

MunEnergy Spring Webinar

Agenda

Welcome & Introduction – Katie McCue, Deputy Executive Director,
MMA

Energy Market Update & Summer Forecast – Brandon Fong, Principal,
Commodities Management Group, Constellation

Meet Your Business Development Managers – Charlotte Diogo & Aiste
Dacys, Business Development, Constellation

Questions and Closing



Massachusetts
Municipal
Association

'MMA's MunEnergy Model' vs. 'Broker Model'

MunEnergy Provides:

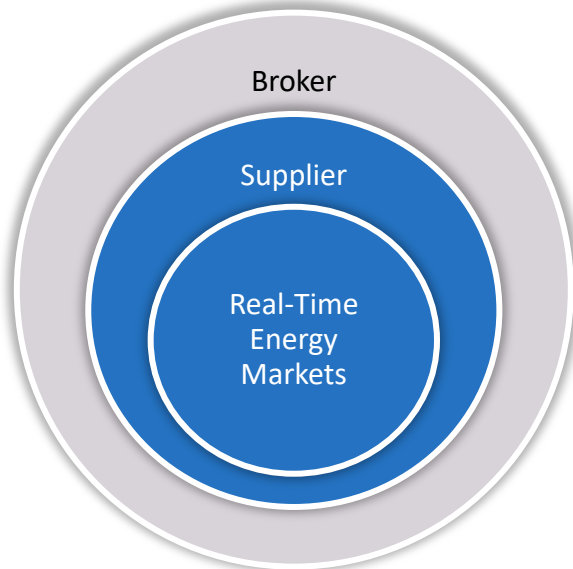
- ✓ Fully-vetted municipal energy contract terms, specifically for cities and towns
- ✓ Energy market updates, seminars, webinars, in-person meetings
- ✓ Legislative & Regulatory Updates & Changes

Constellation, MMA's Endorsed Supplier, Provides:

- ✓ Energy Education with Timely & Relevant Market Trends and Weather Updates
- ✓ Dedicated Business Development Managers (BDMs) to assist members with customized energy procurement solutions
- ✓ REC's (New Mix Wind & Solar)
- ✓ Online Website and Billing Services
- ✓ Customer Care

Broker Provides:

- ✓ Access to information you would already be receiving from your supplier
- ✓ Standard contract terms & conditions
- ✓ Market Price Shopper
 - *Do you know the broker's fee per kWh?*
 - *Do you know if the price is 'All Inclusive' with NO pass-through components?*



Example of a Town's Typical Usage:

Annual Usage (kWh):	4,000,000	
Term:	3 years	
	Price/kWh	Annual Cost
Energy Obligation:	\$0.1800	\$ 720,000
Supplier Margin (1-2%):	\$0.0025	\$ 10,000
Broker Fee (Estimated):*	\$0.0050	\$ 20,000

3-year Term	
Energy Costs:	\$ 2,160,000
Supplier Margin:	\$ 30,000
Estimated Broker Fee: *	\$ 60,000

*Typical Broker fees range from \$0.0030 to \$0.0080/kWh

Our Strategy

POWER AMERICA'S CLEAN ENERGY FUTURE
Operate and grow the nation's largest fleet of clean, zero-emissions generation facilities, with world-class levels of safety, reliability, and resiliency

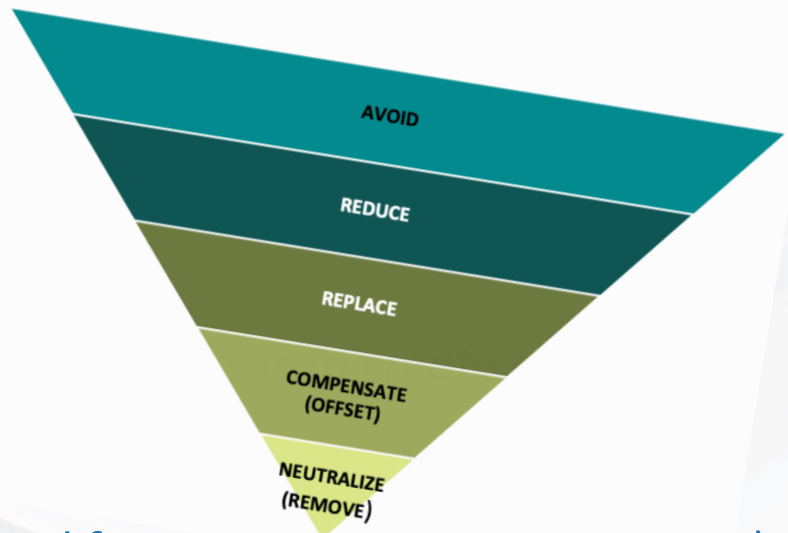
EXPAND AMERICA'S LARGEST FLEET OF CLEAN ENERGY CENTERS
Leverage and expand our state-of-the-art clean energy assets by co-locating with data centers, exploring direct air capture of CO2, and producing clean hydrogen and other sustainable fuels to reduce industrial pollution

UPLIFT AND STRENGTHEN OUR COMMUNITIES
Advance respect, belonging, diversity and equity; drive community investment and create family-sustaining clean energy jobs for all

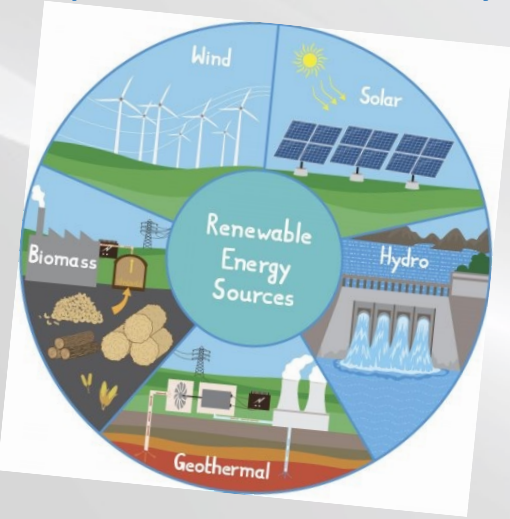
PROVIDE ENERGY AND SUSTAINABILITY SOLUTIONS FOR CUSTOMERS
Provide reliable, resilient energy and deliver innovative sustainability solutions that help customers achieve their clean energy goals

OUR PURPOSE: ACCELERATING THE TRANSITION TO A CARBON-FREE FUTURE

Greenhouse Gas Mitigation Hierarchy



our pursuit of productive harmony to support present and future generations

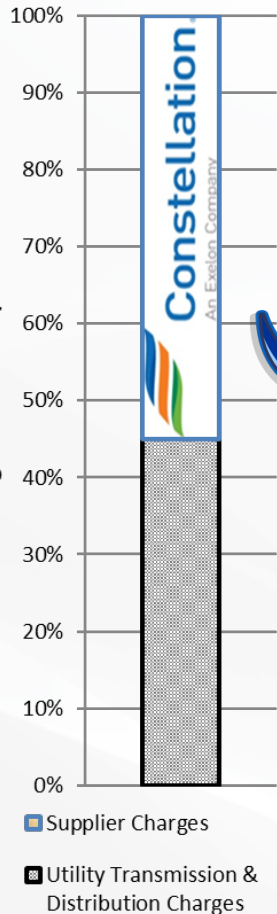


Today, 48 percent of our electricity comes from renewable sources. We expect that to be 53 percent by the end of this year.

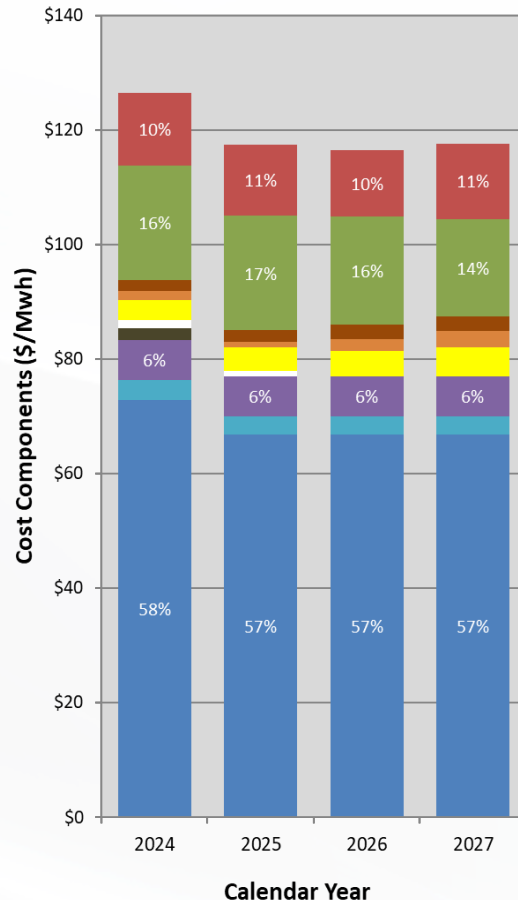
The time has come to be bolder: I am announcing tonight that I am directing my Energy Office to draft legislation requiring that 100 percent of our electricity come from clean energy by 2040.

What's In Your Electric Supplier's Price?

Estimated Electricity Bill Components



Estimated Supplier Price Breakdown in MA (Current)

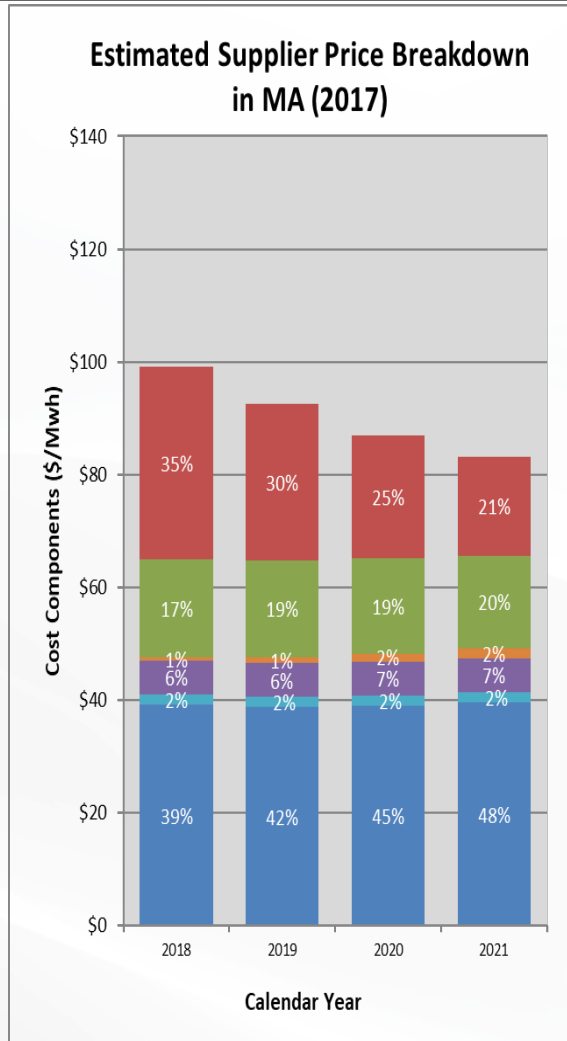


- **Capacity** – Determined by prices set from independent system operator (ISO)-run auctions and customer capacity tag (peak usage). Designed to provide grid reliability and ensure enough generation available to the region.
- **Renewable Portfolio Standards (RPS)** – Mandates set by individual states for load-serving entities (LSE's/Constellation) to purchase a certain amount of renewable energy. Determined by state regulated compliance percentages and the financial market for renewable energy certificates (RECs).
- **Clean Energy Standard (CES)** – Similar to RPS but a Massachusetts mechanism to incent new zero emission generation (ex. hydro & nuclear)
- **Clean Energy Standard – Expansion** – MA state mandate for existing zero emission generation
- **Clean Peak Standard** – Mandate set by state of MA to incentivize renewable and storage power supply during peak periods.
- **Cost of Service/Fuel Security Ch. 1**– Additional costs to LSE's to fund out-of-market compensation for particular resources to ensure grid reliability in the region.
- **Inventoried Energy Program/Fuel Security Ch. 2**– ISO New England administered program that will provide payments to resources that can store fuel for winters '23/24 & '24/25.
- **Ancillaries** – Small administrative charges billed to load-serving entities by the ISO to operate grid safely and reliably.
- **Line Losses** – Included to make up for the energy lost over transmission and distribution (T&D) lines due to heating
- **Energy** – The cost of procuring the actual electrons transmitted through the T&D lines. Largely determined by cost of natural gas for New England.

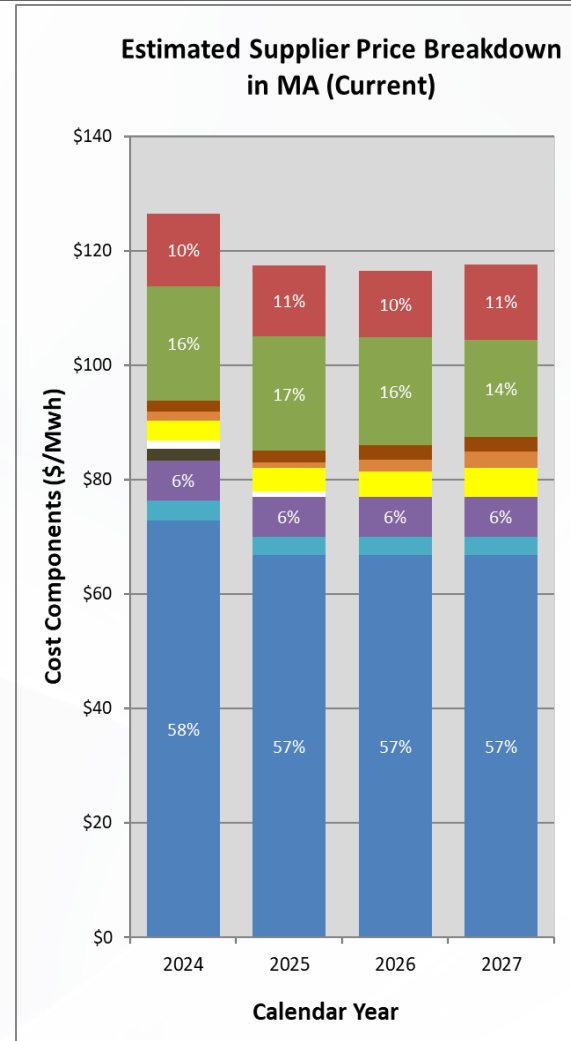
* Source: Proprietary Data, Eversource

** **Disclaimer:** This information is provided for illustrative purpose only and should not be construed as advice regarding the purchase or sale of exchange-traded futures, options contracts, or energy commodities. This report is based, in part, upon factual information obtained from sources believed to be reliable, but the accuracy of such information is not guaranteed. Past performance is not necessarily indicative of future results. Furthermore, the forward-looking information and analysis that may be contained in any such report may be based upon: (a) a number of viable factors and assumptions that are constantly changing and (b) our subjective judgments and opinions. Such information will be provided as of the date of any such report (with no obligation on our part to update), is subject to change, and is provided herein for informational purposes only. Reliance upon any such information and analysis in such a report for decisions is the sole risk of the purchaser.

Supplier Stack 2017 vs. Today



Vs.



* Source: Proprietary Data, Eversource

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MA Energy Policy Priorities 2023/2024

Healy Driscoll Administration

- Double offshore wind and solar targets
- Quadruple energy storage deployment
- Electrify public transportation
- One million electric vehicles on the road by 2030
- At least 1% of the state budget to environmental and energy agencies
- Triple the budget of the Clean Energy Center/ Create Green Bank to foster investment in resilient infrastructure

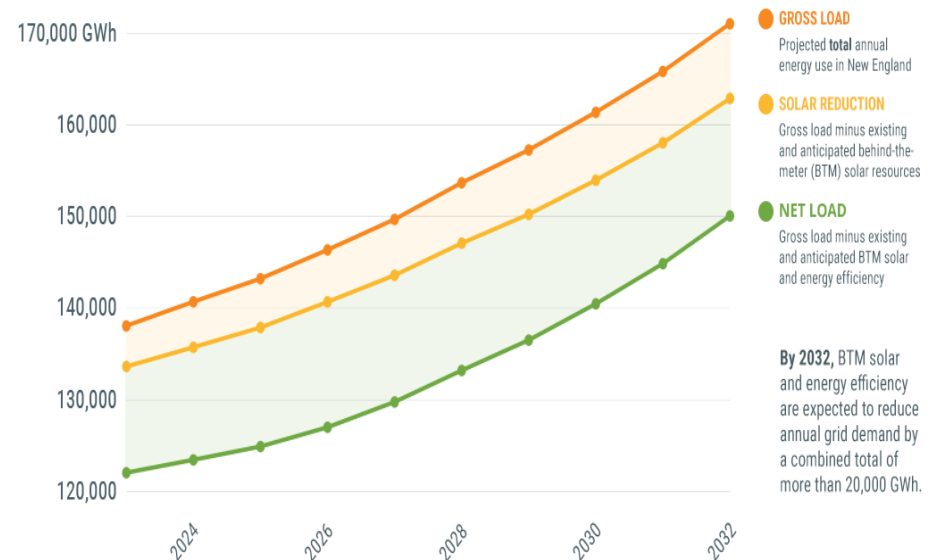
Telecom, Utilities and Energy Joint Legislative Committee

- Disagreement over committee rules between the House and Senate has led to a delay in committee hearings. There are numerous bills before TUE addressing issues including energy efficiency, decarbonization, solar incentives, energy facilities siting board reforms, enhancing RPS among others.
- No hearings have been scheduled. It's likely hearings will begin later this spring and continue into the fall.

Climate Cabinet

- Melissa Hoffer has been appointed as Massachusetts' first Climate Chief. Massachusetts is the first state in the nation to establish such a position at the cabinet level.

Projected annual energy use in New England, 2023-2032

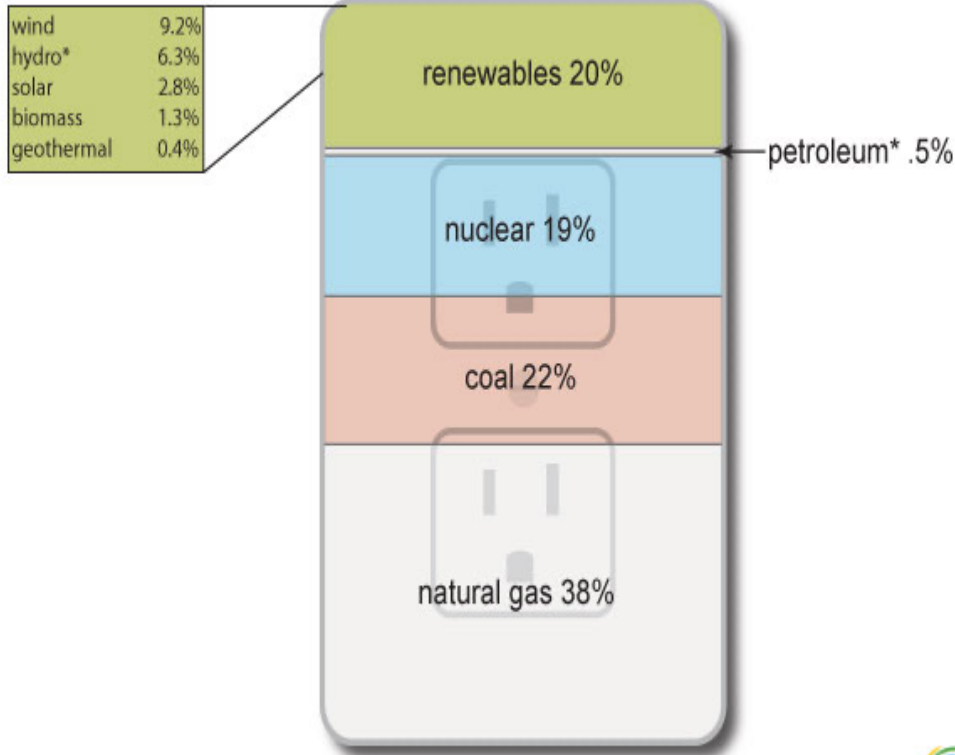


Source: Constellation

Why Natural Gas Matters to New England/Power

Sources of U.S. electricity generation, 2021

Total = 4.12 trillion kilowatthours



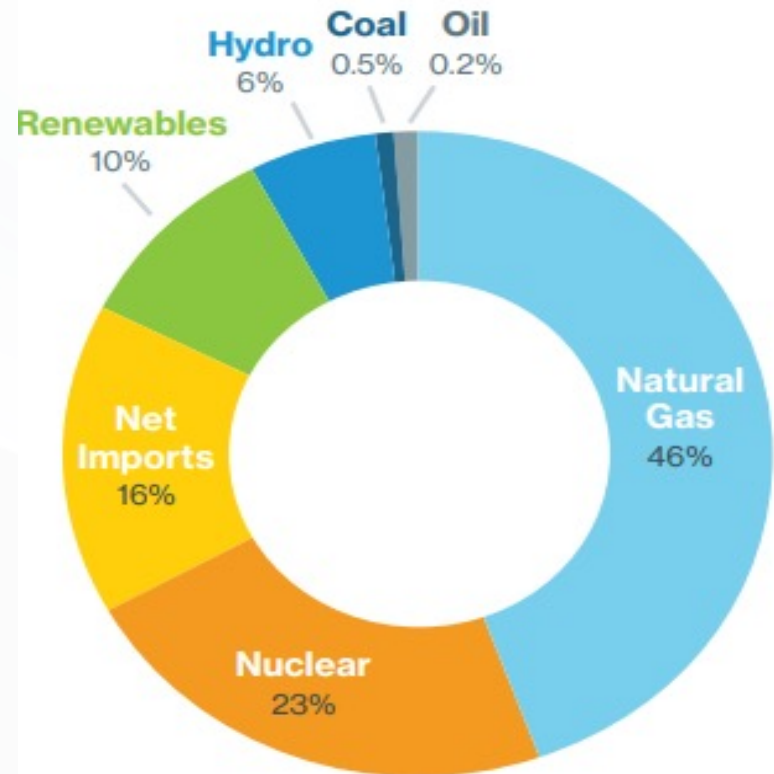
Data source: U.S. Energy Information Administration, *Electric Power Monthly*, February 2022, preliminary data

Note: Includes generation from power plants with at least 1,000 kilowatts of electric generation capacity (utility-scale).

*Hydro is conventional hydroelectric. *Petroleum includes petroleum liquids, petroleum coke, other gases, hydroelectric pumped storage, and other sources.

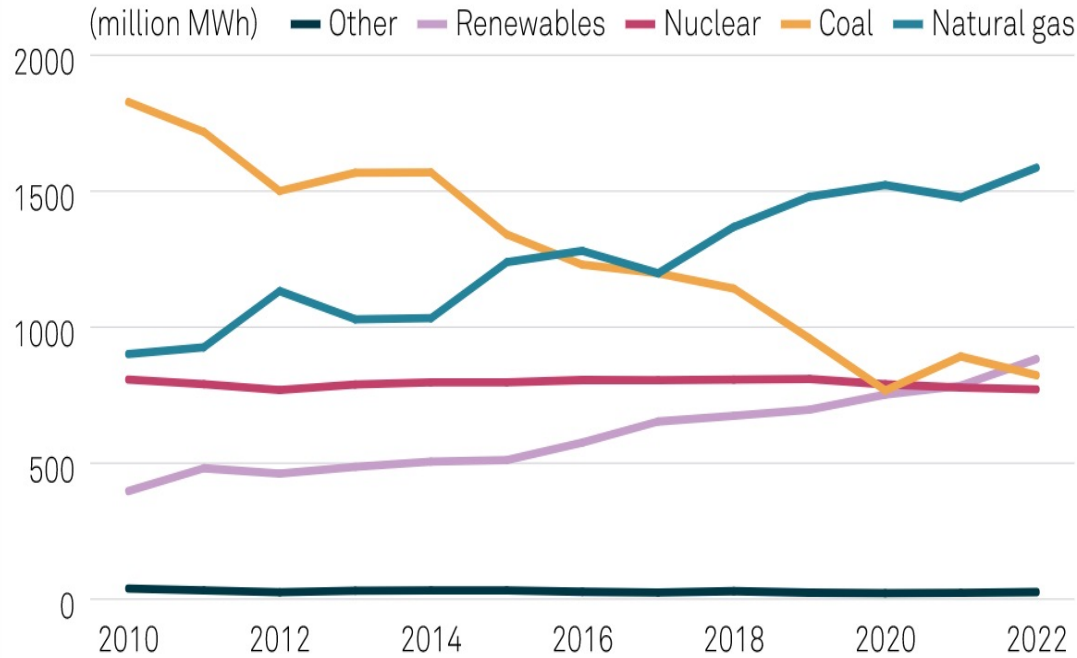


New England 2021 ENERGY RESOURCES

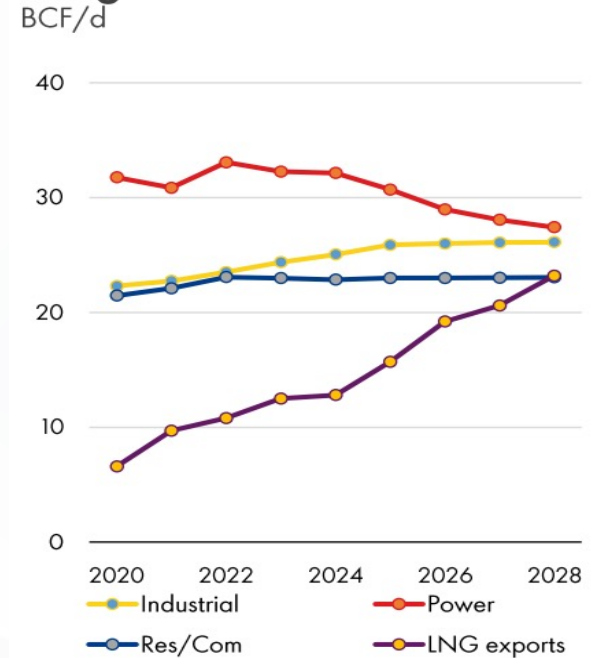


Acclimate to Volatility: Gas Dependency and Exports Set to Increase

US electric power sector electricity generation



US gas demand



- 41% of existing coal plant capacity are projected to retire by 2030 further diminishing the balancing effect the fossil fuel has on natural gas demand.
- Shell sees an additional ~7 Bcf/d of LNG export capacity by 2028 further pressuring natural gas demand in the US.

[Natural Gas: Fasten Your Seat Belts - WSJ](#)

Customer Takeaway: The warm winter has created more supply slack in the supply/demand balance of natural gas but as we continue to move forward on the path of sustainability, natural gas dependency will increase along with LNG export growth creating larger price swings.

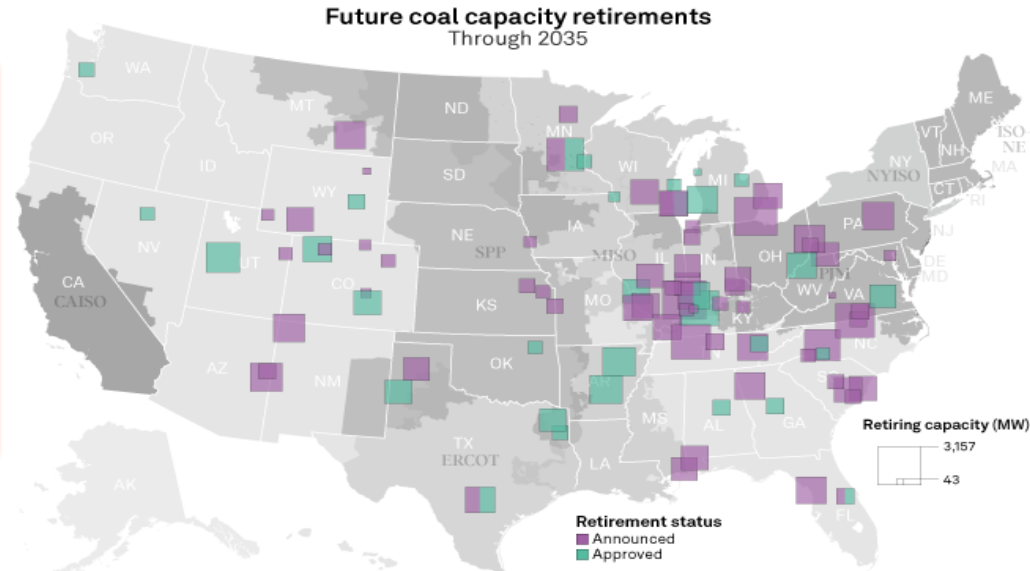
Transition to Dependency on Natural Gas Happening Now

STATEIMPACT PENNSYLVANIA Energy, Environment, Economy. A reporting project of [NPR](#) member stations

Homer City — Pa.'s largest coal-fired power plant — will close in July

Homer City operating only around 20 percent in recent years

Reid Frazier



US Power Plant Firm Goes Bankrupt After Winter Storm Penalties

- Owner of power plants was already facing liquidity constraints
- Lincoln's debt load became unworkable, company executive says

By [Jeremy Hill](#) and [Naureen S Malik](#)
March 31, 2023 at 5:59 PM EDT

[Lincoln Power LLC](#), the owner of two Illinois power plants, filed for bankruptcy after its financial strain was exacerbated by nearly \$39 million in penalties levied by the biggest US electric-grid operator.

The Chapter 11 filing allows Lincoln, a unit of Carlyle Group-backed [Cogentrix Energy Power Management LLC](#), to keep operating while working on a plan to repay creditors.

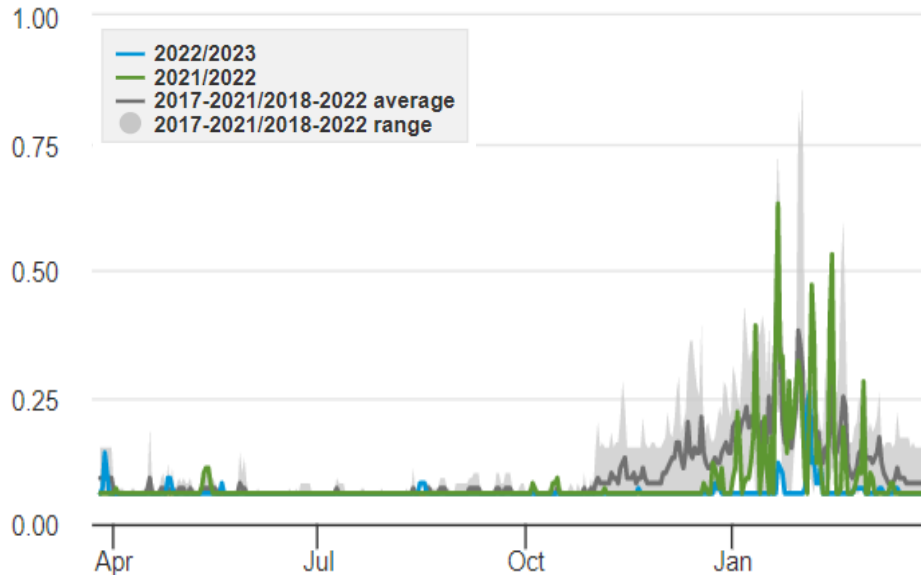
Unit	Capacity (MW) Total: 10,029.4	Fuel Type (All)	State (All)	Age	Transmission Owner Zone (All)	Future Deactivations	
						Owner Notification Date	Requested Deactivation Date
Brandon Shores 1	638.9		MD	39	BGE	4.06.2023	6.1.2025
Brandon Shores 2	642.7		MD	32	BGE	4.06.2023	6.1.2025
Homer City 1	620		PA	54	PENELEC	3.31.2023	7.1.2023
Homer City 2	614		PA	54	PENELEC	3.31.2023	7.1.2023
Homer City 3	650		PA	46	PENELEC	3.31.2023	7.1.2023
Vienna 8	153		MD	51	DPL	3.24.2023	6.1.2025
Vienna CT 10	14.3		MD	55	DPL	3.24.2023	6.1.2025

Sources: Bloomberg, State Impact Pennsylvania, PJM

The Most Expensive Natural Gas in the Continental US

Daily deliveries of liquefied natural gas in New England

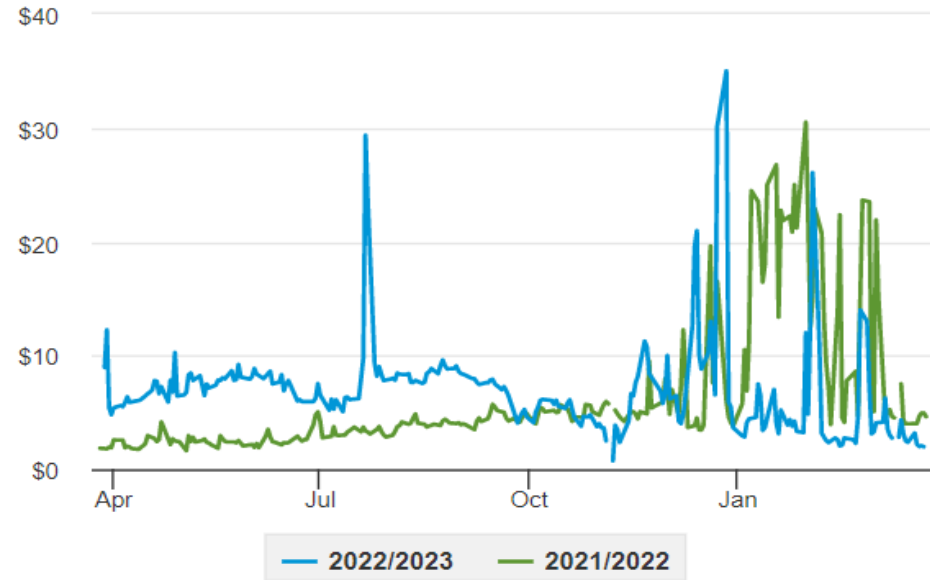
billion cubic feet per day (Bcf/d)



Daily spot price of natural gas at the Algonquin Citygate

(Click and drag in the plot area to zoom in)

dollars per million British thermal units



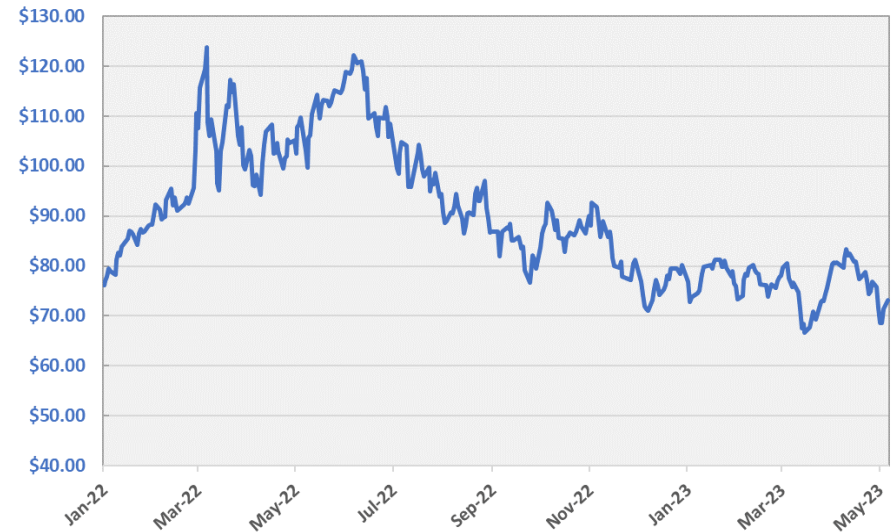
- Natural gas pipeline constraints for gas coming up from Western PA/OH create a supply/demand imbalance during winter months
- Liquefied natural gas (LNG) imports are necessary to supplement constrained dry gas coming west to east.
 - This creates a link between New England energy pricing and global natural gas prices.

Customer Takeaway: The region's push towards sustainability has created siting problems, mostly for fossil fuel projects, but even more cleaner solutions. As such, fuel security continues to be of great concern looking forward as sustainable solutions (high-capacity batteries, transmission lines, etc.) still need more time to scale up.

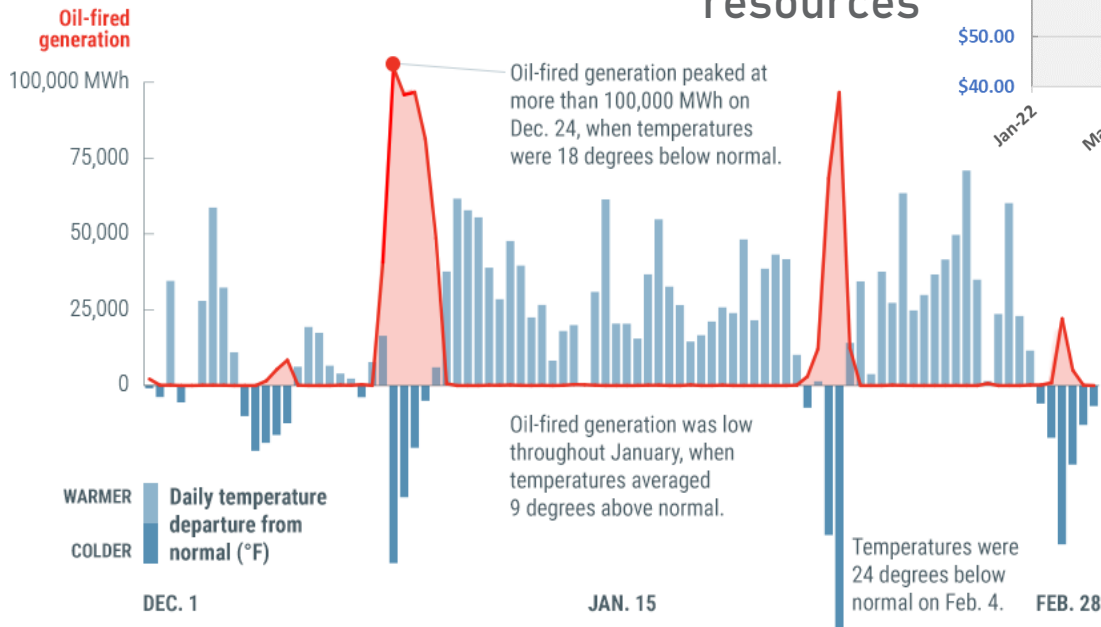
Oil & LNG Price Moves Impact New England Energy

- Oil-fired generation accounted for over 1/3rd of the fuel mix on Christmas Eve (Winter Storm Elliot) and is often the marginal unit during those fuel-constrained days.
- European prices have traded ~\$12/MMBtu following a mild winter and storage inventories in very good position for injection season (51% above the 5-year average).

WTI Prompt Crude Oil
Since 2022



On cold days, more electricity came from oil-fired resources

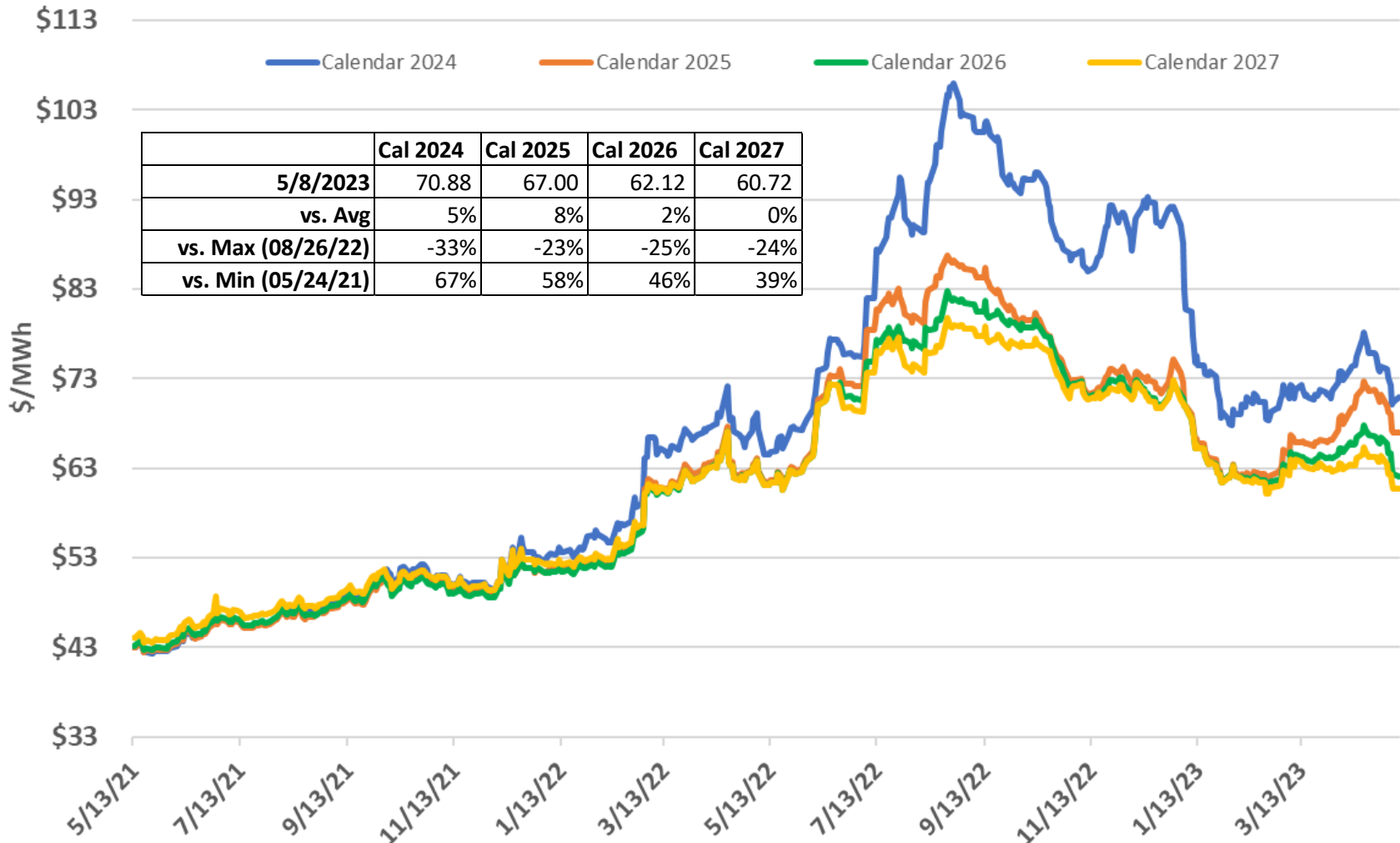


Customer Takeaway: With its unique fuel mix (no coal) coupled with fuel constraints, New England’s risk exposure to LNG and crude oil prices has been elevated over the past 2 years and price movements to these fuels impact forwards.

Source: ISONE

New England Historical Power Pricing – 2 Year Lookback

ISONE Mass Hub Historic Calendar Strips

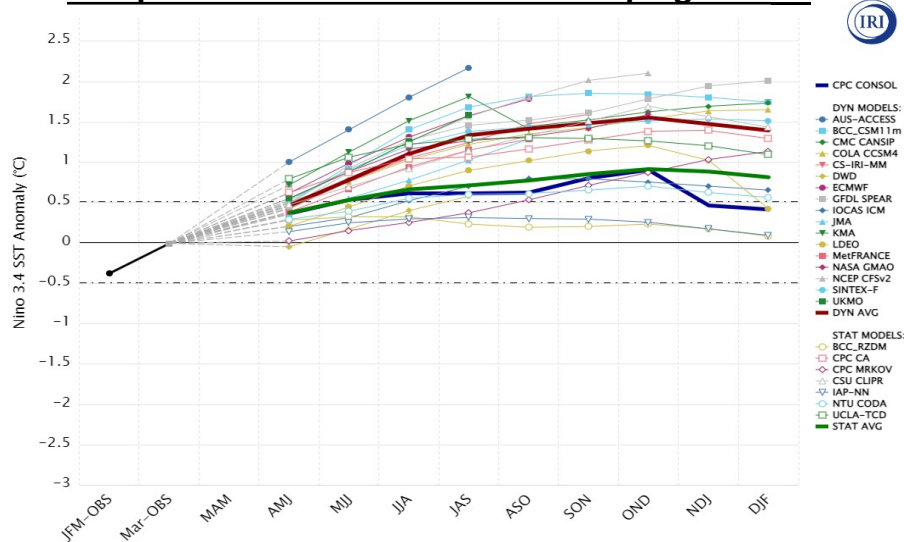


So

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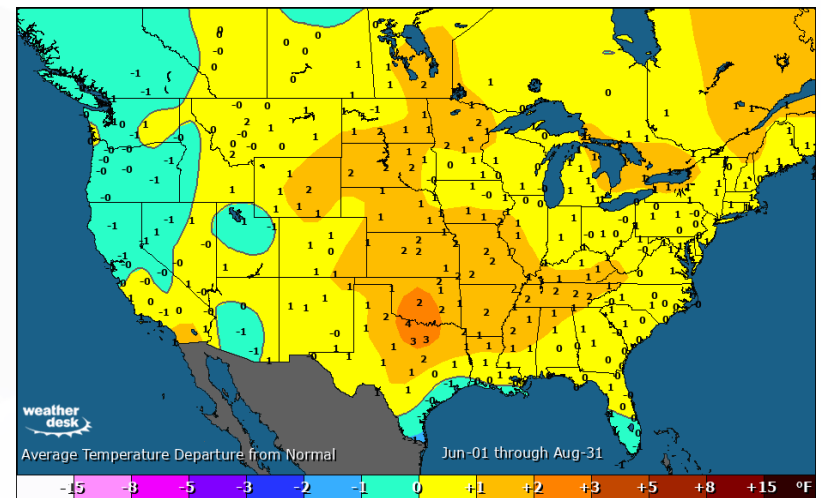
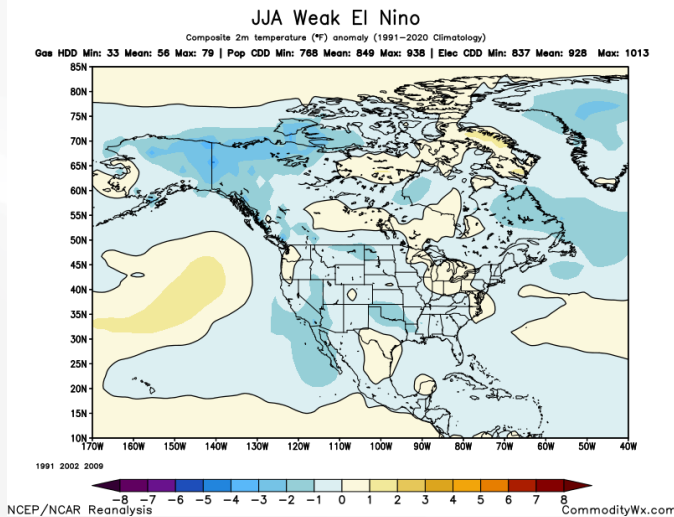
Mixed Summer Signals: Indicators Show Both Warmer and Cooler Drivers

Computer Models Forecast a Developing El Niño



- It was very difficult to find years in the past that have exhibited many of the same parameters that are currently going on.
- The list includes, but is not limited to:
 - Most recent winter outcome
 - Pacific and Atlantic water temperatures
 - Drought conditions
 - The current state of EL Niño, Southern Oscillation known as ENSO.
- Collectively, our research showed the summers of 1952, 2006 and 2018 are the best matches, with emphasis on the two most recent years **2006** and **2018**.

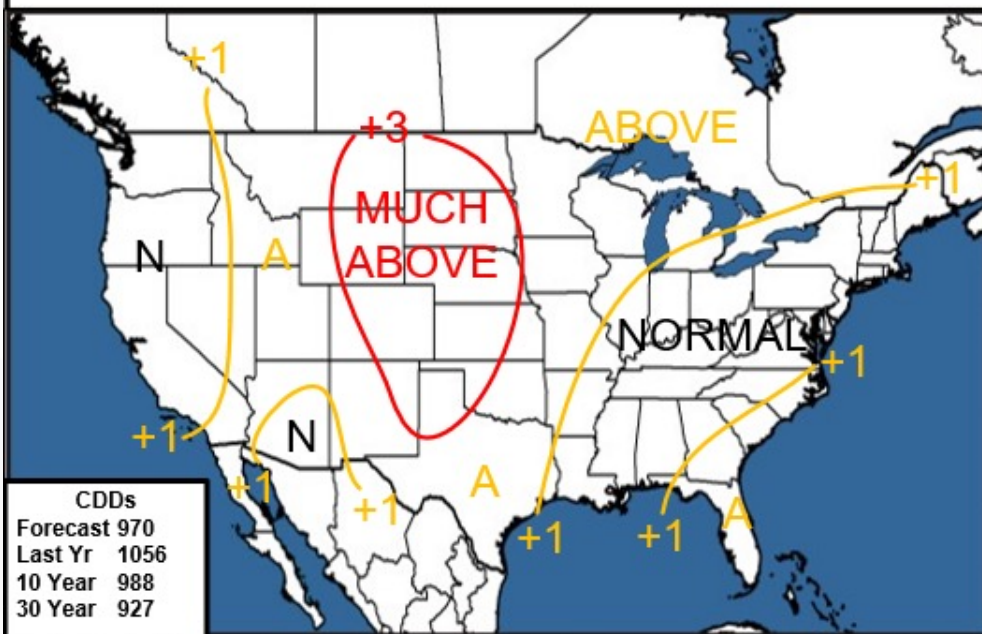
Summer El Niño Correlation



Source: NOAA, Maxar, IRI, CommodityWx

Low Confidence in Forecast Yields Expected 12th Warmest

Constellation Summer 2023 Forecast



- The Constellation forecast leans cooler than market vendors and predicts a not-top-10 summer for the first time since 2017.
- Lowest confidence in the West where moisture and snowpack are high.
- The pace of the El Nino transition will be key.
- Best chance for significant, sustained heat is the Plains, Texas and parts of the South.
- Tropical activity looks to be average with highest risk for landfall on the East Coast and Southeast.

Summer Ranks Since 2010

Year	Rank (Since 1950)	PWCDD's
2010	5th	1039
2011	2nd	1049
2012	8th	1010
2013	23rd	922
2014	35th	892
2015	14th	959
2016	3rd	1048
2017	19th	935
2018	6th	1029
2019	9th	981
2020	4th	1042
2021	7th	1017
2022	1st	1056
2023 (Projected)	12th	970

Customer Takeaway: Above-average uncertainty in the forecast this year mainly because of the unusual winter and the shifting into an El Nino event. The overall, national forecast has cooler risks outweighing a warmer trend with the East seeing variable temps netting to average to above-average – an unspectacular summer.

Source: Constellation, Maxar

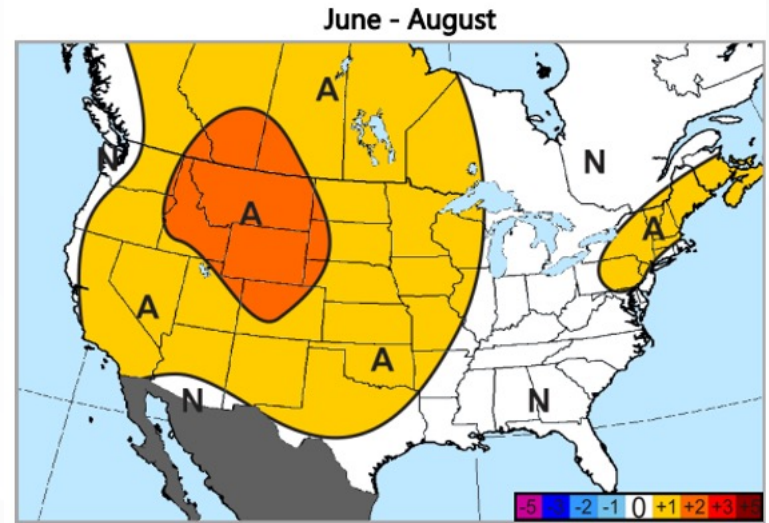
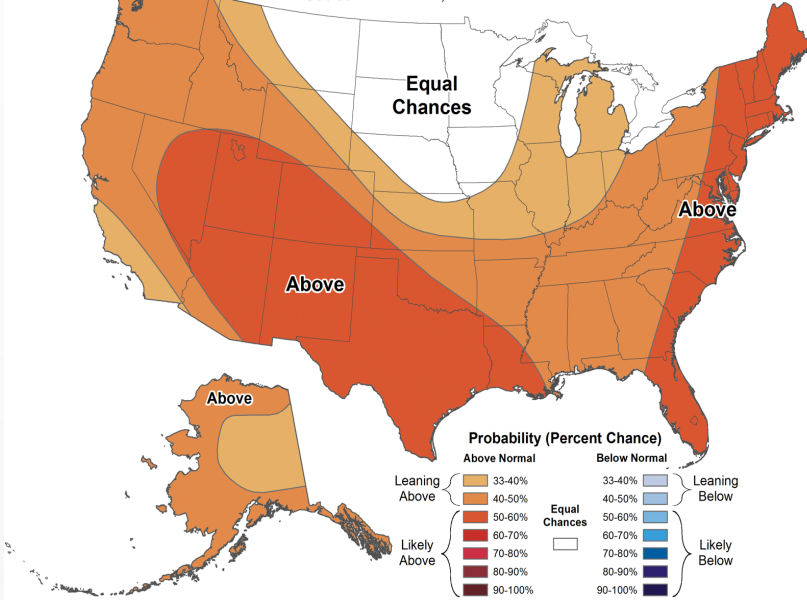
National Weather Service (and vendors) Lean Warmer Than Constellation's



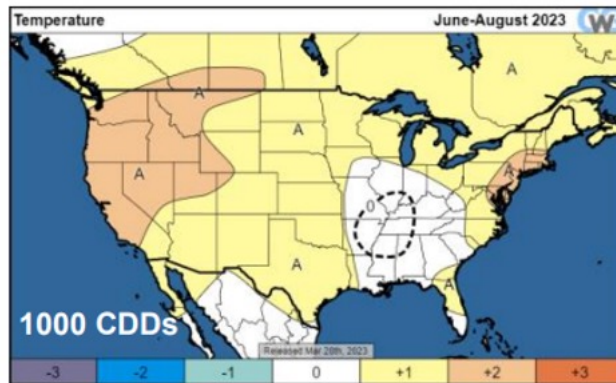
Seasonal Temperature Outlook



Valid: Jun-Jul-Aug 2023
 Issued: March 16, 2023



CWG Official Forecast (50% Chance)



PWCCD Outlook	
Forecast	990
10y Normal	988
30y Normal	927
Last Year	1056

Rank: 9th **Hottest** Since 1950

Source: NWS, CWG, Maxar



Energy Strategy Takeaways

- **Chess Not Checkers:** Sustainability is Transforming the Industry Faster Than We Realize
 - Touches all aspects of this budgetary line items
 - Reliability and integrating new technologies will likely get more expensive/volatile in the interim
- **New England Winters Still Pose the Most Risks:** Not quick fix to fuel constraints
 - Global LNG and Fuel Oil prices will correlate to power prices
- **Summer Will Likely Be Hot-tish:** Cooler risks are presenting themselves
 - Prices will likely remain low with an “average” to cool summer
 - Will move higher if hotter-than-normal
- **Have a Strategy! Don’t Wait for Contract to End**
 - Never a bad time (or too early) to look at renewals

MMA MunEnergy Program Benefits

Price is only one criteria when reviewing and comparing quotes for energy procurement

- The MMA contract has been **negotiated and carefully vetted by the MMA's municipal energy attorney** who specializes in municipal energy issues, and is available for questions about the benefits of their fully-vetted energy contract **at no cost**.
- Chapter 30b
- Ability to **add or delete accounts without penalty** during the term of the contract as long as one account remains active.
- Ability to **add solar, wind and other co-generation** during the contract term **without penalty**.
- **No bandwidth/penalty for variations in usage** over the contract term.
- **55-day payment terms**
- Utility billing for Fixed price contracts.
- **Dedicated Business Development Manager (BDM)** to help cities and towns manage their energy costs and develop an energy strategy to minimize risk for electricity procurement.
- Constellation **elected to NOT pass through two changes in law costs** (Winter Reliability & Clean Peak Standard) to MMA customers, resulting in **avoided costs for municipalities under contract with us at the time**.
- Invitations to all MMA MunEnergy sponsored **educational energy seminars and webinars** as well as having energy specialists available to speak at Energy Advisory committee meetings and other board meetings.
- Constellation Solutions team can assist with **solar projects** and **EV charging station** implementation
 - Financing
 - Trusted partnerships

Source: Constellation



Q & A

Thank you

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Appendix