

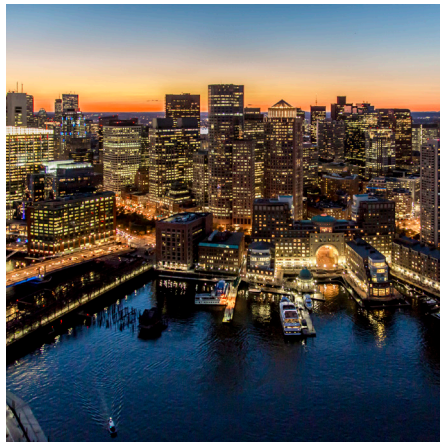
Energy Risk Report

Procurement recommendations for commercial, industrial and institutional electricity users

SEPTEMBER 2019



ISO-NE



EBWAnalyticsGroup

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EBWAnalytics.com

OUR PROJECTIONS AND RECOMMENDATIONS

Time Period	EBW* Recommendation	Price (\$/MWh)				
		09/16/2019	Trend Past Month	Trend Since January	12-Month Range	Year-Ago Actual Price
Bal 2019	Buy	\$43.37	\$2.85	-\$5.13	\$39.28-\$51.1	\$31.98
Cal 2020	Portfolio	\$44.50	\$2.17	-\$3.55	\$41.33-\$51.01	\$49.52
Cal 2021	Portfolio	\$44.22	\$0.96	-\$4.13	\$41.87-\$50.04	—

* See Glossary on last page

Grid Operator Highlights Year-Round Fuel Security Concerns

ISO-NE wholesale power futures broadly edged higher since mid-August. Fall 2019 contracts gained \$0.50/MWh (0.7%), while the winter 2019-20 strip increased \$6.29/MWh (9.8%). Gains further along the forward curve were more muted by comparison, with balance of Cal 2020 contracts edging higher by \$0.33/MWh (0.9%) month-over-month and Cal 2021 adding \$1.21/MWh (2.0%).

Rising natural gas futures prices factored prominently into the upward shift along the wholesale power forward curve. Balance of Cal 2019 contracts at the benchmark Algonquin hub gained 37¢/MMBtu (9.1%) over the last month, while Cal 2020 added 28¢/MMBtu (5.8%) and Cal 2021 inched higher by 7¢/MMBtu (0.7%) versus month-ago levels.

A combination of bullish fundamental developments and technical drivers have sent natural gas prices higher nationally, raising expected marginal generator fuel costs and ultimately lifting wholesale power forward curves.

A proposed modification to ISO-NE's Installed Capacity Requirement (ICR) could significantly reduce end user capacity costs. **1** The grid operator has proposed to stakeholders a 1.3 GW leftward shift in the net ICR for the 2023-24 delivery year, meaningfully reducing the amount of supply resources that must be procured in next year's Forward Capacity Auction (FCA). Stakeholders will vote on the proposed ICR values this fall before the ISO files them with FERC in November.

Analysis from Platt's suggests the ICR shift could reduce FCA 14 clearing prices by about 20% versus FCA 13, which already set a six-year low for regional capacity costs. We believe the net effect of the shift on end user total energy costs may be less than anticipated, as generators will look to make up lost capacity revenues via higher bids in energy and ancillary service markets. Any bearish impact may also be muted by the ISO's new fuel security payment programs.

Even so, end users are likely to come out ahead in the aggregate.

Key Takeaways

1 Installed Capacity Requirement (ICR) shift to benefit end users.

The bearish tweak could slash capacity costs but may prompt generators to raise energy market bids.

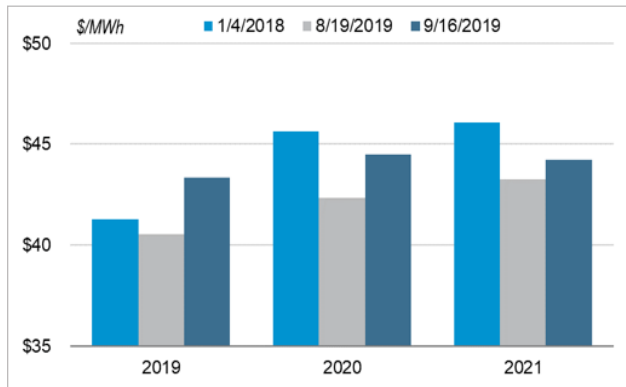
2 Connecticut's Gov. Lamont issues 100% clean energy by 2040 executive order.

The new target may help spur regional market reforms to accommodate an influx of renewables—and limit gas-fired generation.

3 Draft Regional System Plan suggests expanding fuel security risk.

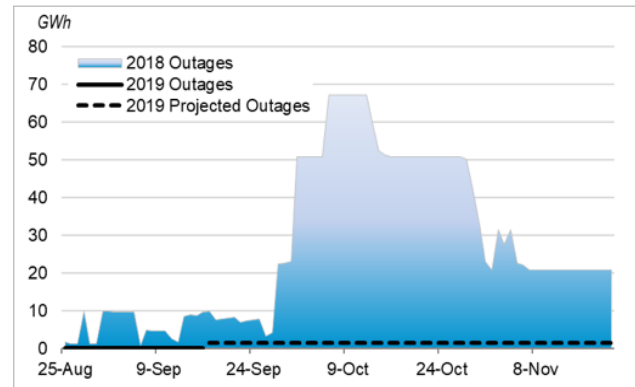
The sheer volume of gas generators with interruptible deliveries could eventually pose fuel security risks during the summer.

ISO-NE Internal Hub Day-Ahead Peak Futures (\$/MWh)
2019, 2020 and 2021



Source: EBW AnalyticsGroup, Bloomberg

Lost Daily Generation (GWh) from Nuclear Outages in ISO-NE,
2018 vs 2019



Source: EBW AnalyticsGroup, Bloomberg

Connecticut Governor Ned Lamont issued an executive order targeting 100% clean electricity by 2040.

2 Governor Lamont is the latest state leader to adopt aggressive emissions reductions targets, although for now his goals lack the backing of the Connecticut General Assembly—muting their impact. Notably, Department of Energy and Environmental Protection Commissioner Katie Dykes said the new target is specifically designed to move regional power planning away from a long-term reliance on gas-fired generation.

Connecticut is the second-largest energy consumer in New England, and its generation choices will almost certainly have major implications on ISO-NE's market rules. With New England states increasingly prioritizing low-carbon generation and shrinking the operating horizon for natural gas, the ISO will likely have to consider major reforms to accommodate an influx of variable, low-cost generation—with myriad, multi-directional impacts on energy, capacity and ancillary service prices.

ISO-NE's draft Regional System Plan **3 emphasizes the risk of year-round energy security concerns.** The ISO highlighted New England's increasing reliance on interruptible gas-fired generation and variable renewable output to meet regional demand amid mounting coal, nuclear and oil retirements. Insufficient fuel availability to meet power sector demand, already a major price risk, may become increasingly common during other parts

of the year as well, given the region's fleet turnover and acute lack of new pipeline capacity. Summertime fuel risk is likely to be less intense than during the winter due to the lack of competition for pipeline space with space heating interests—but may still represent an emerging challenge for regional planners.

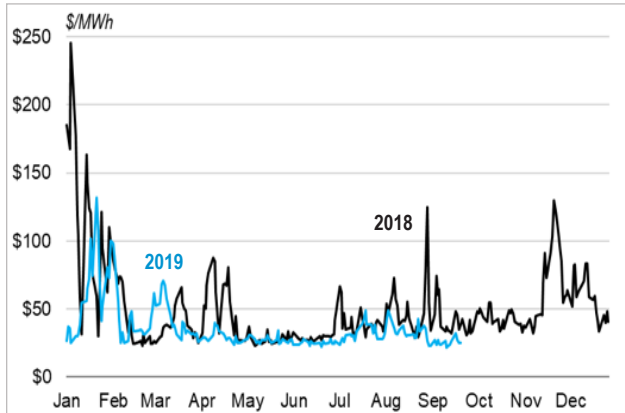
The grid operator plans to overcome reliability challenges primarily via transmission investments, but, as the Northern Pass and Clean Energy Connect line approval processes show, this may be a risky, time-consuming bet.

Although energy efficiency and behind-the-meter solar investments are expected to trim system demand, end users may be exposed to pronounced, fuel-related price risks for longer than is currently understood.

We recommend consumers selectively hedge exposure through the coming winter and utilize a portfolio strategy for longer-dated obligations. The recent run-up in natural gas prices is likely to dissipate over the next month, weighing on New England wholesale power prices despite the region's pipeline constraints.

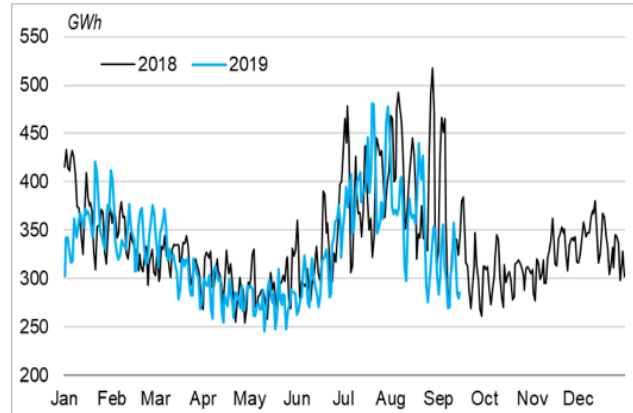
A portfolio strategy for later-dated contracts allows end users to capitalize on expected price declines driven by bearish fall weather and the broader regional transition toward lower cost generating resources while reducing exposure to risks associated with risks of particularly cold weather during the upcoming winter. ■

ISO-NE Internal Hub Day-Ahead Peak Electricity Prices, 2019 vs 2018 (\$/MWh)



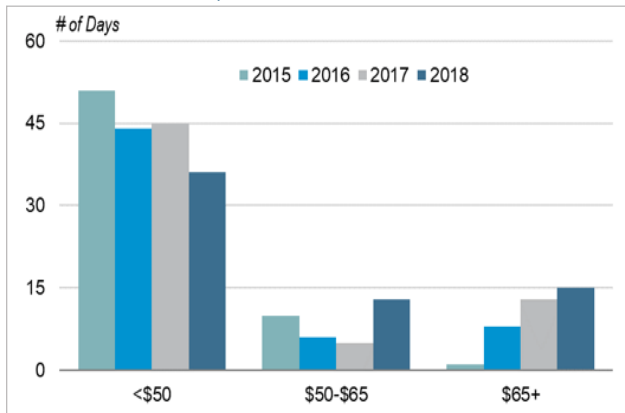
Source: Bloomberg

ISO-NE Daily Generation (GWh), 2019 vs 2018



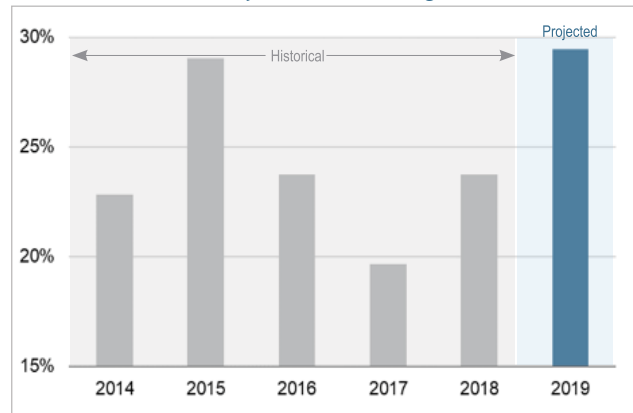
Source: EBW AnalyticsGroup, ISO-NE

ISO-NE Internal Hub Daily High and Scarcity Prices (\$/MWh), Number of Days in October–December, 2015–2018



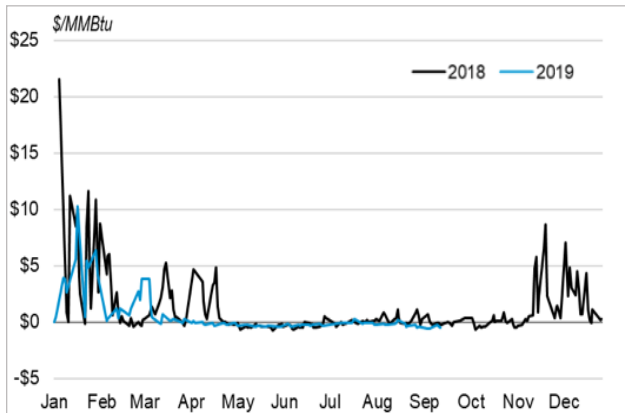
Source: EBW AnalyticsGroup, Bloomberg

Historical and Projected Reserve Margins, 2014–2019



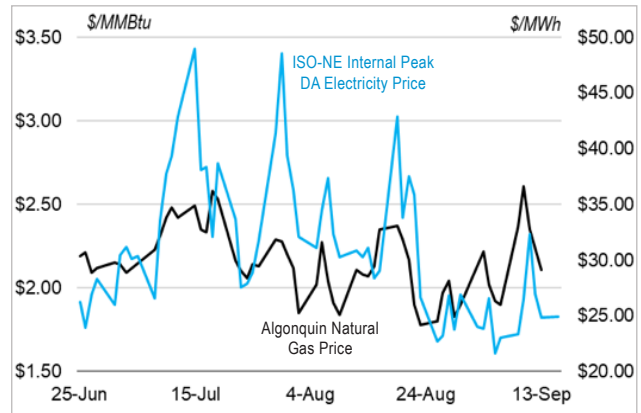
Source: ISO-NE, NERC

Algonquin Natural Gas Hub Basis Differential, 2018 vs 2019 (\$/MMBtu)



Source: Bloomberg

ISO-NE Natural Gas and Electricity Prices



Source: Bloomberg

Energy Risk Report

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Glossary: Our recommendations are made for a hypothetical commercial or industrial end user that consumes large amounts of electricity. With that in mind, end users must decide the timing to cover their electricity requirements.

"Wait" means that in our view prices are elevated and end users can get a better value by waiting for prices to fall.

"Buy" means that in our view prices are cheap relative to their true value, and end users are better served to buy now before prices rise.

"Portfolio" is more of a middle ground reflecting more balanced upside and downside risks. By taking a portfolio approach to procurement, end users cover a portion of requirements regularly to reduce upside risk exposure, but still retain downside potential should prices fall. In this light, a portfolio approach to procurement could be considered a cousin of dollar-cost averaging.

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