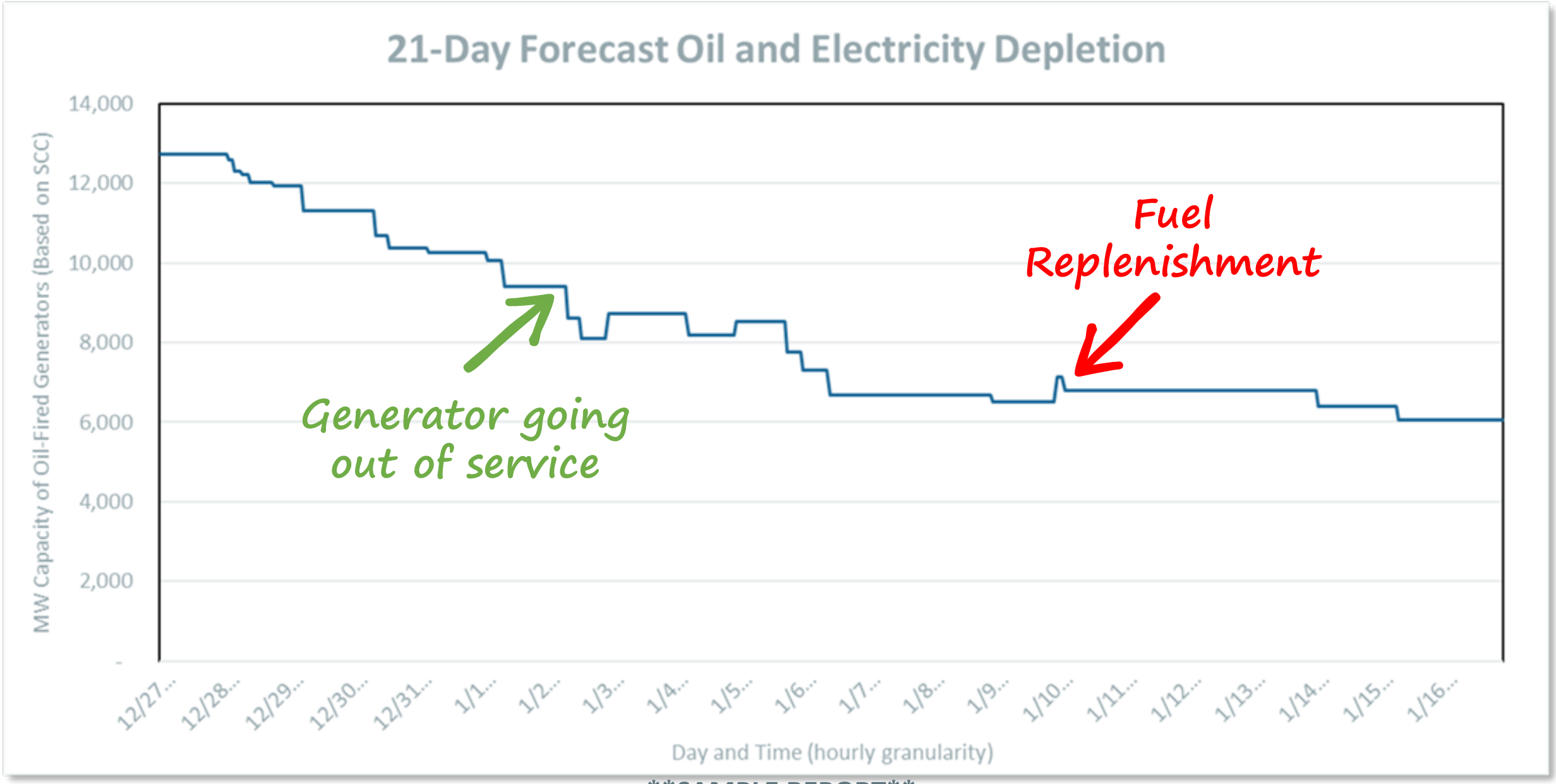


****SAMPLE REPORT****

21-Day Forecast Oil and Electricity Depletion



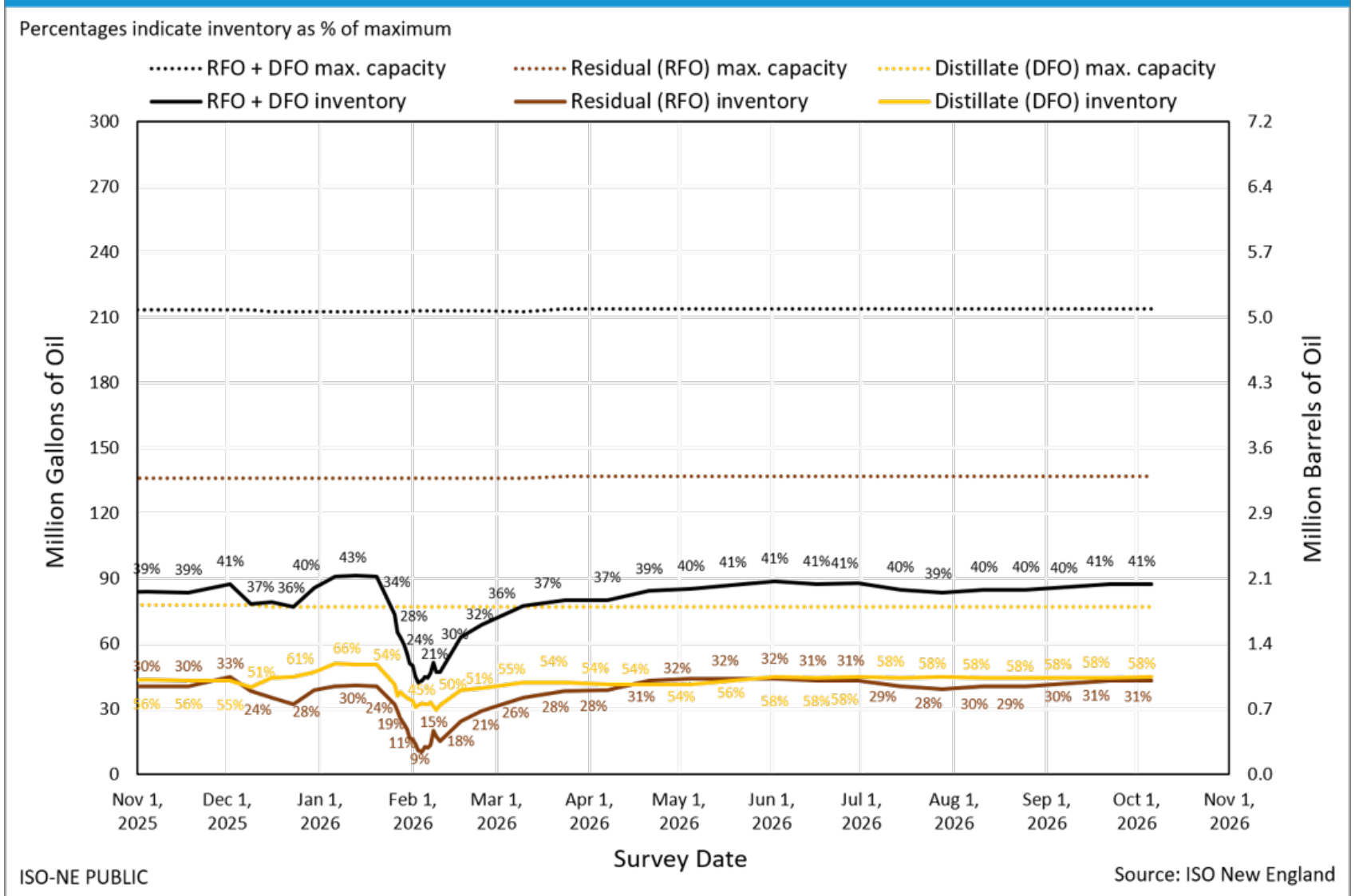
****SAMPLE REPORT****



SAMPLE REPORT

Fuel Oil Usable Inventory: Last 12 Months

Based on OP-21 generator surveys received from market participants



ISO-NE PUBLIC

Source: ISO New England

Oil Consumption Summary – November 29th – December 5th	
Fuel Type	**Gallons Consumed**
Residual Fuel Oil	181,987
Distillate Fuel Oil	106,693
Total Consumption	**288,680**

The oil consumption summary indicates the number of gallons of oil burned in the previous week as reported in the generator survey.

****SAMPLE REPORT****

Glossary

Forecast MLCC 2 (FMLCC2) - indicates that available Resources during any hour of the Operating Day are forecasted to be less than 200 MW above those required to meet Operating Reserve requirements.

Forecast Energy Emergency Level 1 (FEEA 1) - indicates that available Resources during any hour of the Operating Day are forecasted to be less than those required to meet Operating Reserve requirements, and that the implementation of OP-4 Actions 1 through 5 is being forecasted.

Forecast Energy Emergency Level 2 (FEEA 2) - indicates that available Resources during any hour of the Operating Day are forecasted to be less than those required to meet Operating Reserve requirements and that the implementation of OP-4 Actions 6 through 11 is being forecasted.

Forecast Energy Emergency Level 3 (FEEA 3) - indicates that available Resources during any hour of the Operating Day are forecasted to be insufficient to serve firm load requirements, and the implementation of firm load shedding under OP-7 is being forecasted.

Energy Alert – An Energy Alert is declared when FEEA 2 or FEEA3 are forecasted to occur in at least 1 hour on 1 or more consecutive days, in days 6 through 21 of this 21 Day Energy Assessment.

Energy Emergency - An Energy Emergency is declared when FEEA 2 or FEEA3 are forecasted to occur in at least 1 hour on 1 or more consecutive days, in days 1 through 5 of this 21 Day Energy Assessment or where firm load shed under OP-7 is occurring or anticipated to occur.

Appendix A

[1] **Overall System Health** – The overall system health represents the energy surplus in New England spanning the 21 day study period. The bounds to further define this status are, 8,000 MW, 3,500 MW and 2,100 MW. As surplus decreases, the weights associated with each threshold increases.

[2] **Consumer Demand** – Consumer demand represents hourly system load spanning the 21 day study period. The bounds to further define this status are, 20,000 MW, 24,000 MW and 26,000 MW. As hourly load increases, the weights associated with each threshold also increases.

[3] **Weather** – Weather represents the sum of HDDs spanning the 21 day study period. Slider position is based on the worst slider position being 21 days of 72 HDDs or more. The slider was linearly scaled from 1512 total HDDs to 0.

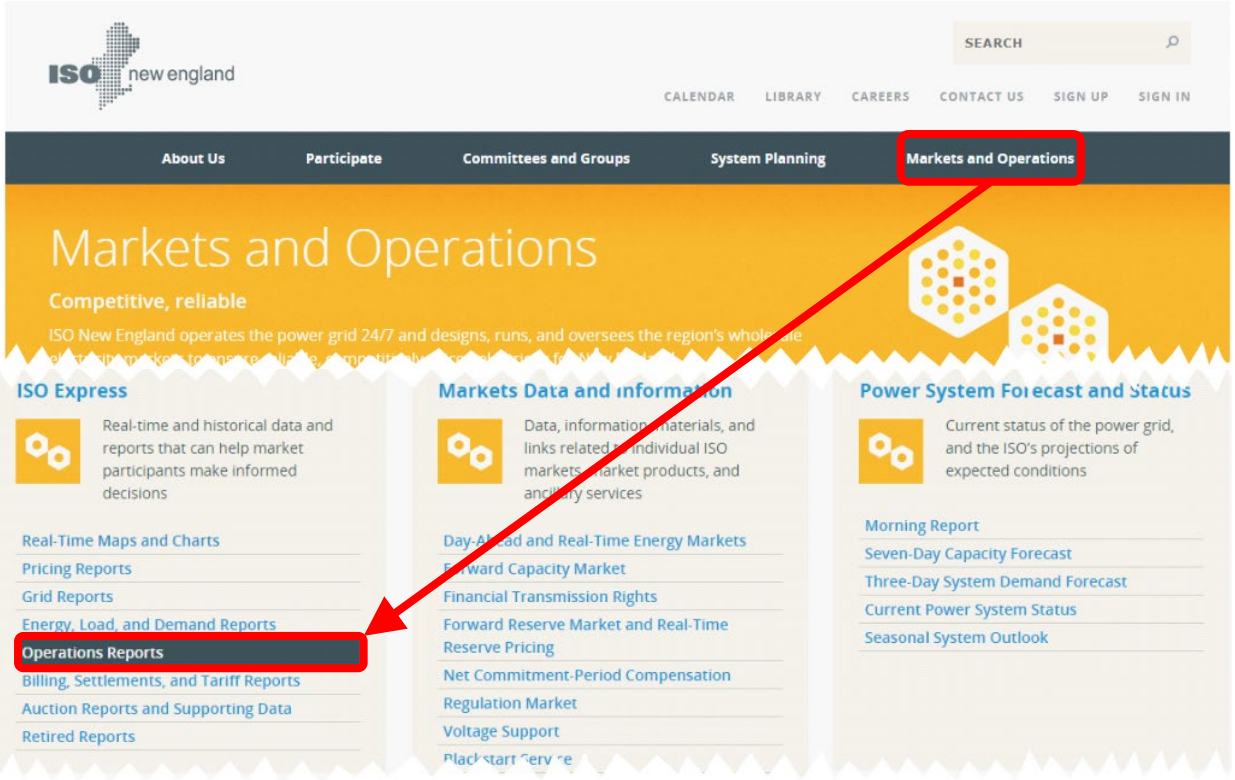
[4] **Outages** – Outages is representative of generation forced outages throughout the 21 day study period. The bounds are further defined using the ISO-NE Op-Cap Analysis' most restrictive Unplanned Outage MW Allowance. Should the total forced outages achieve or exceed the identified allowance, the weight associated with the limits increase.

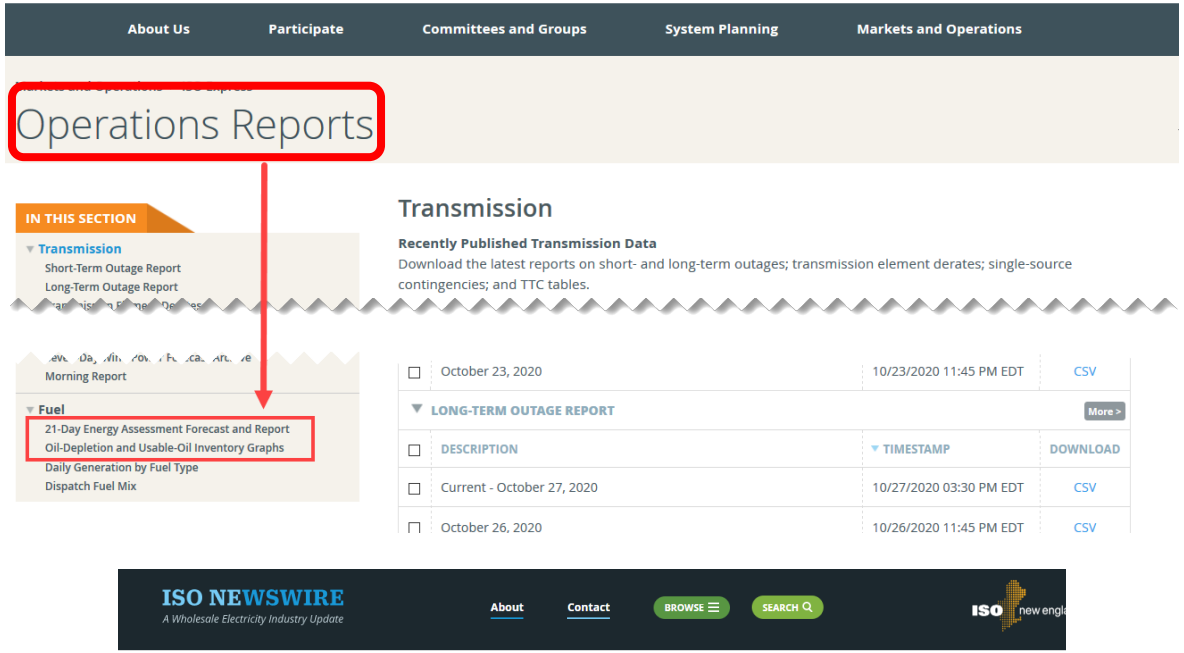
[5] **Pipeline Natural Gas Supply** – Gas Supply represents the natural gas availability to New England utilizing pipeline capacity restrictions to identify the total gas available. The position of the slider is a representation of total volume of gas over the entire 21-day study period.

[6] **Pipeline Natural Gas Demand** – Gas Demand represents the natural gas availability to generators taking the Local Distribution Company (LDC) demand into consideration, and spans the 21-day study period. It is based on the forecasted total natural gas usage in Bcf, with anything less than 40 Bcf not moving the slider.

[7] **Stored Fuel Inventory** – Stored fuel inventory reflects the total usable fuel inventory in New England. The position of the slider is in relation to 70% full and reflects the current capacity in the region based on weekly generator surveys.

21-Day Energy Assessment is Available on ISO's Website





[ISO Newswire - 21 Day Energy Assessment]



ISO Emergency Procedure Review

M/LCC-2, OP-4, OP-7

Jon Gravelin

DIRECTOR, SYSTEM OPERATIONS



ISO-NE PUBLIC

Overview of Emergency Procedures

- M/LCC-2: Abnormal Conditions Alert
- OP-4: Action During a Capacity Deficiency
  - OP-4 Appendix A: Estimates of Additional Generation and Load Relief
- OP-7: Action in An Emergency

M/LCC-2 Alerts the Region When Abnormal System Conditions Exist or are Anticipated

- ISO will declare M/LCC-2, Abnormal Conditions Alert, when the reliability of the New England RCA/BAA is degraded
  - An LCC may also declare M/LCC-2 for its own local area of the system

- Possible conditions for declaration of M/LCC-2 include:
  - A forecasted or actual deficiency of operating reserves requiring implementation of OP-4 or OP-7
  - Low transmission voltages and/or low reactive reserves
  - A credible threat to power system reliability such as sabotage or an approaching storm

- ISO most frequently declares M/LCC-2 for large storms and conditions where system capacity is low

- Actions are intended to reduce or eliminate the risk of losing equipment due to testing or other high-risk activities whenever the system is stressed

- Market participants are expected to stop or postpone maintenance, construction or test activities that reduce the reliability or output of a resource or contribute to decreased reliability of the system (e.g. interruption of communications or reduced staffing levels)
  - If a maintenance, construction or test activities cannot be stopped and/or postponed; precautions shall be taken to prevent the activity from posing further risk to the power system

OP-4 Actions are Implemented When Load and Operating Reserve Requirements Exceed Available Resources

- ISO will implement actions of OP-4, Capacity Deficiency, when available resources are insufficient to meet the anticipated load plus operating reserve requirements
  - An LCC may also implement OP-4 actions for its own local area of the system
- Other system conditions resulting in OP-4 include:
  - Transmission facilities into a sub-area of the region are loaded beyond transfer capabilities
  - A sub-area of New England is experiencing abnormal voltage and/or reactive conditions
  - An external area is experiencing a capacity deficiency and has requested assistance resulting in operating reserves below the required levels
- Time permitting, ISO system operators take action in advance of OP-4. Available actions include:
  - Ordering on longer lead time resources
  - Reduction of real-time only export transactions
  - Scheduling priced import transactions
- The 11 actions of OP-4 provide ~1,145 – 4,020 MW of relief (as documented in OP-4, Appendix A)

OP-4 Actions

1. Implement a Power Caution
30-Minute Reserve Depletion
Resources with CSO prepare

2. Declare Energy Emergency Alert (EEA) 1

3. Request Voluntary Load Curtailment of MP facilities

4. Implement a Power Watch

5. Emergency cap/energy from MPs or neighboring RC/BAs
10-Minute Reserves

6. Implement Voltage Reduction (5% > 10 Min)
Declare EEA2

7. Resources w/o CSO voluntarily provide MWs

8. Implement Voltage Reduction (5% ≤ 10 Min)
Declare EEA2 *(if not done yet)*

9. Request Customer Generation & Voluntary Load Curtailment
(Large Industrial/Commercial)

10. **Implement a Power Warning**
Initiate Radio/TV Appeals
Declare EEA2 *(if not done yet)*

11. Request State Governor Appeals
Declare EEA2 *(if not done yet)*

Historical OP-4 Event

- On Tuesday, June 24, 2025, due to about 1,060 MW of forced generator outages and reductions near the peak load period resulting in an OP-4 declaration.
- System conditions required implementation of Master/Local Control Center Procedure No. 2 (M/LCC2) and OP-4
  - M/LCC2: 6/23 at 21:00 to 21:00 on 6/25
  - OP-4, Actions 1, 2: 17:22 – 21:00
  - Op-4 Actions 3, 5: 17:40 – 20:30
- These events led to a Capacity Scarcity Condition (CSC) under the Pay-for-Performance construct
  - A CSC is triggered by the approval of a single dispatch case that is violating one or more of the system reserve or local reserve zone constraints for one 5-minute interval

OP-7 Action in an Emergency

- ISO will implement actions of OP-7, Action in an Emergency, in the event of an operating emergency involving unusually low frequency, equipment overload, capacity or energy deficiency, unacceptable voltage levels, or any other emergency that ISO deems appropriate
- The objectives of OP-7 actions are to protect reliable operation of the Eastern Interconnection, restore balance between customers' load and available generation in the shortest practicable time, minimize risk of damage to equipment, and to minimize interruption of customer service
- 50% of the New England load can be shed manually in 10 minutes or less, including the 30% that is shed automatically by underfrequency relays
  - Load shed instructions are communicated as an operating instruction from ISO to the LCCs verbally as a % of area load to be shed

KEY TAKEAWAYS

Winter 2026 - 2027

Key Takeaways

- Warmer than normal temperatures and near to above normal precipitation are forecasted for most of New England; extreme cold weather can occur at any time, so advance preparations by ISO and by resources in the region are critical
- ISO is closely monitoring weather forecasts and fuel supplies in the region; monitoring of regional LNG storage inventory and routine surveys of oil, coal, and natural-gas fired resources enhance situational awareness and inform preparations
- Capacity is expected to be adequate this winter; fuel replenishment will greatly mitigate any potential for energy shortfalls under extreme conditions
- ISO's 21-day energy assessment provides early warning to the region should energy supplies become constrained; stakeholders should monitor this weekly report closely
- ISO's well-established emergency procedures are available for use should system conditions dictate; resource owners and operators should be aware of their roles and responsibilities should emergency conditions arise
- Communication and coordination is critical; ISO expects to be informed by resource owners of actual or anticipated concerns with the availability of generating resources