

# 2024-28 RS-1 Budget Forecast

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**Budget & Priorities Working Group**

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# Agenda

- **2024-28 RS-1 Budget Forecast Summary**
- **Net Load Forecast**
- **Incremental Supply Forecast**
- **Transactions Forecasts: Billable Exports & Wheels**

# 2024-28 RS-1 Budget Forecast Summary

# RS-1 Budget Forecast Categories

- **Net Load**
- **Incremental Supply**
  - Incremental supply is the additional supply above net load needed to compensate for transmission losses and RS-1 non-billable exports to New England
  - In the 2023 RS-1 budget forecast, incremental supply was included within net load
- **Transactions**
  - Billable Exports
  - Wheels

# Primary Budget Forecast Drivers

## ■ Net Load

- Levels driven by economic growth, increasing energy efficiency and behind the meter (BTM) solar impacts, large loads, and electrification
- Variability driven primarily by weather

## ■ Incremental Supply

- Monthly net load
- Winter weather

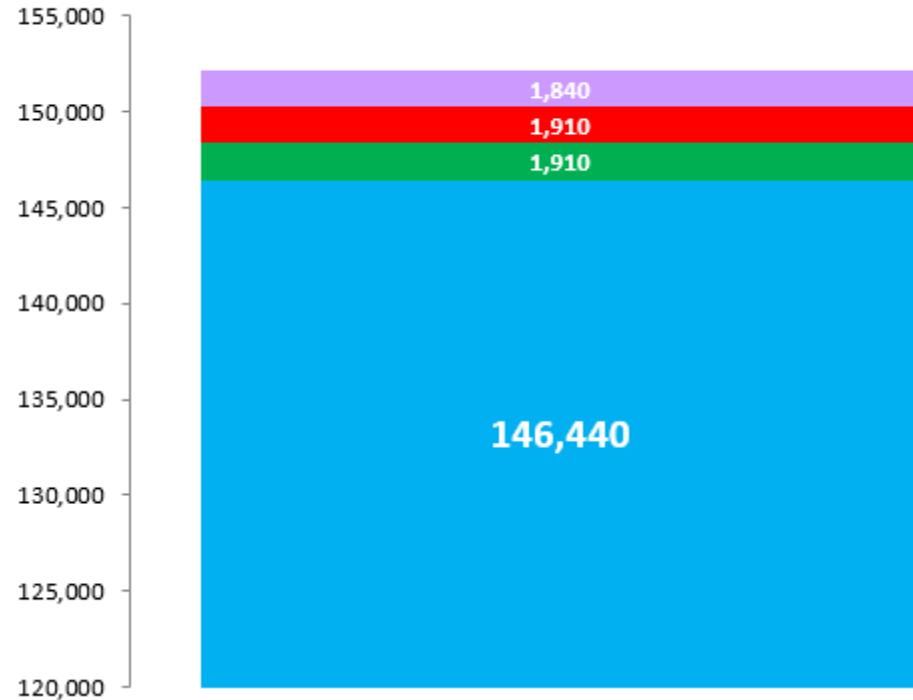
## ■ Billable Exports & Wheels (Transactions)

- Natural gas price
- Weather – most significantly, winter weather for exports

# 2024 RS-1 Budget Forecast

## 2024 RS-1 Budget Forecast: 152,100 GWh

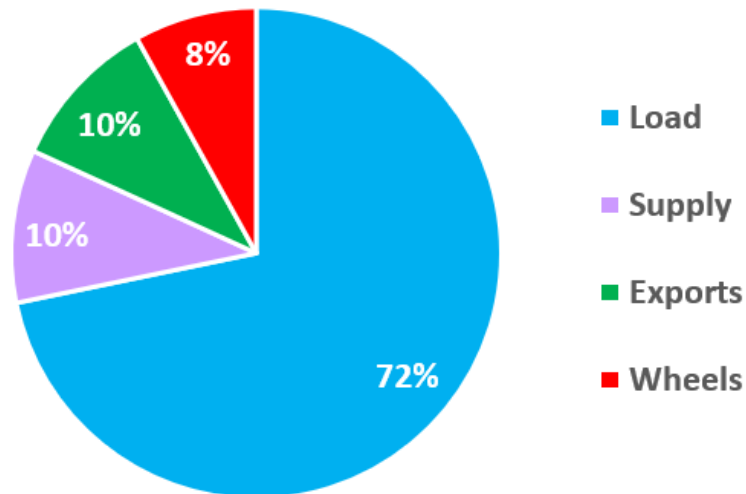
|  |             |
|--|-------------|
| ■ Net Load :                               | 146,440 GWh |
| ■ Billable Exports :                       | 1,910 GWh   |
| ■ Wheels :                                 | 1,910 GWh   |
| ■ Incremental Supply :                     | 1,840 GWh   |
| <b>TOTAL : 152,100 GWh</b>                 |             |
| 2023 RS-1 Budget Forecast :<br>156,700 GWh |             |



# Variability of Budget Forecast Components

| Percent of RS-1 Total |        |          |           |          |
|-----------------------|--------|----------|-----------|----------|
| Year                  | % Load | % Supply | % Exports | % Wheels |
| 2017                  | 95.9%  | 1.1%     | 1.5%      | 1.5%     |
| 2018                  | 96.0%  | 1.5%     | 1.4%      | 1.1%     |
| 2019                  | 95.9%  | 1.9%     | 1.3%      | 0.9%     |
| 2020                  | 95.9%  | 2.1%     | 1.1%      | 0.9%     |
| 2021                  | 96.0%  | 1.4%     | 1.1%      | 1.5%     |
| 2022                  | 95.1%  | 1.0%     | 2.2%      | 1.6%     |
| 2023                  | 96.1%  | 1.3%     | 1.4%      | 1.1%     |
| 2024                  | 96.3%  | 1.2%     | 1.3%      | 1.3%     |

RS-1 Share of Annual Variability by Component



# 2024 RS-1 Budget Forecast: 152,100 GWh

2024 RS-1 Budget Forecast - GWh (000 MWh)

| Year                    | A/F      | Month | Load <sup>1</sup> | Supply <sup>2</sup> | Exports <sup>3</sup> | Wheels       | RS-1 Total     | Weather Risk <sup>4</sup> |
|-------------------------|----------|-------|-------------------|---------------------|----------------------|--------------|----------------|---------------------------|
| 2024                    | Forecast | Jan   | 12,990            | 280                 | 200                  | 160          | 13,630         | +/- 400                   |
| 2024                    | Forecast | Feb   | 12,190            | 220                 | 190                  | 160          | 12,760         | +/- 350                   |
| 2024                    | Forecast | Mar   | 11,470            | 80                  | 170                  | 150          | 11,870         | +/- 250                   |
| 2024                    | Forecast | Apr   | 10,230            | 60                  | 150                  | 130          | 10,570         | +/- 100                   |
| 2024                    | Forecast | May   | 10,920            | 100                 | 140                  | 120          | 11,280         | +/- 350                   |
| 2024                    | Forecast | Jun   | 12,470            | 130                 | 140                  | 190          | 12,930         | +/- 500                   |
| 2024                    | Forecast | Jul   | 15,150            | 170                 | 140                  | 220          | 15,680         | +/- 900                   |
| 2024                    | Forecast | Aug   | 14,550            | 160                 | 140                  | 210          | 15,060         | +/- 800                   |
| 2024                    | Forecast | Sep   | 11,860            | 120                 | 140                  | 180          | 12,300         | +/- 500                   |
| 2024                    | Forecast | Oct   | 11,030            | 120                 | 140                  | 140          | 11,430         | +/- 200                   |
| 2024                    | Forecast | Nov   | 11,070            | 160                 | 170                  | 100          | 11,500         | +/- 200                   |
| 2024                    | Forecast | Dec   | 12,510            | 240                 | 190                  | 150          | 13,090         | +/- 300                   |
| <b>Annual Forecast:</b> |          |       | <b>146,440</b>    | <b>1,840</b>        | <b>1,910</b>         | <b>1,910</b> | <b>152,100</b> | <b>+/- 3,000</b>          |

1 - Net load (excluding transmission system losses)

2 - Incremental supply of injections (relative to load) in support of non-billable exports and losses

3 - Billable exports (excludes exports to New England per the CTS agreement)

4 - Annual weather risk is lower than the monthly sum due to the likelihood of offsetting impacts

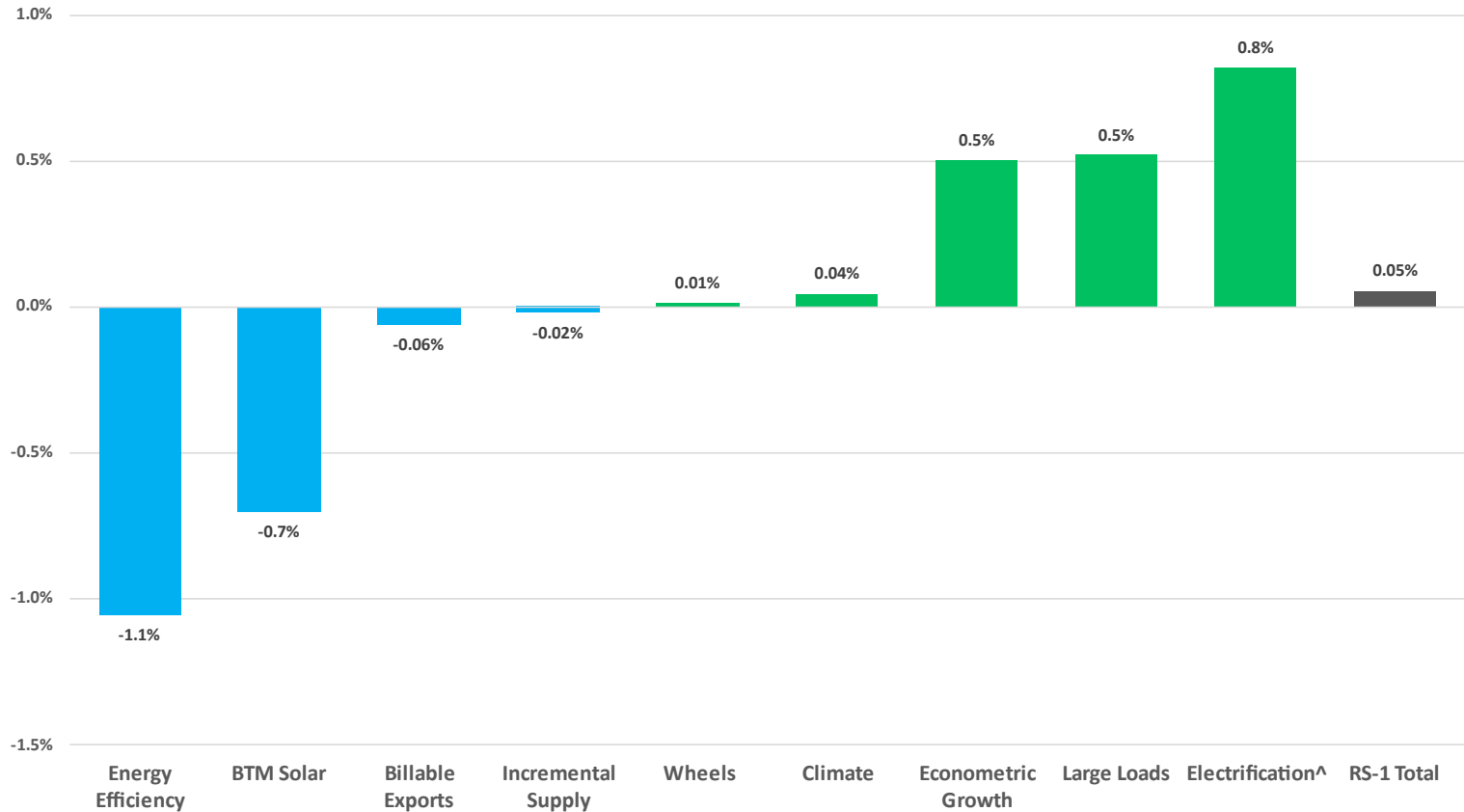
Seasonal weather risks: Summer +/- 2,500 GWh, Winter +/- 1,000 GWh



# 2024 RS-1 Budget Forecast Discussion

- The 2024 RS-1 budget forecast value is similar to the expected 2023 weather normalized RS-1 collections (after the 2023 projected collections are scaled up to normal weather conditions)
- Positive year-over-year (YoY) net load growth drivers include increasing impacts from interconnecting large loads, electric vehicles, heating electrification, and economic growth
- Negative YoY net load drivers include the continued load reductions due to policy-driven growth in energy efficiency and behind-the-meter Solar
- 2024 exports and wheels are projected to be similar to 2023 actuals
- Positive and negative net load growth drivers largely offset YoY, resulting in generally flat 2024 RS-1 forecast growth (relative to weather-adjusted 2023 collections)

# 2024-28 RS-1 Budget Forecast Growth Drivers - Annual Percent Impact\*



\* 2024-28 average annual growth, relative to projected 2023 weather-normalized collections

^ Includes both electric vehicle and building electrification impacts

# RS-1 Budget Summary - GWh

| Actual & Forecast RS-1 Components - GWh |                   |                     |                      |        |            |                       | WN Pct Growth         |                       |                         |
|---|-------------------|---------------------|----------------------|--------|------------|-----------------------|-----------------------|-----------------------|-------------------------|
| Year                                    | Load <sup>1</sup> | Supply <sup>2</sup> | Exports <sup>3</sup> | Wheels | RS-1 Total | W-Normal <sup>4</sup> | Net Load <sup>a</sup> | RS-1 Tot <sup>b</sup> | Cumulative <sup>c</sup> |
| 2017                                    | 152,040           | 1,820               | 2,300                | 2,400  | 158,560    | 158,940               |                       |                       |                         |
| 2018                                    | 156,860           | 2,410               | 2,250                | 1,810  | 163,330    | 160,650               |                       |                       |                         |
| 2019                                    | 151,560           | 3,030               | 2,080                | 1,370  | 158,040    | 158,060               |                       |                       |                         |
| 2020                                    | 146,240           | 3,240               | 1,680                | 1,370  | 152,530    | 152,640               |                       |                       |                         |
| 2021                                    | 148,210           | 2,120               | 1,720                | 2,310  | 154,360    | 154,530               |                       |                       |                         |
| 2022                                    | 149,110           | 1,630               | 3,510                | 2,550  | 156,800    | 156,180               |                       |                       |                         |
| 2023*                                   | 143,500           | 2,000               | 2,140                | 1,710  | 149,350    | 151,600               | -1.85%                | -2.93%                |                         |
| 2024                                    | 146,440           | 1,840               | 1,910                | 1,910  | 152,100    | 152,100               | 0.47%                 | 0.33%                 | 0.33%                   |
| 2025                                    | 145,770           | 1,840               | 1,900                | 1,890  | 151,400    | 151,400               | -0.46%                | -0.46%                | -0.13%                  |
| 2026                                    | 145,920           | 1,840               | 1,800                | 1,840  | 151,400    | 151,400               | 0.10%                 | 0.00%                 | -0.13%                  |
| 2027                                    | 146,100           | 1,840               | 1,720                | 1,840  | 151,500    | 151,500               | 0.12%                 | 0.07%                 | -0.07%                  |
| 2028                                    | 146,670           | 1,840               | 1,680                | 1,810  | 152,000    | 152,000               | 0.39%                 | 0.33%                 | 0.26%                   |

\* 2023 Includes 8 months estimated actual & 4 months updated budget forecast

(1) - net load (excluding transmission system losses)

(2) - incremental supply of injections (relative to load) in support of non-billable exports and losses

(3) - billable exports (excludes exports to New England per the CTS agreement)

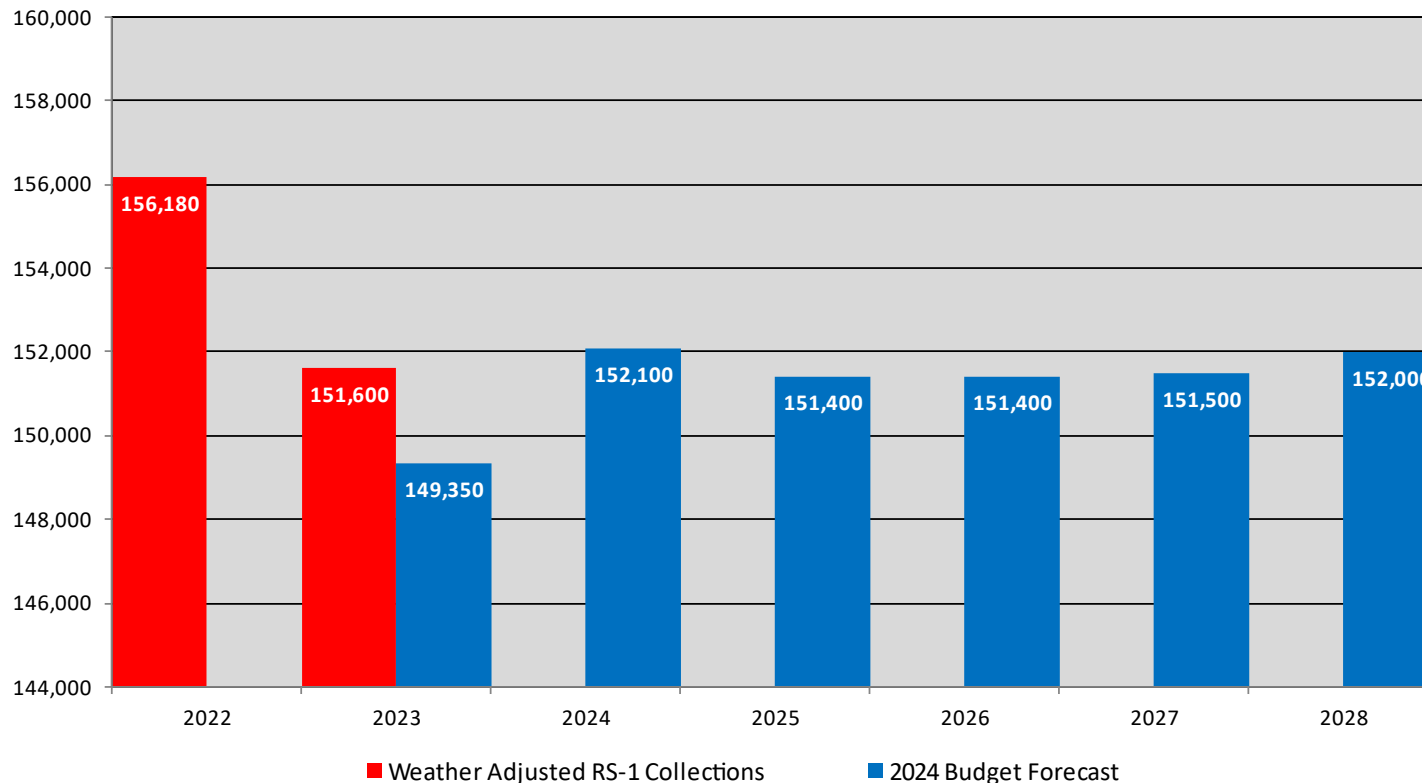
(4) - weather-normalized RS-1 collections

(a) - year-over-year percent change in weather-normalized net load

(b) - year-over-year percent change in weather-normalized RS-1 Budget forecast

(c) - cumulate percent change in weather-normalized RS-1 Budget forecast relative to 2023 projection

# RS-1 Budget Forecast – GWh



Note: Red 2023 bar represents estimated weather adjusted loads through August plus updated budget forecast for rest of year  New York ISO

# RS-1 Budget by Month, Actual, and Forecast - GWh

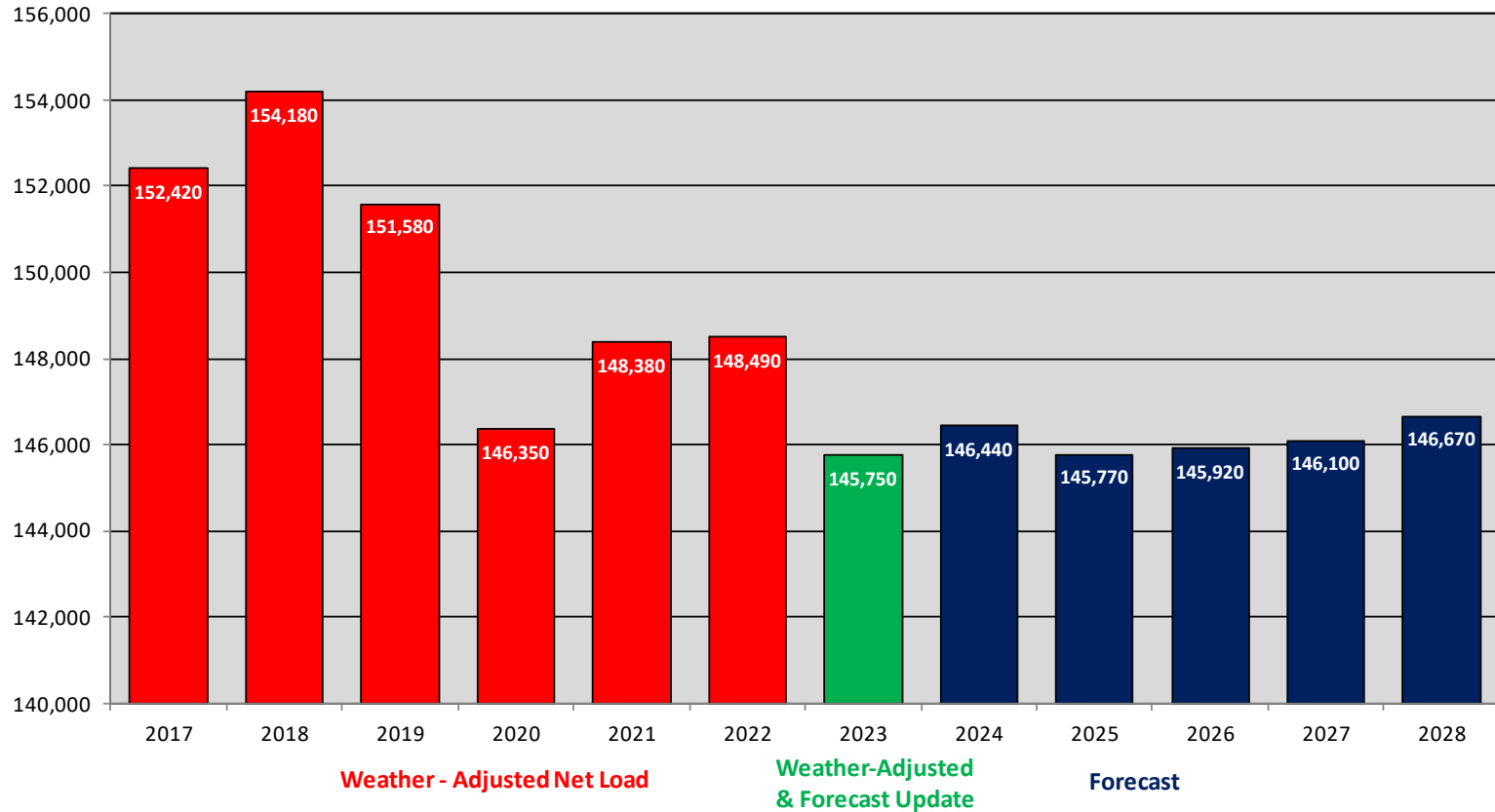
| Month         | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           | 2024           | 2025           | 2026           | 2027           | 2028           |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Jan           | 13,600         | 14,630         | 14,270         | 13,280         | 13,510         | 14,560         | 13,090         | 13,630         | 13,740         | 13,880         | 14,070         | 14,240         |
| Feb           | 11,900         | 12,010         | 12,410         | 12,260         | 12,430         | 12,480         | 11,870         | 12,760         | 12,350         | 12,450         | 12,590         | 13,190         |
| Mar           | 13,160         | 12,910         | 12,780         | 11,760         | 12,140         | 12,280         | 12,170         | 11,870         | 11,900         | 11,960         | 12,030         | 12,080         |
| Apr           | 11,410         | 11,830         | 11,240         | 10,540         | 10,770         | 11,240         | 10,620         | 10,570         | 10,550         | 10,550         | 10,550         | 10,550         |
| May           | 12,120         | 12,450         | 11,670         | 10,760         | 11,370         | 12,060         | 10,960         | 11,280         | 11,190         | 11,120         | 11,040         | 10,970         |
| Jun           | 13,680         | 13,470         | 13,080         | 13,170         | 13,900         | 12,930         | 12,280         | 12,930         | 12,780         | 12,660         | 12,540         | 12,420         |
| Jul           | 15,570         | 16,540         | 16,930         | 16,640         | 15,080         | 15,990         | 15,880         | 15,680         | 15,570         | 15,460         | 15,370         | 15,280         |
| Aug           | 14,920         | 16,870         | 15,340         | 15,420         | 15,940         | 16,120         | 14,270         | 15,060         | 14,960         | 14,870         | 14,790         | 14,700         |
| Sep           | 13,290         | 13,960         | 12,820         | 12,420         | 12,770         | 12,500         | 12,290         | 12,300         | 12,260         | 12,240         | 12,190         | 12,130         |
| Oct           | 12,500         | 12,650         | 11,810         | 11,640         | 11,820         | 11,330         | 11,430         | 11,430         | 11,420         | 11,410         | 11,380         | 11,340         |
| Nov           | 12,300         | 12,590         | 12,200         | 11,430         | 11,630         | 11,810         | 11,470         | 11,500         | 11,520         | 11,550         | 11,580         | 11,620         |
| Dec           | 14,110         | 13,420         | 13,490         | 13,210         | 13,000         | 13,500         | 13,020         | 13,090         | 13,160         | 13,250         | 13,370         | 13,480         |
| <b>Annual</b> | <b>158,560</b> | <b>163,330</b> | <b>158,040</b> | <b>152,530</b> | <b>154,360</b> | <b>156,800</b> | <b>149,350</b> | <b>152,100</b> | <b>151,400</b> | <b>151,400</b> | <b>151,500</b> | <b>152,000</b> |

# Net Load Forecast

# Net Load Forecast

- **Net load forecast models developed including the impacts of:**
  - **Economy** – models utilize the April 2023 Moody’s forecast
  - **Climate trends** – warmer weather in summer months and milder weather in winter months over time
  - **Energy efficiency and BTM solar** – continued load-reducing impacts driven by state policies
  - **Electrification** – load increasing impacts primarily due to electric vehicles and heating electrification
  - **Large Loads** – based on the most recent information, including from Transmission Owners

# Net Load - GWh

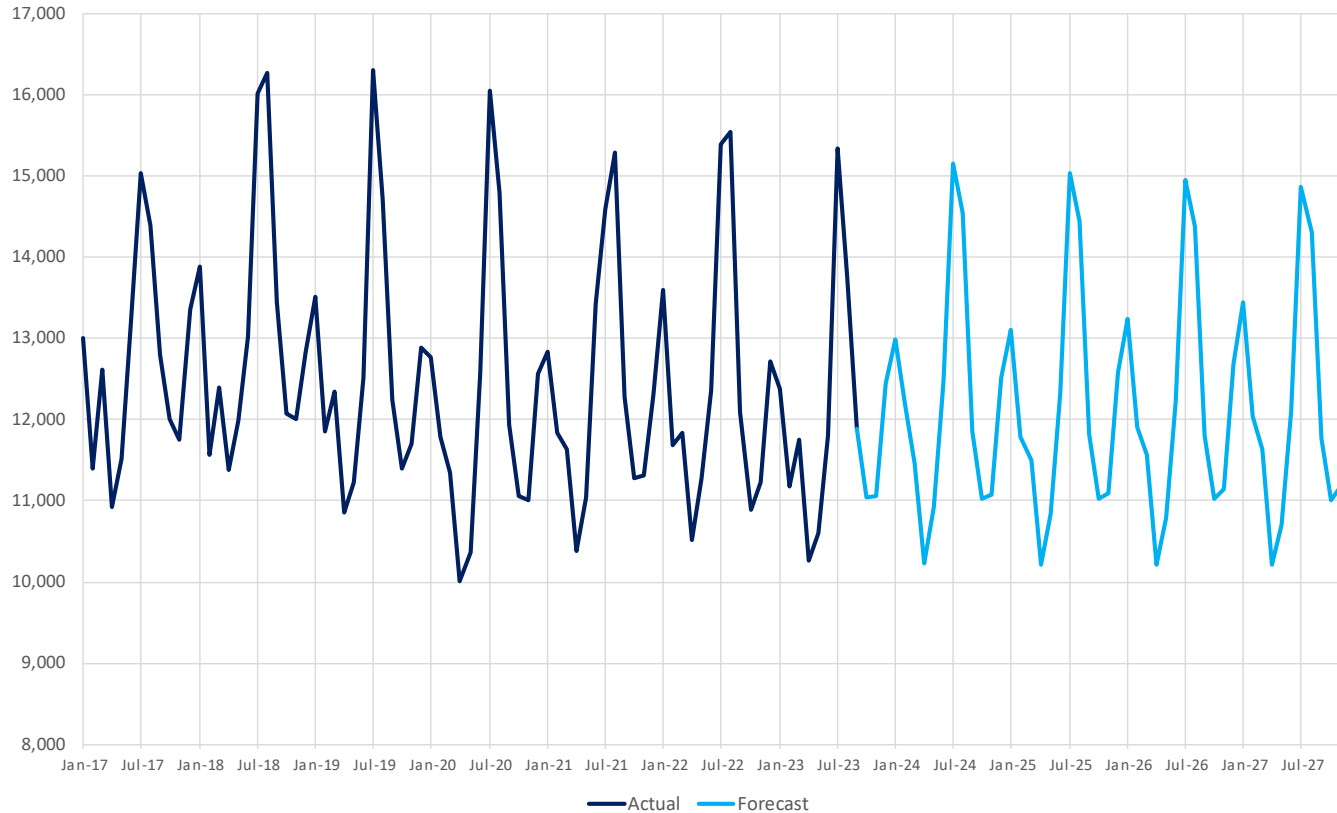


Note: 2023 includes 8 months estimated weather adjusted net load and 4 months updated budget forecast



# Monthly Net Load

Monthly Net Load, Actual and 2024 Budget Forecast (GWh)

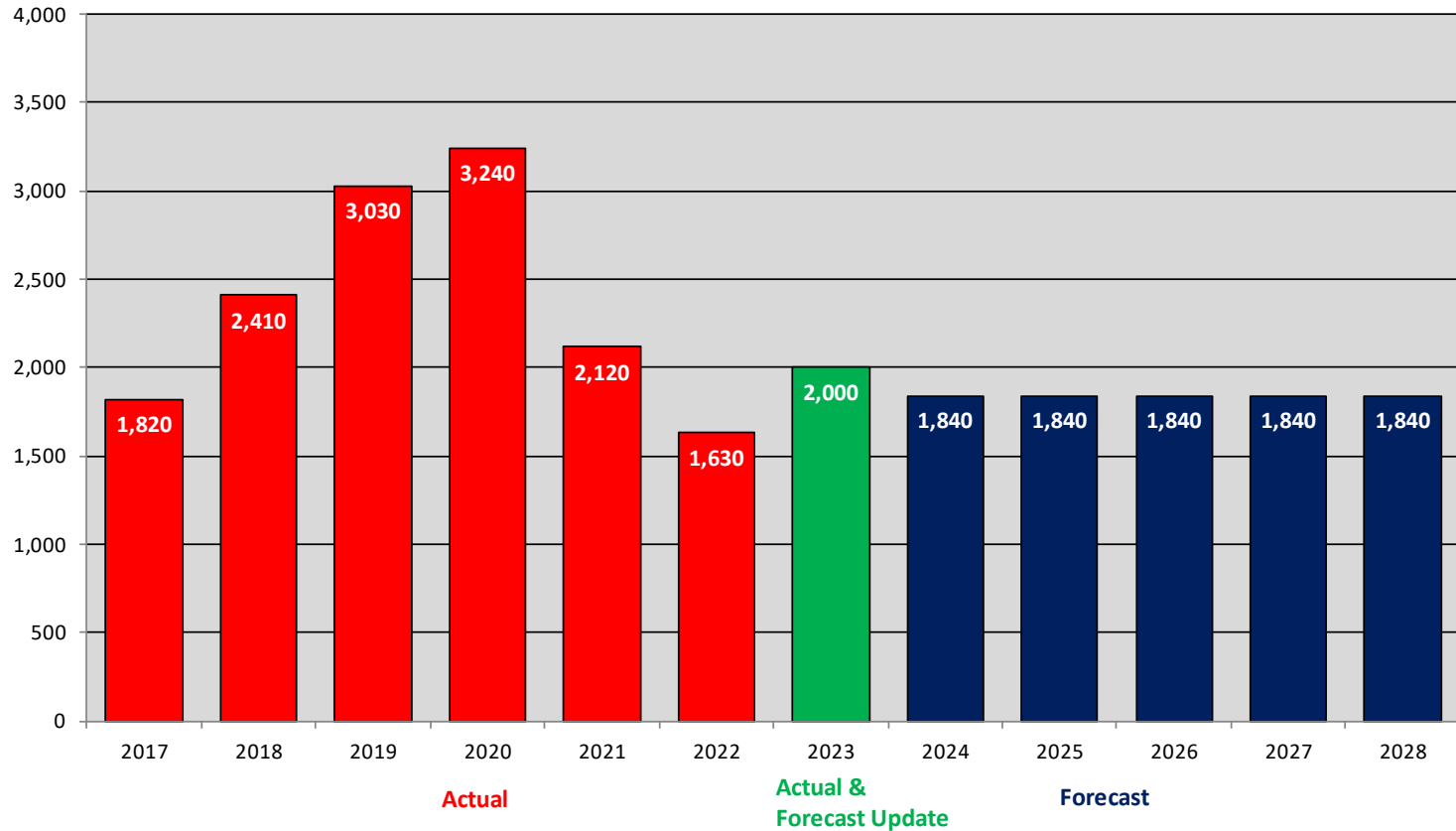


# Incremental Supply Forecast

# Incremental Supply Forecast

- **Incremental supply quantifies the additional injections (relative to net load) needed to support transmission losses and RS-1 non-billable exports to New England**
- **Model-based forecast including:**
  - Monthly net load
  - Winter weather variable
  - Calendar and lag terms

# Incremental Supply - GWh



Note: 2023 includes 8 months estimated actual and 4 months updated budget forecast

# Transactions Forecasts

# Transactions Forecasts

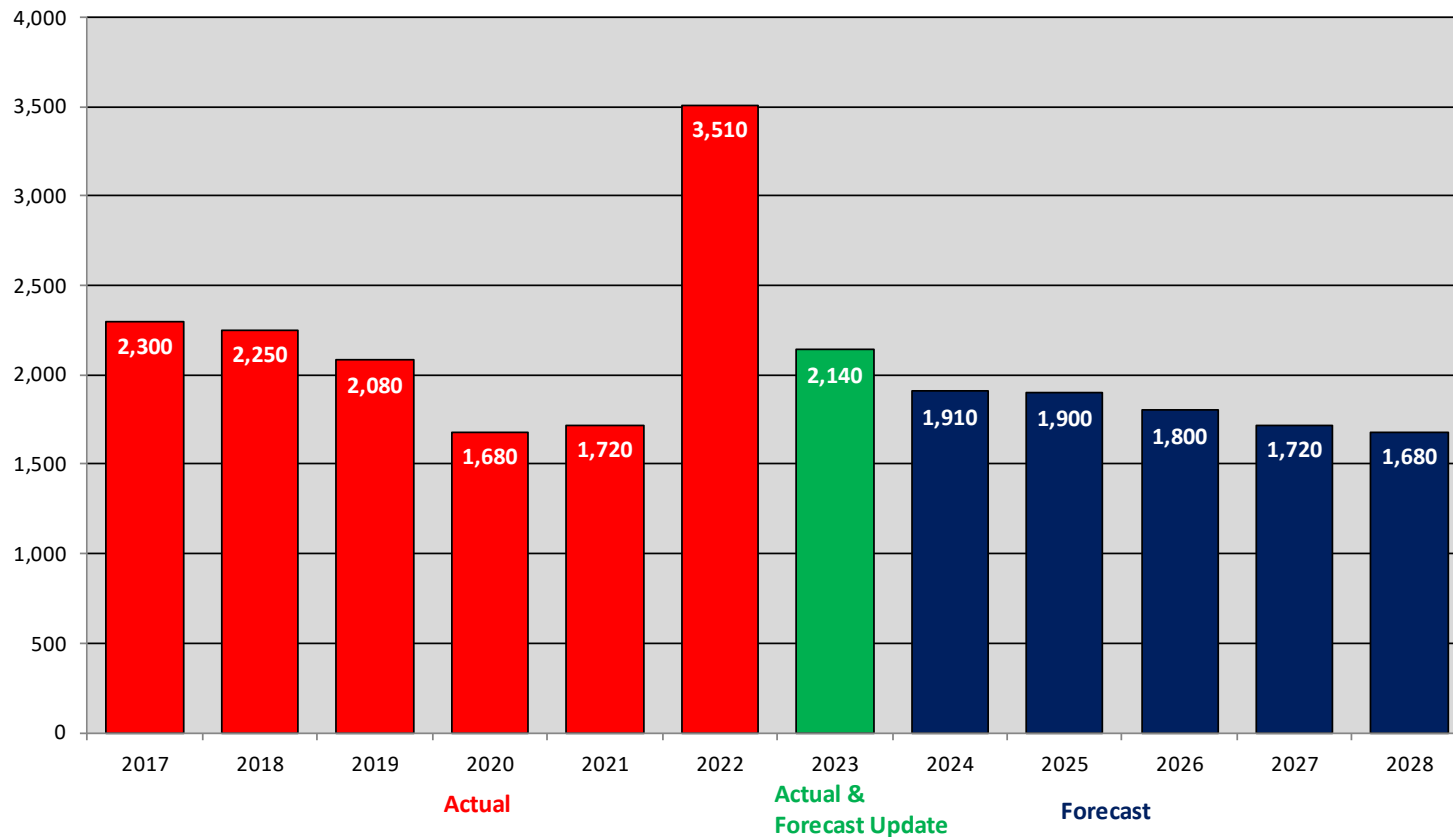
## ■ Billable Exports

- RS-1 billable exports exclude exports to New England per the CTS agreement implemented in 2016
- Forecast model including variables for natural gas price, winter weather, and a trend
- Uses Henry Hub natural gas monthly spot price (as a proxy for regional gas prices), including the 2024 monthly forecast from the EIA Short-Term Energy Outlook
- Exports are projected to remain near their typical long-term levels. Monthly exports peaked in early 2022 coincident with high natural gas prices, and have recently decreased along with the natural gas price

## ■ Wheels

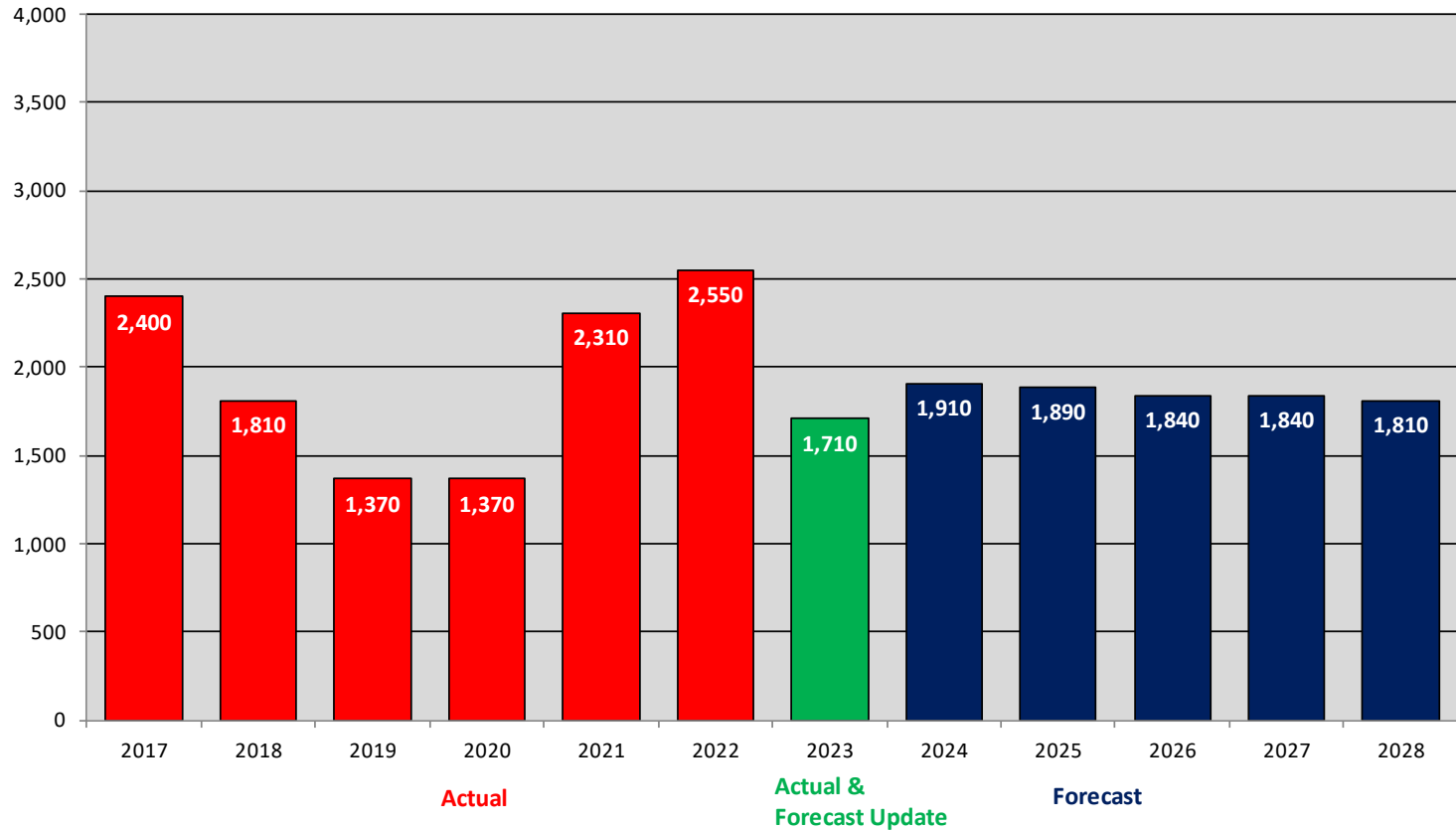
- Forecast model including variables for natural gas price, summer weather, calendar terms, and a trend

# Billable Exports - GWh



Note: 2023 includes 8 months of estimated actual exports and 4 months of the updated budget forecast

# Wheels - GWh

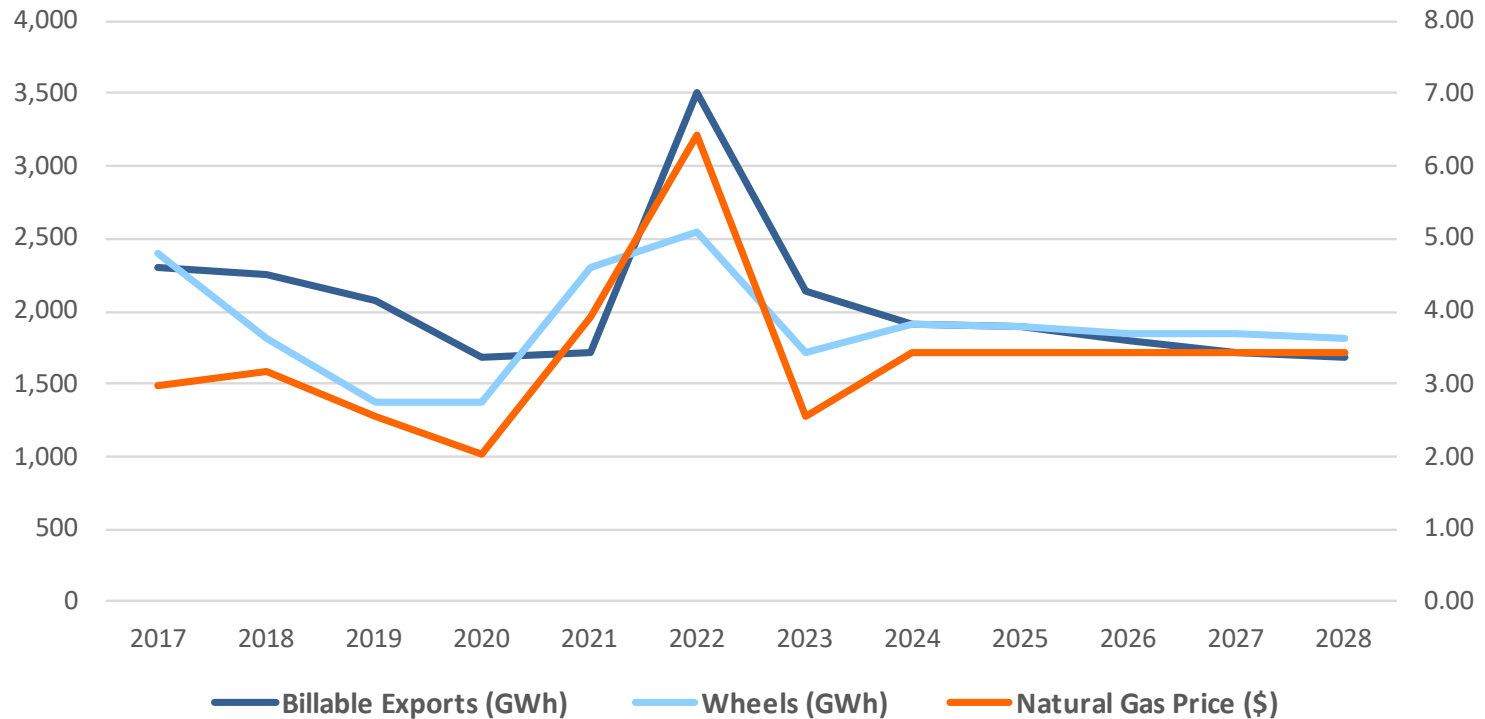


Note: 2023 includes 8 months of estimated actual wheels and 4 months of the updated budget forecast



# Correlation Between Transactions and Natural Gas Prices

## Billable Exports & Wheels (L), vs. Natural Gas Price (R)



Note: Henry Hub Spot Price and 2024 EIA Short-Term Energy Outlook Forecast

# Questions?

# Our Mission & Vision



## Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



## Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation