India's Energy Overview

October 2025

VASUDHA FOUNDATION
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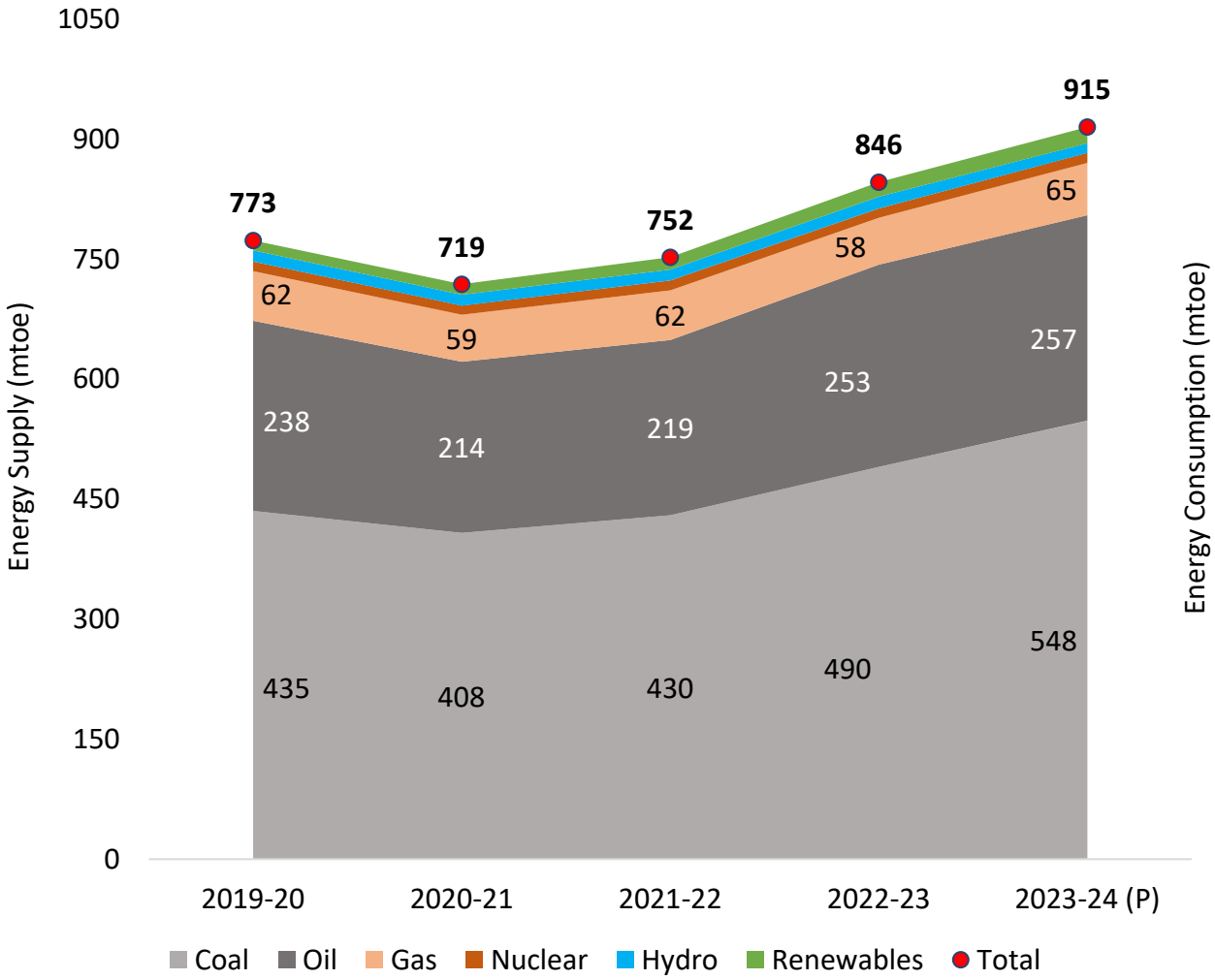
Contents

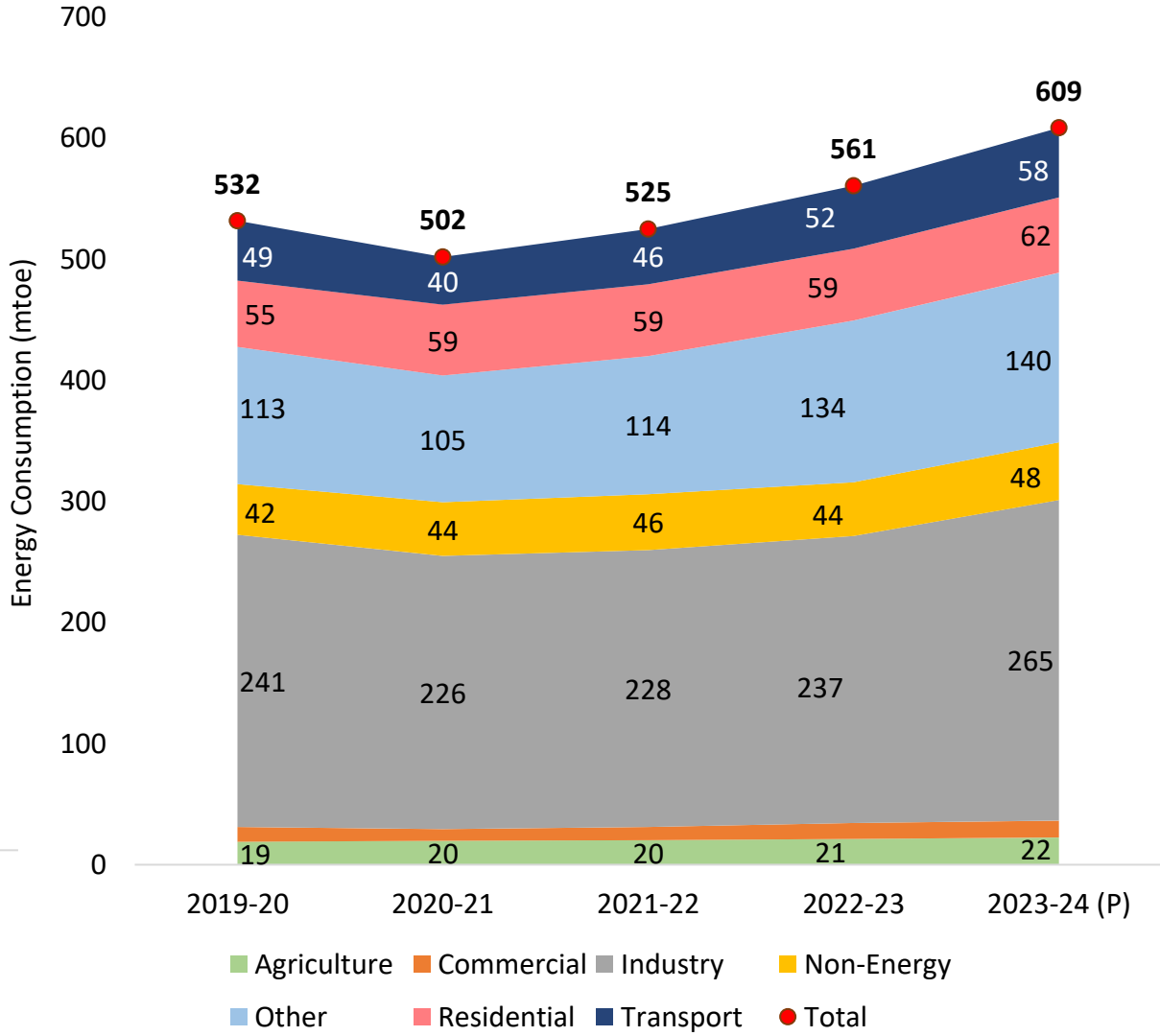
Primary* and Final Energy Mix in India

Source-wise Primary Energy Supply (mtoe)*



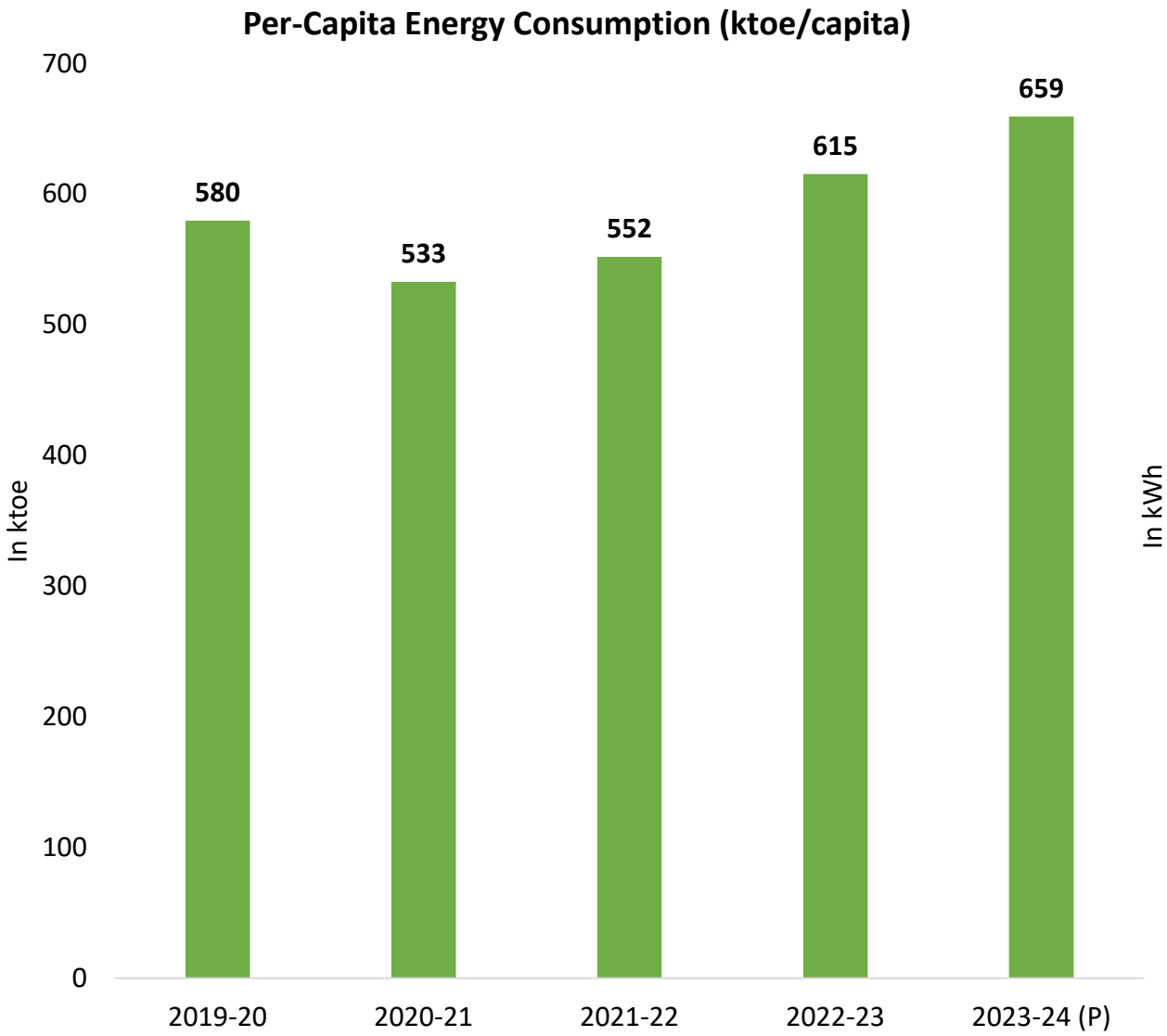
*Excluding biofuels, waste, and other non-commercial source of energy

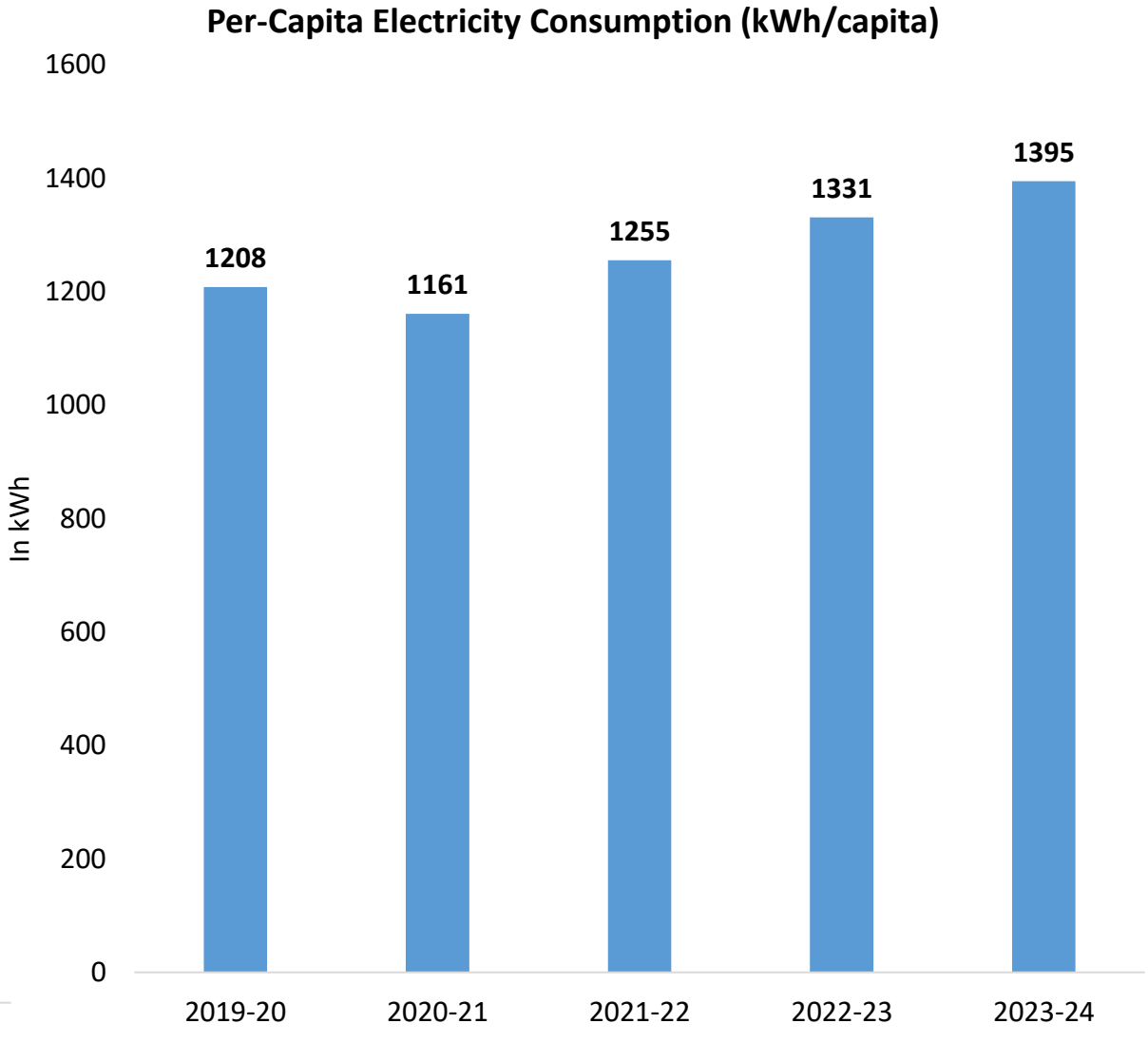
Sector-wise Energy Consumption (mtoe)



Source: ICED

Per-Capita Energy and Electricity Consumption

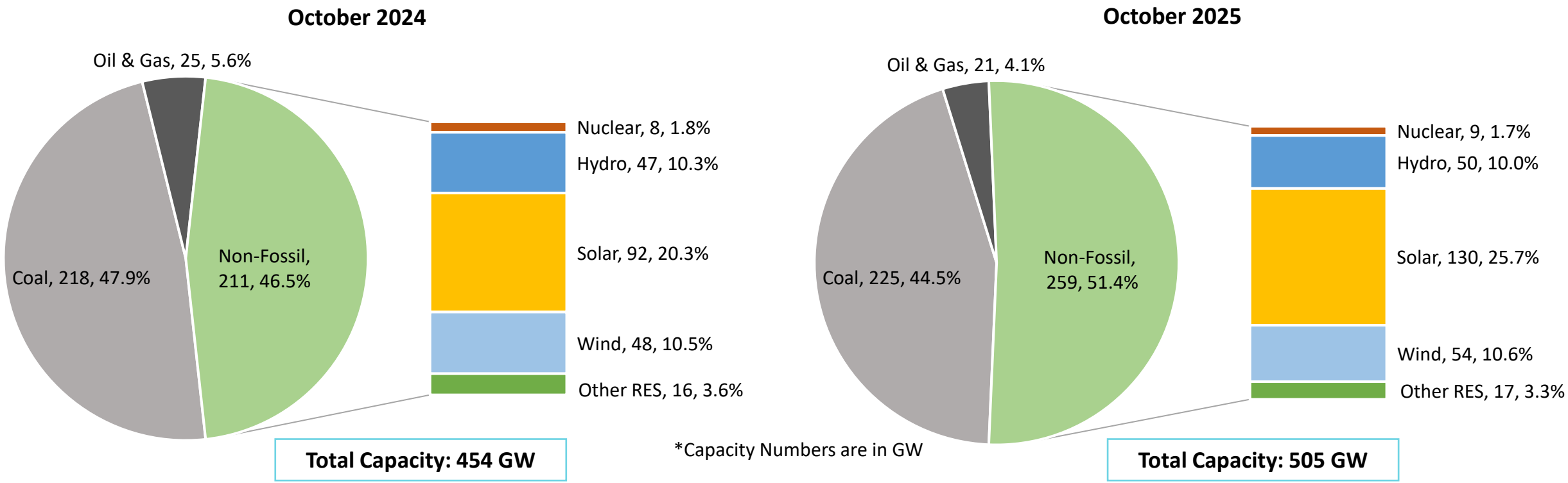




Note: Per Capita energy consumption is calculated on energy supply basis.

Source: ICED & CEA

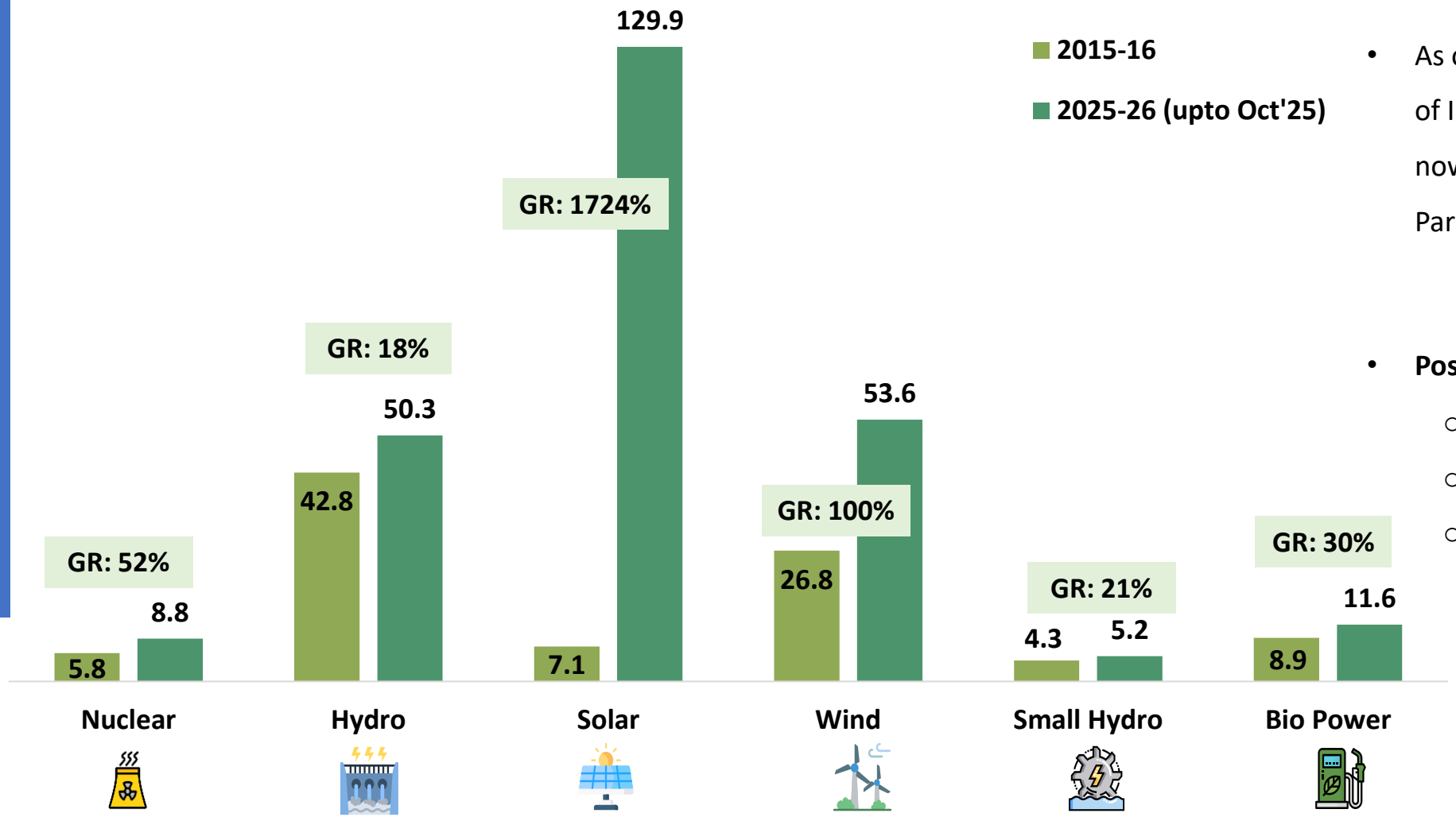
India’s Electricity Capacity Mix (Utility-scale)



- India’s electricity generating capacity is 505 GW as on Oct’2025 [coal 225 GW (44.5%), solar 130 GW (25.7%), wind 54 GW (10.6%), and hydro 50 (10.0%)].
- India has achieved its NDC target of 51.4% non-fossil capacity, 5 years ahead of the originally set in 2030.
- As on Oct’2025, India’s renewable energy capacity (including large hydro) stood at 251 GW out of 501 GW.

Source: CEA

Non-Fossil Energy Capacity (in GW) Growth Post-2015 Paris Agreement



- As of October 31, 2025, **51.4% (259 GW)** of India's total power capacity (**505 GW**) is now non-fossil fuel-based, meeting the Paris Agreement pledge.

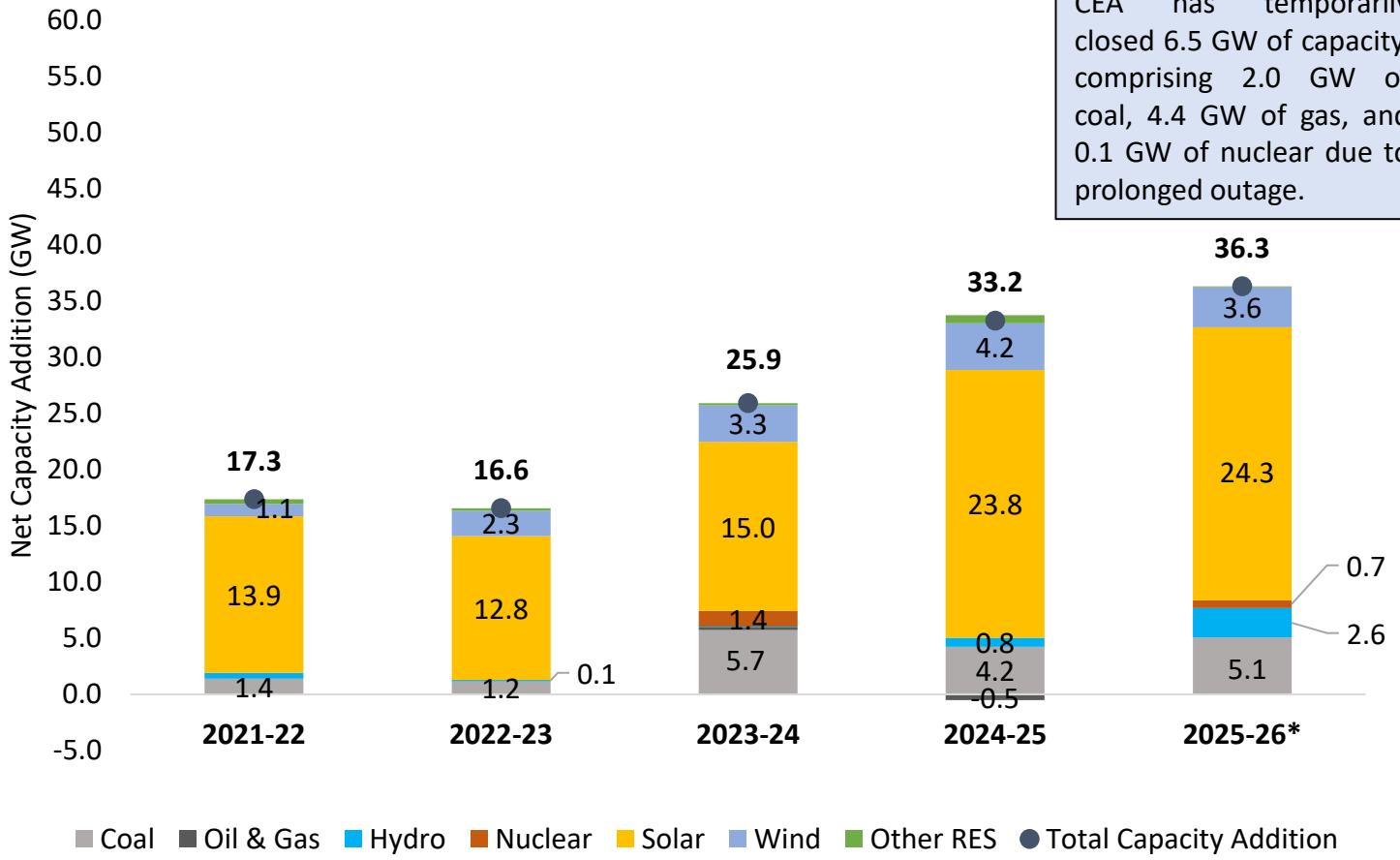
- **Post-2015 Paris Agreement Growth**:
  - solar capacity increased **18-folds**
  - wind power **doubled**
  - nuclear energy **doubled**.

Source: CEA & MNRE

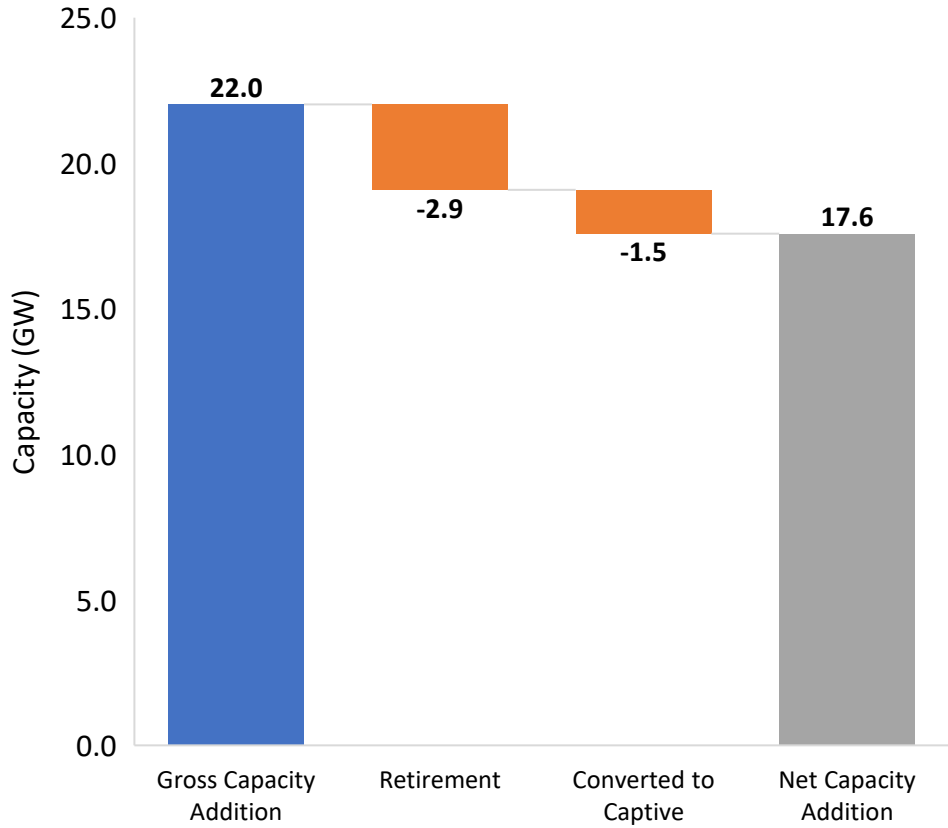
India’s Electricity Capacity Addition in last 5 years

Source-wise Net Capacity Addition (GW)

As of October 2025, the CEA has temporarily closed 6.5 GW of capacity, comprising 2.0 GW of coal, 4.4 GW of gas, and 0.1 GW of nuclear due to prolonged outage.



Net Coal Capacity Addition during 2021-22 to 2025-26*



- A total of 110 GW of generation capacity has been added in RE (Hydro, solar, wind, and other RES) over the past 5 years (2021-22 to 2025-26*), whereas the net coal capacity addition during the same period was 18 GW, mostly in the central sector.

NOTE: * The data for 2025-26 is up to October 2025.

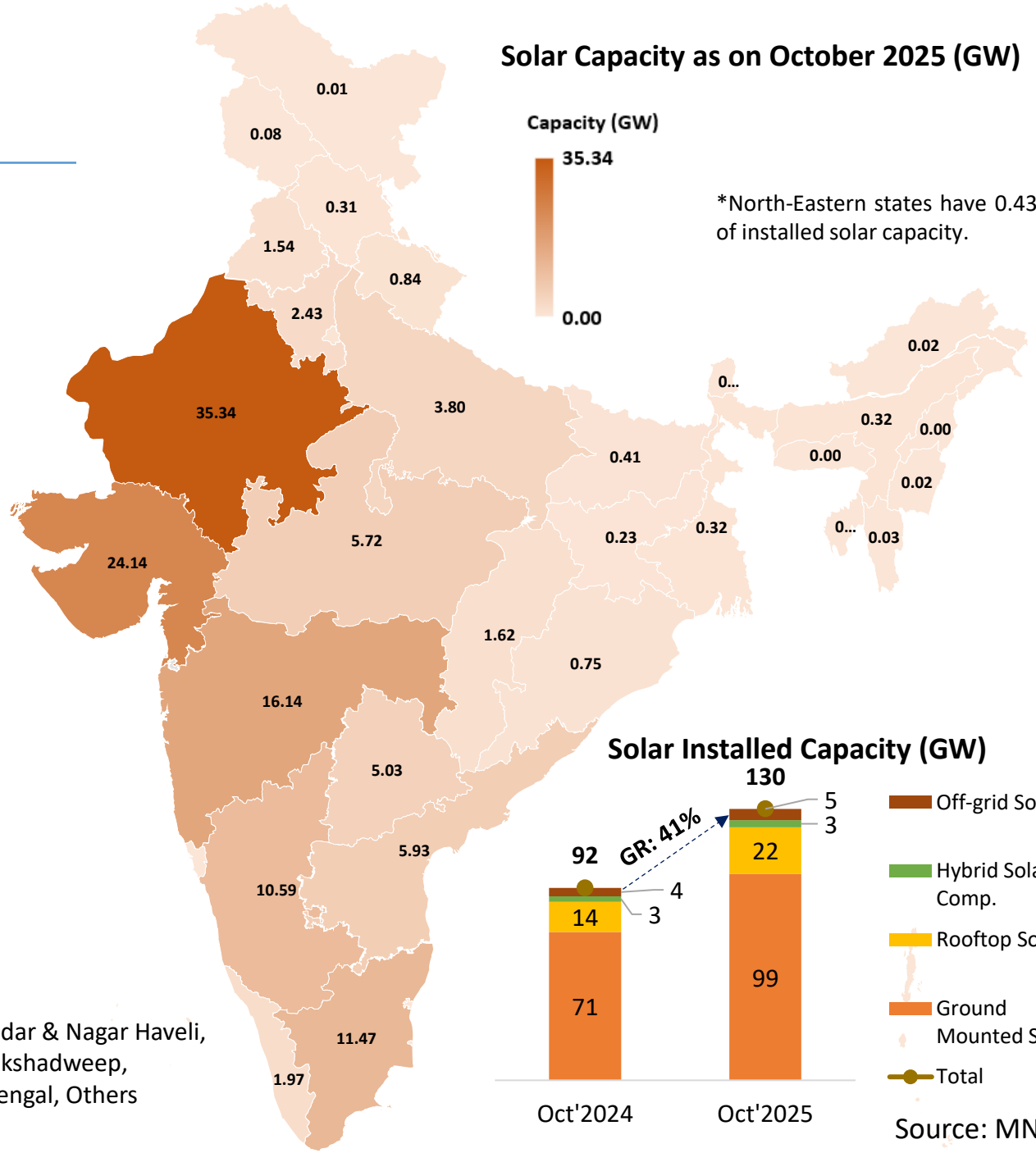
Source: CEA & MNRE

State-wise Solar Capacity

as on October 2025

State-wise installed capacity of Solar Power (GW)					
States	**Ground Mounted**	**Rooftop**	**Solar Component in Hybrid**	**Off Grid**	**Total Solar Power**
Rajasthan	**30.64**	1.91	**1.98**	0.81	**35.34**
Gujarat	16.65	**6.19**	1.14	0.17	24.14
Maharashtra	9.97	4.39	0.00	**1.78**	16.14
Tamil Nadu	10.17	1.23	0.00	0.07	11.47
Karnataka	9.56	0.77	0.21	0.04	10.59
Andhra Pradesh	5.14	0.69	0.00	0.09	5.93
Madhya Pradesh	4.89	0.73	0.00	0.10	5.72
Telangana	4.36	0.66	0.00	0.01	5.03
Uttar Pradesh	2.78	0.66	0.00	0.36	3.80
Haryana	0.27	1.06	0.00	1.11	2.43
Kerala	0.32	1.62	0.00	0.02	1.97
Chhattisgarh	1.06	0.17	0.00	0.39	1.62
Punjab	0.89	0.55	0.00	0.10	1.54
Uttarakhand	0.54	0.27	0.00	0.02	0.84
Others	1.47	1.50	0.00	0.38	3.35
All India	**98.72**	**22.42**	**3.33**	**5.45**	**129.92**

Others include- Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Ladakh, Lakshadweep, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Puducherry, Sikkim, Tripura, West Bengal, Others

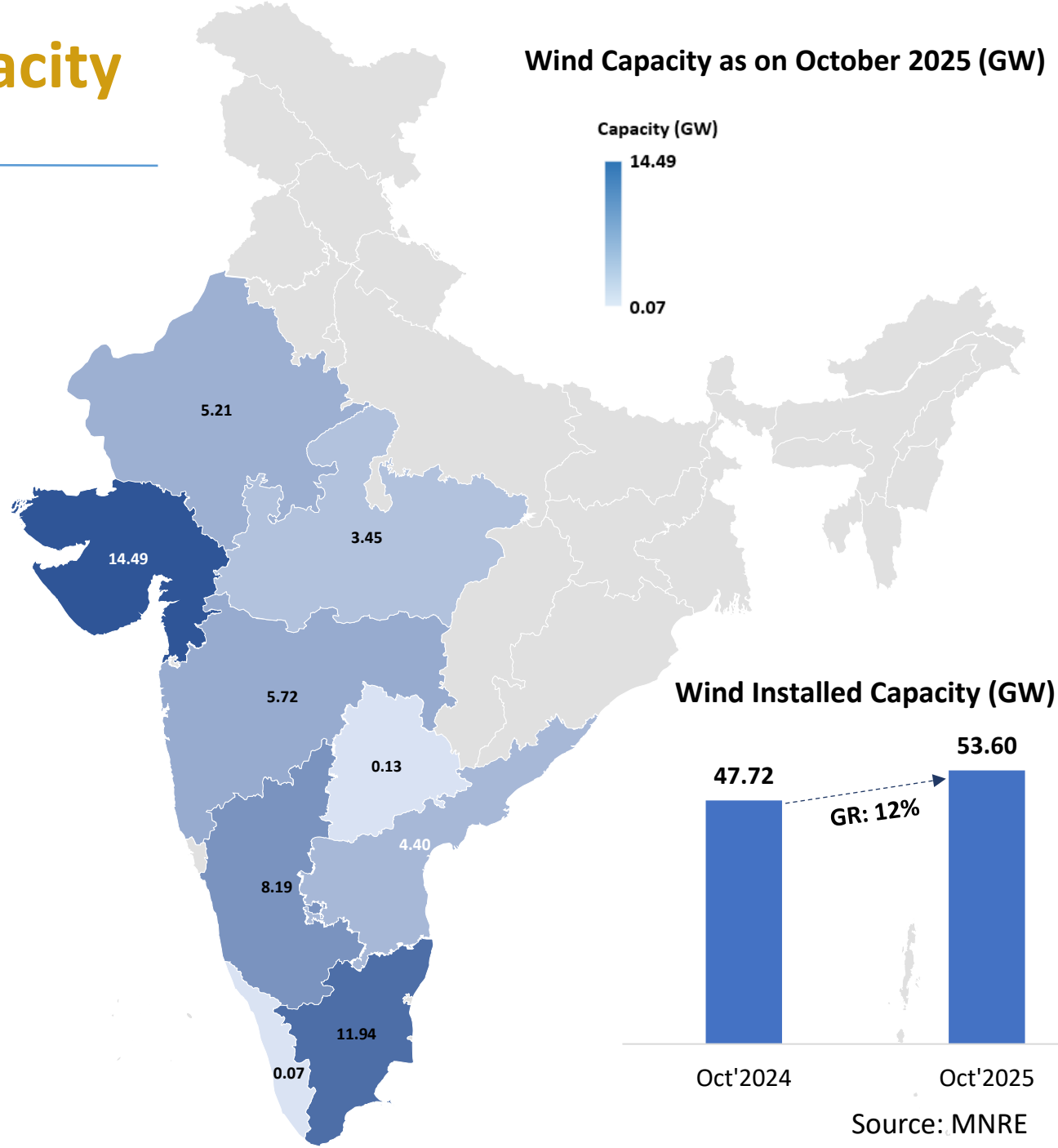


Source: MNRE

State-wise Wind Onshore Capacity

as on October 2025

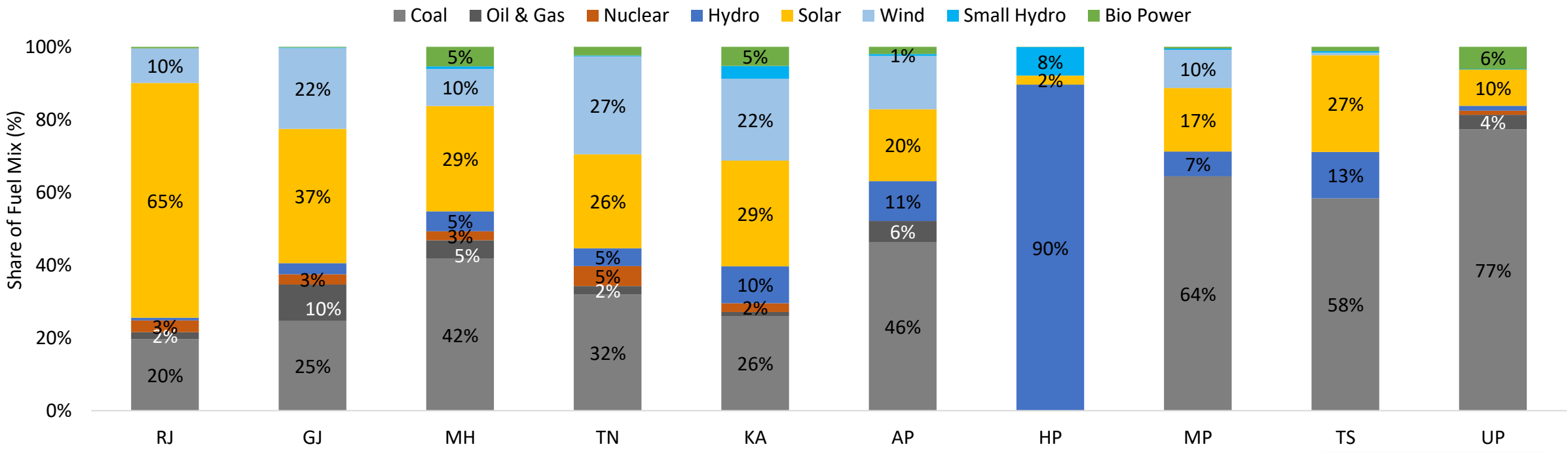
State-wise installed capacity of Wind (Onshore) Power	
States	**Installed Capacity (GW)**
Gujarat	14.49
Tamil Nadu	11.94
Karnataka	8.19
Maharashtra	5.72
Rajasthan	5.21
Andhra Pradesh	4.40
Madhya Pradesh	3.45
Telangana	0.13
Kerala	0.07
India Total	**53.60**



Source: MNRE

Top 10 High RE (incl. Large Hydro) States and Their Capacity Mix

as on October 2025



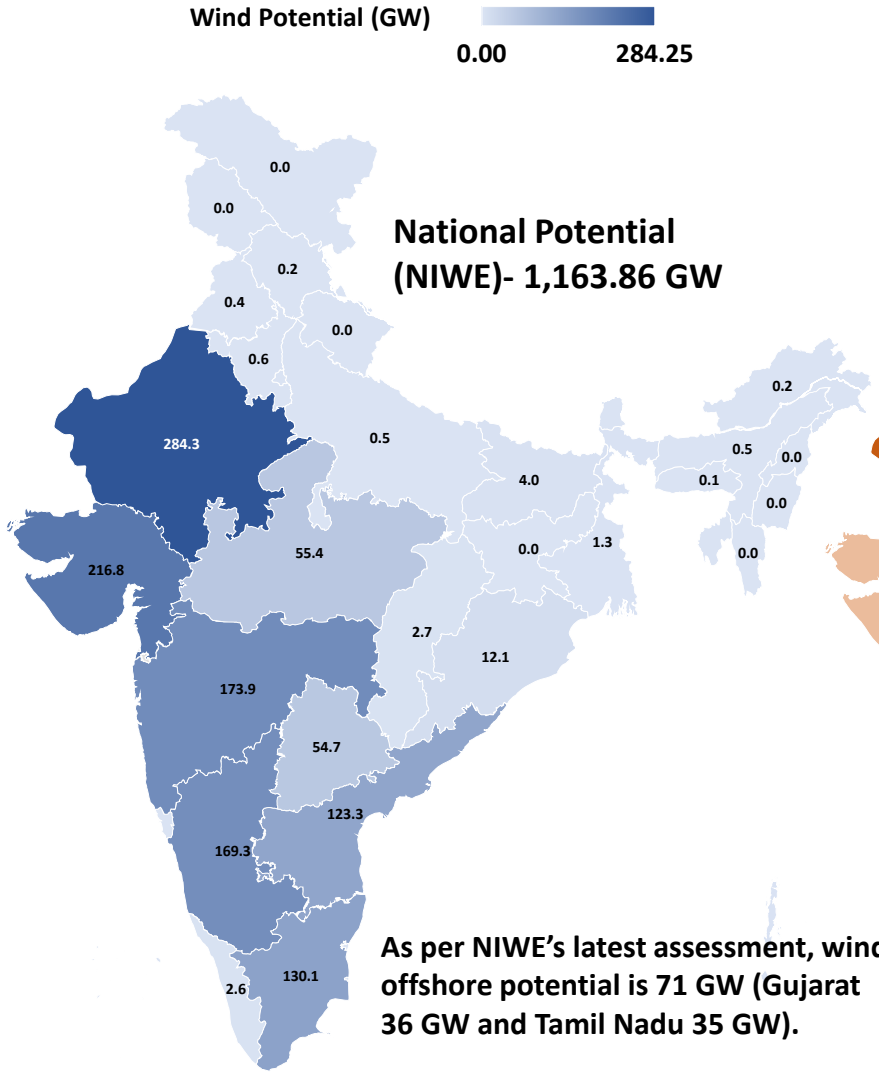
Numbers are in GW

Parameters	RJ	GJ	MH	TN	KA	AP	HP	MP	TS	UP
Total Installed Capacity	54.77	65.38	55.82	44.42	36.43	30.04	12.74	32.86	18.92	37.95
Total RE Capacity	41.19	40.87	28.28	26.76	25.68	14.37	12.74	11.69	7.88	6.66
RE Share	75%	63%	51%	60%	70%	48%	100%	36%	42%	18%

Source: MNRE & NPP

Renewable Energy (RE) Potential

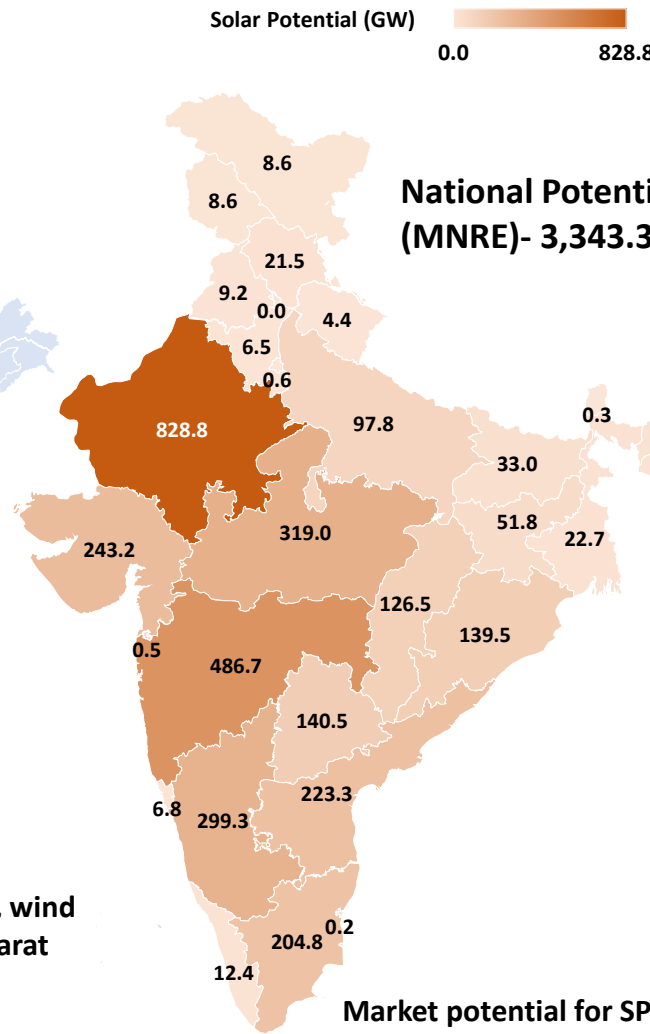
Wind Onshore (at 150m agl) and Offshore Potential



National Potential (NIWE)- 1,163.86 GW

As per NIWE's latest assessment, wind offshore potential is 71 GW (Gujarat 36 GW and Tamil Nadu 35 GW).

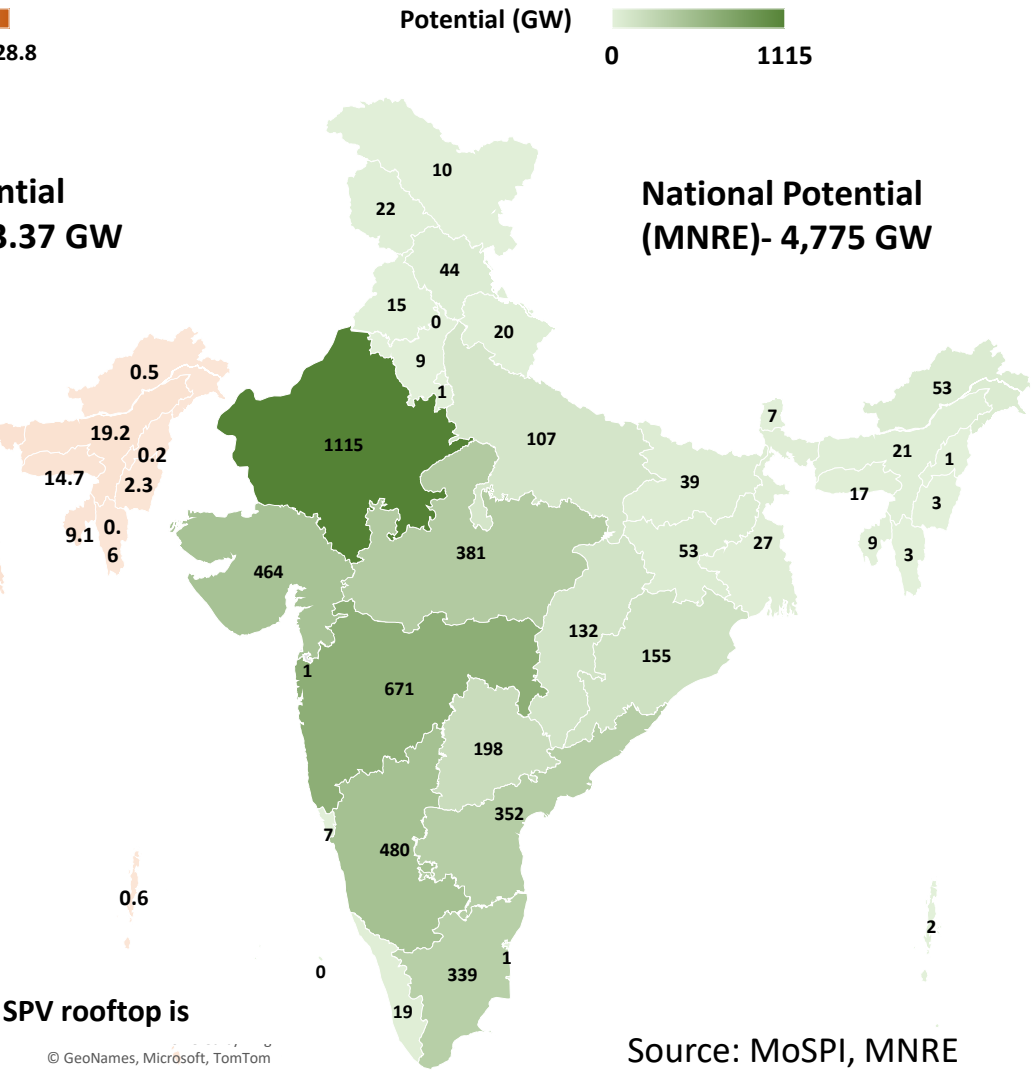
Solar Ground Mounted Potential (at 6.69% wasteland)



National Potential (MNRE)- 3,343.37 GW

Market potential for SPV rooftop is 124 GW.

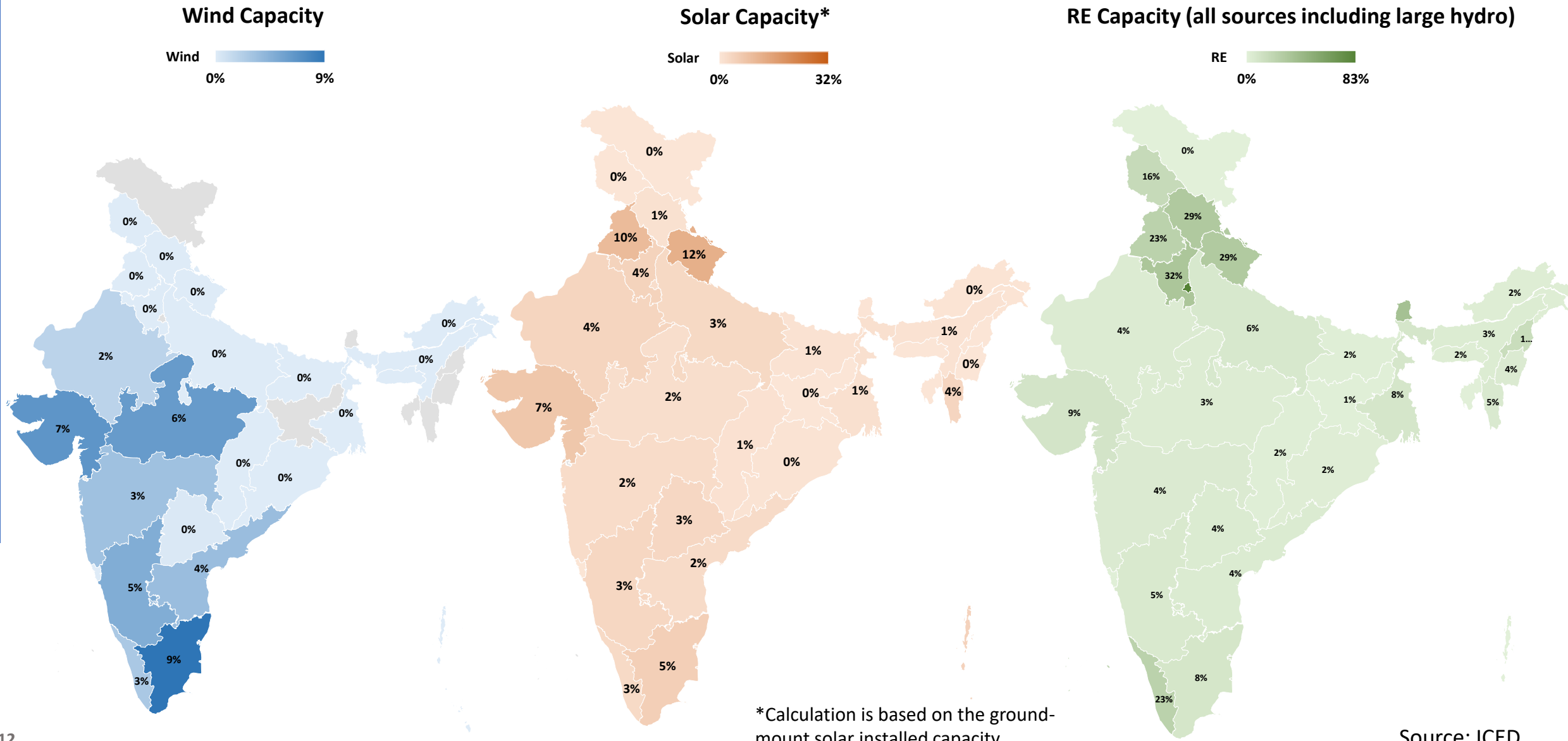
Renewable Energy Potential (all sources incl. large Hydro)



National Potential (MNRE)- 4,775 GW

Source: MoSPI, MNRE

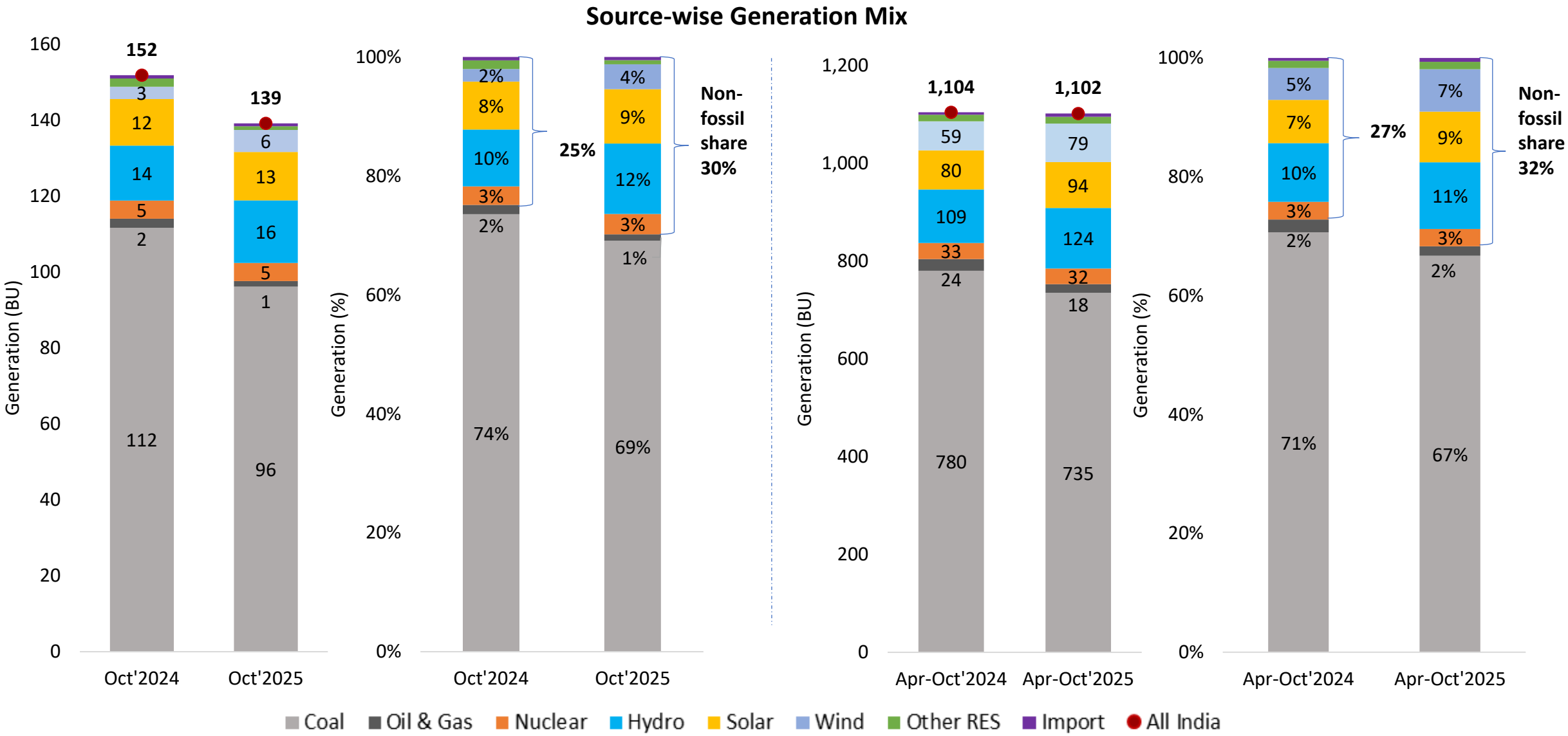
RE Installed capacity as a Percentage of the total resource potential in the state as on October 2025



*Calculation is based on the ground-mount solar installed capacity.

Source: ICED

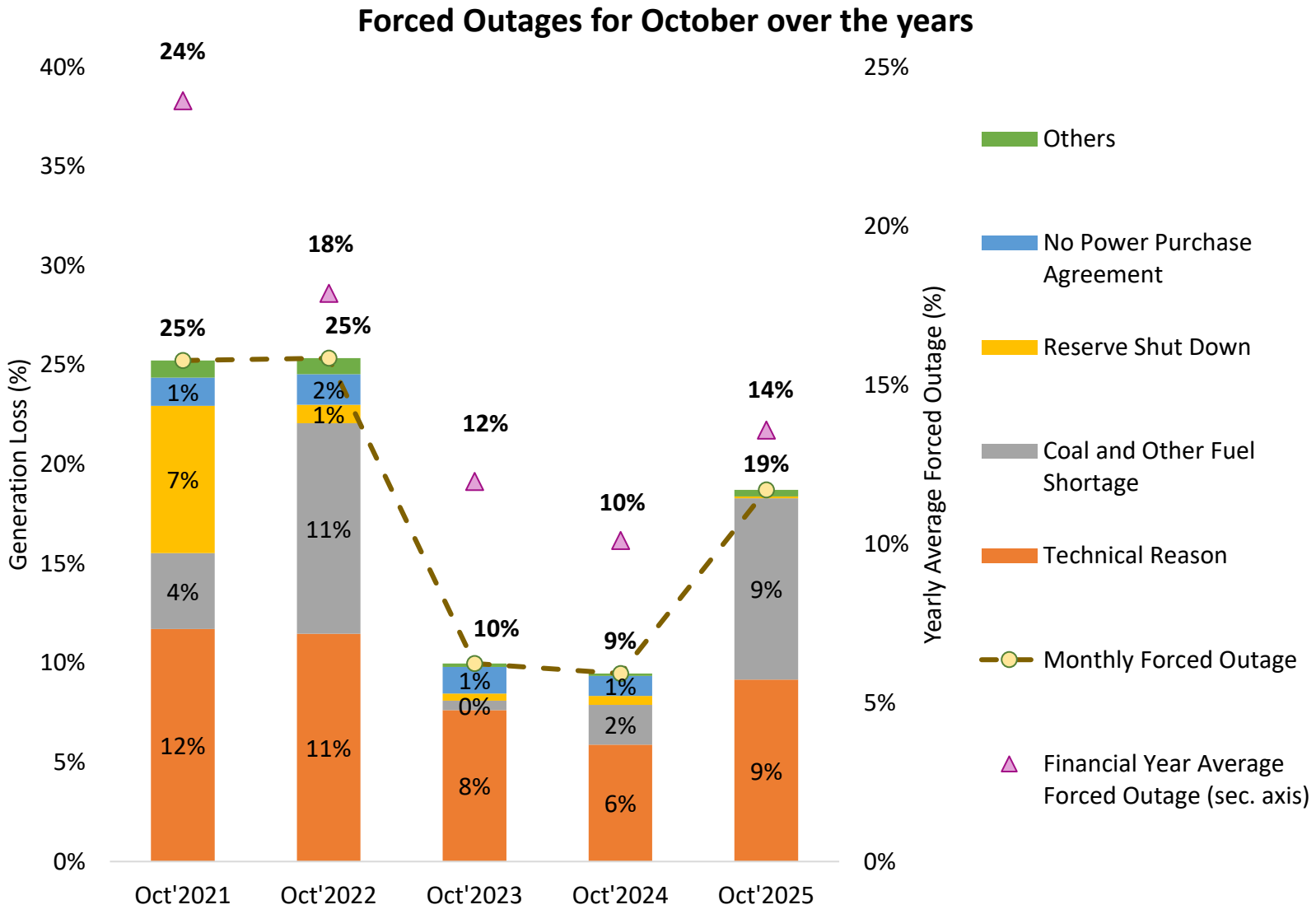
India’s Electricity Generation Mix



Note: The electricity generation data for Oct’25 is Provisional.

Source: CEA

Thermal Generation Loss and Reasons for Forced Outages

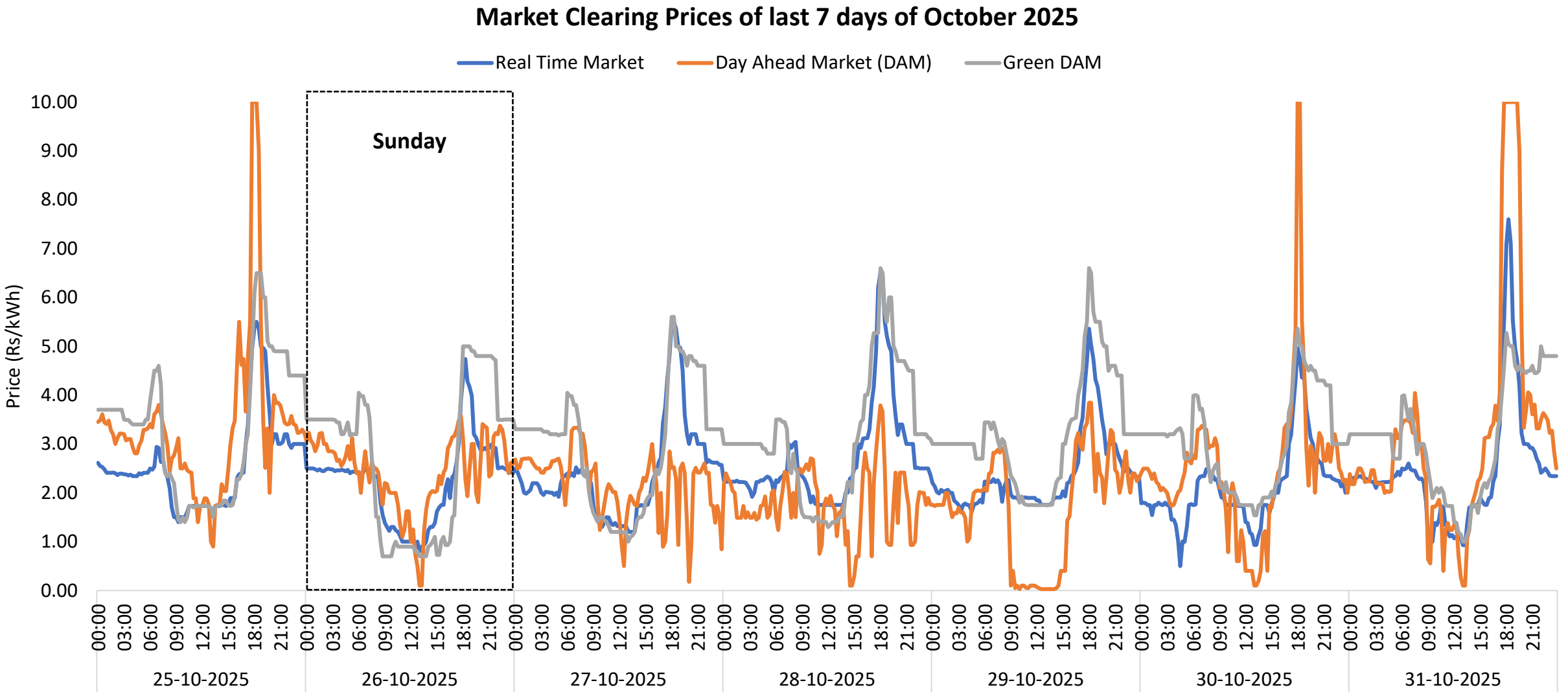


Year/ Month		Average Forced Outage Share
Yearly	FY 2023-24	12%
	FY 2024-25	10%
	FY 2025-26 (up to Oct'25)	14%
Monthly	Oct'2023	10%
	Oct'2024	9%
	Oct'2025	19%

Thermal includes only Coal and Lignite Plants.

Source: ICED

Indian Electricity Exchange (IEX) Market Snapshot

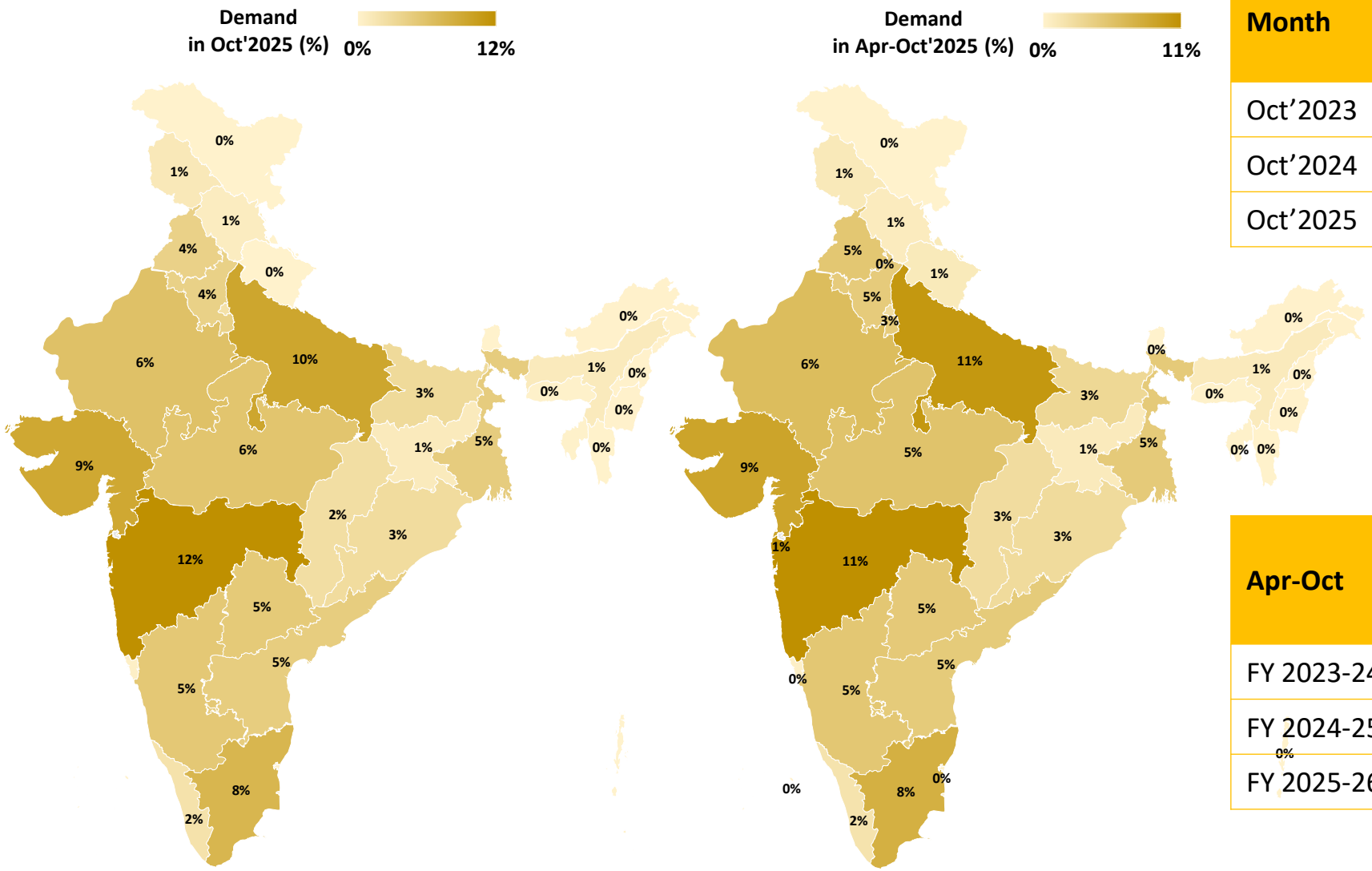


In April 2023, CERC revised the price ceiling from ₹12/kWh to ₹10/kWh in the power exchange market.

Source: IEX

National and State level Electricity Demand

State-level Electricity Demand as a percent of National Demand (%)



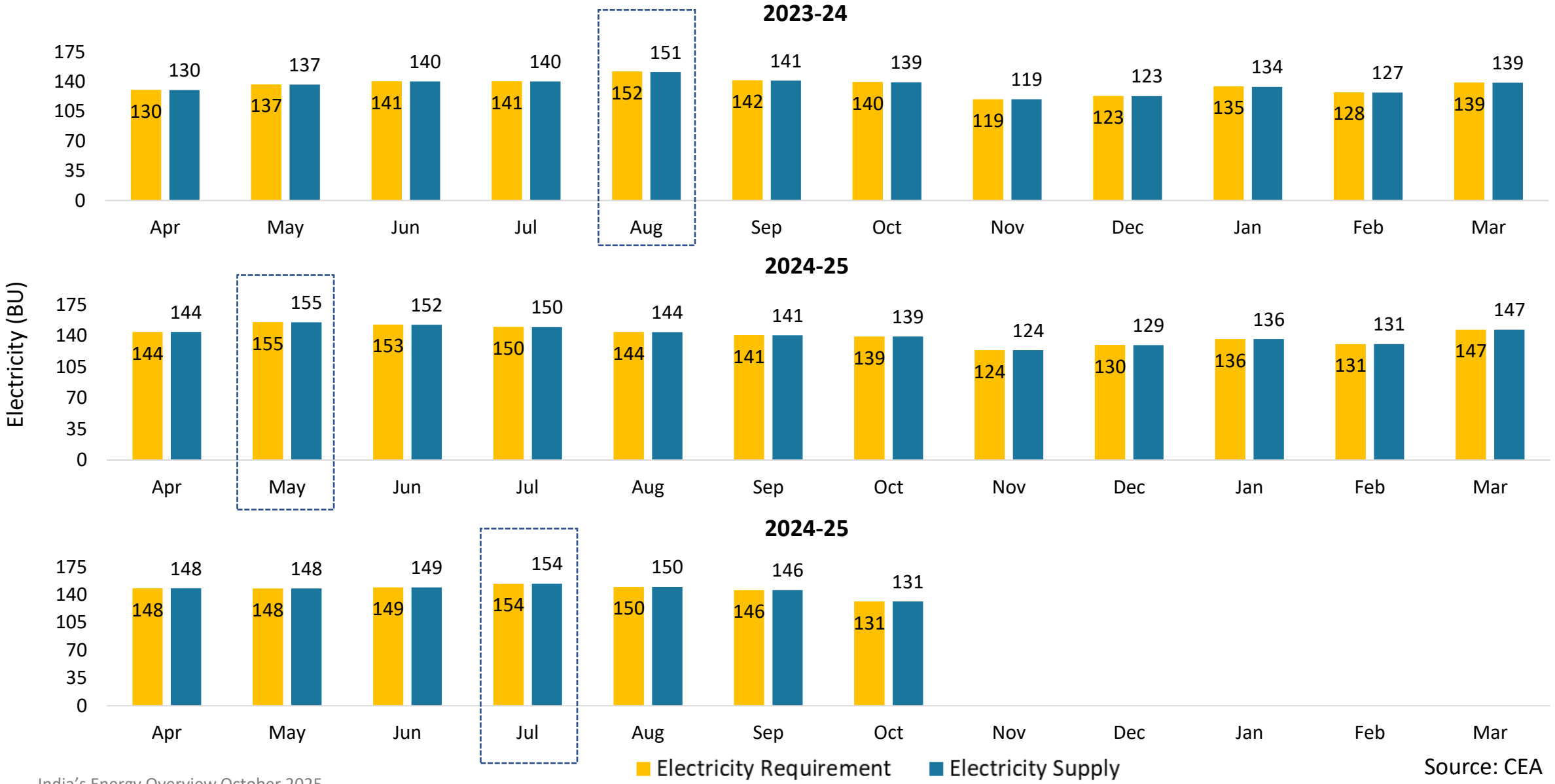
Month	Electricity Demand (BU)	Electricity Supply (BU)	Gap (BU) (+/-)
Oct'2023	140	139	0.4
Oct'2024	139	139	0.0
Oct'2025	131	131	0.0

Apr-Oct	Electricity Demand (BU)	Electricity Supply (BU)	Gap (BU) (+/-)
FY 2023-24	982	979	2.9
FY 2024-25	1,027	1,025	1.3
FY 2025-26	1,026	1,026	0.3

NOTE: The demand represented above includes intra state T&D losses.

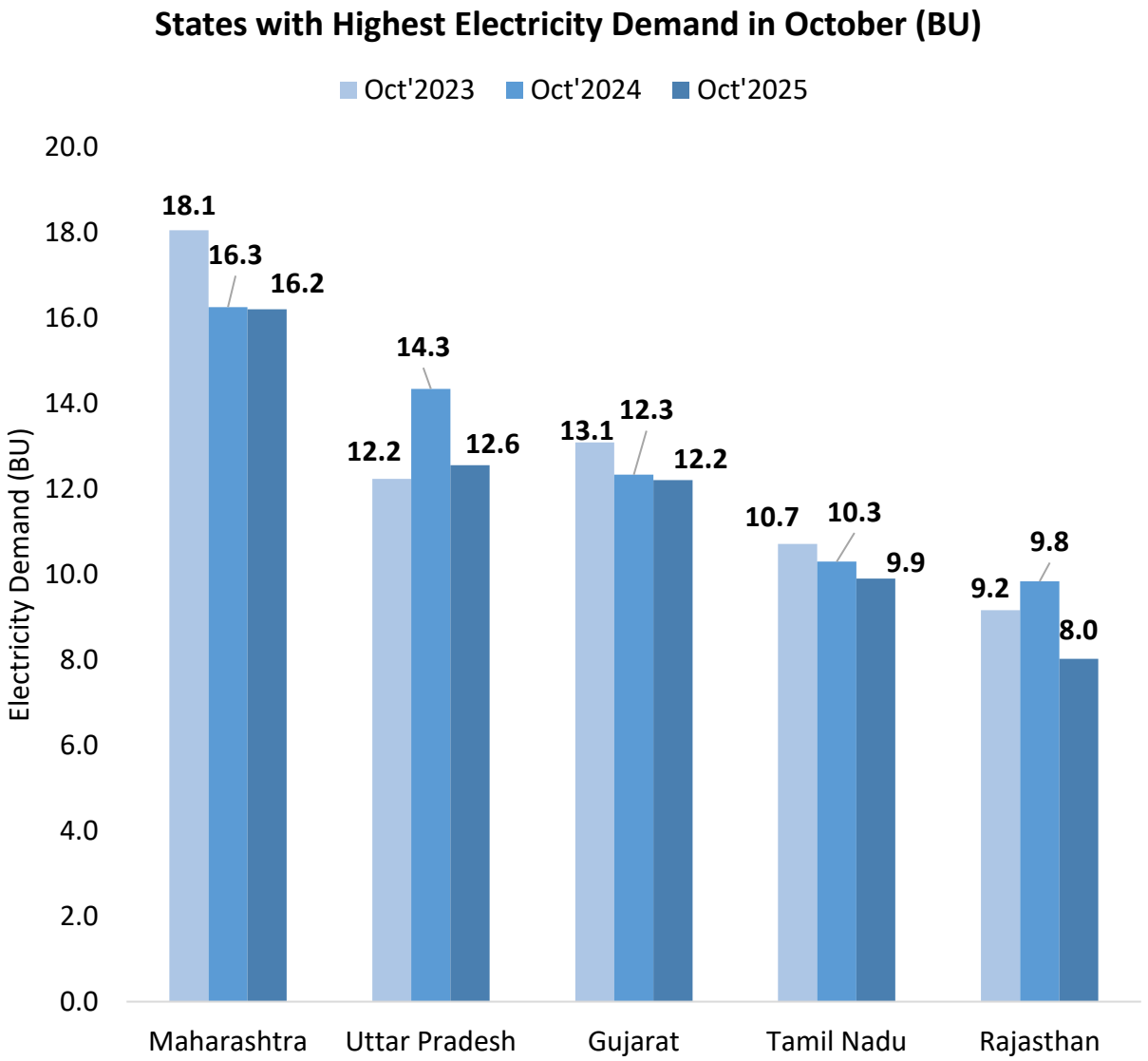
Source: CEA

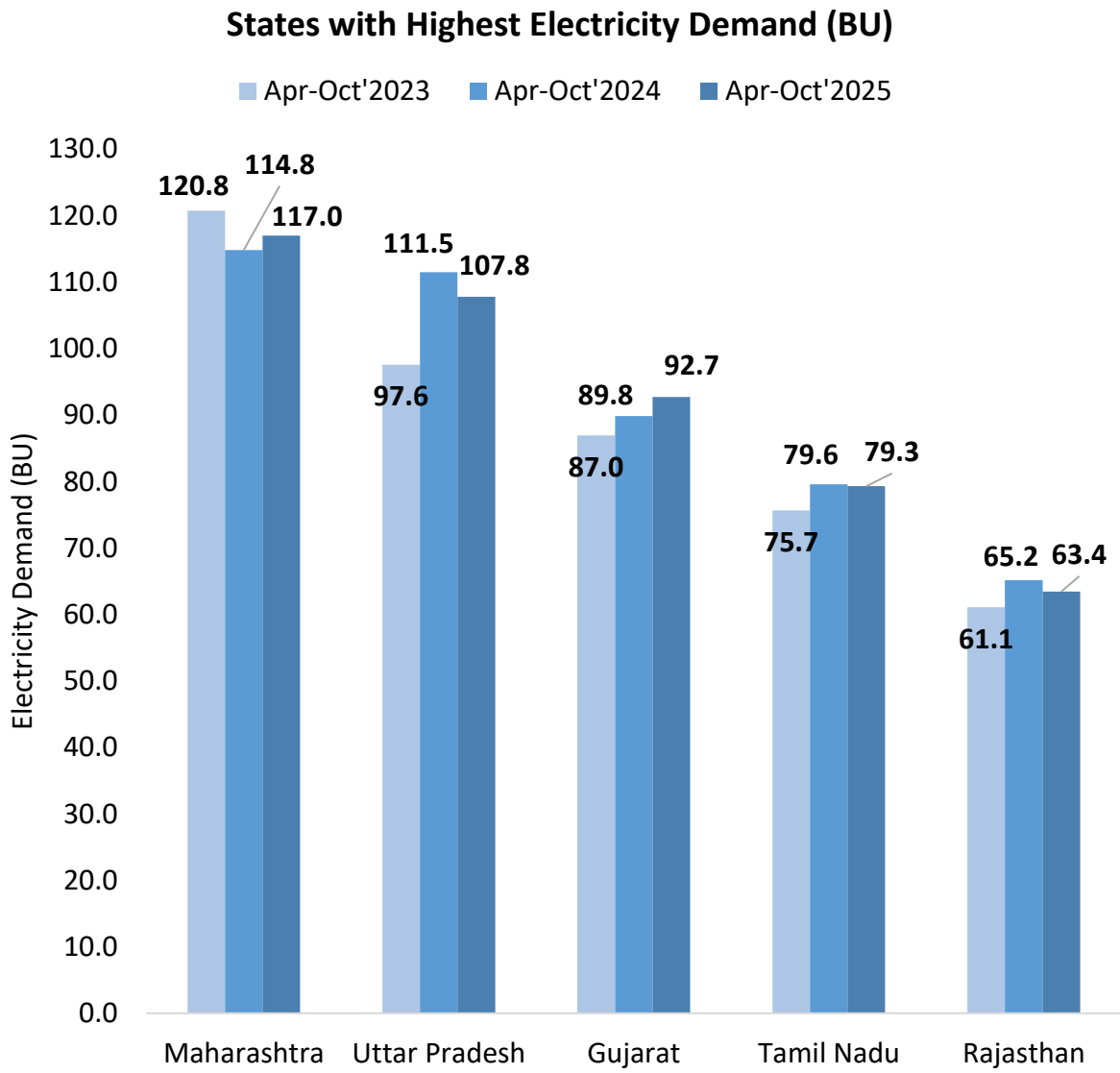
India’s Monthly Electricity Requirement and Supply



Source: CEA

Monthly Electricity Demand of the top 5 states

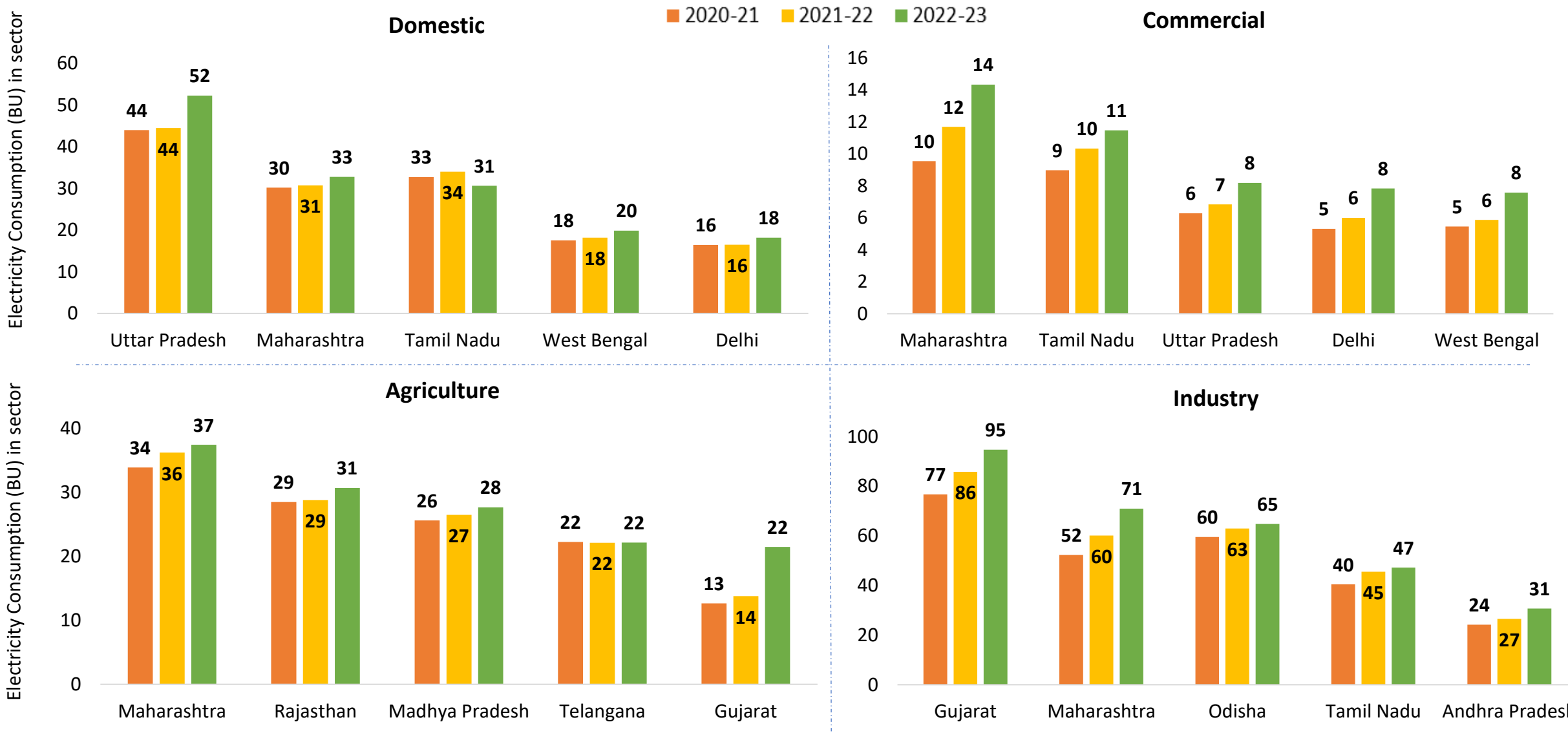




Note: The electricity demand data for Oct'25 is Provisional.

Source: CEA

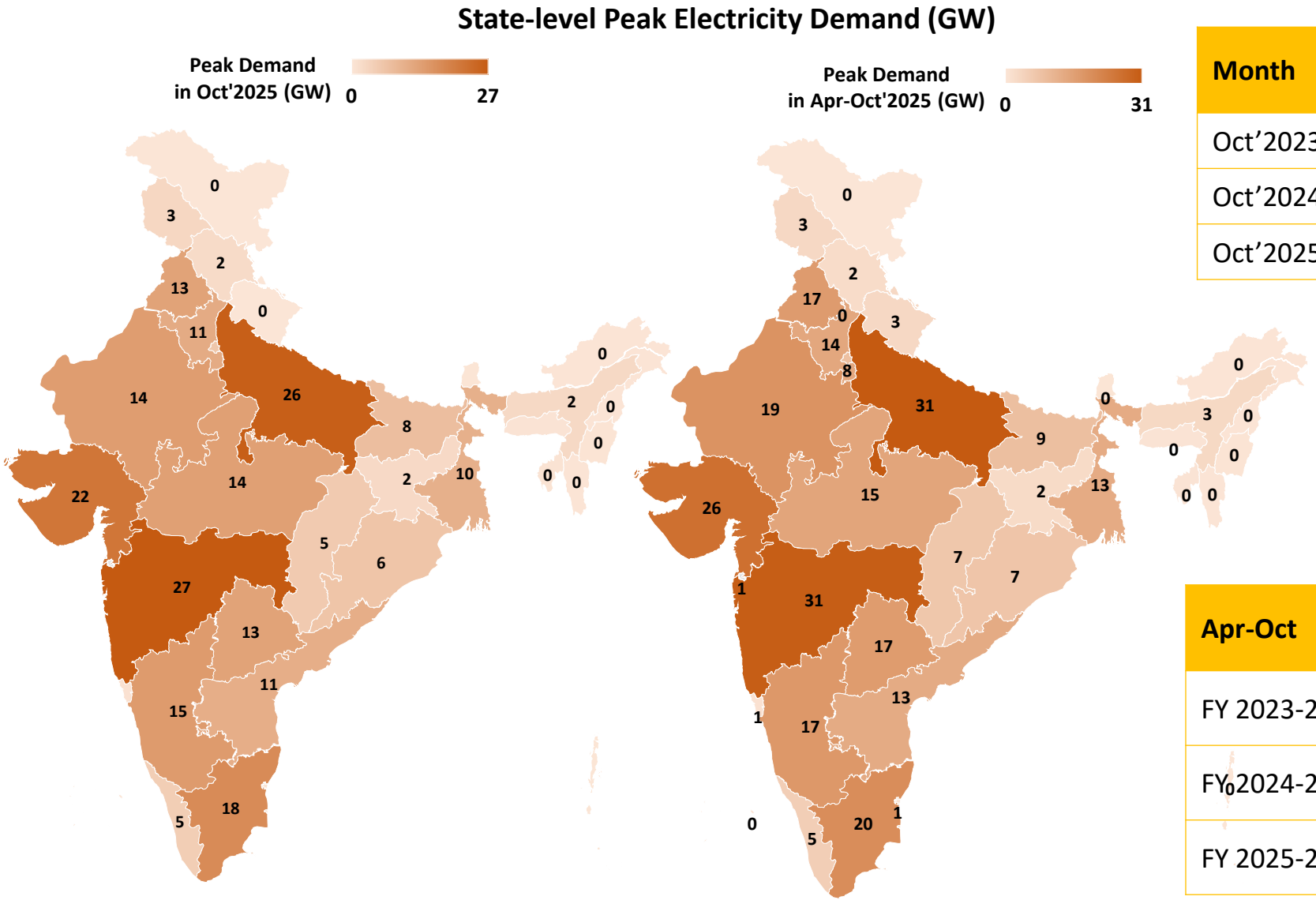
Electricity Consumer-category wise top 5 States



NOTE: Top 5 States under consumer-categories are selected on the basis of 2022-23

Source: CEA

National and State level Peak Electricity Demand



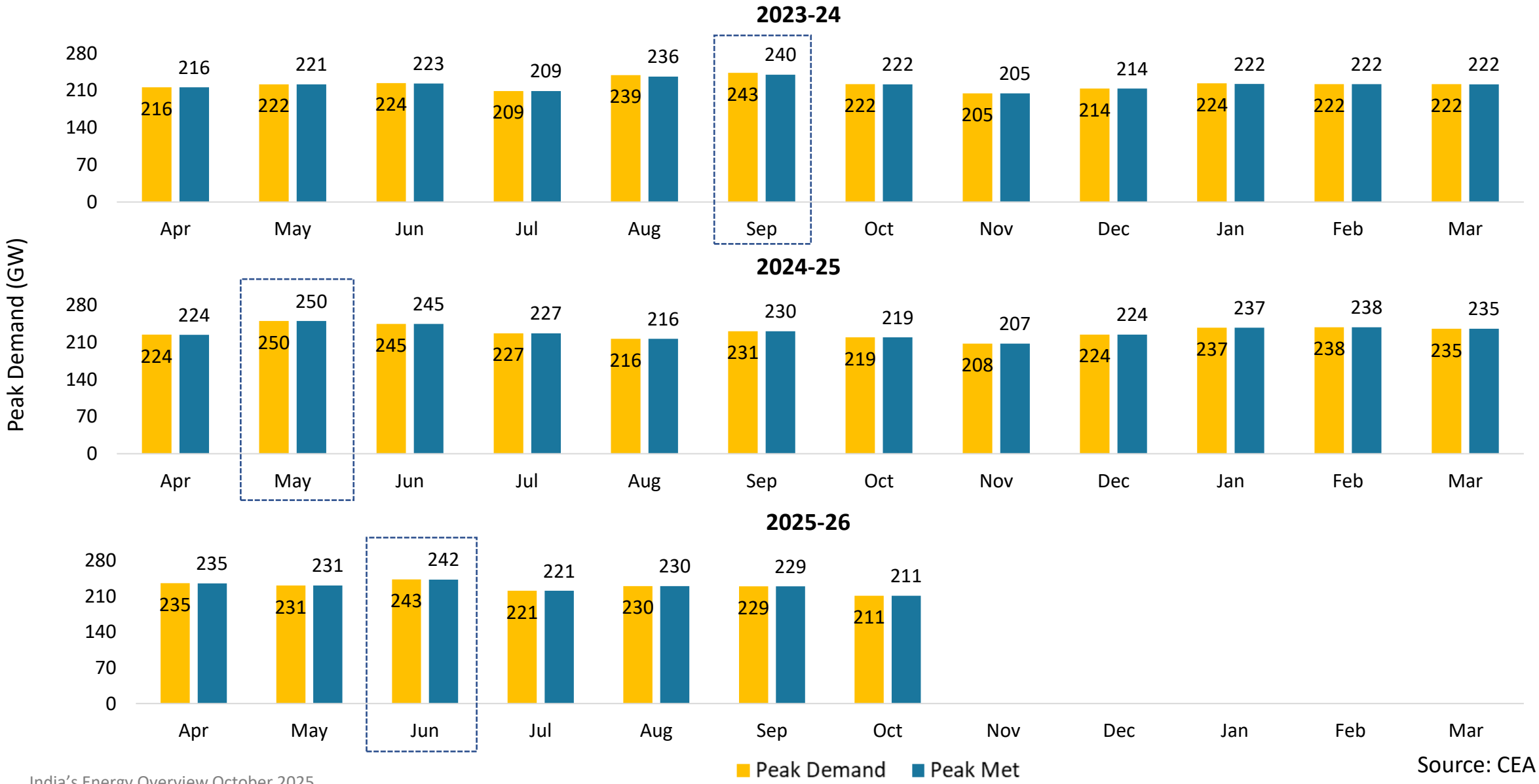
Month	Peak Demand (GW)	Peak Supply (GW)	Gap(GW) (+/-)
Oct'2023	222	222	0.6
Oct'2024	219	219	0.1
Oct'2025	211	211	0.0

Apr-Oct	Peak Demand (GW)	Peak Supply (GW)	Gap (GW) (+/-)
FY 2023-24	243	240	3.3
FY 2024-25	250	250	0.0
FY 2025-26	243	242	0.3

Note: The peak electricity demand data for Oct'25 is Provisional.

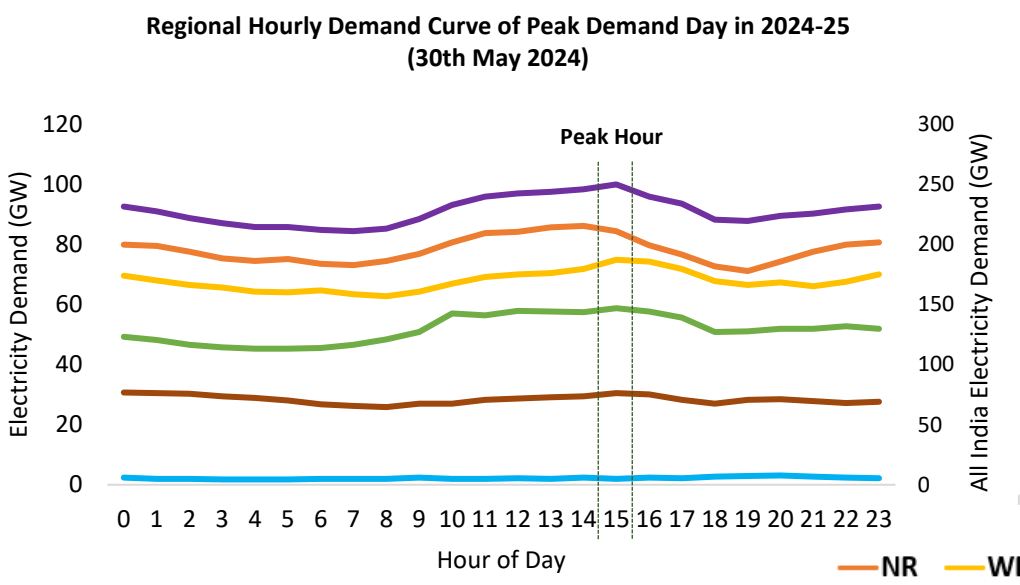
Source: CEA

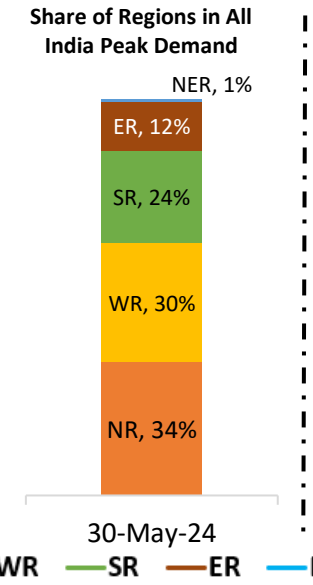
India’s Monthly Peak Electricity Demand and Supply

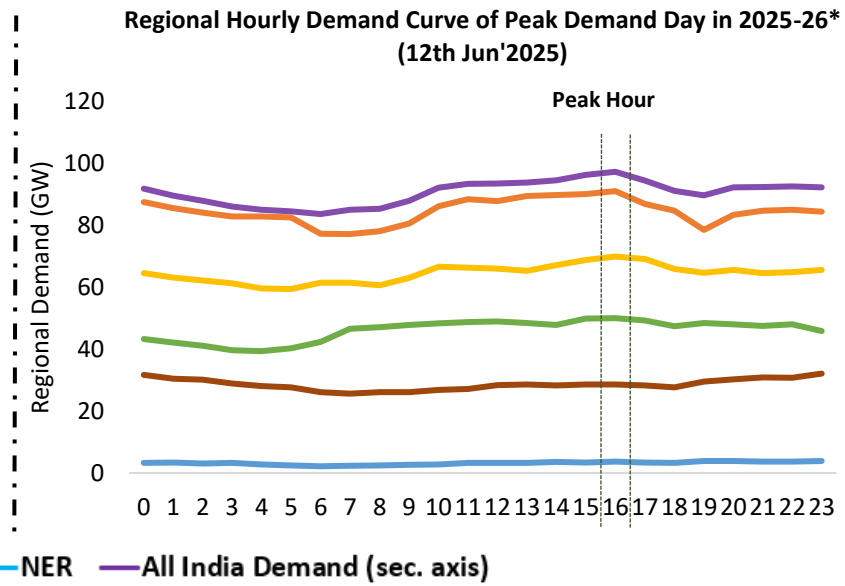


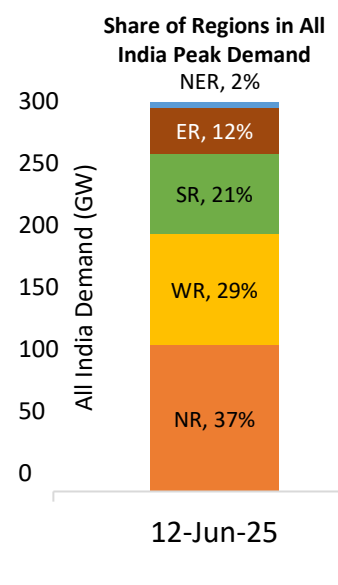
Source: CEA

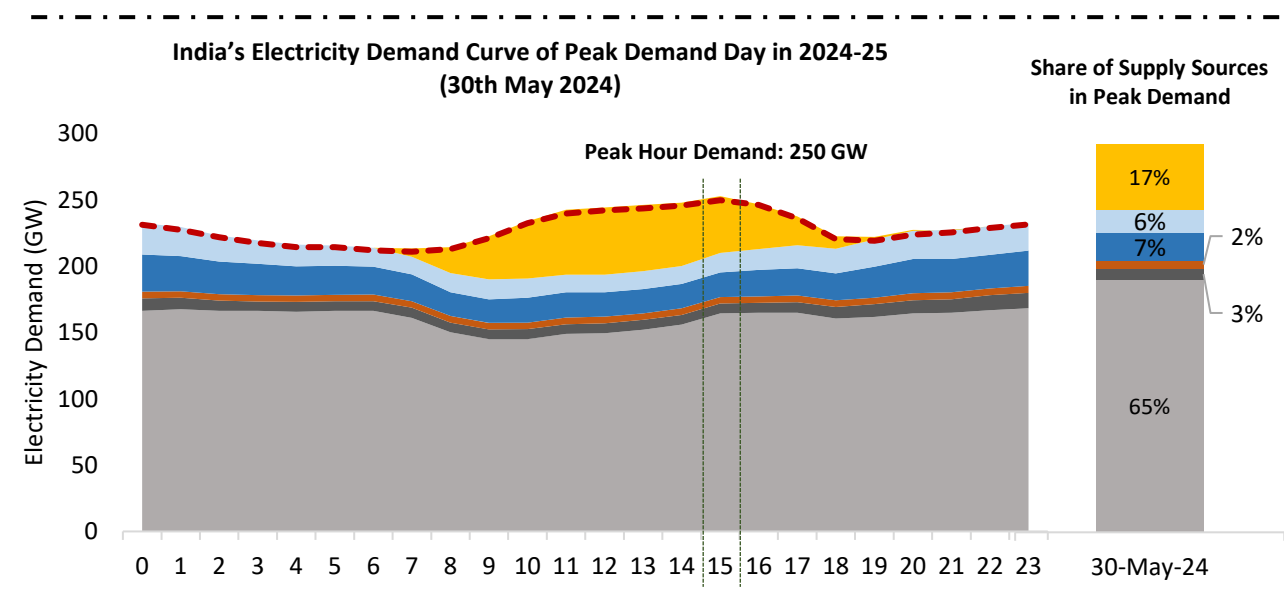
All India and Regional Electricity Demand Curve of Peak Demand Day

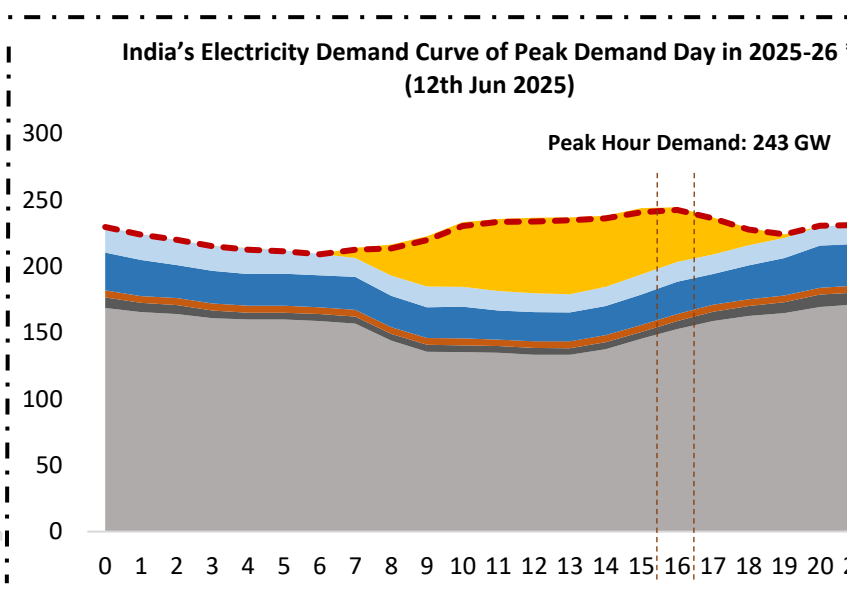


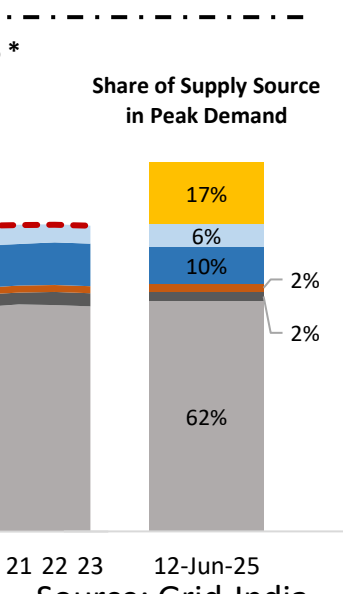










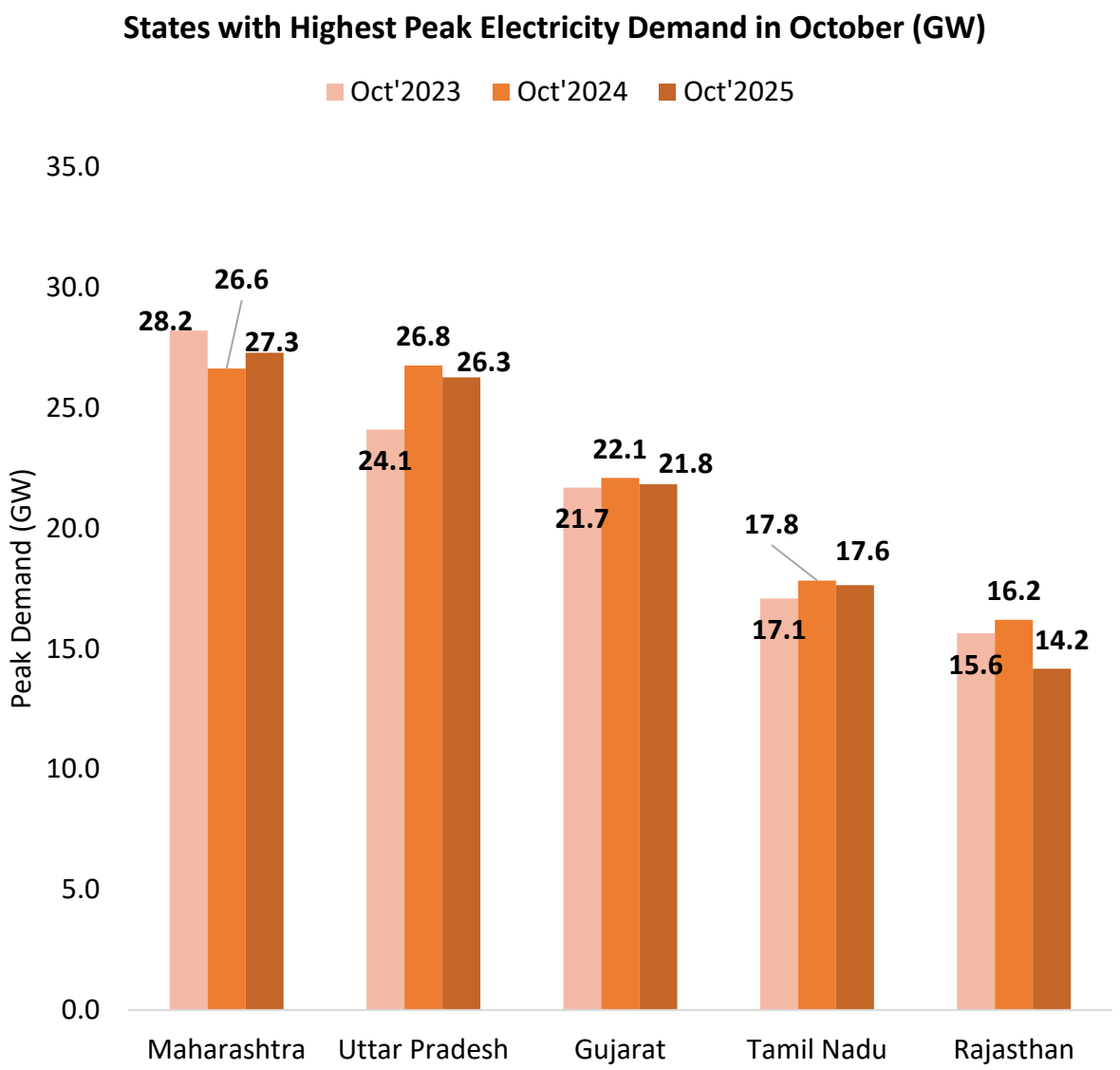


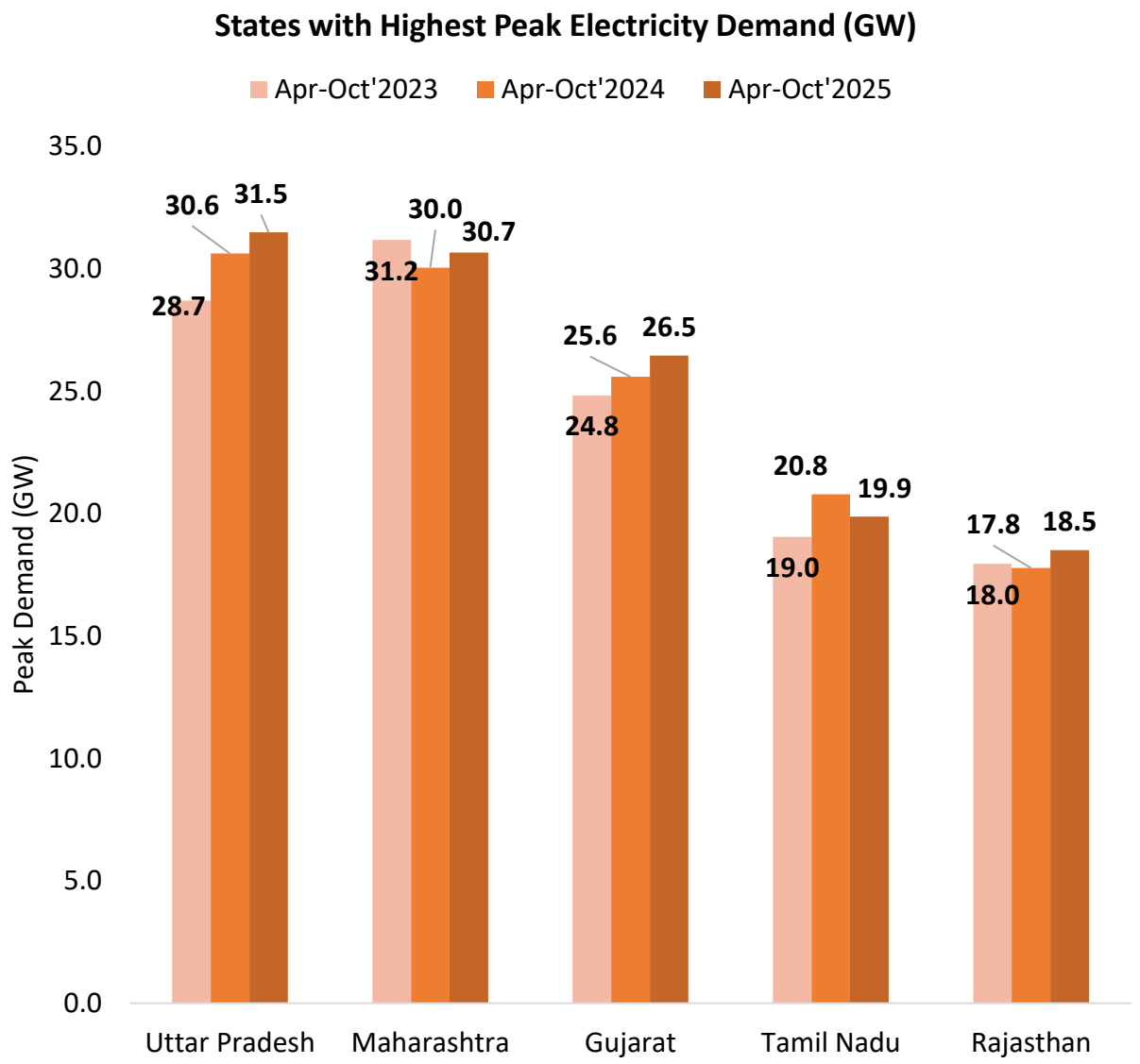
NR WR SR ER NER All India Demand (sec. axis)

Coal Gas Nuclear Hydro Wind Solar Gross Demand

Source: Grid-India

Monthly Peak Electricity Demand of the top 5 states

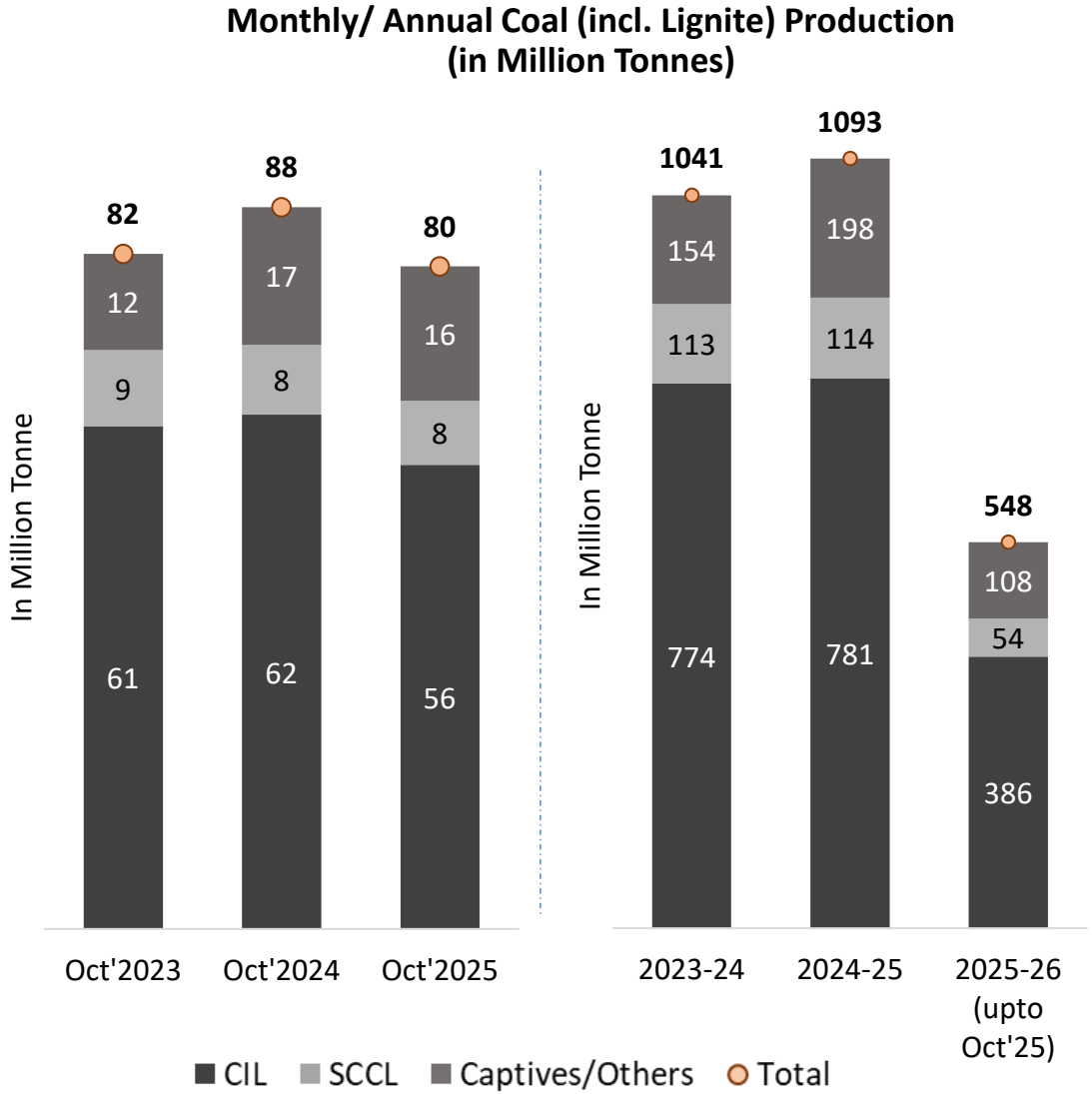




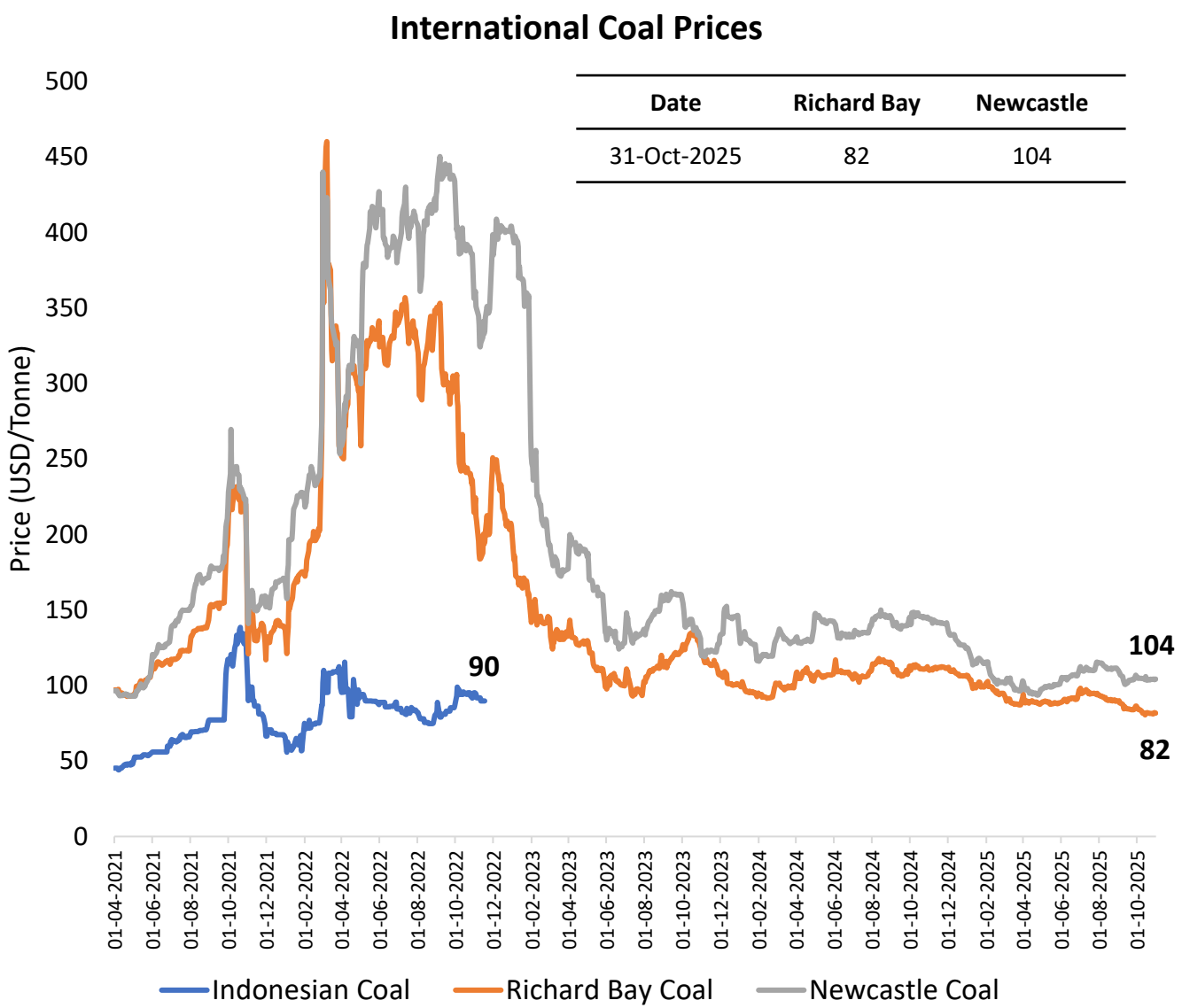
Note: The peak electricity demand data for Oct'25 is Provisional.

Source: CEA

Monthly Coal Statistics



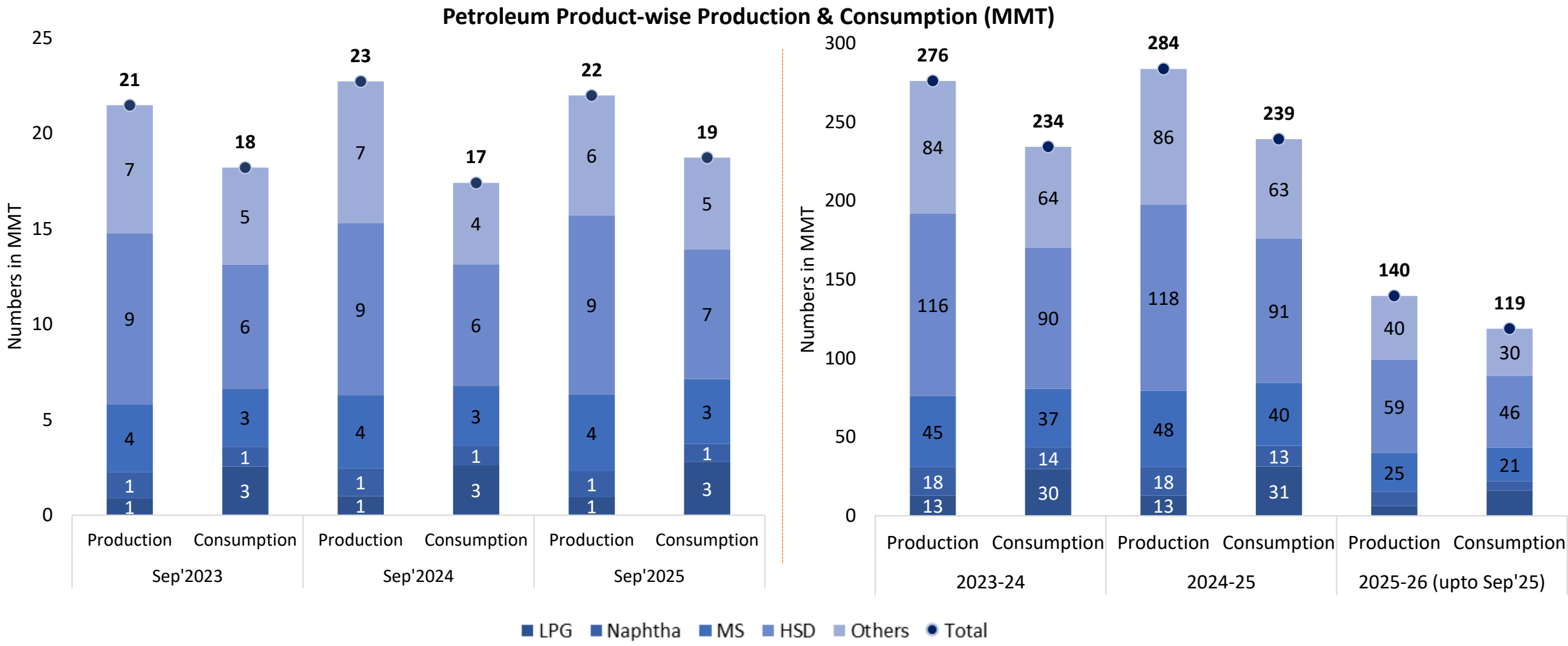
Source: Ministry of Coal



Date	Richard Bay	Newcastle
31-Oct-2025	82	104

Source: Investing.com

Oil Market Scenario (1/3)



Others include ATF, SKO, LDO, Lubes, FO, LSHS, Bitumen, pet coke, and others.

Abbreviations: ATF- Aviation Turbine Fuel, FO- Furnace Oil, HSD- High-Speed Diesel, LDO- Light Diesel Oil, MS- Motor Spirit (Petrol), SKO- Superior Kerosene Oil, LSHS- Low Sulphur Heavy Stock, LPG- Liquefied Petroleum Gas, MMT- Million Metric Tonne

NOTE: The data is available latest up to September 2025.

Source: PPAC

Oil Market Scenario (2/3)

Import/Export of Crude Oil and Petroleum Products ('000 Tonnes)							
Petroleum Products	Import/ Export	Monthly			Yearly		
		Sep'23	Sep'24	Sep'25	2023-24	2024-25	2025-26 (up to Sep'25)
Crude Oil	Import	17502	18789	19934	234262	243225	121054
	Export	0	0	0	0	0	0
	Net Import	**17502**	**18789**	**19934**	**234262**	**243225**	**121054**
LPG	Import	1620	1656	1856	18514	20667	10842
	Export	40	41	48	525	551	283
	Net Import	**1580**	**1615**	**1808**	**17989**	**20116**	**10558**
Diesel	Import	5	0	3	42	42	12
	Export	2326	2694	3105	28204	28027	13820
	Net Import	**-2321**	**-2693**	**-3102**	**-28162**	**-27985**	**-13807**
Petrol	Import	151	64	0	717	235	0
	Export	993	1245	1569	13472	15830	8236
	Net Import	**-842**	**-1181**	**-1569**	**-12755**	**-15596**	**-8236**
Others	Import	2286	1919	2540	29419	29960	14062
	Export	1459	2506	1461	20391	20667	9562
	Net Import	**827**	**-587**	**1078**	**9029**	**9293**	**4500**

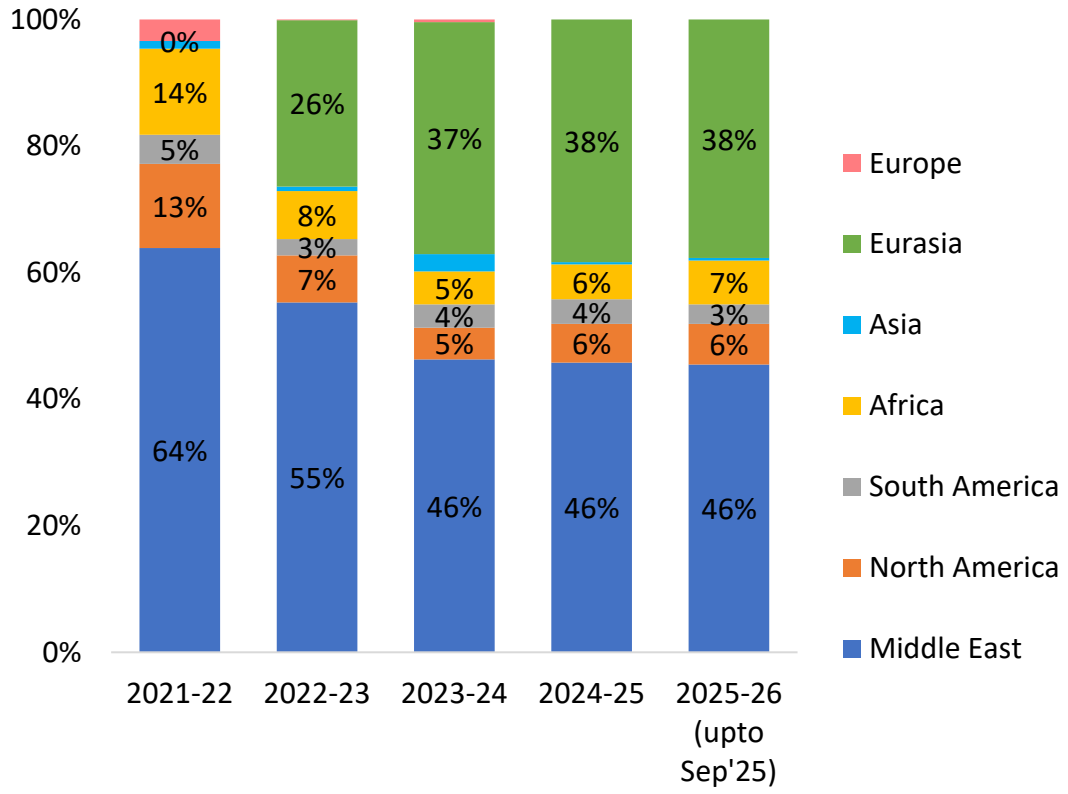
*Others include ATF, Naphtha, SKO, LDO, Lubes, FO, LSHS, Bitumen, pet coke, and others.

NOTE: The data is available latest up to September 2025.

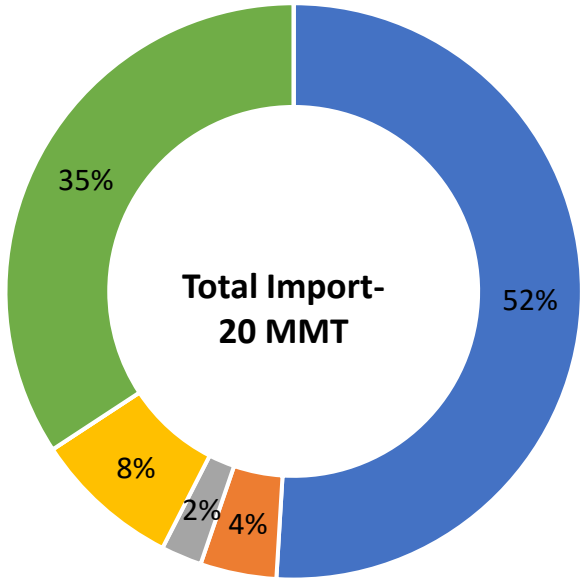
Source: PPAC

Oil Market Scenario (3/3)

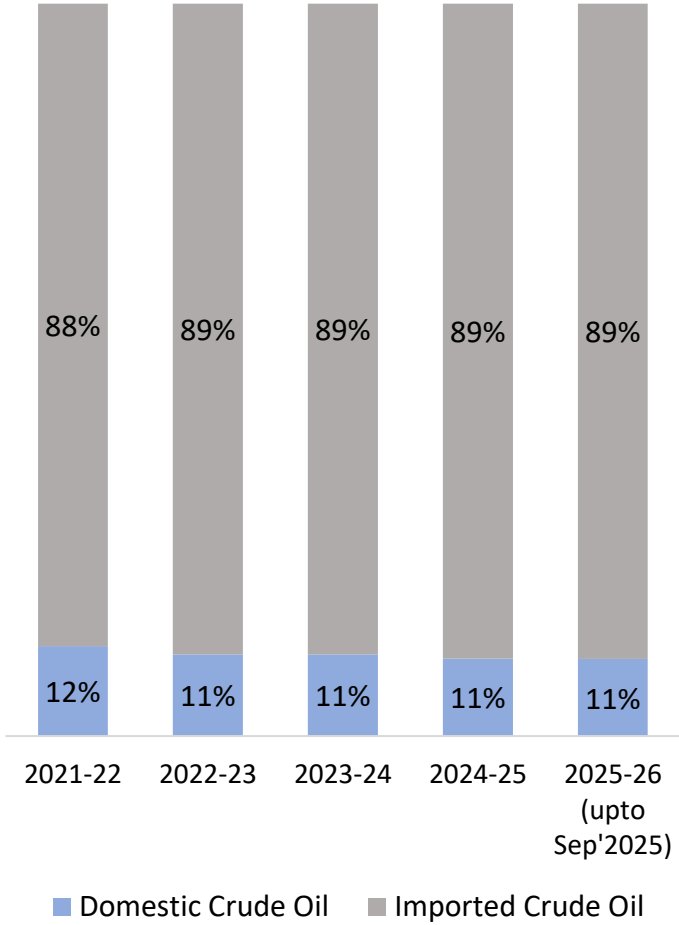
Region-wise Share in Import of Crude Oil (%)



Regional share of Imported Crude oil in September 2025



Domestic and Imported Crude Oil share in India (%)

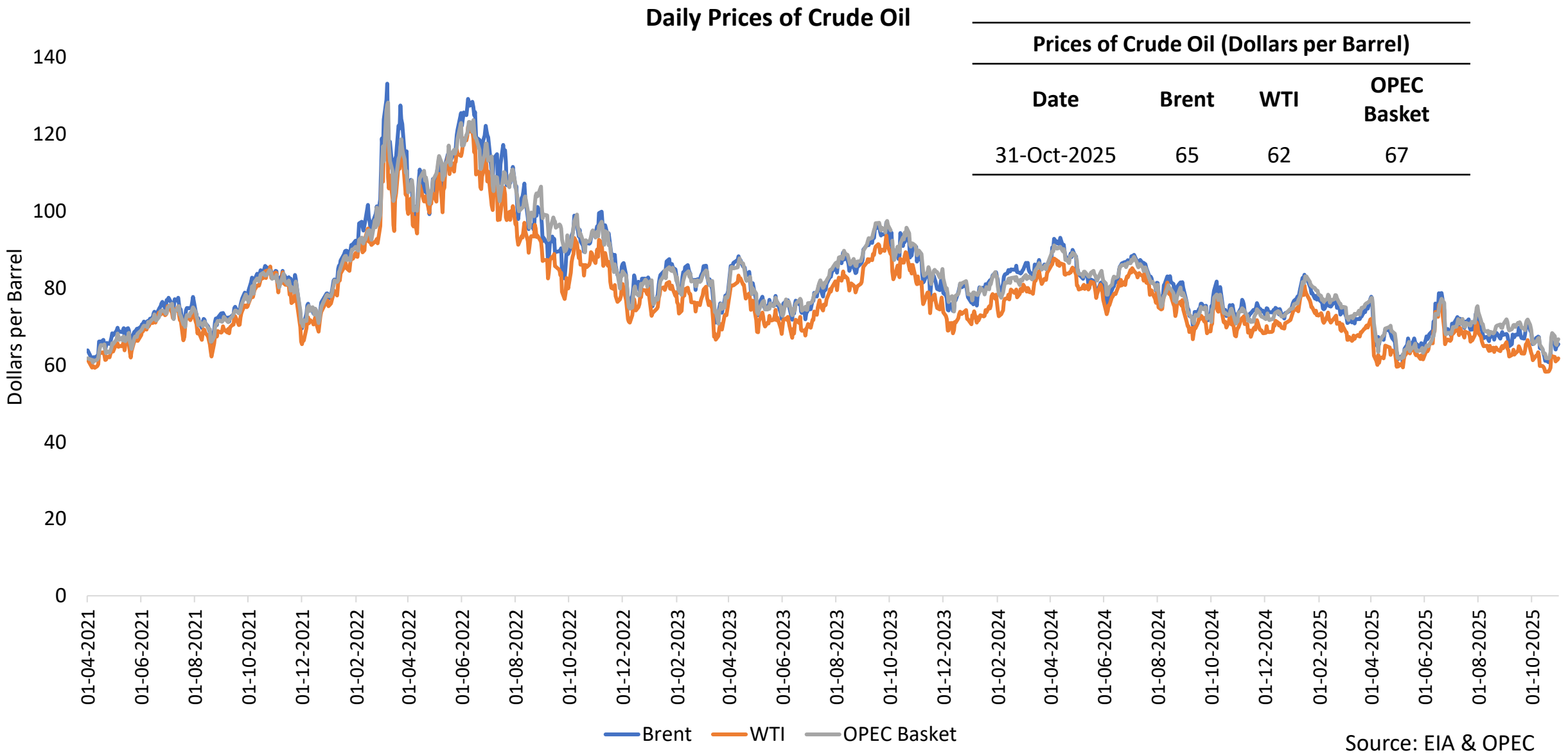


Total Import of Crude Oil (MMT)			
Total Import	2023-24	2024-25	2025-26 (up to Sep'25)
Crude Oil	**234**	**243**	**121**

NOTE: The data is based on the latest available information.

Source: MoPNG and PPAC

Daily Prices of Crude Oil

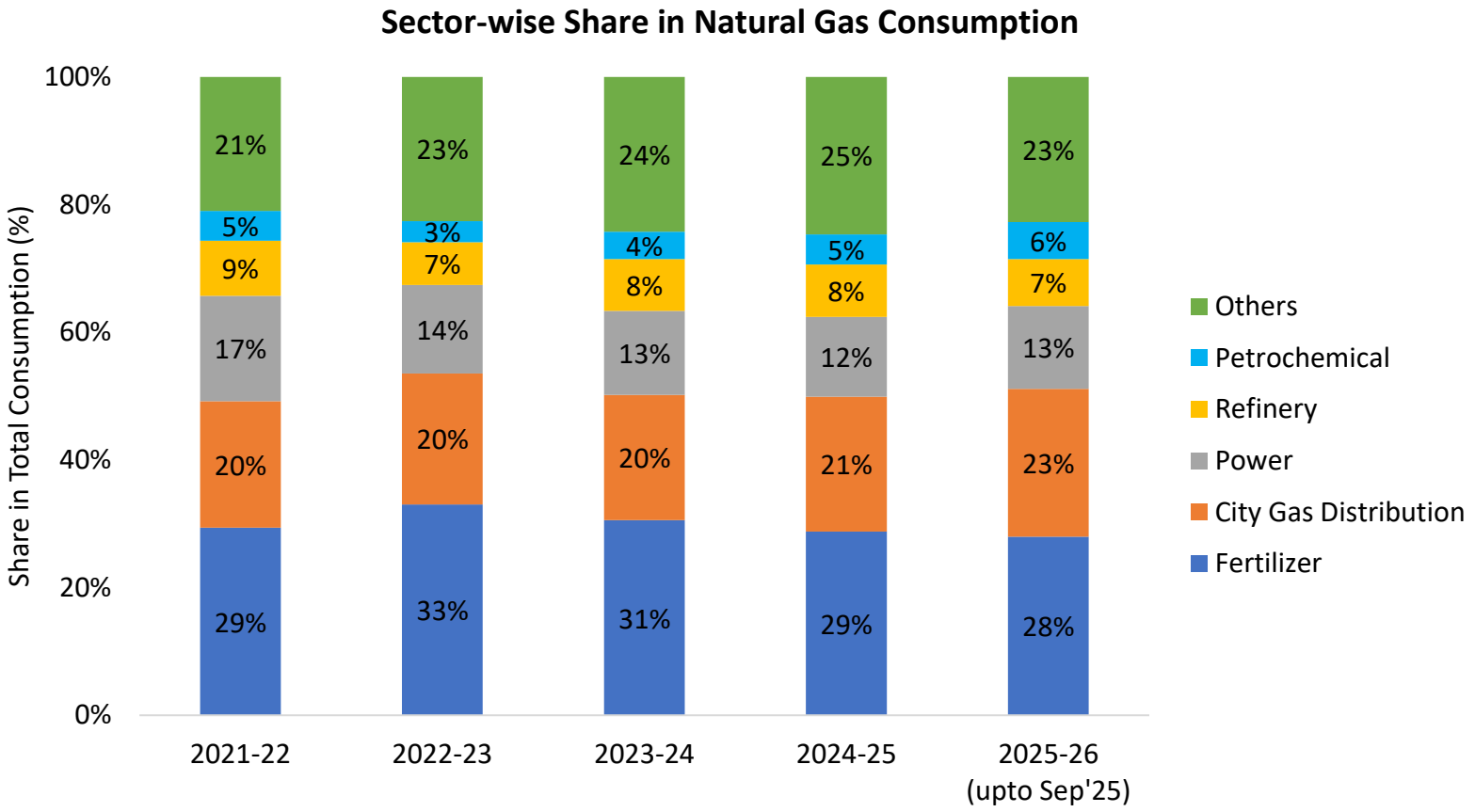


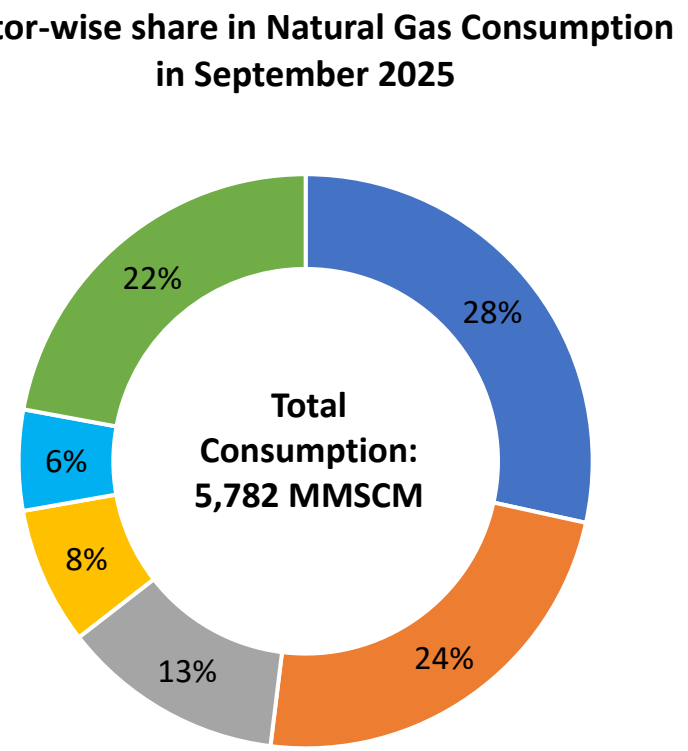
Prices of Crude Oil (Dollars per Barrel)

Date	Brent	WTI	OPEC Basket
31-Oct-2025	65	62	67

Source: EIA & OPEC

Gas Market Scenario (1/2)





Total Consumption of Natural Gas (NG) (MMSCM)					
Total Consumption	2021-22	2022-23	2023-24	2024-25	2025-26 (up to Sep'25)
Natural Gas	**61,491**	**58,702**	**68,809**	**71,196**	**34,867**

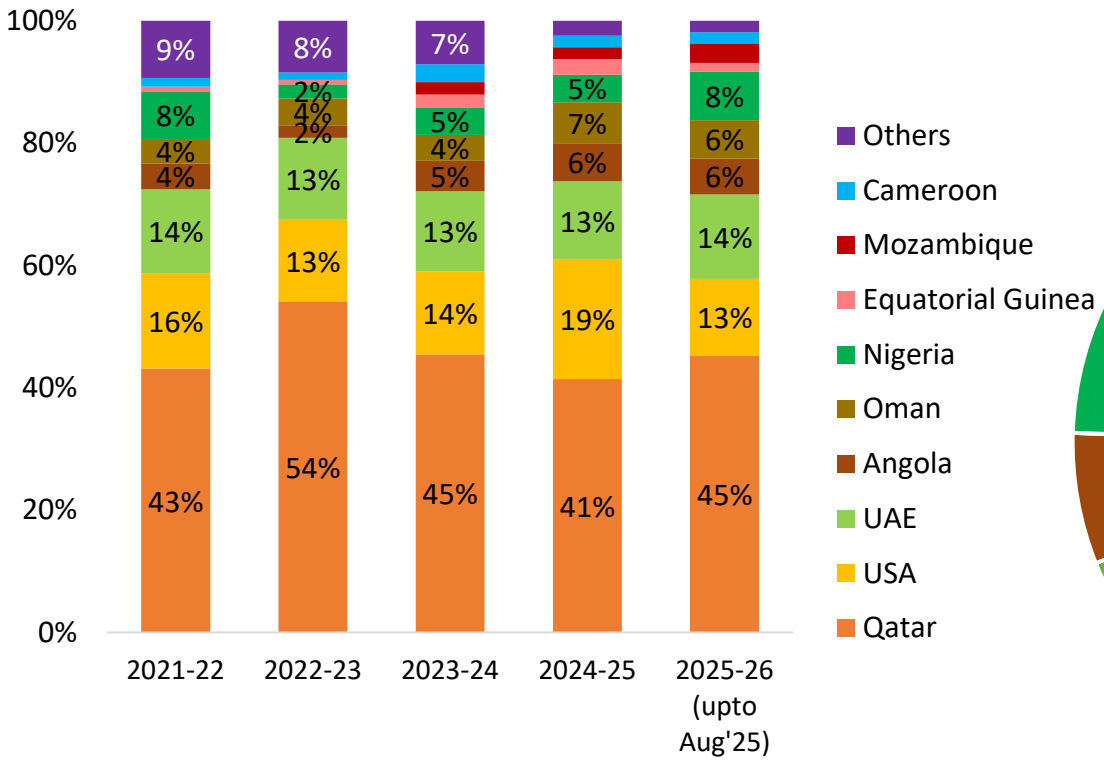
Others include- Internal Combustion of Pipeline System, Industrial, Sponge iron/steel, LPG shrinkage, Manufacturing, Agriculture (tea plantation), Others

NOTE: The data is available latest up to September 2025

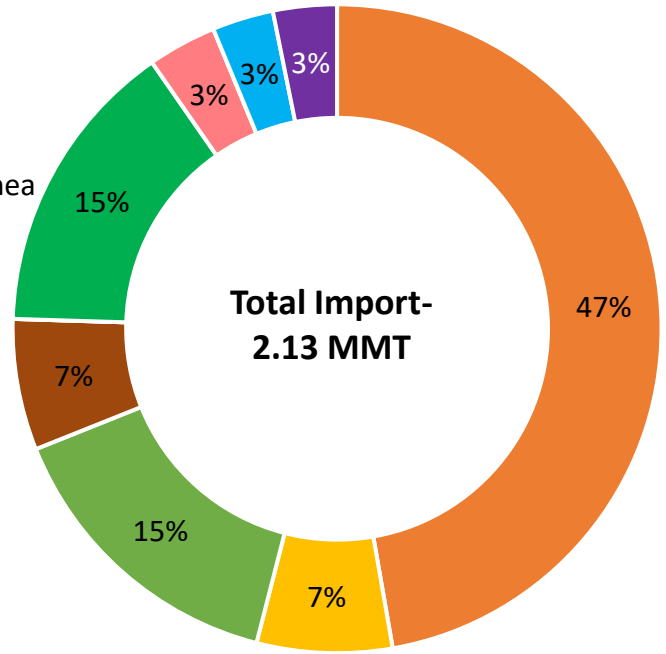
Source: PPAC

Gas Market Scenario (2/2)

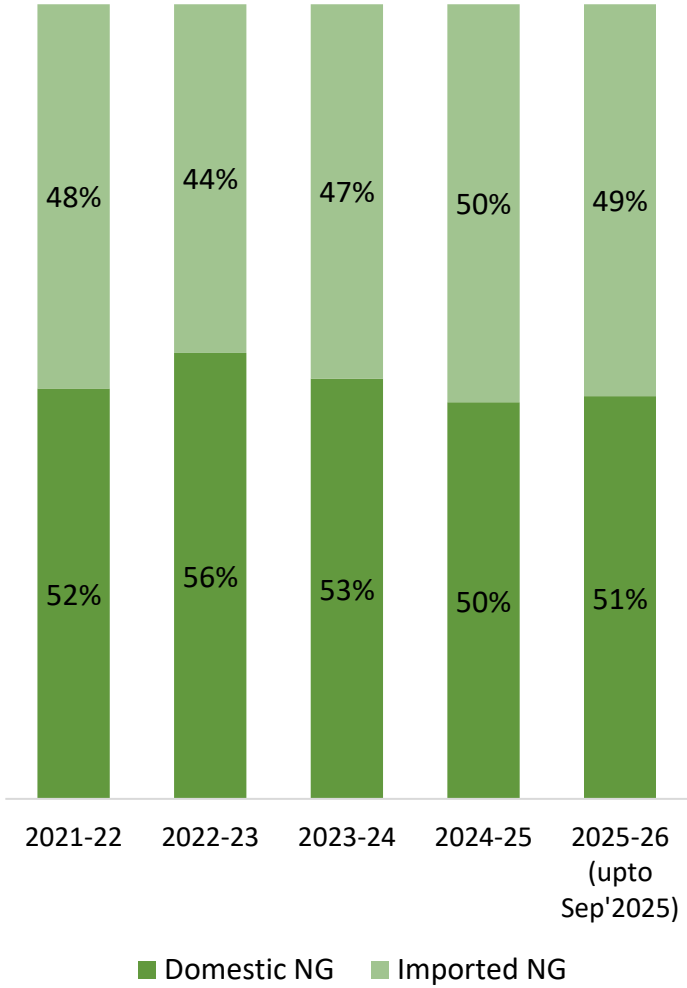
Region-wise Share in Import of LNG (%)



Country Share of Imported LNG in August 2025



Domestic and Imported Natural Gas share in India (%)



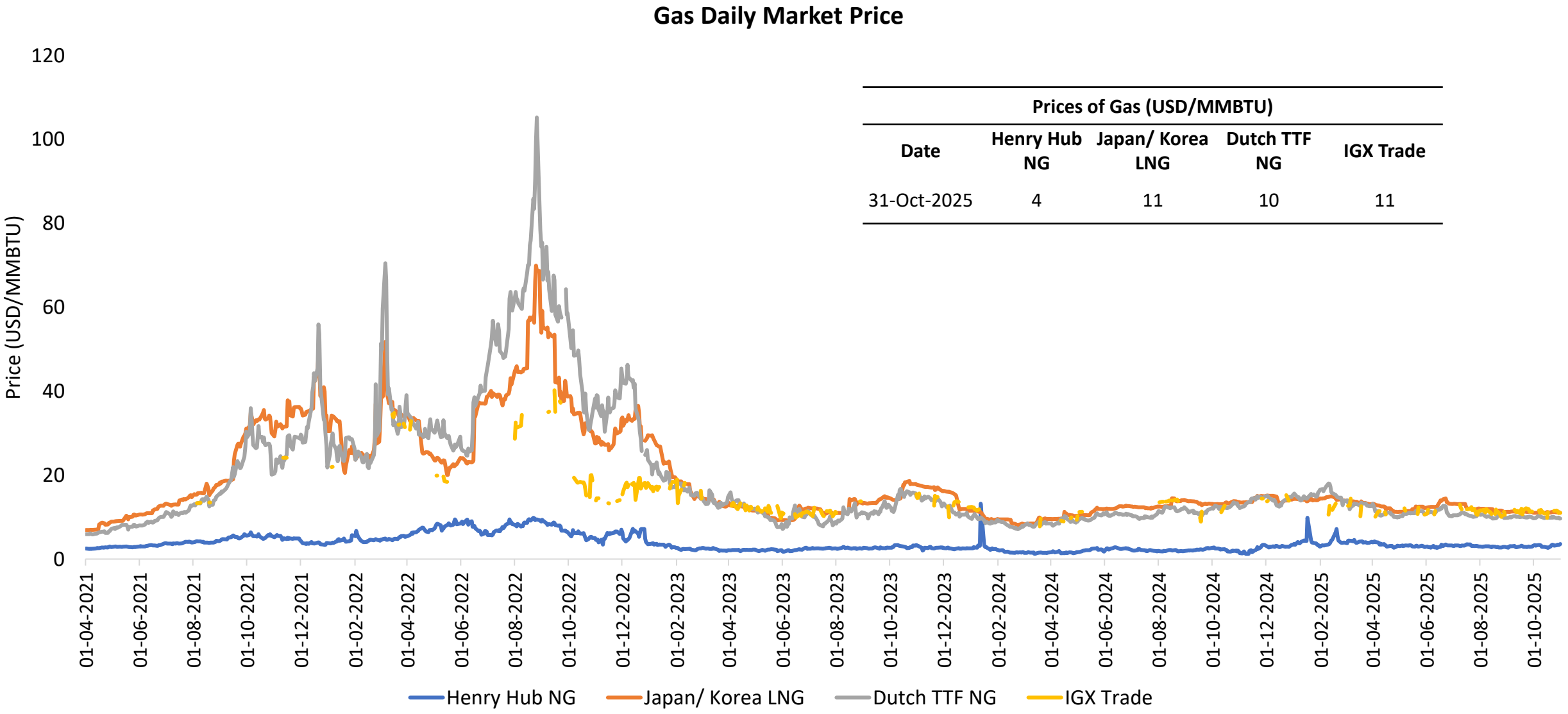
Others include- Trinidad, Cameroon, Egypt, France, Algeria, Belgium, Indonesia, Turkey, Russia, Spain, Malaysia, Brunei, Netherlands, Norway, and others.

Total Import of Liquified Natural Gas (LNG) (MMT)			
Total Import	2023-24	2024-25	2025-26 (up to Sep'25)
LNG	**24.00**	**26.96**	**12.76**

NOTE: The data is based on the latest available information.

Source: MoCI and PPAC

Daily Prices of Gas



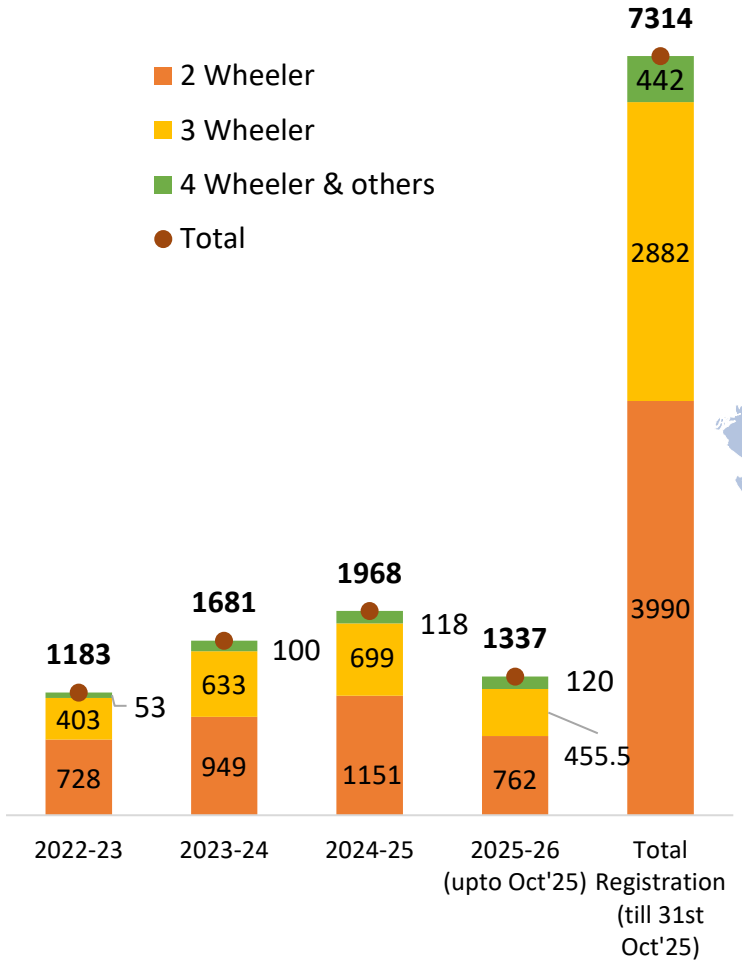
Prices of Gas (USD/MMBTU)				
Date	Henry Hub NG	Japan/ Korea LNG	Dutch TTF NG	IGX Trade
31-Oct-2025	4	11	10	11

MMBTU- Million Metric British Thermal Unit

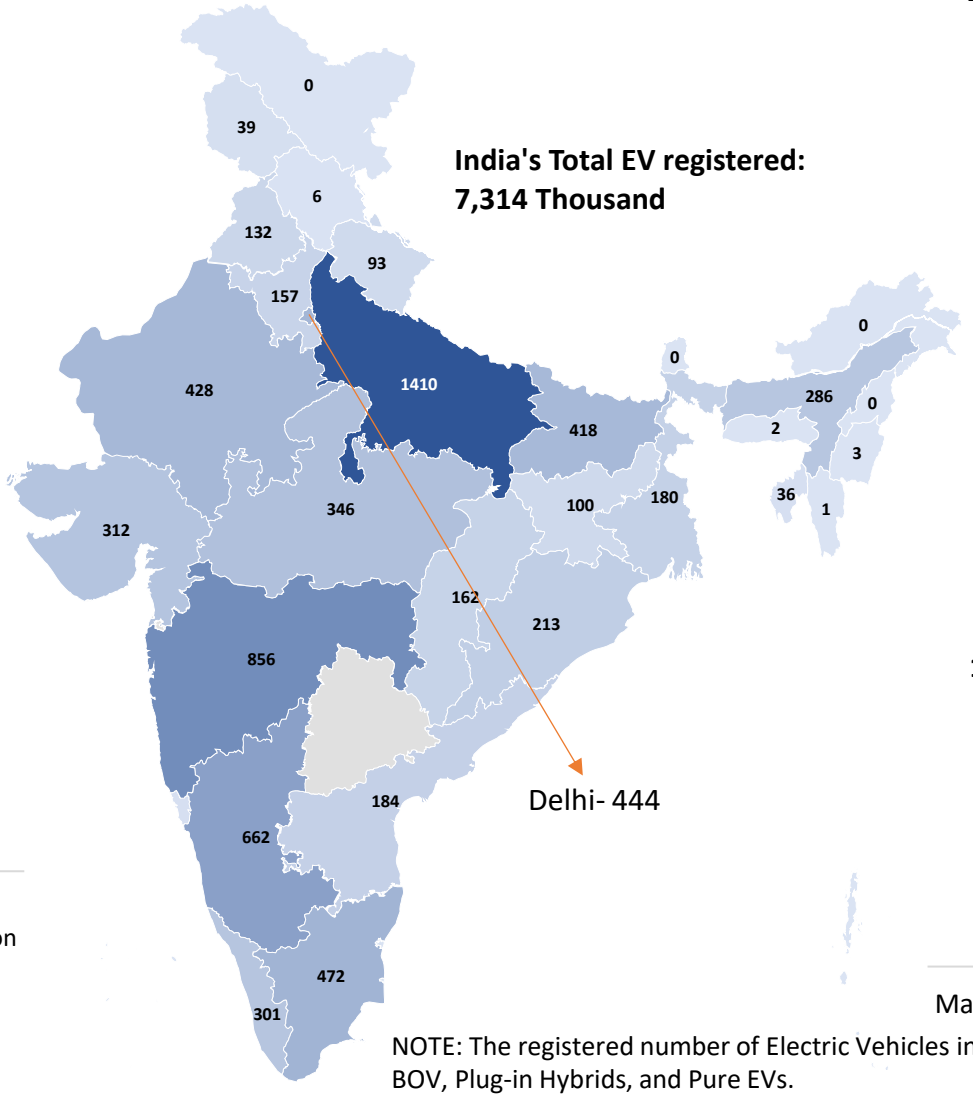
Source: EIA, Investing.com, IGX

Status of Electric Mobility in India

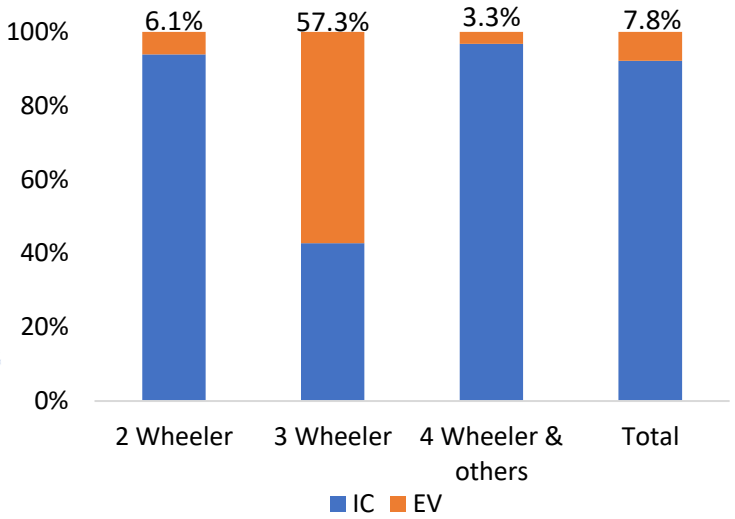
National EV registration (Number in Thousands)



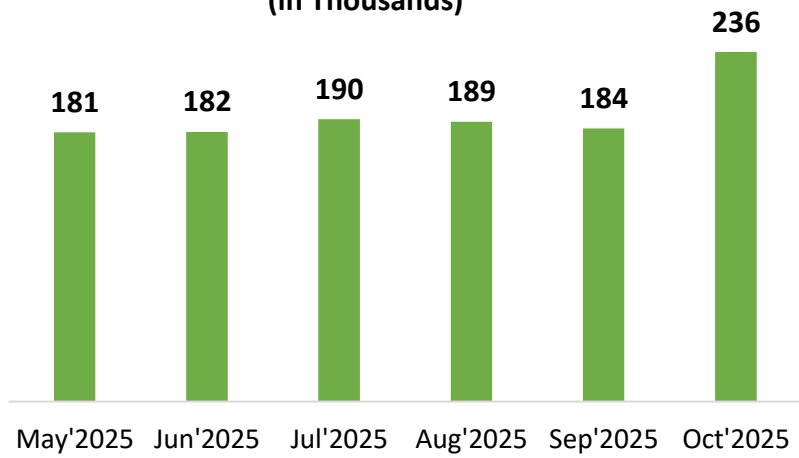
Cumulative State-wise EV registration as on 31st October 2025 (in Thousands)



EV and ICE sale composition in 2024-25



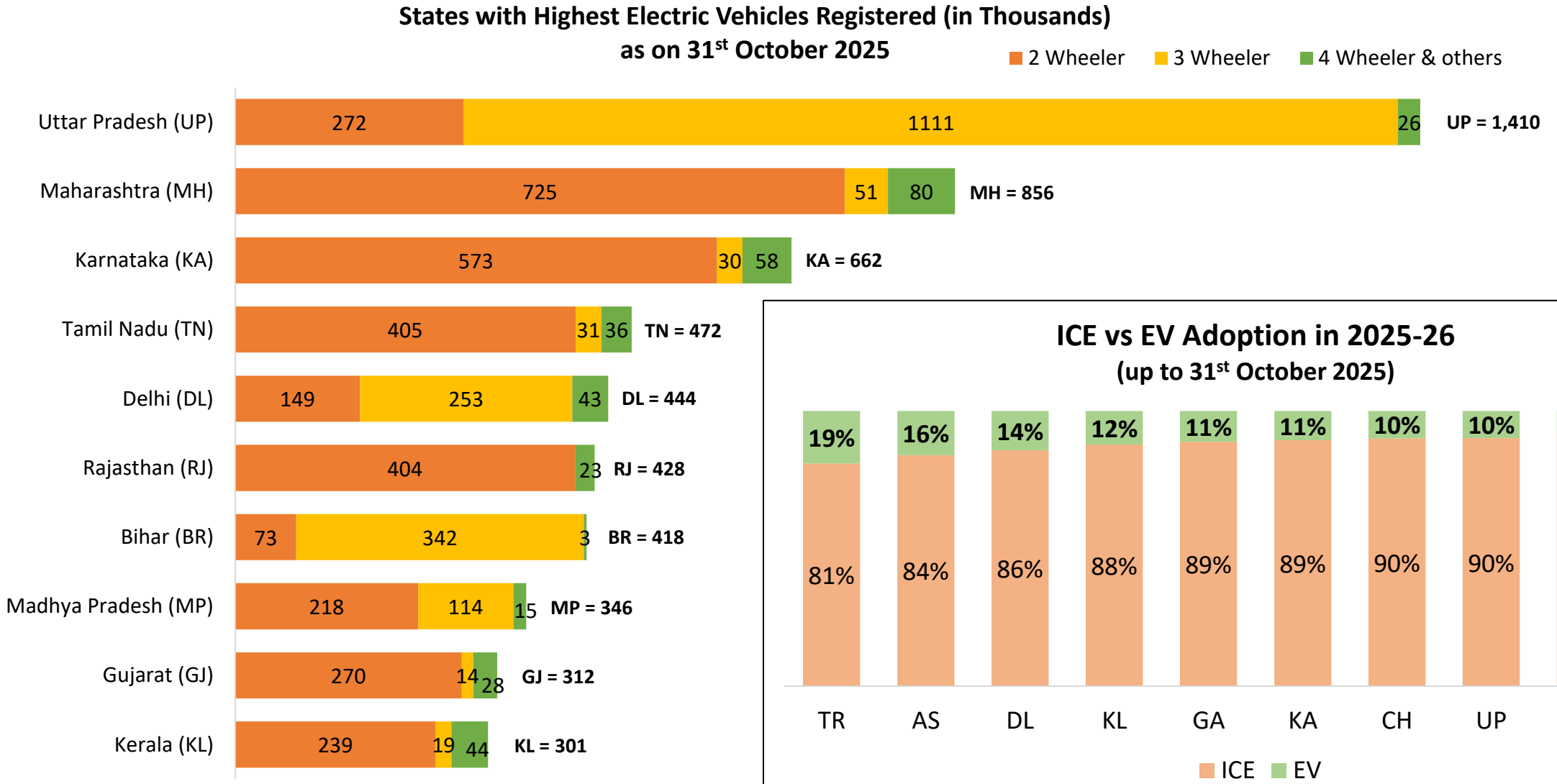
Provisional Monthly EV registered (in Thousands)



NOTE: The registered number of Electric Vehicles includes Electric BOV, Plug-in Hybrids, and Pure EVs.

Source: VAHAN Dashboard

Status of Electric Mobility in India



NOTE: AS- Assam, CH- Chandigarh, GA- Goa, OD- Odisha, TR- Tripura

Source: VAHAN Dashboard

Recent Interventions to promote Renewable Energy

Solar

Under the PLI scheme, the GOI has announced INR 19,500 crores to incentivize the manufacturing of domestic solar PV modules.

PM-Surya Ghar: Muft Bijli Yojana relaesed with a total outlay of Rs. 75,021 crore for installing rooftop solar (RTS) for one crore households. The scheme provides a CFA of Rs 30,000 for a 1 kW RTS system, Rs 60,000 for a 2kW RTS system, and Rs 78,000 for a 3kW RTS system.

The inter-state transmission charges are waived for 25 years for the projects being commissioned before 30th June 2025.

The updated RPO compliance supports solar integration of up to 33.57% of the electricity purchased by DISCOMs/states till the year 2029-30.

PM KUSUM scheme has been extended till Mar'26 to install pump sets up to 15 HP in selected areas.

Wind

Reverse auctions have been scrapped for wind projects. A traditional two-part (technical and financial) bid system has been put in place.

To support off-shore wind, SECI will invite bids for up to 4GW to set up offshore wind plants off the coast of Tamil Nadu and Gujarat.

The ISTS charges are waived for 25 years for the onshore projects being commissioned before 30th June 2025 and for off-shore projects on or before 31st December 2032.

The updated RPO compliance supports WIND integration of up to 6.94% of the electricity purchased by DISCOMs/states till the year 2029-30.

The National Repowering & Life Extension Policy for Wind Power Projects- 2023, for wind power projects is released for the optimum utilization of wind energy resources by maximizing energy (kWh) yield per sq. km of the wind project areas.

The GoI has decided to invite bids for 50 GW of RE annually, which includes up to 10 GW of wind capacity.

Energy Storage

Ministry of Power has released the guidelines for the development of PSP with the target of 26.7 GW of PSP and 47.2 GW of BESS to integrate with RE capacity till 2032.

PLI scheme unveiled for setting up 50 GWh ACC battery storage with an outlay of ₹18,100 crores.

Under the Waste Management Rules 2022, the disposal of waste batteries in landfills and incineration is prohibited and the recycling of waste batteries is made mandatory.

CERC, under RRAS regulation, has allowed the use of energy storage in secondary and tertiary ancillary support.

The Energy Storage Obligation of DISCOMs is pegged at 4.0% up to 2029-30.

India's first 20 MW/40MWh BESS project is going to go live at the 33/11 kV Kilokari sub-station belonging to BRPL, Delhi.

In India, approximately 10.62 GW of solar capacity coupled with 12.52 GWh of BESS has been tendered as of April 2025.

Green Hydrogen (H_2)

National Green Hydrogen Mission (NGHM) aims to meet the target of 5 million metric tonnes of green hydrogen production by 2030. The initial outlay for the Mission will be INR 19,744 crores. NGHM portal to track the recent initiatives and developments.

India's first Green Hydrogen Hub to be build in Andhra Pradesh by NTPC at an estimated cost of ₹1.85 Lakh Crore with a capacity of producing 1500 TPD Green Hydrogen and 7500 TPD Green Hydrogen derivative

MNRE has sanctioned pilot projects on Hydrogen Fuelled Buses and Trucks consisting total of 37 vehicles and 9 hydrogen refueling stations.

MNRE has sanctioned 3 pilot projects in steel sector for use of green Hydrogen in steel production to be commissioned in next 3 years with total financial outlay of ₹347 Crore from GoI.

Indian Railways to run 35 Hydrogen trains under "Hydrogen for Heritage" at an estimated cost of ₹ 80 crores per train and ground infrastructure of ₹ 70 crores per route on various heritage/hill routes.

Key Highlights or Announcements of October 2025

- On 6th October 2025, Ministry of New and Renewable Energy (MNRE) has issued guidelines for releasing Central Financial Assistance (CFA) for rooftop solar projects under the Utility Led Aggregation (ULA) model of the PM Surya Ghar: Muft-Bijli Yojana. The key highlights are:
  - CFA will be released only after successful installation, inspection, and commissioning, with no advance payments allowed.
  - Implementing agencies must use the ULA redeem option on the national portal, and funds will be disbursed directly to vendors after verification by the national implementation agency.
  - The framework applies to all ULA proposals, ensuring transparent, uniform, and timely disbursement.

- MNRE has launched the Renewable Energy Equipment Import Monitoring System (REEIMS), an online portal designed to monitor and track imports of designated renewable energy components. The key provisions include:
  - Mandatory pre-registration of solar and wind equipment on REEIMS before import, along with disclosure of end-use details.
  - Each registration is valid for 3 months, with applications due at least 2 days before air cargo and 5 days before sea or land shipments.
  - The policy will be effective from November 1, 2025, and will apply to all entry points- land, air, and sea.

- The Ministry of Power has released the draft Electricity (Amendment) Bill, 2025, aimed at strengthening the sector and aligning regulations with industry needs. The major highlights are:
  - It mandates state regulators to set tariffs in accordance with the National Tariff Policy, revise tariffs suo motu, and issue tariff orders before the financial year begins.
  - The draft empowers CERC to introduce market-based instruments and establishes a legal framework for renewable energy obligations with penalties for non-compliance.
  - Provisions include reducing cross-subsidies, promoting open access, exempting 1 MW+ open access consumers from universal service obligations, and waiving cross-subsidy charges for new manufacturing units for five years.
  - A national electricity council is proposed to coordinate reforms, chaired by the Union Power Minister with state electricity ministers as members.

Key Highlights or Announcements of October 2025

- The Ministry of Power has issued a revised Renewable Consumption Obligation (RCO) framework under the Electricity (Amendment) Rules, 2025, creating a unified national compliance mechanism by subsuming state-level RPOs. The framework applies to discoms, open access consumers, and captive users, and retains the national RCO trajectory through 2029-30. It updates norms for distributed RE projects (≤10 MW) and clarifies exclusions in the compliance denominator. The rules also introduce group-level aggregation and set new annual compliance timelines starting 2025-26.

- The Central Electricity Authority (CEA) has released two draft regulations on "Technical Standards for Construction of Electrical Plants and Electric Lines" and "Cyber Security in Power Sector", to modernise India's power sector. They key highlights are:
  - The technical standards update introduces a new chapter for renewable energy and BESS, defining components like BMS and PCS and prescribing detailed safety and performance norms.
  - Solar, wind, floating solar, and offshore wind projects must meet 25-year design life and follow mandatory requirements such as RFID tagging, structural safety, and equipment standards.
  - The BESS chapter outlines comprehensive technical, safety, and emergency response protocols to address thermal and operational risks.
  - The cybersecurity draft mandates minimum security norms, audits, and incident reporting to protect critical digital and OT systems across the grid.

- The CEA has released a ₹6.4 trillion transmission master plan to evacuate 76 GW of hydropower from the Brahmaputra basin. The roadmap includes 208 hydro and pumped-storage projects across 12 sub-basins, totalling 64.9 GW of hydro and 11.1 GW of PSP capacity. It proposes high-capacity transmission corridors, pooling stations, and redundant routes to connect remote sites to the national grid. The investment plan is split into two phases: ₹1.91 trillion till 2035 and ₹4.52 trillion beyond 2035.

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