

Memorandum

To: ISO Board of Governors
From: Eric Hildebrandt, Executive Director, Market Monitoring
Date: May 13, 2021
Re: Department of Market Monitoring update

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides an update on trends in solar and wind energy production and curtailments during January through April in the ISO and other balancing areas in the energy imbalance market (EIM). These four months span most of the period in which the need to curtail renewable resources is highest due to transmission and other system limitations. Seasonally low demand paired with seasonal increases in hydroelectric generation typically increase curtailment of solar and wind energy. One of the key expected benefits of the EIM is to facilitate the integration of an increasing amount of intermittent renewable energy resources in the ISO and throughout the other western states.

Although output from solar and wind resources has continued to increase within the ISO and other EIM balancing areas, the total amount and portion of these intermittent energy resources being curtailed remained relatively low and dropped in 2021 compared to last year. Most of the renewable resources being curtailed continue to be decremented based on negatively priced bids submitted and dispatched through the ISO market, with only a small portion of wind and solar reductions resulting from curtailment of resources that are self-scheduled.

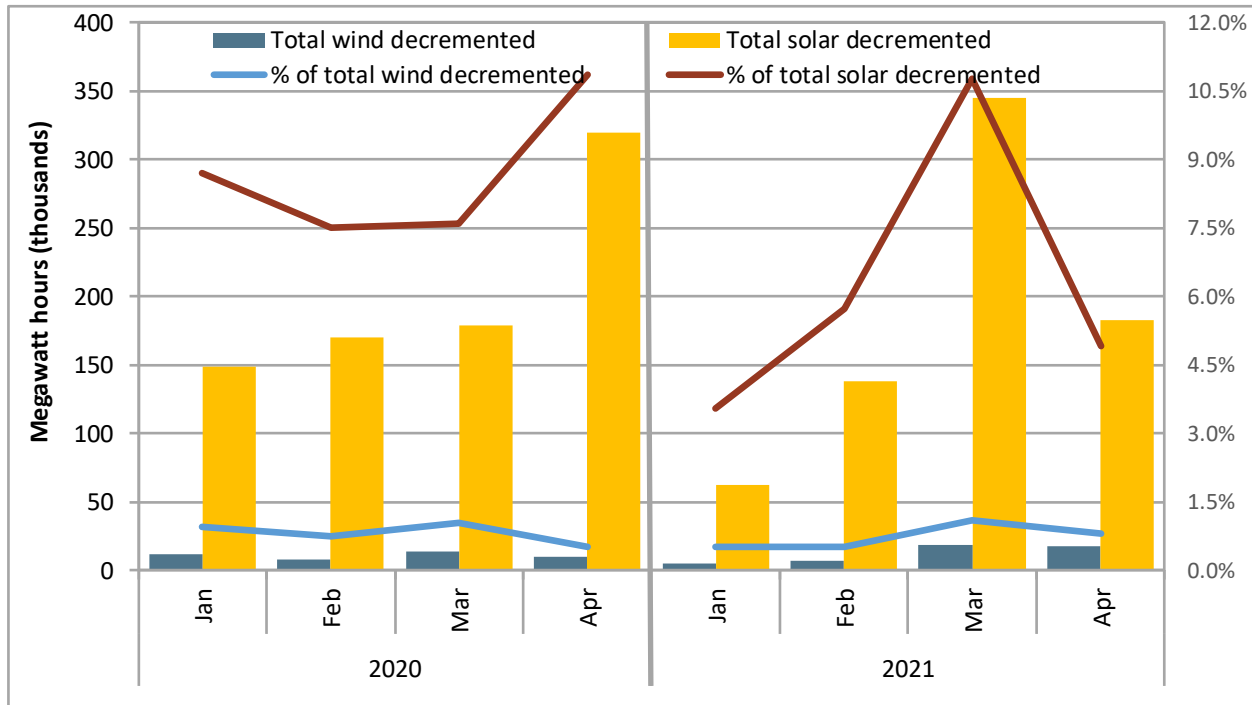
CAISO balancing area

During the first four months of 2021, forecasted output from solar and wind resources connected to the ISO system increased compared to the same period in 2020 by about 20 percent and 17 percent, respectively. From January to April 2021, solar accounted for about 12 percent of total supply in the ISO area, while wind accounted for about 7 percent.¹

¹ 2021 wind and solar generation percentages of total supply in the ISO and EIM are preliminary and may be subject to change at a later date.

Figure 1 shows the amount of wind and solar output which was curtailed from January through April of 2020 and 2021 in terms of total energy and as a percentage of total forecasted wind and solar output.

Figure 1. Decrementing of wind and solar resources in CAISO area (January to April, 2020 and 2021)



While forecasted solar output in these months increased by about 20 percent compared to last year, the amount of solar energy being curtailed dropped about 11 percent. This represents a reduction from 8.8 percent of total forecast solar output in the first four months of 2020 to 6.6 percent of forecast solar output in 2021. About 97 percent of solar output curtailed in 2021 was decremented based on bids submitted in the real time market, compared to about 91 percent during the first four months of 2020.

Forecasted wind energy from January through April increased by about 17 percent compared to last year, while the amount of wind energy being curtailed increased by about 15 percent. The overall portion of forecast wind output being curtailed remained at about .8 percent. About 94 percent of wind output curtailed in 2021 was decremented based on bids submitted in the real time market, compared to about 87 percent during the first four months of 2020.

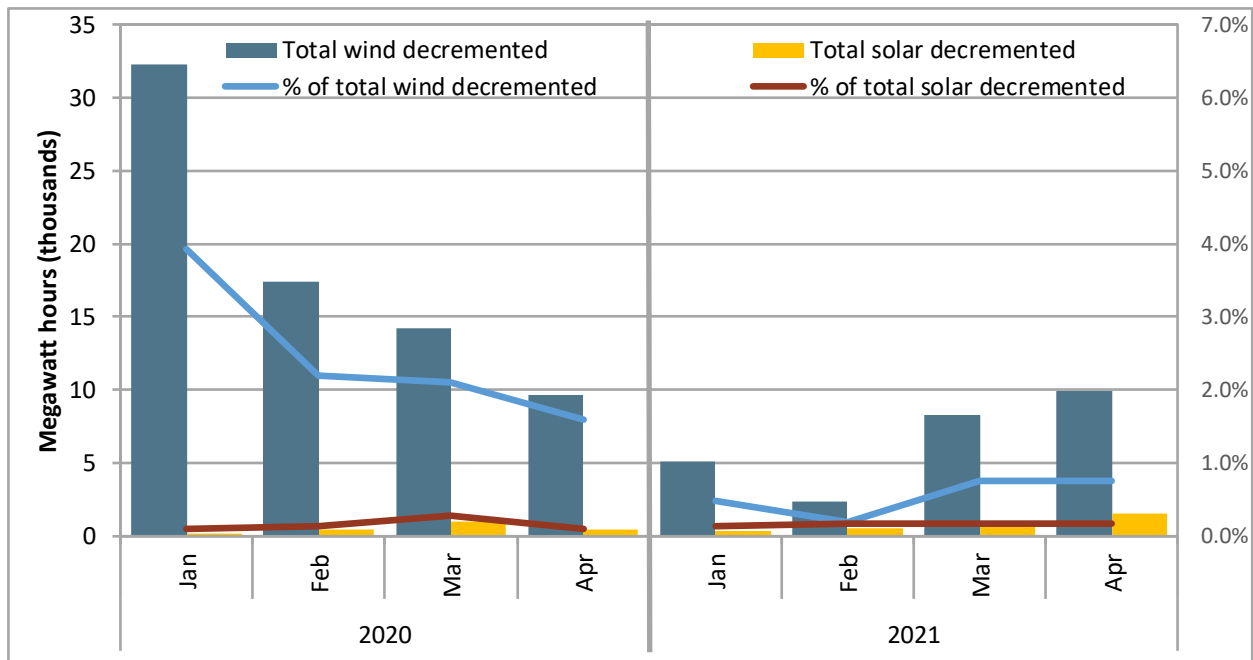
Energy imbalance market

Output from solar and wind resources in the rest of the energy imbalance market continues to increase due to the addition on new balancing areas, as well as some growth in renewable resources within some EIM areas. During the first four months of 2021, forecast

output from solar and wind resources in EIM areas outside the ISO system increased compared to the same period in 2020 by about 43 percent and 61 percent, respectively. From January to April 2021, wind accounted for about 7 percent of total supply in these EIM areas, while solar accounted for about 3 percent.²

Figure 2 shows the amount of wind and solar output which was curtailed in EIM areas during the first four months in 2020 and 2021 in terms of total energy and as a percentage of total forecast wind and solar output.

Figure 2. Decrementing of wind and solar resources in EIM areas (January to April, 2020 and 2021)



Forecasted wind output from January through April in EIM areas increased by about 60 percent compared to last year, the amount of wind energy being curtailed dropped about 65 percent. This represents a reduction from about 2.5 percent of total forecast wind output in the first four months of 2020 to 0.5 percent of forecast wind output in 2021.

Forecasted solar energy within EIM areas from January through April increased by about 43 percent compared to last year, while the amount of solar energy being curtailed increased by about 46 percent. The overall portion of forecast solar output being curtailed remained at about 0.2 percent in 2021.

² Total EIM supply does not include imports.