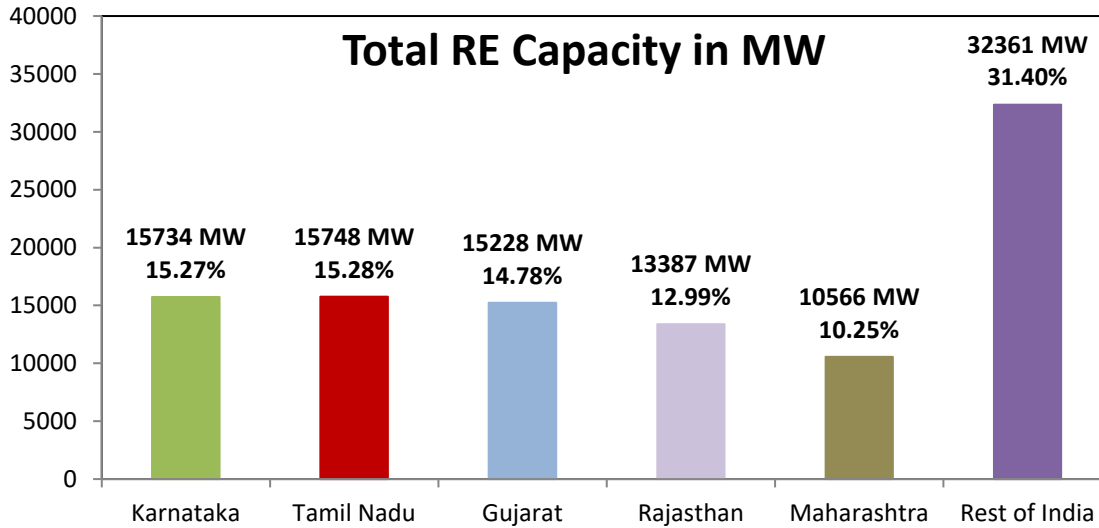


**WELCOME
TO
VIRTUAL ROADSHOW ON
“STORAGE TECHNOLOGIES”**

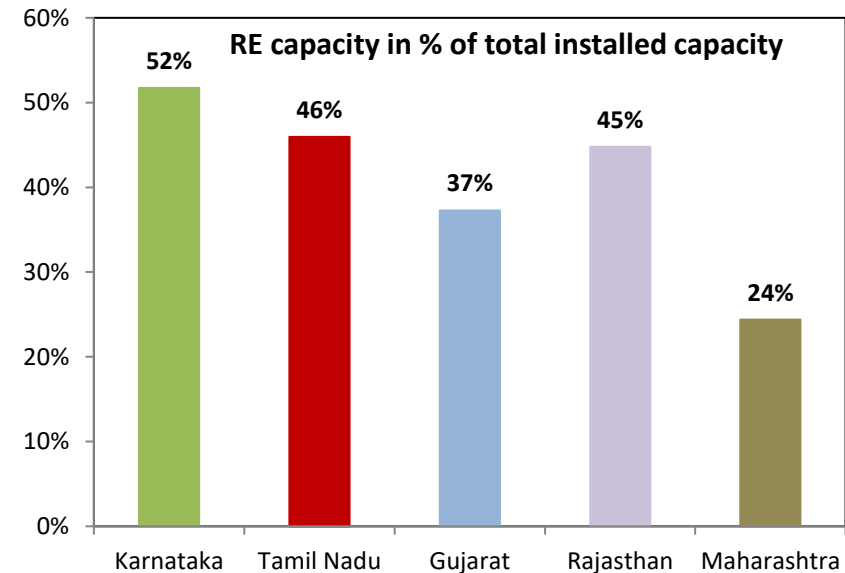
**MANAGING DIRECTOR
PCKL**

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Indian Power Sector Celebrates 100 GW of RE Addition on 31.10.2021

Category	Karnataka	Tamil Nadu	Gujarat	Rajasthan	Maharashtra
Solar (MW)	7512	4738	6093	8911	2541
Wind (MW)	5039	9847	8953	4327	5013
Hydro (MW)	3632	2178	772	1939	3332
Total Install Capacity (MW)	30407	34263	40848	29887	43355



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- RE capacity penetration in Karnataka State is 52% of the total installed capacity in the State and is highest as compared with **other States in India**. Hence, high renewable penetration demands for more flexibility resources in the grid to maintain the stability of the grid and minimize imbalances in the system.
- Government of India (GoI) recently announced the target of 500 GW of renewables by 2030 and consequent to this an additional capacity of approximately 12,650 MW of renewables is to be added year on year into the State grid by 2030. This requires lot of flexible resources in the system to maintain the grid stability and minimize imbalances in the system.
- Government of Karnataka has carried out comprehensive study of long term power procurement in Karnataka to determine the quantity of power, source of power and the timings of requirement of power for the period of over next 10 years.

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Projected Energy & Demand based on historical growth

The present Installed capacity of the State is 31,087 MW, wherein Renewable capacity is around 15,177 MW.

Normally, State plans the capacity addition to meet the future demand based on the projections. The energy and demand requirement of the state forecasted as per the CEA and M/s. PRDC are as follows:

Year	PRDC Projections		19th EPS	
	Energy Requirement (MU)	Peak Demand (MW)	Energy Requirement (MU)	Peak Demand (MW)
FY22	82649	15007	85932	14271
FY23	85985	15770	90381	15033
FY24	89496	16580	95042	15834
FY25	93194	17439	99916	16674
FY26	97095	18353	105017	17554
FY27	101233	19135	110368	18481
FY28	105943	20025		
FY29	110941	20970		
FY30	116251	21974		

Methods used by CEA:

- CAGR
- Partial End use method
- Recently CEA started using econometric method

Methods used by PRDC per category wise:

- Trend
- CAGR
- Econometric method
- Partial End use method

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- As per the PRDC report, the capacity additions at the end of 2029-30 are to be achieved by establishing the following projects:
 - a) KPCL Sharavathy Pumped storage power plant (PSP) :- 2000 MW from KPCL
 - b) Proposed Pumped Storage Power Plant (PSP):- Under Private Investment - 1000 MW
 - c) The Firm Capacity of 1950 MW and 6396 MW RE is to be established.
- Based on the studies GOK has taken initiative to prepare the Bidding Document and invite tender for establishment of 2000 MW Pumped Hydro Storage Power Plant on Grid supported / RE supported model. At first stage **GoK made Budget announcement (2021-22) for 1000 MW Pumped Storage Plant on Private Investment of Rs.5000 Crores.** The administrative approach for implementing said project is under process.
- **GoK made Budget announcement (2022-23) for establishment of 500 MW Solar Park in Kalburgi by KREDL.**

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- **SALIENT FEATURES OF BIDDING DOCUMENT (BD)**

- The total bid capacity intended to be procured by the ESCOMs is [1,000] MW from PSP/s
- The primary objective is to add flexibility and firmness to maintain the health of the grid. [ESCOMs] will procure energy corresponding to **[8] Million Units (MUs)** from the Contracted Capacity, on daily basis in accordance to the schedule provided by **[SLDC]**.
- A Bidder may quote for multiple locations (all in Karnataka), subject to
 - i. capacity of generation in each location - **minimum [100] MW,**
 - ii. single price bid for all locations, and
 - iii. aggregate capacity offered is **[1,000] MW** i.e. Bidder shall quote for the entire bid capacity of **[1,000] MW,**
 - iv. capacity of each generating unit should not exceed 250 MW,
 - v. each unit should have the Generation variation from 20% to 100%
 - vi. PPA term: 25 years

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- Award criteria shall be through competitive bidding process, based on the parameters as below:
 - i. Annual Fixed Cost (AFC) expressed in INR Lakhs/MW/annum, quoted by the Bidders at Delivery Point.
 - ii. Cost of Cycle Loss (CCL), expressed in INR Lakhs/MW/annum, which shall be calculated based on the Cycle Loss (%) declared by the Bidder.
- The areas identified by the CEA for the PHPS project in the state, such as the Sharavati, Kali and Kollur project areas, are "Protected Areas" and it is difficult to obtain environmental clearance. The rest of the project areas identified by the CEA, varahi, Minhole, Sitanadi, and Hulagi, are located in the micro ecological zones of the Western Ghats, making projects difficult / impossible. As per KPCL DPR for Sharavathy PHPS has been submitted by M/s. WAPCO and further PFR is under progress in rest of the locations. Some Rivers are inter-state projects wherein the implementation of the PHPS projects requires consent from other States. Hence, GoK has taken action to identify the places for PHPS Project other than said places.

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- As per the directions of the Energy Department GoK, PCKL is interacting with SECI to accurately MAP future way forward in BESS for Karnataka and also exploring the Proposals of SECI to implement firm and flexible hybrid solar wind Hybrid project with 200/300 MWh to develop at Ramagiri, Anantapur District, Andhra Pradesh, and will be connected to Pavagada STU substation.
- Further, PCKL is also interacting with M/s PRDCL for setting up of 10 MW green Hydrogen production plant in Karnataka.

THANK YOU