

SectorVector

Reading the topical trends

Jan 2023

Power exchange market heating up

Intense summer and winter spells, buoyant economy to lift power demand this fiscal

India's peak power demand touched a record high of 216 GW in April 2022, up 6% on-year, as several regions in the North reeled under a severe heatwave. Industrial and manufacturing activities also contributed to the surge.

12% on-year and 9% on-month to 206 GW, this time because of increased heating requirement following the onset of winter as well as continued momentum in manufacturing activity, which rose to a 25-month high during the month, as signalled by the Purchasing Managers' Index.

In December, peak demand rose once again by a sharp

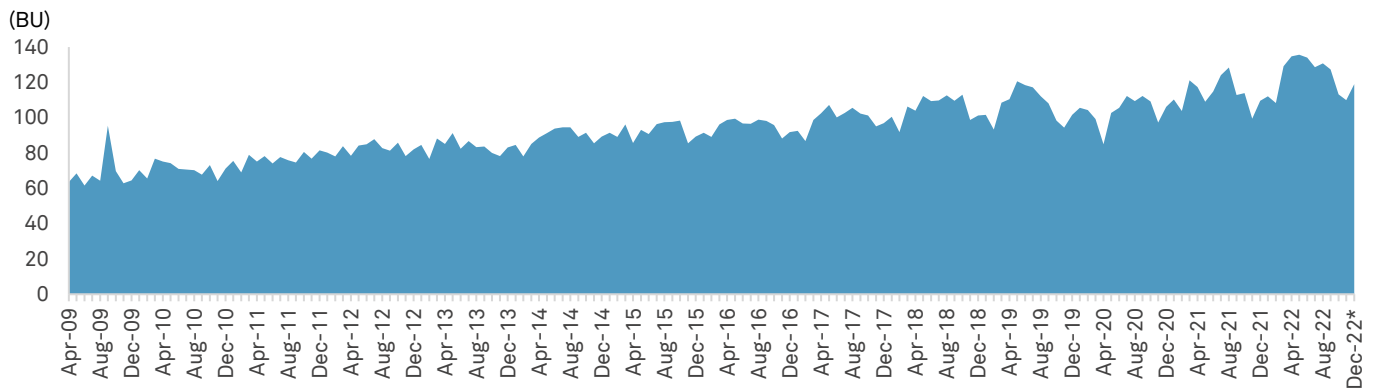
Figure 1: Peak power demand surged 6% on year in first nine months of this fiscal

GW	April	May	June	July	August	September	October	November	December	January	February	March
FY18	159	160	156	157	164	162	162	151	153	159	159	162
FY19	162	172	172	170	173	177	173	163	164	164	162	169
FY20	177	184	184	177	179	175	165	156	172	172	179	171
FY21	133	167	167	172	169	177	171	161	184	190	190	186
FY22	183	169	194	203	198	181	180	167	184	193	194	202
FY23(YTD)	216	206	212	192	197	200	187	188	206*			

% Dev from peak ■ Lean demand ■ >8%&≤20% ■ >7%&≤8% ■ >2%&≤6% ■ ≤2% ■ Peak demand.

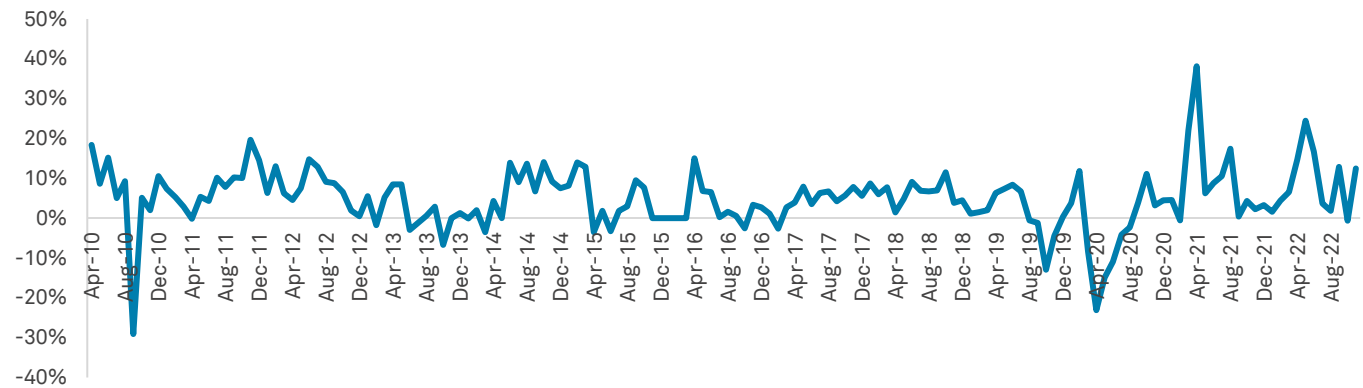
* Provisional number
Note: Lean demand is the lowest peak demand observed in a fiscal year
Source: CEA, POSOCO

Figure 2: Base power demand spurted 10% on year in first nine months of this fiscal



* Provisional number
Source: Central Electricity Authority (CEA), Power System Operation Corporation (POSOCO)

Figure 3: Power consumption increased 9% on-year in December to 119 BUs



* Provisional number
Source: CEA, POSOCO

Demand has sustained into January 2023, with the first eight days posting an on-year increase of 14%. We expect demand to grow a healthy 6-7% on-year in the fourth quarter owing to anticipated severe cold wave across parts of the country as well as healthy economic activity.

For the full fiscal, electricity consumption is slated to grow at a decadal high of 9.0-10.0% vis-à-vis 8.2% in fiscal 2022.

Volume share of short-term power in overall generation rose 130 bps in third quarter

To cater to the rising demand for electricity, power companies are increasingly turning to the short-term power market.

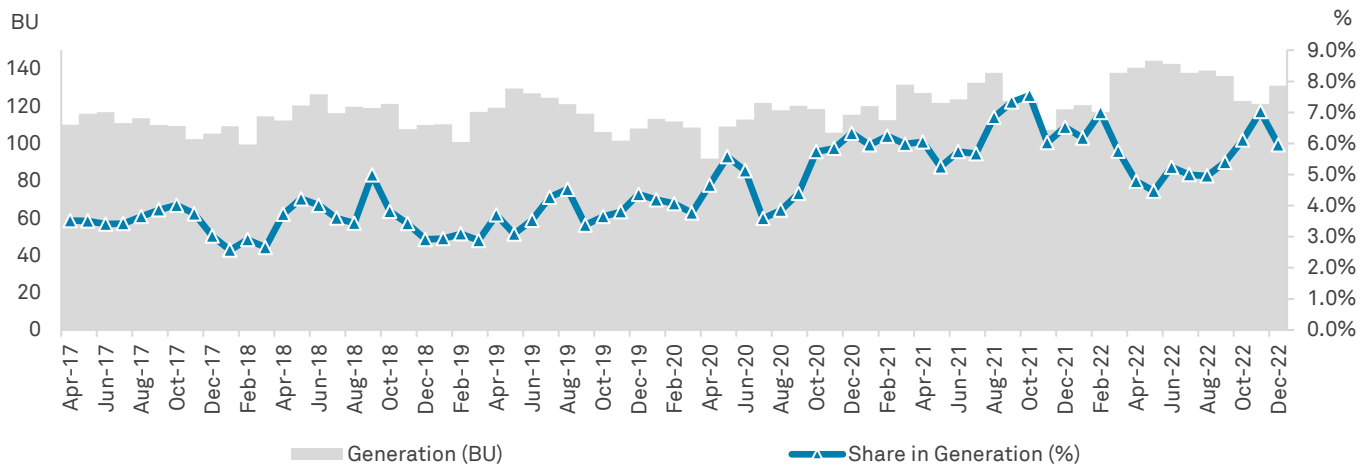
The share of the short-term power market in overall

generation increased to 6.4% in the third quarter of the current fiscal from 5.1% in the second quarter, well above the long period average of 4.6% over 69 months. This share, though, was slightly lower on-year vis-à-vis 6.7% in the third quarter of fiscal 2022, when the country faced a severe coal supply crisis, which impacted generation.

Generation in the third quarter of fiscal 2023 was affected by seasonally lower output from renewable sources, leaving costly thermal power to service incremental demand.

Overall generation declined sequentially in the quarter, with the combined output from hydro and wind plunging 50% owing to seasonality issues. Despite 4% m-o-m increase in generation from hydro and wind combined in December, generation from thermal grew 9% over the same period to service the incremental demand.

Figure 4: Share of power exchange volume in all India generation (conventional and renewables)



Note: Volume of short-term is total traded volume across two power exchanges – Indian Energy Exchange (IEX) and Power Exchange India (PXIL)
Source: CEA, IEX, PXIL

Lower generation from hydro increased short-term prices sharply on-month in December

Evening peak load is typically serviced by hydro power. Lower hydro generation of 10% on-month in December 2022 increased dispatches of coal generation to service the evening peak.

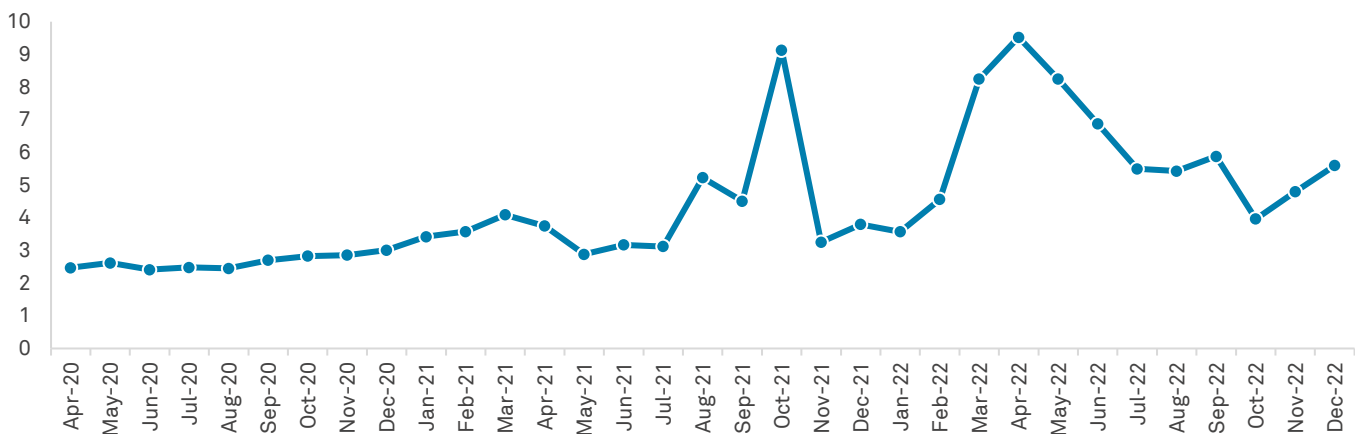
But elevated coal prices in spot e-auctions, along with

winter heating demand, increased on-month prices 17% during the month.

The continuing rise in power demand in January on account of high heating demand and robust industrial activity further pushed up prices to Rs 6.79/ kWh as of January 10.

Pressure on prices was exacerbated by an all-India energy shortage, which rose a whopping 429% in the first ten days of January over December 2022

Figure 5: Price discovered in day-ahead market rose on-month in December

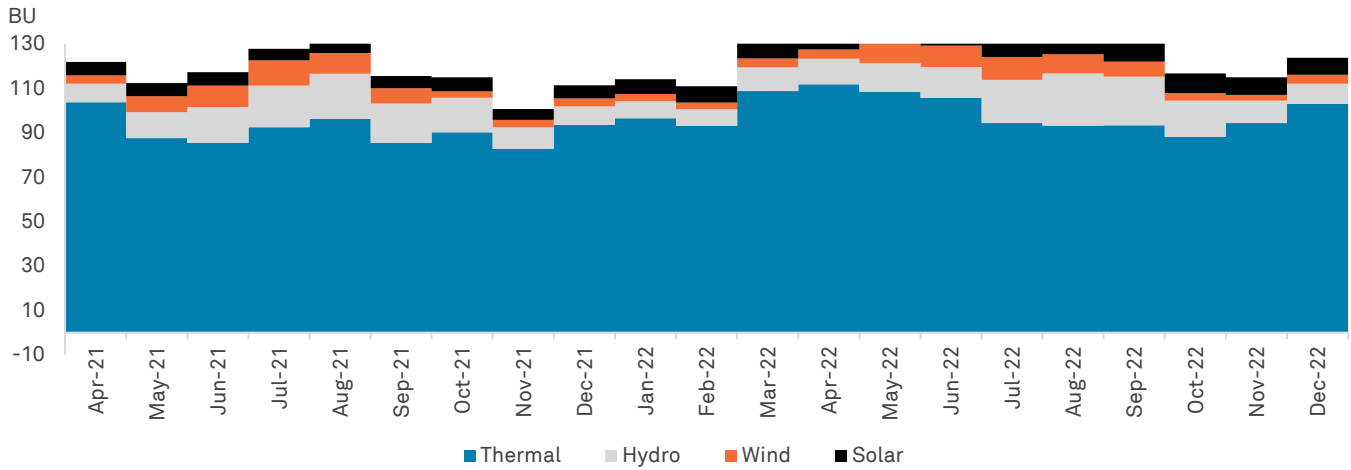


Source: IEX

To be sure, prices have been on an uptrend since November, when prices rose 21% on-month as generation from the entire renewable space – hydro, wind

and solar – decreased 28%. On an on-year basis, prices posted a sharper rise in November, increasing 47%, owing to 11% higher base power demand.

Figure 6: Generation increased 7% on month in December to service incremental demand



Source: CEA, POSOCO

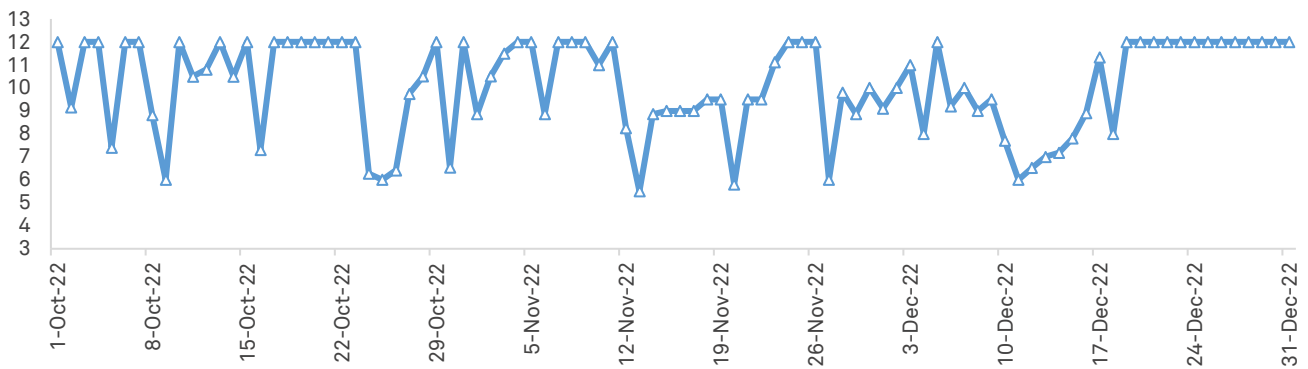
Meanwhile, time blocks for peak price discovery shifted to the morning hours in December from the usual evening hours in November and October, indicating the onset of winter heating demand.

But peak price sustaining multiple time blocks is

indicative of the fact that buyers are still struggling to efficiently service evening and morning peaks through long term sources.

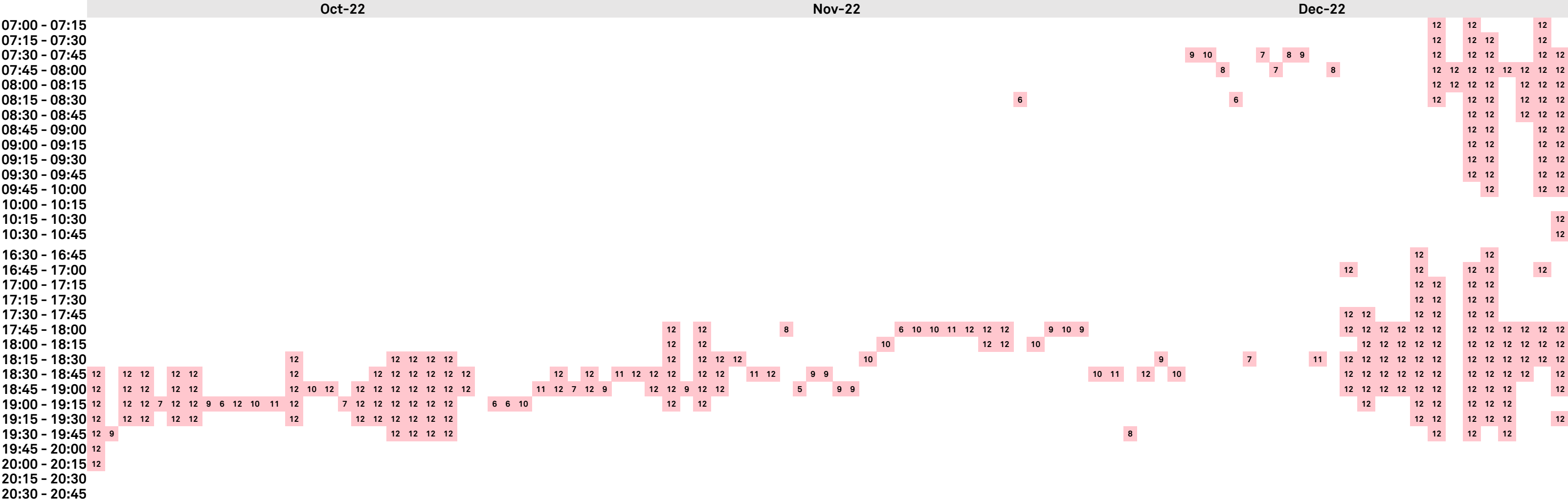
These high prices will lead to burgeoning of APPC for distribution utilities, impacting their finances.

Figure 7: Daily peak price discovered in day-ahead market hit upper circuit of Rs 12/kWh in the last two weeks of December 2022



Source: IEX

Figure 8: Time blocks in which maximum price of the day was achieved in day-ahead market



Source: IEX

Peak price has clung to the upper circuit into January as well, as supply has failed to meet increasing demand, which primarily came from heating requirement as prices started to touch upper circuit at 6:30 in the morning and continued till 11:45.

Increase in prices led to 2% decrease in day-ahead market volume in December

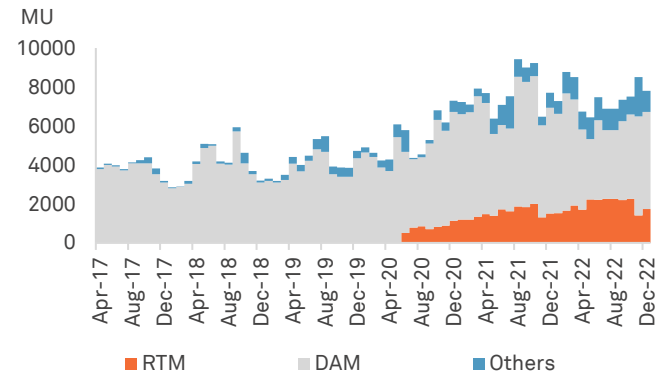
The high price discovery is having an impact on day-ahead market volume, which decreased 2% on-month in December as higher priced sell bids did not match lower priced buy bids.

However, November saw 18% on-month increase in volume despite a 21% increase in price, indicating price discovery of Rs 4.8/kWh had better matching of buy and sell bids.

Peak pricing in multiple time blocks is the result of significant gap in demand-supply volume

High peak pricing in December 2022 was evidence of high positive differential of demand-supply bids for the month, both in evening and morning peaks. Low

Figure 9: Volume of transactions in power exchanges

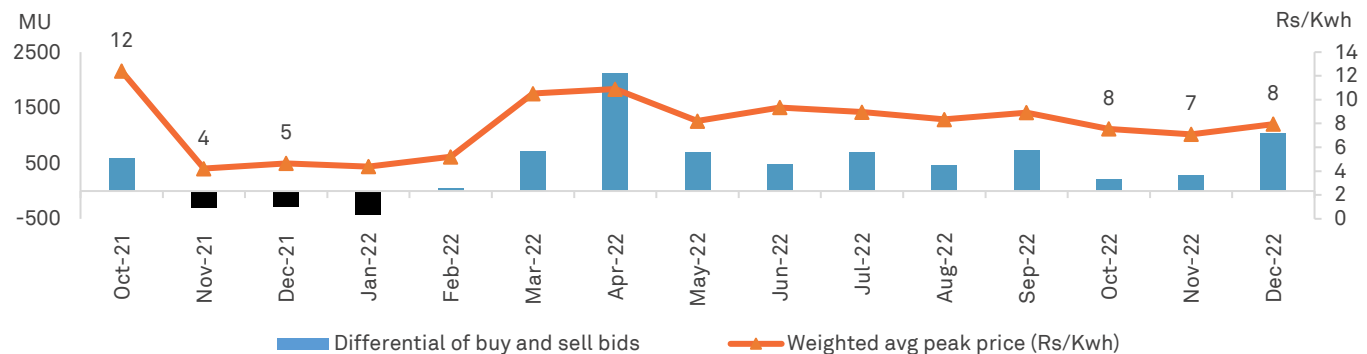


Note: Day-ahead market (DAM) and real-time market (RTM) are two main products of power exchanges, constituting over 85% of the short-term market. DAM alone constitutes over 60% of overall market volume
Source: IEX

off-season generation for hydro and wind exacerbated this gap.

Positive demand-supply differential, however, contrasts with the round-the-clock (RTC) differential, which was largely in negative territory, indicating higher supply volume vis-à-vis demand volume.

Figure 10: Differential between buyers over seller continues to rise in peak hours, impacting overall weighted average peak prices in the month to move upwards



Note: For second quarter of fiscal 2023, peak time block is considered between 17:30-24:00. October and November 2022 had peak time block between 17:45-20:45. December 2022 had peak time block between 7:00-10:45 and 17:45-20:45

Source: IEX

For January 2023, even this RTC demand-supply differential turned positive at 248 MU, in addition to peak differential of 808 MU, indicating demand overshooting supply volume.

The government, in a recent circular, acknowledged the trend of increasing demand. To avoid continuous

energy shortages, the government has mandated a 6% blending for all thermal plants till the first half of fiscal 2023. Sufficient coal availability will likely ease pressure on short-term prices, while plugging the energy shortage. However, continued growth in power demand will remain a key monitorable for short-term price trends

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