



IMM Quarterly Markets Performance Report

Fall 2021 Report Highlights

September 2021 – November 2021 outcomes

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Summary for Fall 2021

- Wholesale market costs totaled \$2.2bn, a 67% increase (up \$0.88bn) on Fall 2020 costs of \$1.32bn
 - Year-over-year increase is large because, like summer and spring of 2020, Fall 2020 saw low natural gas prices as a result of reduced consumption due to the economic shutdown associated with COVID-19
- Substantial increase in energy costs (totaled \$1.65bn, up by nearly \$1bn or 137%) driven by a large increase in natural gas prices and slightly higher loads
 - Avg. day-ahead and real-time Hub LMPs were \$54.18/MWh and \$53.87/MWh; 131% and 126% higher than Fall 2020
 - Avg. natural gas price was \$5.07/MMBtu, up 163% on the Fall 2020 price of \$1.93/MMBtu
 - Avg. hourly load of $\approx 12,600$ MW was up by 1.9% (≈ 230 MW) on Fall 2020, due to a combination of higher loads during a warmer, more humid September and less BTM solar output over the season due to increased cloud cover (≈ 60 MW decrease compared to Fall 2020)
- Capacity market costs were down by 12% (totaled nearly \$532m, down by \$73m) on Fall 2020
 - Fall 2021 was the second quarter of the FCA 12 commitment period, with clearing prices of \$4.63/kW-month for rest-of-system, compared to an FCA 11 price of \$5.30/kW-month

Seasons: Winter: Dec-Feb Spring: Mar-May Summer: Jun-Aug **Fall: Sep-Nov**

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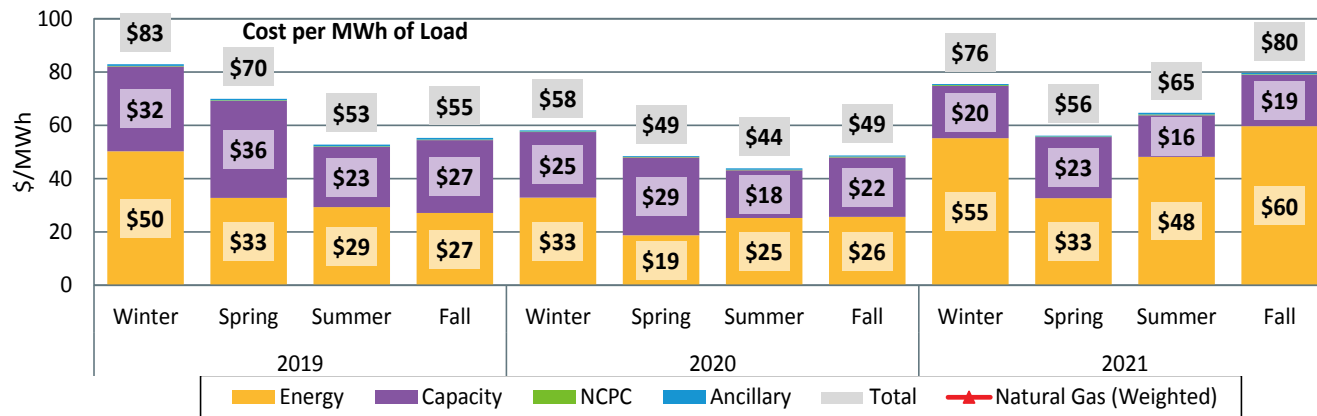
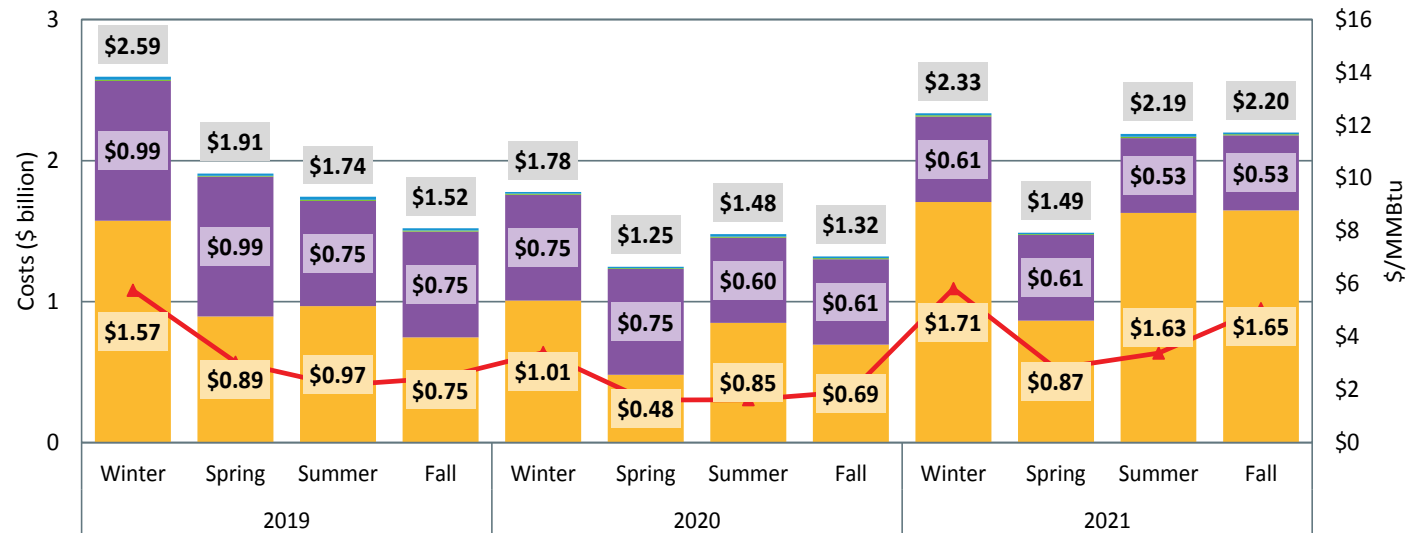
Summary for Fall 2021 (cont.)

- Real-time reserve payments totaled \$1.6m, a 41% decrease from \$2.6m in Fall 2020
 - There were no instances of offline non-zero reserve prices
 - In Fall 2021, there was less fixed supply and more dispatchable generators online, increasing the supply of spinning reserves
 - Non-zero spinning reserve pricing occurred in 350 hours (16% of intervals) in Fall 2021, down from 467 hours (21% intervals) in Fall 2020, with a slight decrease in avg. price from \$7.84 to \$7.35/MWh
- Total regulation payments were \$6.4m, up by \$1.2m (19%) compared to Fall 2020
 - Avg. real-time Hub LMPs were significantly higher in Fall 2021 compared to the previous fall, leading to an increase in regulation capacity payments that reflect energy market opportunity costs
- Uplift or Net Commitment Period Compensation (NCPC) costs totaled \$7.8m, up by 10% (by \$0.7m) on the prior fall
 - Uplift costs were relatively low, representing 0.5% of the total energy costs
 - Economic payments made up 78% (\$6.1m) of the total, up by \$1.1m on Fall 2020 costs
 - Local reliability payments were \$0.9m (similar to Fall 2020) due to planned transmission work in Boston and northern New England requiring day-ahead reliability commitments

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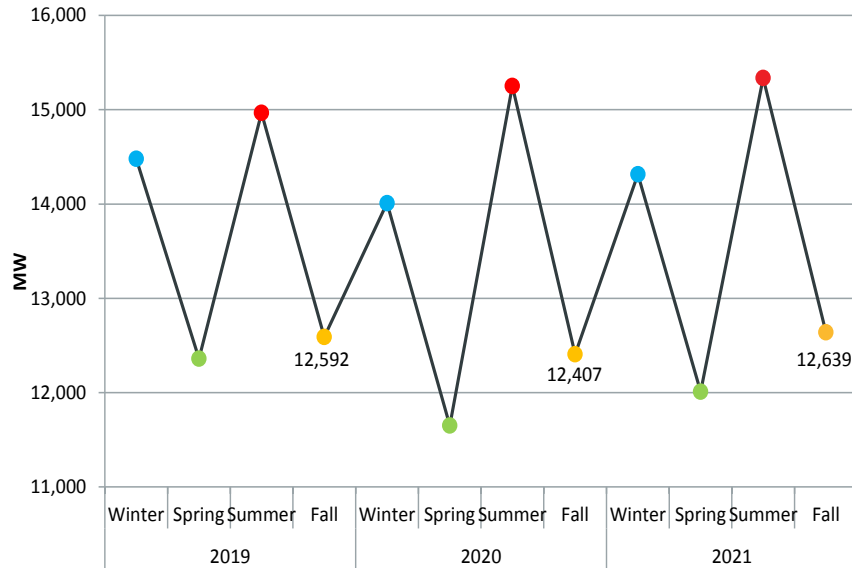
Wholesale electricity cost up 67% on prior fall driven by higher natural gas prices



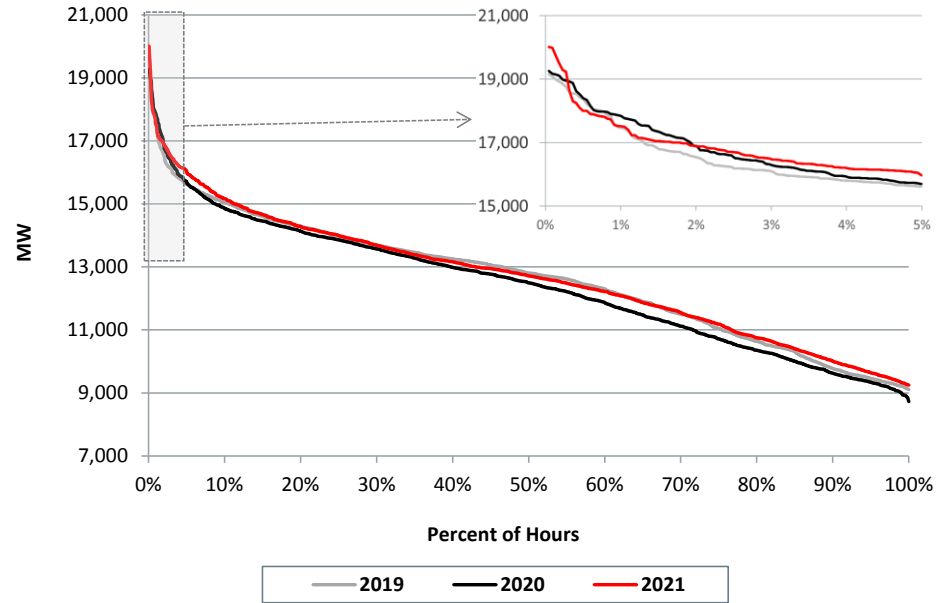
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Average loads were up slightly due to a warmer September and lower BTM solar output

Average Hourly Load



Load Duration Curves

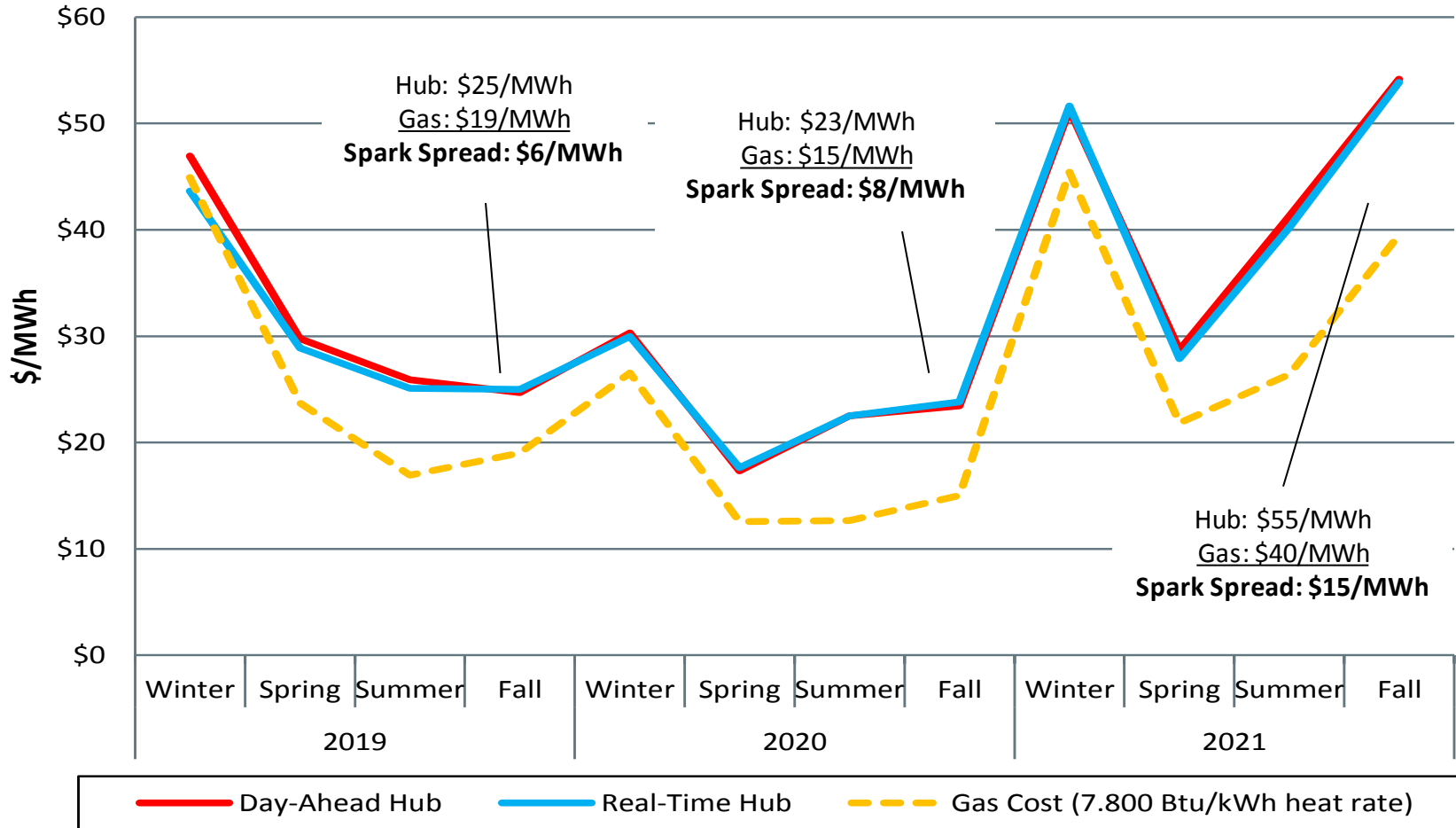


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Higher gas prices drove higher energy prices and spark spreads

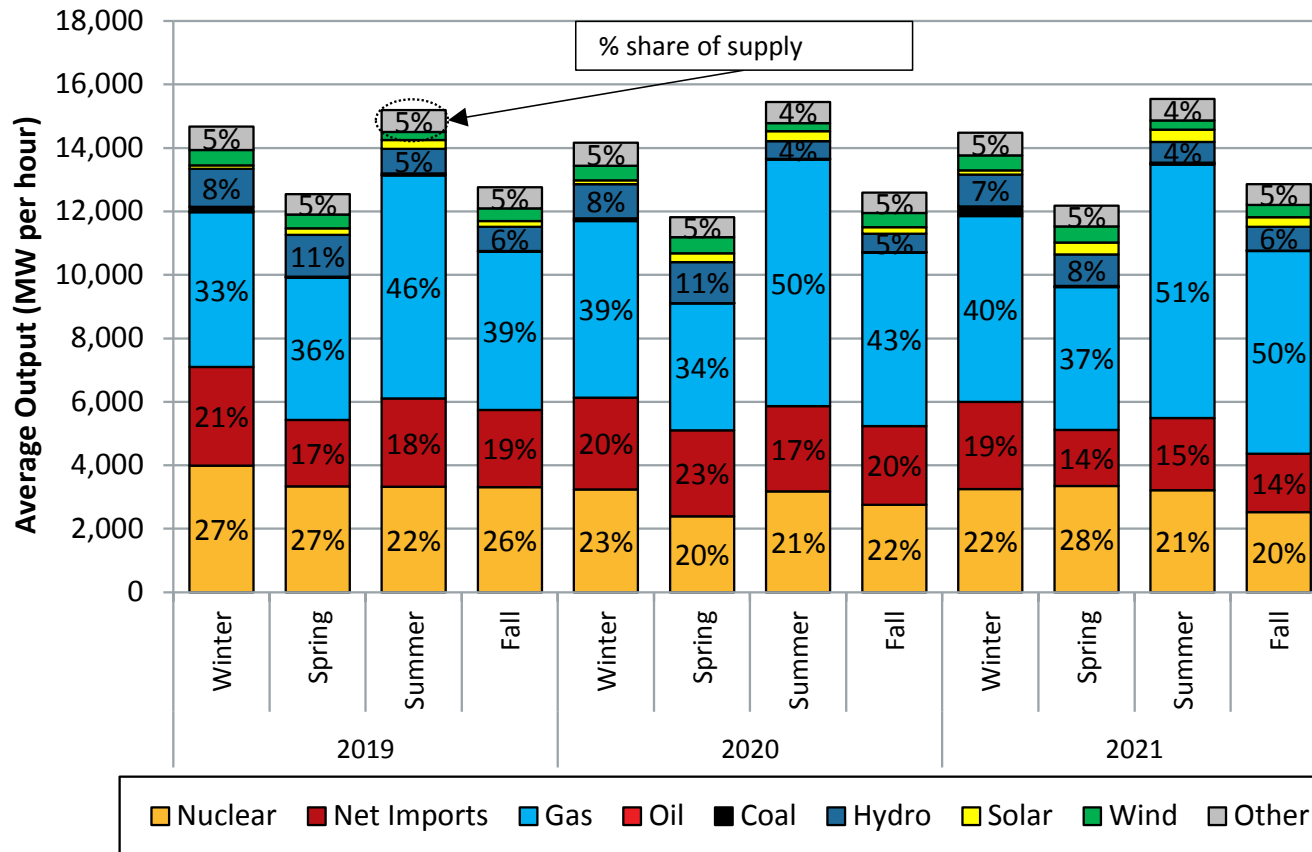
Day-Ahead Prices



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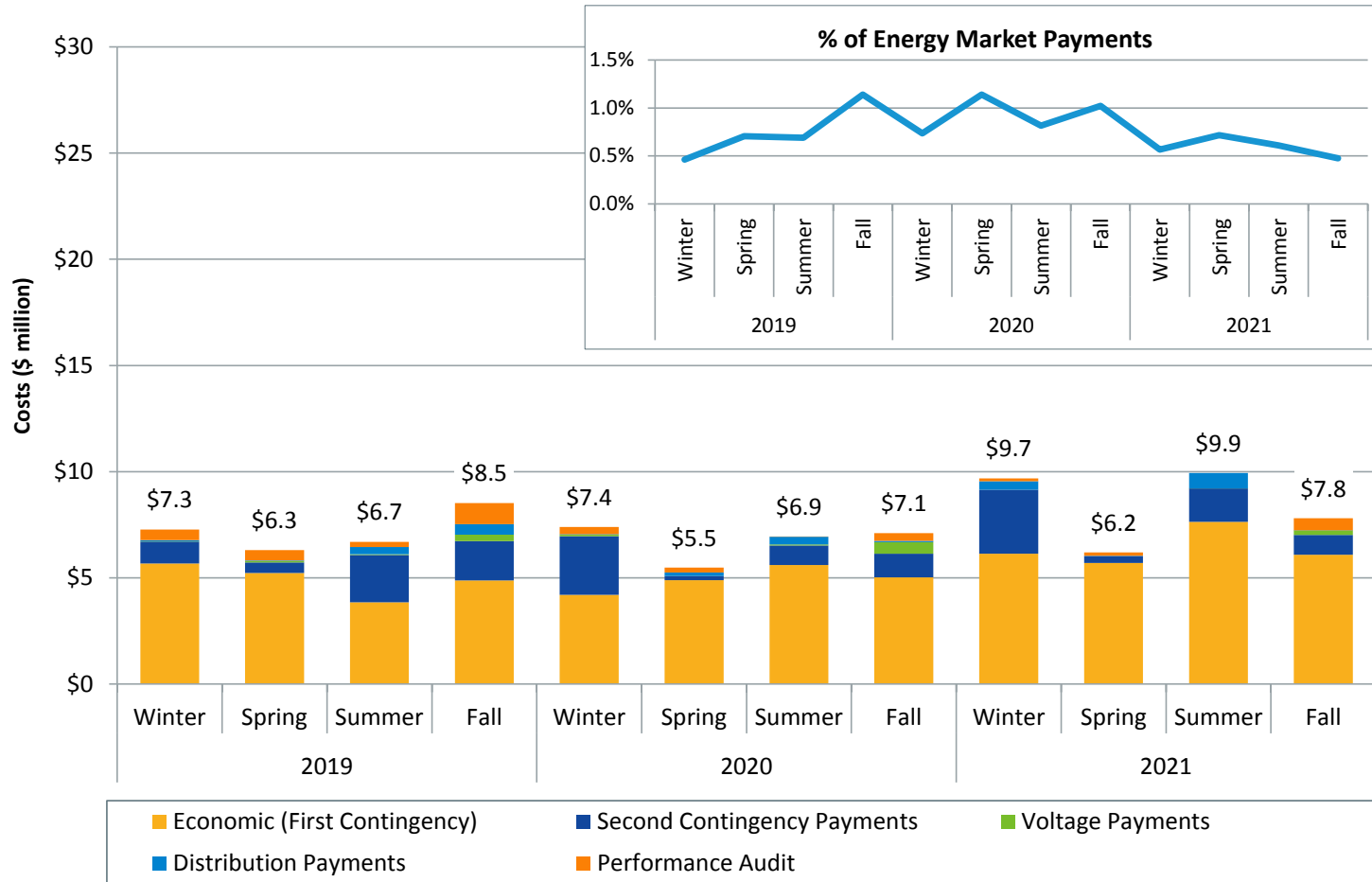
Increase in gas generation offset a decline in net imports and nuclear generation compared to Fall 2020

Share of Electricity Generation by Fuel Type



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Uplift payments remain relatively low; most payments covering economic commitments and dispatch

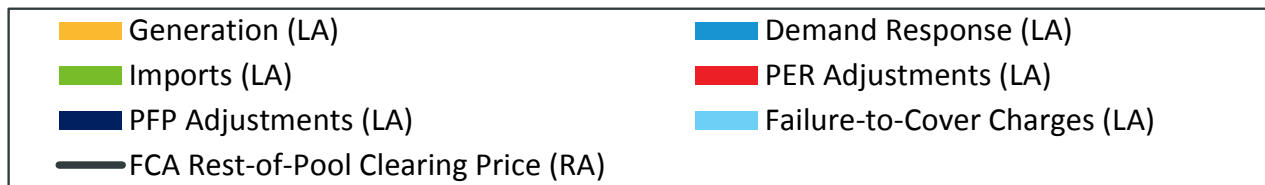
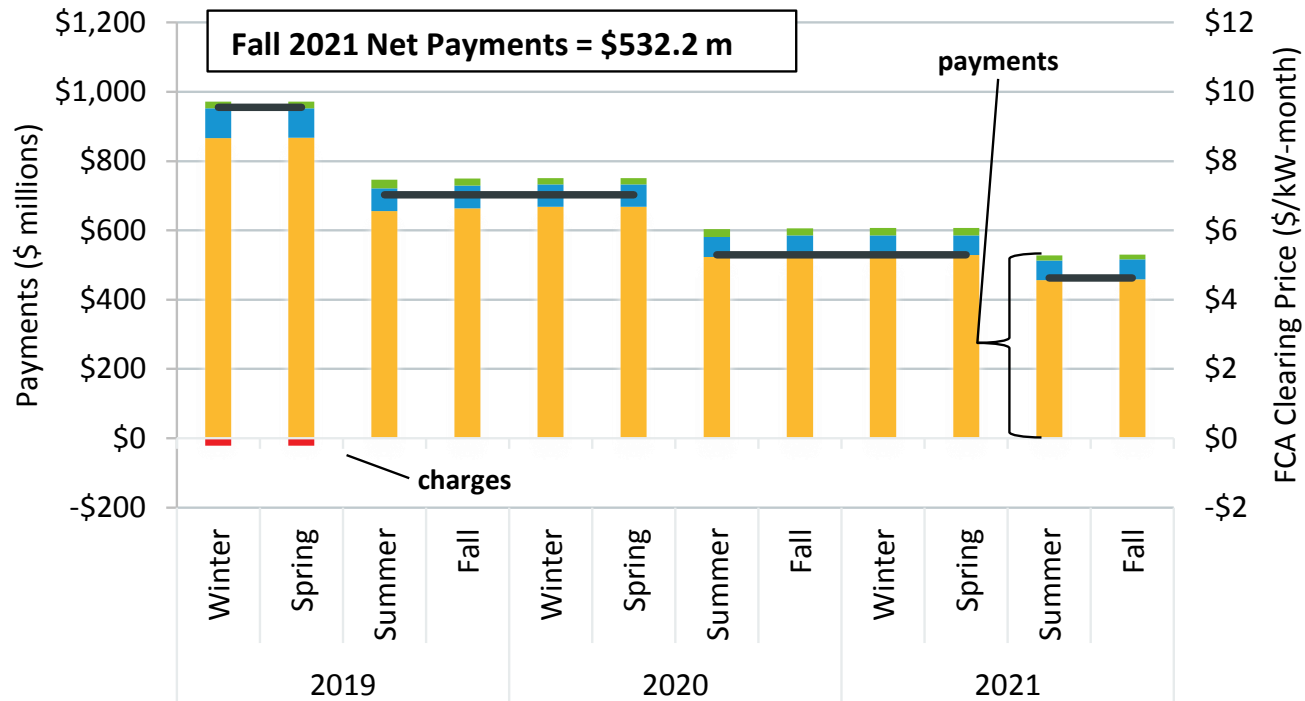


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Second quarter of FCA12; lower clearing prices

FCA 12 prices: \$4.63/kW-month; was 13% lower than the previous year



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Energy Market Competitiveness

- There was at least one pivotal supplier present in the real-time market for 24% of 5-minute intervals in Fall 2021
- The residual supply index for the real-time market in Fall 2021 was 105, indicating that on average, the ISO could meet load and the reserve requirement without energy and reserves from the largest supplier

Residual Supply Index and Intervals with Pivotal Suppliers (Real-Time)

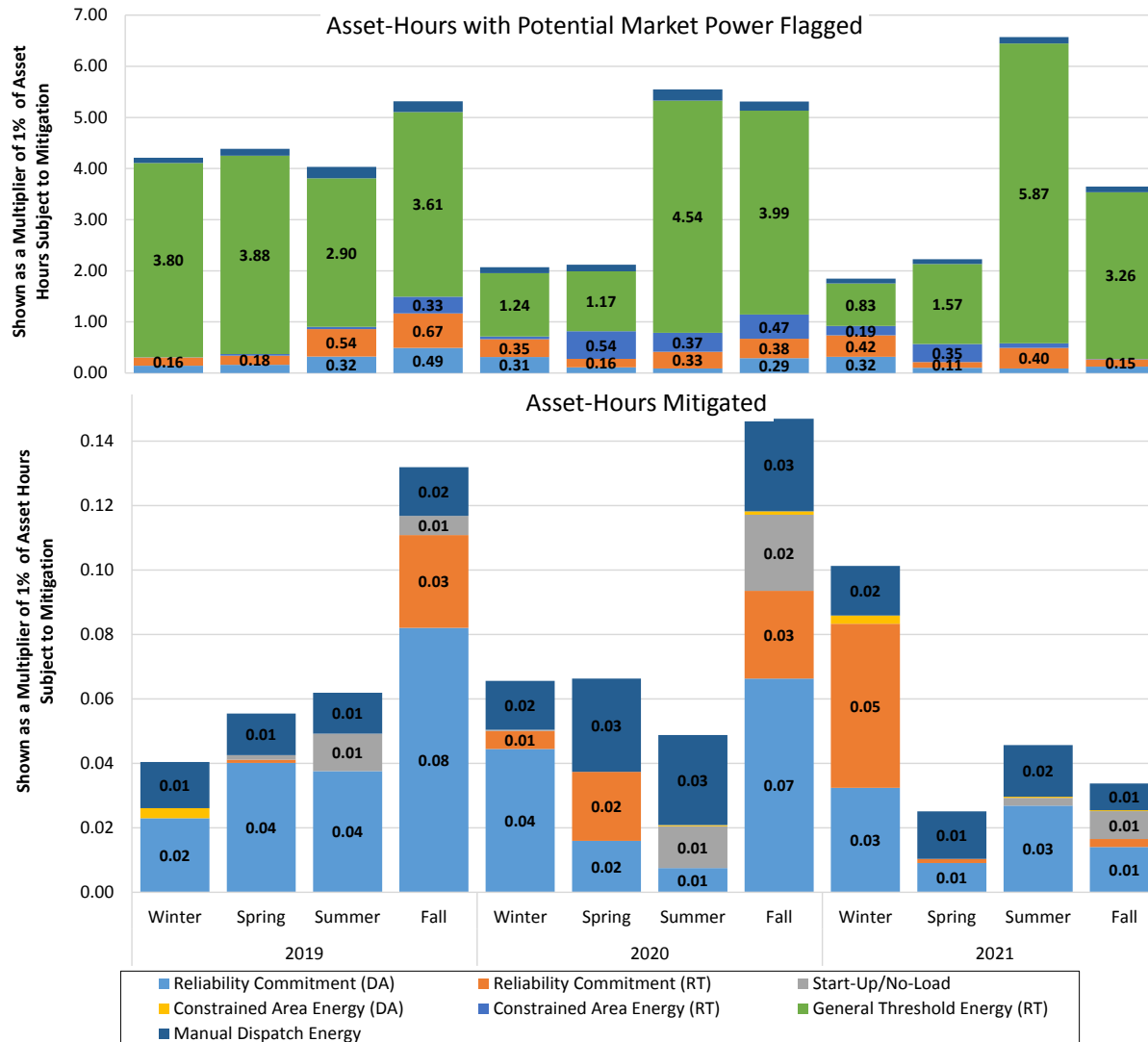
Quarter	RSI	% of Intervals With At Least 1 Pivotal Supplier
Winter 2019	106.3	11%
Spring 2019	107.5	8%
Summer 2019	106.7	18%
Fall 2019	104.8	21%
Winter 2020	108.6	8%
Spring 2020	109.2	8%
Summer 2020	104.8	27%
Fall 2020	105.1	24%
Winter 2021	107.9	8%
Spring 2021	106.6	14%
Summer 2021	104.7	27%
Fall 2021	105.0	24%

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Market Power Mitigation in the Energy Market

- In general, mitigation occurs very infrequently relative to the structural test failures



Almost 4% of total Asset Hours flagged for Market Power, mostly at the system level (green bar)

Just 0.03%, or 106 hrs, of total Asset hours were mitigated, spread across reliability, start-up/no-load, and manual dispatch mitigation

Questions

