

India, May see a Shot up in the Tune of Renewable Purchase Obligation in Coming Years with GOAR-2022 in Picture

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Source: Channel Checks

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Section – Renewable Purchase Obligation (RPO) in India – A know how

RPO overview in India & state wise trend track

RPO Know How & State Wise Trajectory

2.1 RPO know how

Background

The Government of India's policy initiatives have led to a tremendous growth and development of renewable energy (RE) sector in the country. The Ministry of New and Renewable Energy (MNRE), Government of India, along with all the State Nodal Agencies (SNAs) have already taken appropriate policy initiatives for achieving the target of 175 GW of renewable energy by 2022-23, with solar capacity of 100 GW. India communicated its Intended Nationally Determined Contributions (INDCs) to the United Nations Framework Convention on Climate Change (UNFCCC) committing amongst others, mainly to reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level and to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030. These initiatives at both international and national level have proved to be a major motivation for energy security and reduced dependence on conventional sources of fuel. It can be a step towards meeting the INDCs, thereby contributing towards the global effort to meet the challenges of climate change. Pursuant to the enactment of the Electricity Act 2003, the SERCs are required to fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources. With the amendment of Tariff Policy in January, 2016, the State Electricity Regulatory Commissions (SERCs) are required to reserve a minimum percentage for purchase of solar energy which shall be such that it reaches 8% of total consumption of energy, excluding Hydro Power, by March 2022 or as notified by the Central Government from time to time. The Government of India in July, 2018 notified the Long Term growth trajectory of Renewable Purchase Obligations (RPOs) for Solar as well as Non-solar, uniformly for all States/ Union Territories, reaching 21% of RPO by 2022 with 10.5% for solar based electricity.

RPO know how

What is RPO ?

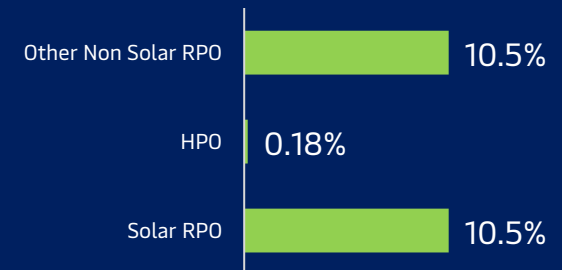
Under Section 86(1) (e) of the Electricity Act 2003 ("EA 2003") and the National Tariff Policy 2006, Renewable purchase obligation (RPO), is a mechanism by which the obligated entities are obliged to purchase certain percentage of electricity from renewable energy sources, as a percentage of the total consumption of electricity. RPOs are categorized as solar and non solar RPO. With the objective to achieve the target of 175 GW of renewable energy by FY'2022-23, including solar energy capacity of 100 GW, Ministry of Power (MoP) have notified the target RPO trajectory up to year FY'2022-23. The RPO targets specified for solar and non-solar power are to be adhered and met uniformly by the Obligated Entities of all the States and Union Territories. Obligated Entities (which includes Discoms, Open Access Consumers and Captive power producers) are obligated to purchase a minimum share of their electricity from renewable energy sources as per RPO targets.

"On 8th March 2019, the GoI had issued an order detailing various policy measures to promote hydropower sector in India by declaring large hydropower projects including pumped storage projects having capacity of more than 25 MW which come into commercial operation after March'2019 as renewable energy sources and to specify hydropower purchase obligation (HPO) with non-solar RPO. In compliance of the above decision and with the objective to add 30,000 MW of hydro power capacity by the year 2029-30, Ministry of Power – India prepared a revised long-term trajectory for HPO considering the LHPs commissioned after 8th March 2019"



RPO Breakup as of March'2022

The total RPO in India as of March'2022 stands to be 21.18%




Note:


- HPO – Hydro purchase obligation
- Other non solar RPO includes energy purchase from wind, biomass, waste to energy etc.


RPO know how


RPO Objectives


To establish a centralized monitoring mechanism for RPO compliance through a web-based portal for all states and Union territories


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To enlist obligated entities and assess their RPO compliance
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To ease-out the process of monitoring the RE transactions of obligated entities
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To develop database which would become a tool for SERCs to audit RPO compliance
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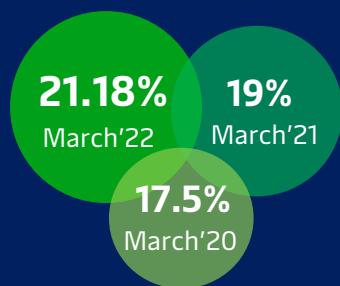
To enhance transparency in RPO compliance process
- 

Create user interfaces for obligated entities to provide data on RE purchase
- 

Create user interfaces for monitoring agencies to cross-verify the data provided by obligated entities
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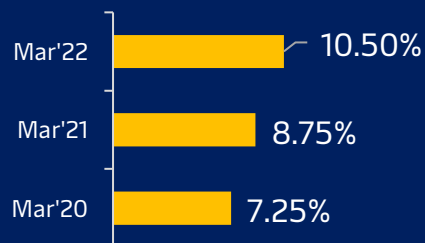
Prepare database for the system and analytics modules to analyse the effectiveness of the RPO regulations in the states

2.2 Current status of RPO in India



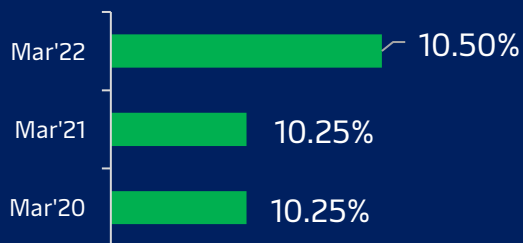
Total RPO

Trends in the total renewable purchase obligation (RPO) in India from March'20 till March'22



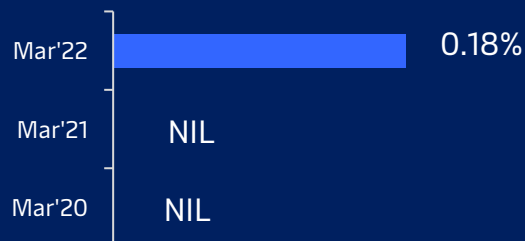
Solar RPO

Trends in the solar RPO in India from March'20 till March'22



Non-Solar RPO

Trends in the non-solar RPO in India from March'20 till March'22

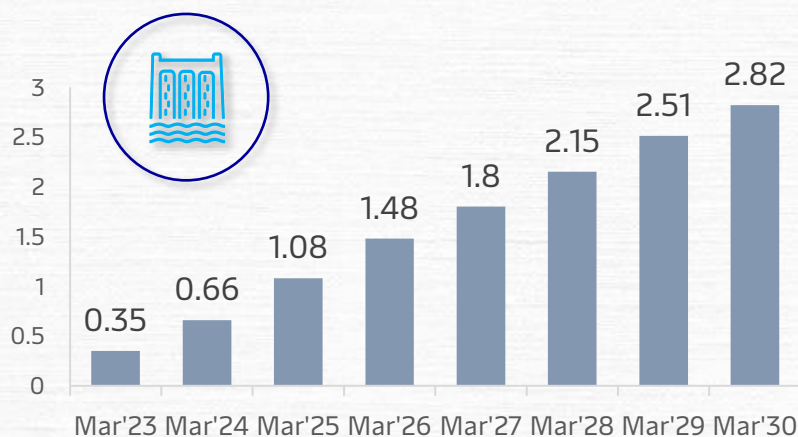


Hydropower Obligation

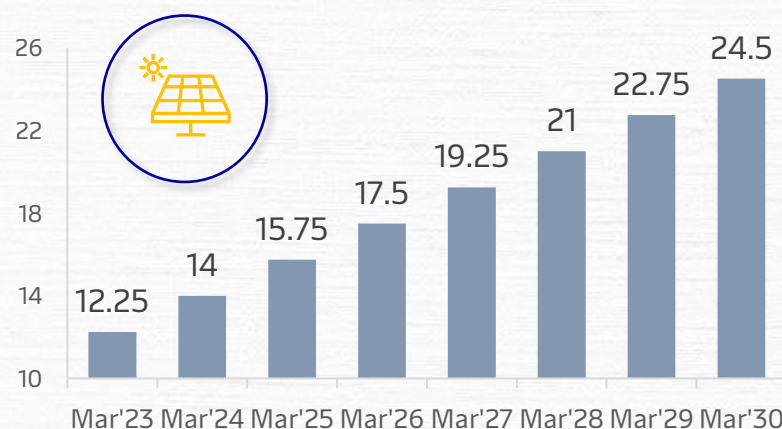
Trends in the hydro purchase obligation (HPO) in India from March'20 till March'22

2.3 RPO trajectory for solar, non solar & hydro

HPO (In Percentage)

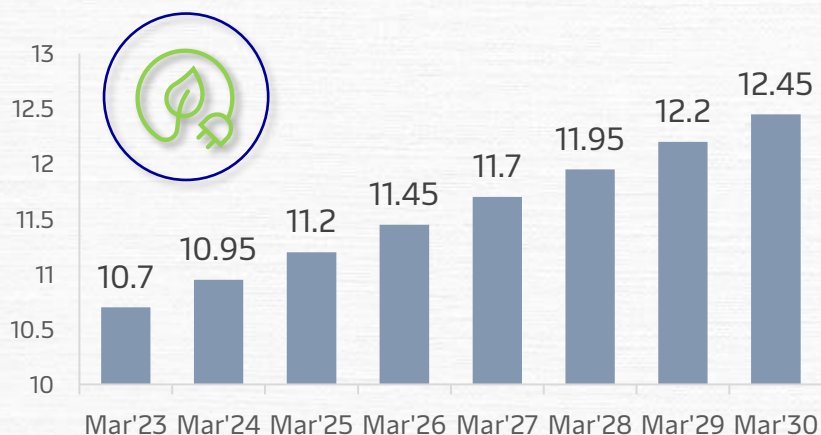


Solar RPO* (In Percentage)



* These are estimated values with 1.75% addition each year in the solar RPO quantum

Other Non-Solar RPO* (In Percentage)



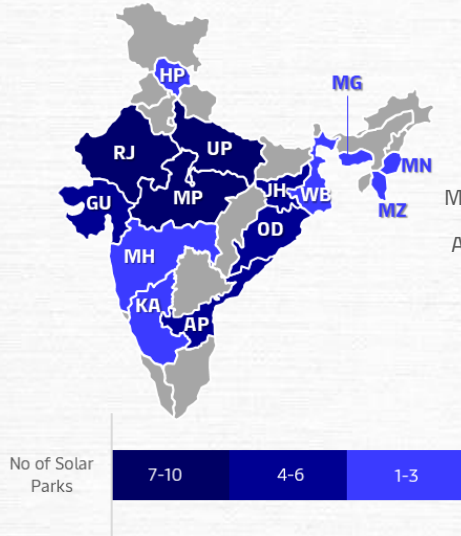
* These are estimated values with 0.25% addition each year in the other non-solar RPO quantum

39.7%

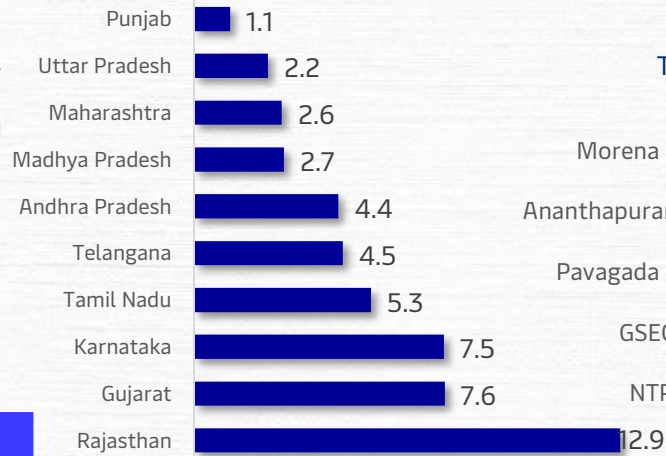
Projected total RPO quantum in India by 2030, given the current set of anticipated growth in the solar & non-solar RPO

State wise Solar Power Installed Capacity & Look on Development of Solar Power Parks in India as of Apr'2022

State wise allocation of solar power parks in India



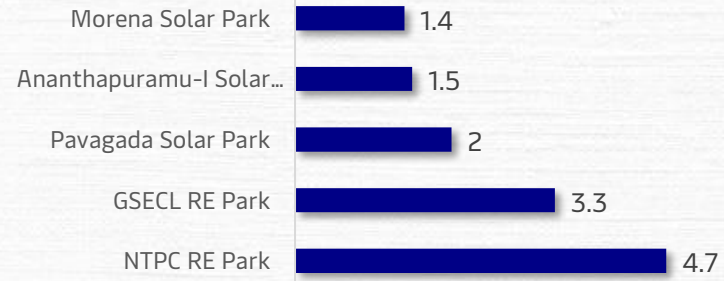
Top 10 Indian States with Highest Solar Power Installed Capacity (In GW) as of Apr'2022



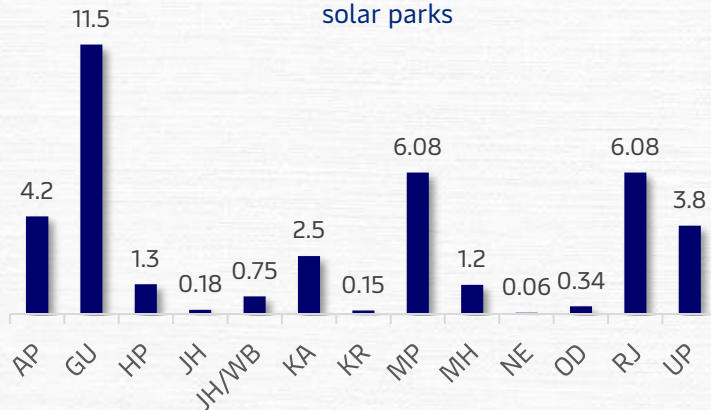
56

solar power parks have been announced in India as of Apr' 2022. The total capacity of these solar parks is 38.2 GW.

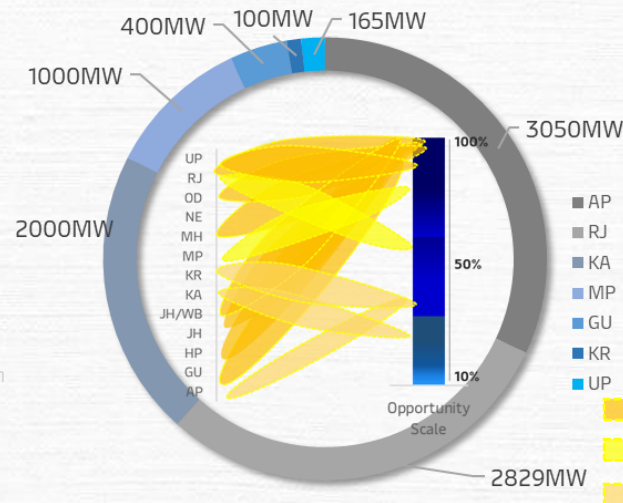
Top five solar parks with maximum approved capacity (GW)



State wise approved capacity (GW) of solar parks



State wise installed capacity (MW) of solar parks & remaining opportunity (Percentage)



Abbreviations

AP-Andhra Pradesh
GU- Gujarat
HP – Himachal Pradesh
JH- Jharkhand
KA- Karnataka
KR- Kerala
MP-Madhya Pradesh
MH- Maharashtra
MG-Meghalaya
MZ-Mizoram
MN- Manipur
NE-Northeast
OD – Odisha
RJ – Rajasthan
UP – Uttar Pradesh
WB-West Bengal

Opportunity b/w 90-100%
Opportunity b/w 50-85%
Opportunity b/w 20-45%

2.4 State wise RPO trajectory track

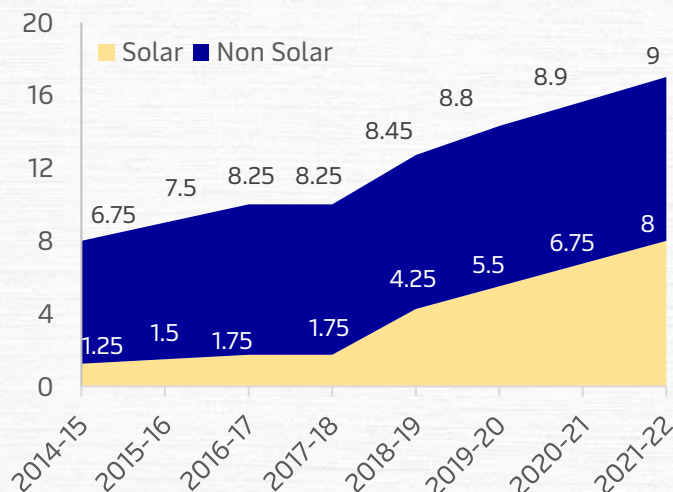


Gujarat

Gujarat currently holds **17%** of renewable purchase obligation (RPO). As of March'2022 the state holds **8%** of solar RPO, **8.25%** of wind RPO and **0.75%** of RPO from biomass, bagasse & other sources. In the state, Gujarat Electricity Development Authority (GEDA) submit all the quarterly status to the commission



1 Trends in RPO Targets (In %)



Source: Eninrac, MNRE, Channel Checks

2 Status w.r.t provisions

(i) Non-compliance provisions

Deposit such amount as the SERC may determine in a separate fund maintained by the OE. Amount shall be determined based on shortfall and the forbearance price. This fund will be used for REC purchase, development of evacuation infrastructure by the OEs.

- If solar and other RE power not available, then additional wind can be purchased. If solar RECs are not available, non-solar RECs may be purchased
- SERC can revise targets, suo moto or on discom's request, keeping in view supply constraints or other factors beyond the discom's control

(ii) Important provisions

- Discom to provide estimated RE purchase in its tariff petition/ APR. In case discom is unable to meet RPO, shortfall is added to the next year, but excess purchase will not be credited next year
- In case of genuine difficulty in complying with the RPO because of nonavailability of power in the State, the OE can request the SERC to carry forward of compliance requirement to the next year

Key states wise RPO Status



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2 Status w.r.t provisions

(ii) Important provisions (contd.)

- Average Power Purchase Cost means the weighted average pooled price at which the distribution licensee has purchased the electricity including cost of self-generation, if any, in the previous year from all the energy suppliers long-term and short-term, but excluding those based on renewable energy sources, as the case may be
- FY 2018 onwards if enough power of a category is not available then additional power of any other category can be purchased

3 Outlook



~14.25%

Anticipated solar RPO in Gujarat by 2026-2027 in a base case

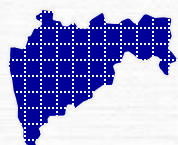


~10.15%

Anticipated non-solar RPO in Gujarat by 2026- 2027 in a base case

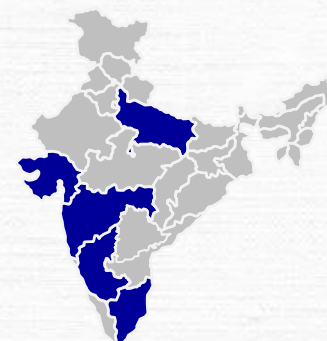
Note – Base case indicates the same quantum addition considered as witnessed over the past five years

Key states wise RPO Status

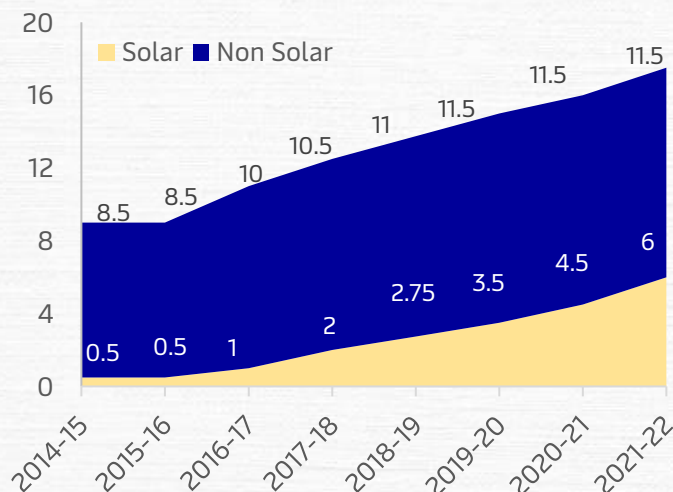


Maharashtra

Maharashtra currently holds **17.5%** of renewable purchase obligation (RPO). As of March'2022 the state holds **6%** of solar RPO, **11.5%** of non-solar RPO. In the state, Maharashtra Electricity Development Authority (MEDA) publishes statement of compliance /procurement every month (every quarter)



1 Trends in RPO Targets (In %)



2 Status w.r.t provisions

(i) Compliance provisions

- Quarterly compliance reports from state agency to SERC
- Discoms to submit compliance statement on monthly basis and audited statements annually to state agency
- In 2019, state agency is required to develop a web portal for compliance monitoring and reporting
- Fund will be used as directed by the SERC

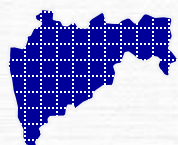
(iii) Important provisions

- A Monitoring Committee to be constituted under the aegis of Grid Co – ordination Committee (GCC) to address issues of energy accounting and monitoring of RE transactions, etc

(ii) Noncompliance provisions

- FY 2020 –21 onwards, ARR will be reduced by INR 0.10 per kWh for cumulative shortfall in total RE procurement target for each year

Key states wise RPO Status

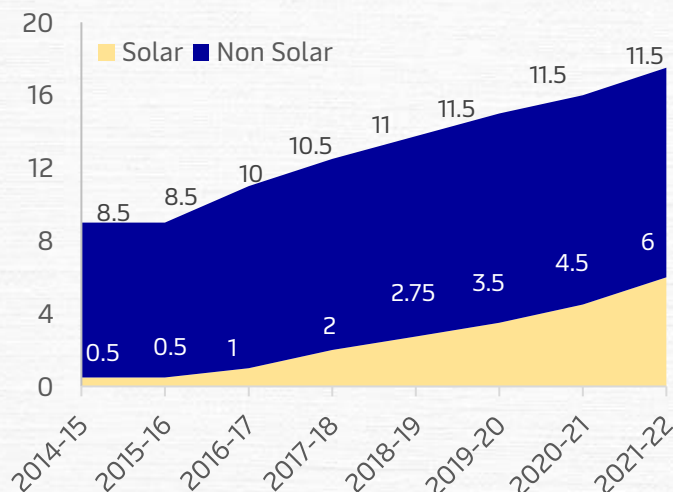


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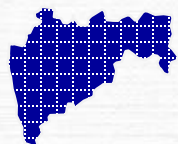
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Key states wise RPO Status



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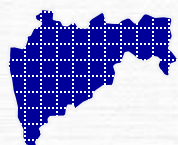
2 Status w.r.t provisions

(iii) Important provisions (contd.)

- Pooled Cost of Power Purchase means the weighted average pooled price at which the distribution licensee has purchased the electricity including cost of self-generation, if any, in the previous year from all the long-term and short-term energy suppliers, but excluding those based on renewable energy sources, as the case may be
- Variation in the fulfilment of RPO targets within a band of +/- 5 per cent of is to be allowed under exceptional circumstances subject to detailed scrutiny of the SERC
- Provided that procurement of RE generated within Maharashtra by a discom at a rate other than that approved by the SERC directly from a Generator or a Trading Licensee cannot be used to fulfil RPO
- From 2019 onwards the obligated entity can use surplus of other category up to 15 per cent of total RPO target to meet short fall in that category and more than 15 per cent with approval of the SERC
- From 2019 – Discoms have to endeavour to achieve MoP RPO target and will get incentive of Rs 0.25 per kWh for RE procured above the SERC target for procurement up to the MoP targets. Incentives will not be given if discoms have not met RPO on cumulative basis
- Shortfall can be carried forward from FY 2020 –21 and FY 2021 – 22 to FY 2022 –23 and from FY 2023 –24 to FY 2024 –25 and OE has to meet such shortfall on cumulative basis by 31 March 2023 and 31 March 2025, respectively. Cumulative shortfall in FY 2023 and 2025 cannot be carried forward and instead there will reduction in the ARR.

Source: Eninrac research & analysis, MNRE, Channel Checks

Key states wise RPO Status



Maharashtra

Maharashtra currently holds **17.5%** of renewable purchase obligation (RPO). As of March'2022 the state holds **6%** of solar RPO, **11.5%** of non-solar RPO. In the state, Maharashtra Electricity Development Authority (MEDA) publishes statement of compliance /procurement every month (every quarter)



2 Status w.r.t provisions

(iii) Important provisions (contd.)

- Shortfall can be carried forward from FY 2020 –21 and FY 2021 – 22 to FY 2022 –23 and from FY 2023 –24 to FY 2024 –25 and OE has to meet such shortfall on cumulative basis by 31 March 2023 and 31 March 2025, respectively. Cumulative shortfall in FY 2023 and 2025 cannot be carried forward and instead there will reduction in the ARR.

3 Outlook

 **~10%**

Anticipated solar RPO in Maharashtra by 2026-2027 in a base case

 **~11%**

Anticipated non-solar RPO in Gujarat by 2026-2027 in a base case

Note – Base case indicates the same quantum addition considered as witnessed over the past five years

Key states wise RPO Status

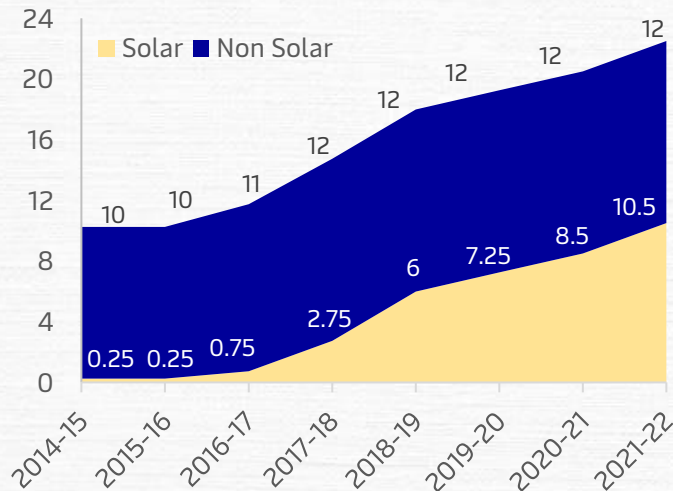


Karnataka

Karnataka currently holds **22.5%** of renewable purchase obligation (RPO). As of March'2022 the state holds **10.25%** of solar RPO, **12%** of non solar RPO. Quarterly compliance reports to the commission from the state agency



1 Trends in RPO Targets (In %)



2 Status w.r.t provisions

(i) Non-compliance provisions

- Deposit such amount as the SERC may determine in a separate fund held by the SERC. (Till 2011 – Fund to be used by discom for promotion of RE or energy conservation with SERC's approval.) Quarterly data of RPO compliance has to be shown on the agency's website
- 2011 – In case of non-compliance, OE has to purchase REC to the extent of 110 per cent of the shortfall, failing which liable to penalty under section 142 of the EA

(ii) Important provisions

- Discoms have to indicate the quantum of proposed purchase from RE for their RPO in their tariff filing (called Expected Revenue from Charges filing)
- In case of difficulty in complying with RPO in case of non-availability, RPO will be carried forward to the next year
- In the 2011 version the definition of APPC is "Pooled Cost of Purchase means the weighted average pooled price at which the state

Key states wise RPO Status



Karnataka

Karnataka currently holds **22.5%** of renewable purchase obligation (RPO). As of March'2022 the state holds **10.25%** of solar RPO, **12%** of non solar RPO. Quarterly compliance reports to the commission from the state agency



② Status w.r.t provisions

(iii) Important provisions (Contd.)

distribution licensees put together have purchased the electricity including cost of self generation, if any, in the previous year from all the energy suppliers long term and short-term, but excluding those based on renewable energy sources, as the case may be

- As per 2015 amendment, excess solar energy will be allowed to be adjusted against non-solar RPO. As per 2017 amendment, after 85 per cent compliance with solar RPO, remaining RPO can be met by purchasing non-solar RE

③ Outlook



~20.2%

Anticipated solar RPO in Karnataka by 2026-2027 in a base case



~13%

Anticipated non-solar RPO in Karnataka by 2026-2027 in a base case

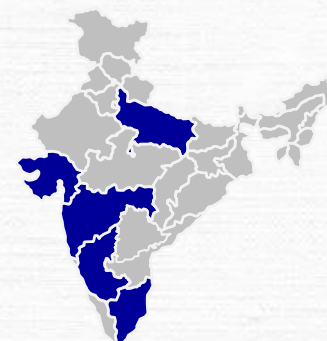
Note – Base case indicates the same quantum addition considered as witnessed over the past five years

Key states wise RPO Status

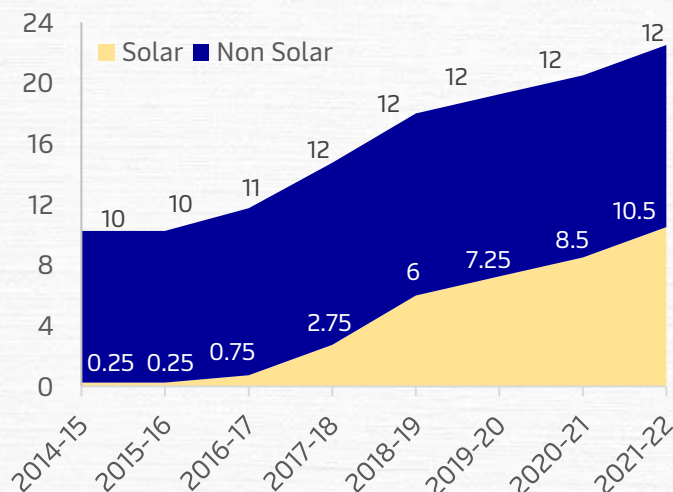


Tamil Nadu

Tamil Nadu currently holds **21%** of renewable purchase obligation (RPO). As of March'2022 the state holds **10.5%** of solar RPO, **10.5%** of non solar RPO. In the state, quarterly compliance reports are submitted from state agency to SERC



1 Trends in RPO Targets (In %)



Source: Eninrac research & analysis, MNRE, Channel Checks

2 Status w.r.t provisions

(i) Non-compliance provisions

- Deposit such amount as the SERC may determine in a separate fund held by the SERC. (Till 2011 – Fund to be used by discom for promotion of RE or energy conservation with SERC's approval.) Quarterly data of RPO compliance has to be shown on the agency's website
- 2011 – In case of non-compliance, OE has to purchase REC to the extent of 110 per cent of the shortfall, failing which liable to penalty under section 142 of the EA

(ii) Important provisions

- Pooled cost of power purchase means the weighted average pooled price at which the distribution licensee has purchased the electricity including cost of self-generation in the previous year from all the long-term energy suppliers, but excluding those based on liquid fuel, purchase from traders, short-term purchases and renewable energy sources

Key states wise RPO Status



Tamil Nadu

Tamil Nadu currently holds **21%** of renewable purchase obligation (RPO). As of March'2022 the state holds **10.5%** of solar RPO, **10.5%** of non solar RPO. In the state, quarterly compliance reports are submitted from state agency to SERC



② Status w.r.t provisions

(iii) Important provisions (Contd.)

- In 2011 the APPC definition was introduced – “...subject to the maximum of 75 per cent of the preferential tariff fixed by the Commission to that category / sub-category of NCES generators”
- If solar energy or REC is not available, then discoms can purchase other RE for solar RPO
- In case of bonafide difficulty in complying with the RPO owing to nonavailability of REC, the OE may request SERC to carry forward of compliance requirement to the next year

③ Outlook

 **~16%**

Anticipated solar RPO in Tamil Nadu by 2026-2027 in a base case

 **~12%**

Anticipated non-solar RPO in Tamil Nadu by 2026-2027 in a base case

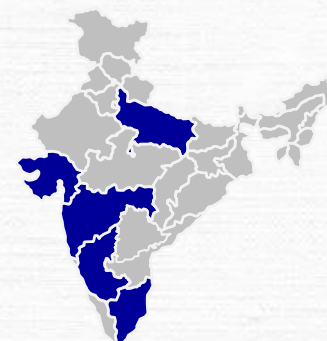
Note – Base case indicates the same quantum addition considered as witnessed over the past five years

Key states wise RPO Status

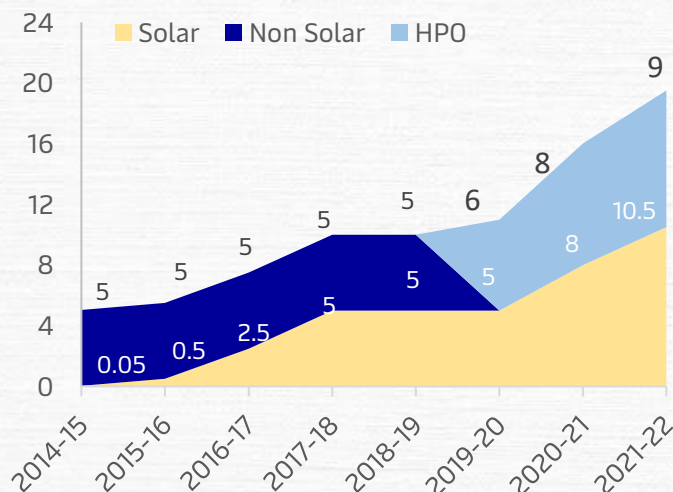


Uttar Pradesh

Uttar Pradesh currently holds **14%** of renewable purchase obligation (RPO). As of March'2022 the state holds **4%** of solar RPO, **9%** of HPO. In the state, quarterly compliance reports are submitted from state agency to SERC



1 Trends in RPO Targets (In %)



2 Status w.r.t provisions

(i) Non-compliance provisions

- OEs liable to deposit such amount as the SERC may determine in a separate fund maintained by the OE
- Amount shall be determined based on shortfall and RPO Regulatory Charges i.e. (highest applicable preferential tariff for that category or any other rate determined by the SERC till 2019) equivalent to applicable floor prices or any other stipulated rate

- Fund will be used for REC purchase or development of evacuation infrastructure or any other manner stipulated by the SERC

(ii) Important provisions

- If the obligated entity has established the fact that the minimum If solar energy or REC is not available, then discoms can purchase other RE for solar RPO

Key states wise RPO Status



Uttar Pradesh

Uttar Pradesh currently holds **14%** of renewable purchase obligation (RPO). As of March'2022 the state holds **4%** of solar RPO, **9%** of HPO. In the state, quarterly compliance reports are submitted from state agency to SERC



2

Status w.r.t provisions

(iii) Important provisions (Contd.)

- SERC can revise targets on its own or on recommendation of the state agency or application by an OE
- In case of genuine difficulty in complying with the RPO due to nonavailability of REC, the OE may request SERC to carry forward of compliance requirement to the next year. Discoms have to intimate the estimate quantum of purchase to the SERC for the ensuing year
- Pooled Cost of Power Purchase means the weighted average pooled price at which the distribution licensee purchased electricity including cost of self-generation, if any, in the previous year from all the long-term and short-term energy suppliers, but excluding those based on renewable energy sources, as the case may be

3

Outlook

 ~7%

Anticipated solar RPO in Tamil Nadu by 2026-2027 in a base case

 ~13%

Anticipated non-solar RPO in Tamil Nadu by 2026-2027 in a base case

Note – Base case indicates the same quantum addition considered as witnessed over the past five years



Truth is ever to be found in the simplicity, and not in the multiplicity and confusion of things

- Sir Isaac Newton



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