

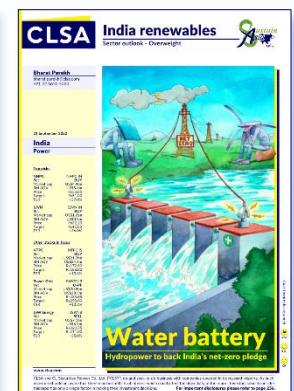
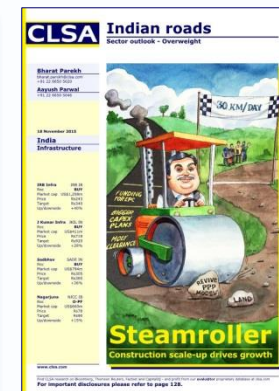
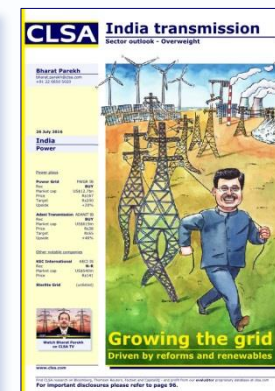
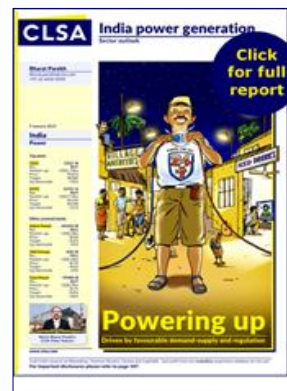


India Power Utilities

Regulating 3rd largest power market in the world

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Investment Analyst

Feb 2024



For important disclosure information please refer to pages 72-73 of this presentation.

India Power – Focus on Energy security & Transition

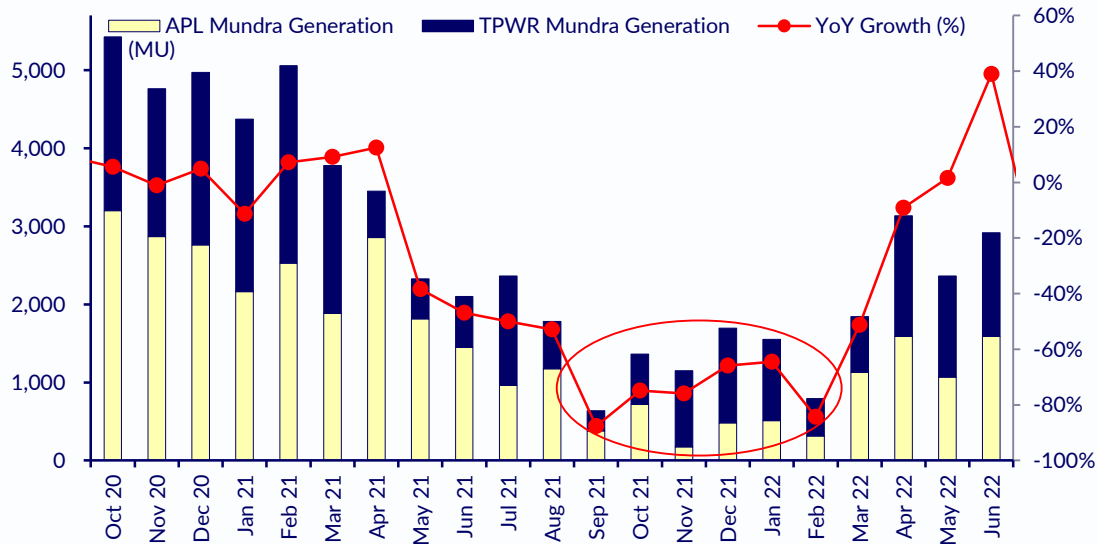
Big picture for Regulation FY24-29

- India stood tall in global energy crisis of FY21-23 - thanks to regulated Utilities!
- Indian consumers' spared of runaway price inflation vs the globe – thanks to regulated Utilities!
- Focus back to energy security / thermal on need for 24x7 power – deficits led by demand and climate change.
- Market mechanism failed to protect consumers'
- India NZ 2070 – will need all sources including Coal w CCUS
- Salute to CERC for long-term track record of a great balancing act!
- Keep regulation - Simple, predictable & consistent!

CPSE	State Genco	Maha Genco	
Debt	70 Debt	70 Debt	70
Equity	30 Equity	30 Equity	30
Cost of Debt	7.3% Cost of Debt	9.0% Cost of Debt (MCLR + 200bps)	10.7%
Cost of Equity	15.5% Cost of Equity	15.5% Cost of Equity	14.0%
Blended Cost of Capital	8.9% Blended Cost of Capital	9.9% Blended Cost of Capital	10.4%

Regulated utilities – bed rock of energy security!

Private IPPs shut down their unsustainable imported coal-based plants – In high demand season



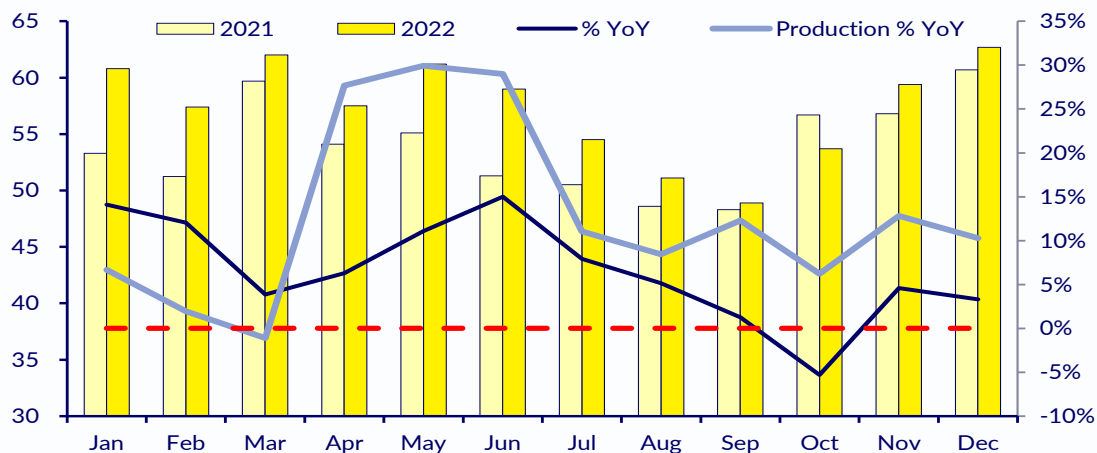
Punjab Discom forced to purchase power from Tata Mundra much higher than the original PPA price

Coal crisis: Private plant forces Punjab power utility to pay 60% more than PPA price

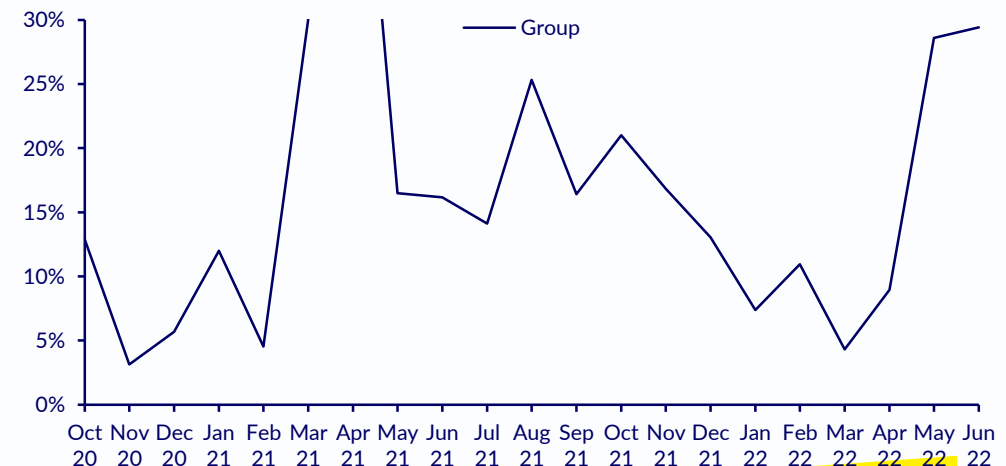
Power engineers oppose corporation's move to buy power at inflated rates from Gujarat-based plant that stopped supply to Punjab since last year

Power crisis continues: PSPCL make power arrangements for week from Mundra plant

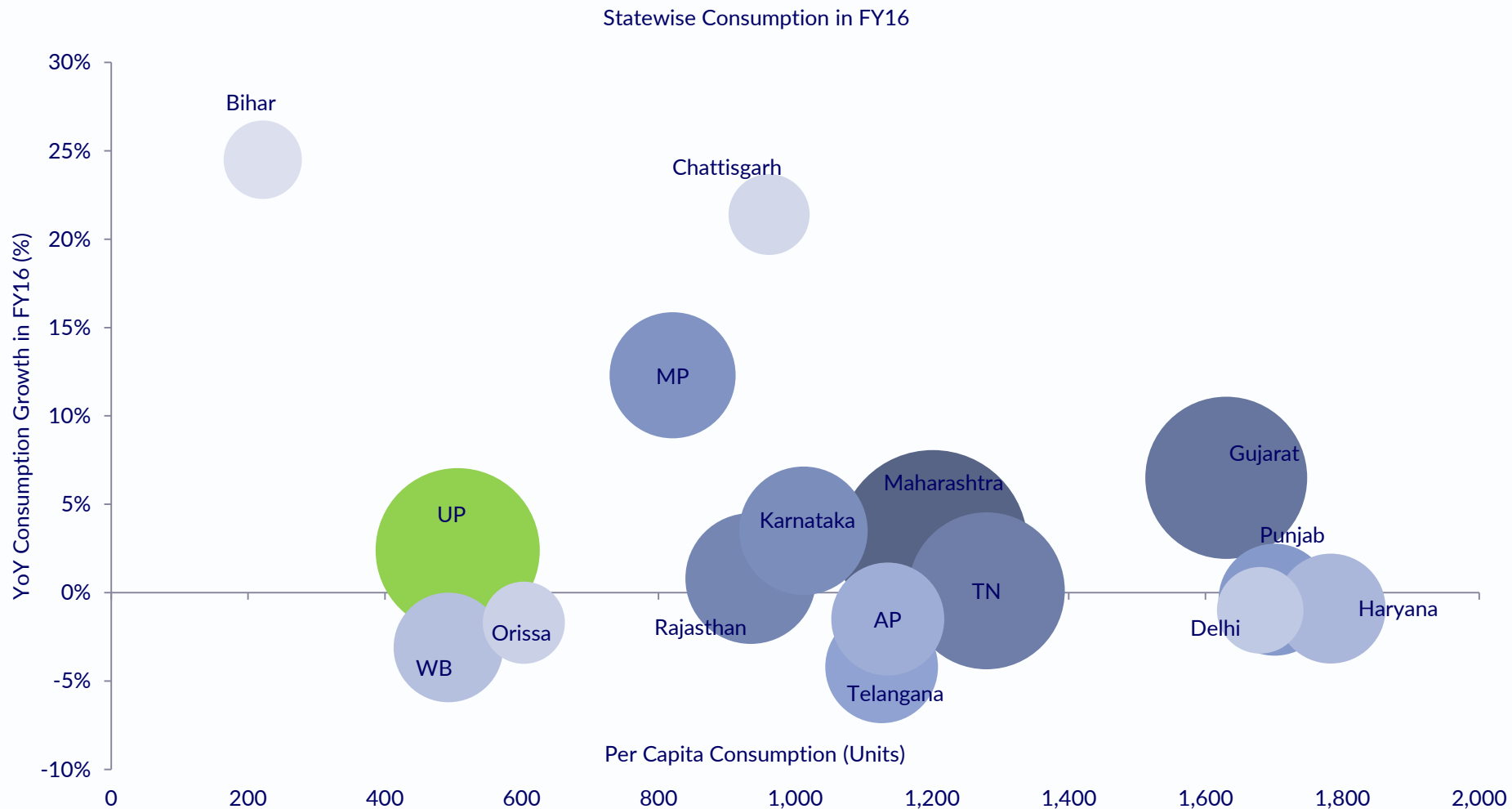
Coal India - ramp-up production to fix unviable imported coal



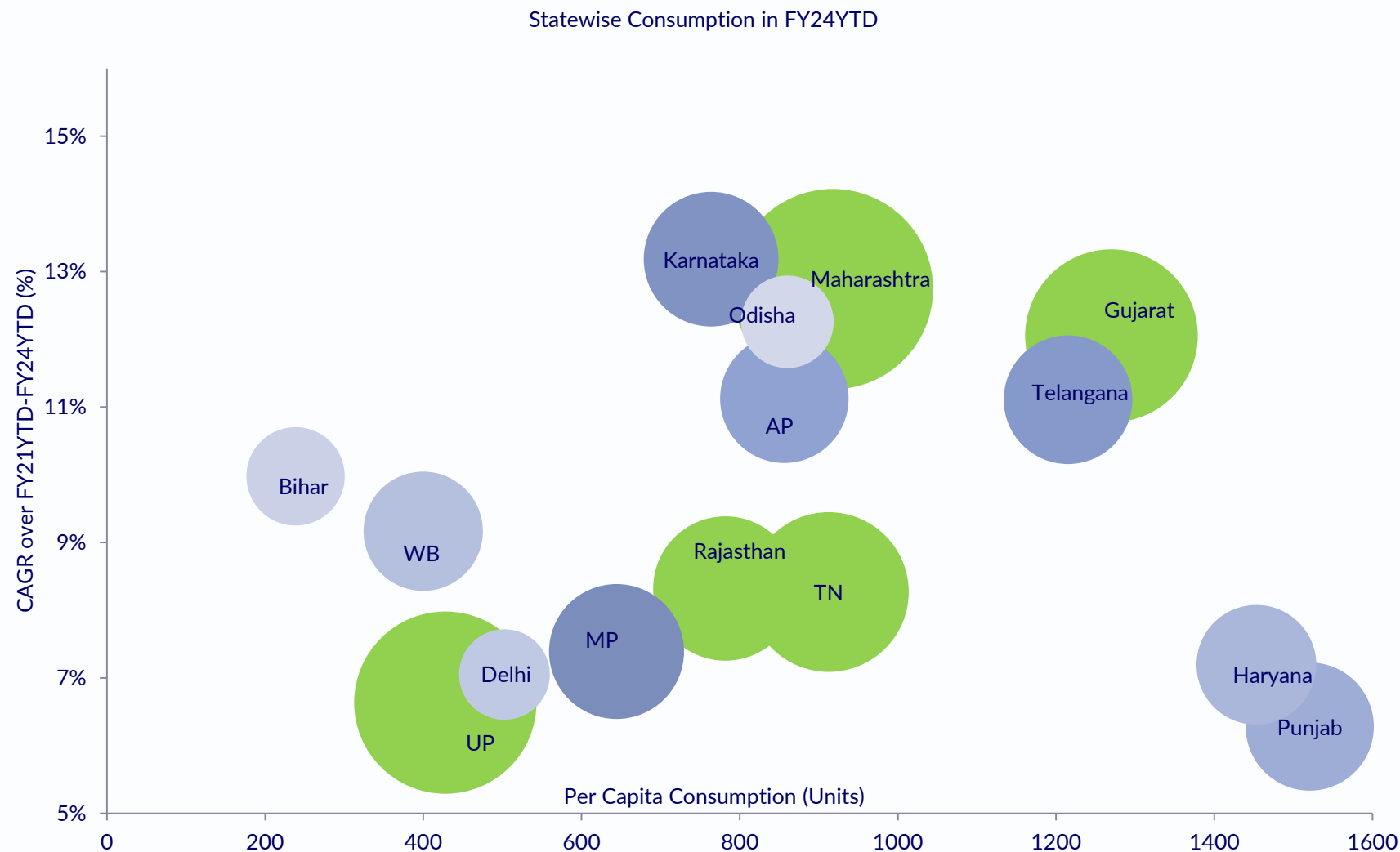
NTPC generation: Central government gencos saved the grid from energy shock



Power Demand: Constraint before UDAY



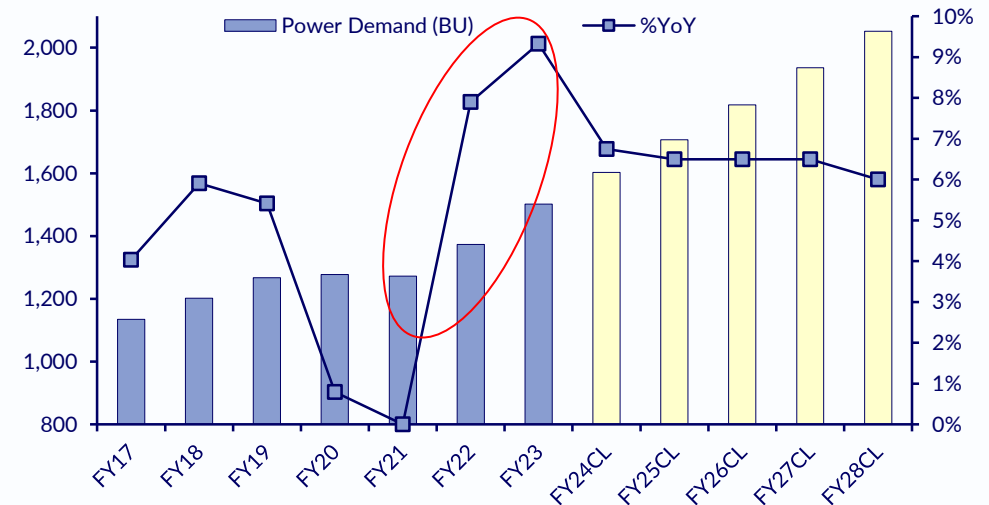
Power Demand: Begins to grow post UDAY



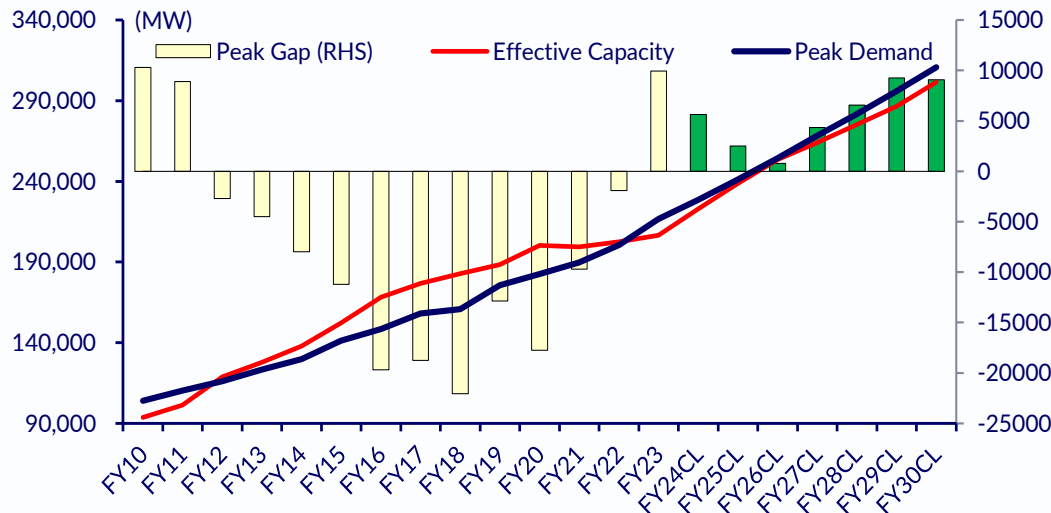
Power markets: Need for capex

- We expect India's power demand to grow 80% over FY23-33CL
- FY21 – Structural bottom of PLF. Hereon, it is expected to rise structurally
- Launch of 80GW coal capacity add plan...
- But focus on old thermal plants first!

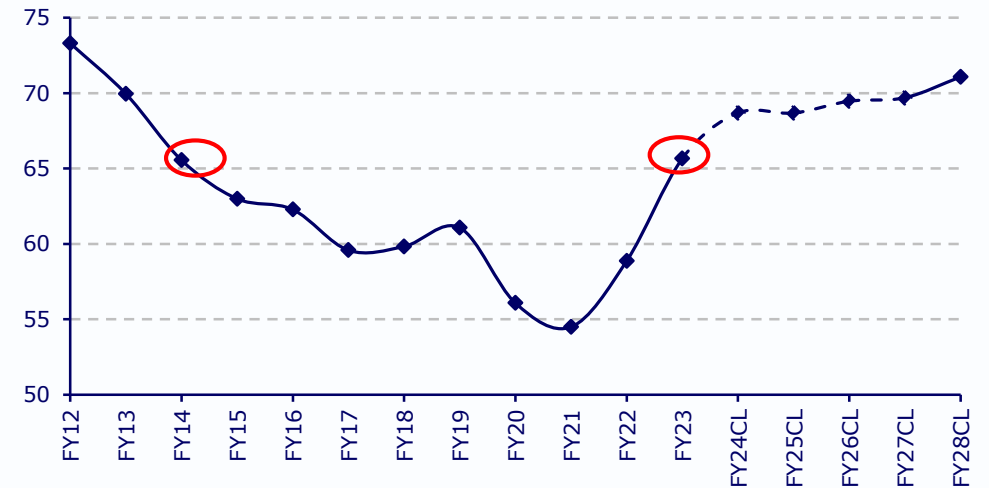
India: Power demand growth – Ahead of GDP



India: Power surplus to deficit



Thermal PLFs: Bottom in FY21, Rise structurally

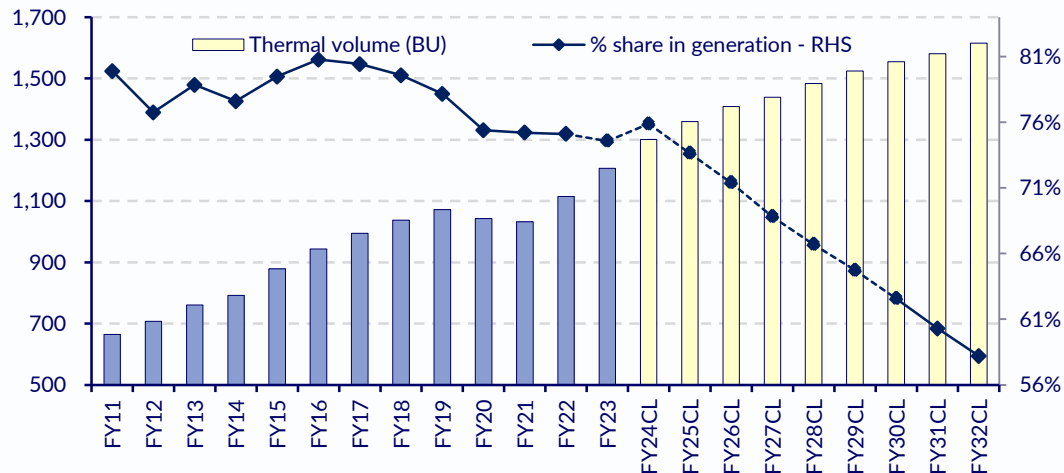


India Net Zero – Will need balanced mix...

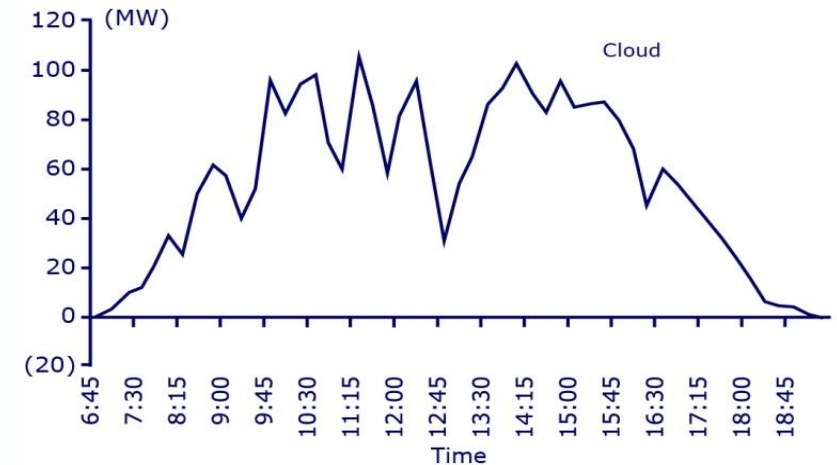
● Copying EU won't help India



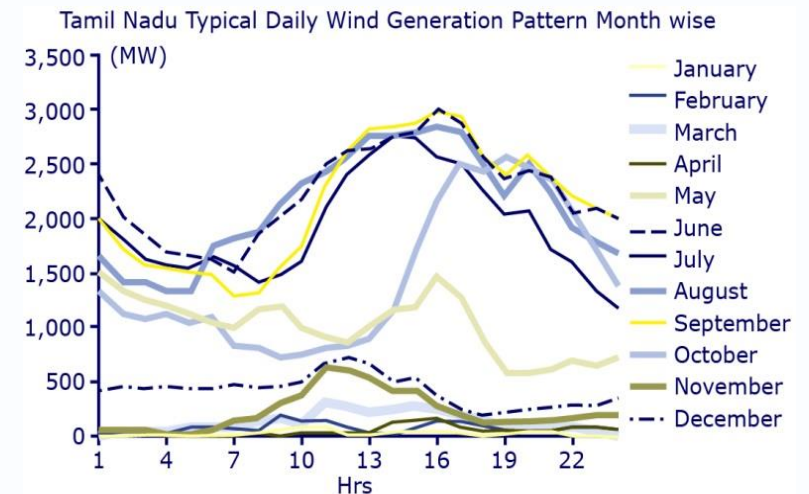
India: Thermal power generation – Decadal growth...



Solar generation: In reality – not a bell curve



Wind generation: In reality



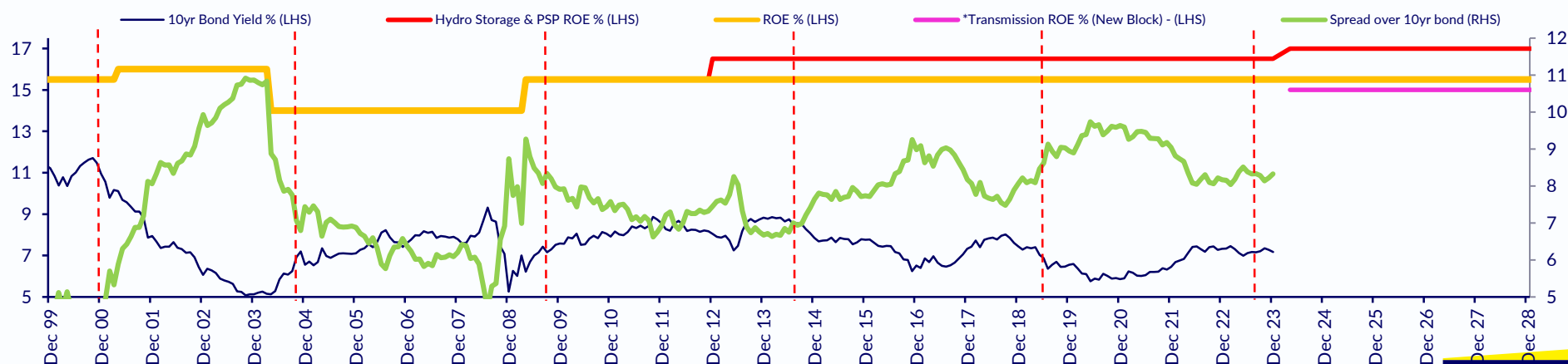
Key investor feedback: Draft FY24-29 – Salute!

What they appreciate?

- CERC's Long-term track record - Continuity of RoE regime, 'grand fathering' of block as of March'24 and healthy spread over 10-yr bond.
- Nice balancing act
- Consumer friendly measures – longer tenure debt, tighter fuel & working capital norms to cut tariff

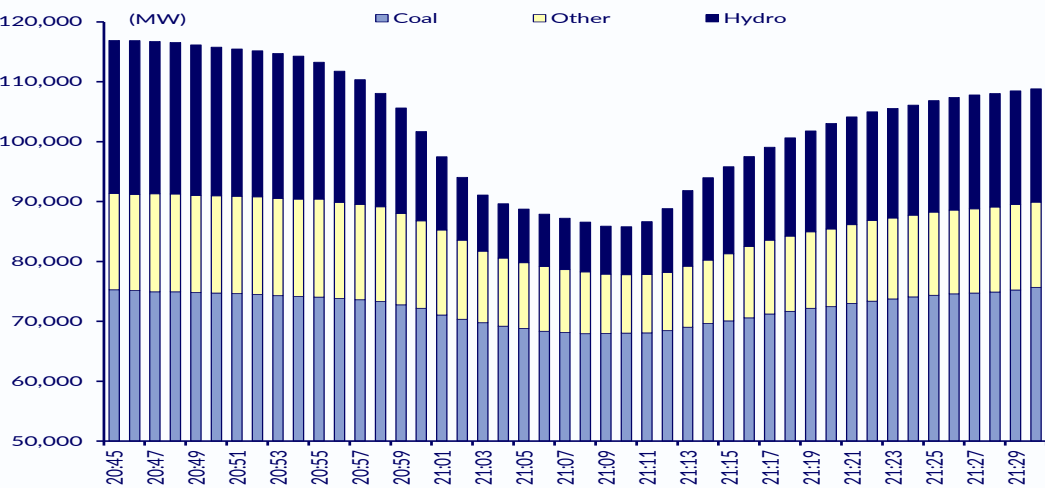
Suggestions: Focus on 24x7 but cheaper power via efficiency / sweating assets

- Uniform RoE across thermal value chain – Thermal plants, Emission control & Mining capex
- Special incentive package for old – 25 year+ thermal plants to reduce system cost
- PLF incentive – should be +50% for peak & off-peak vs 15% only for peak power; Off-peak – flat for a decade?
- Does cutting Transmission RoE by 50bps support continuity? At least exempt under-construction assets from cut!
- Hydro – Need RoE @17.5% to equate duration vs thermal on IRR; Special rate for mega Hydro projects of 10yrs+



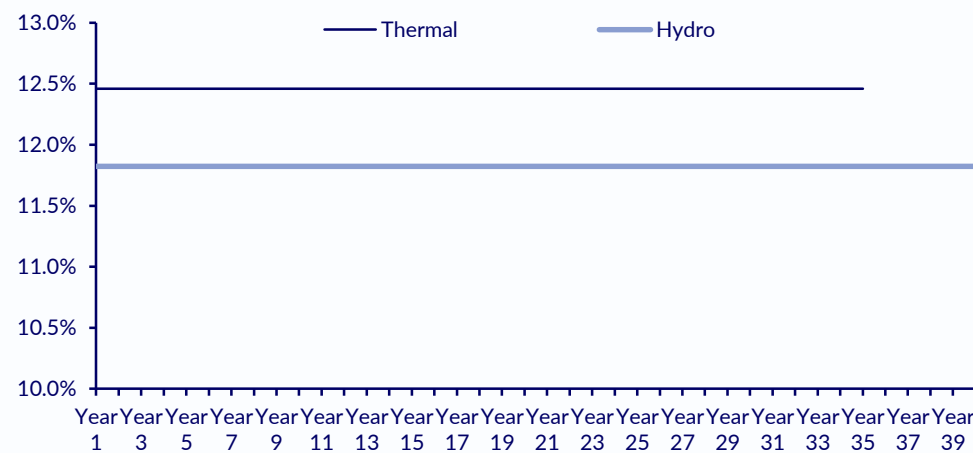
Hydro - helps in time of crisis

Pan-India 9pm nine-minute lights-out: country-wide demand

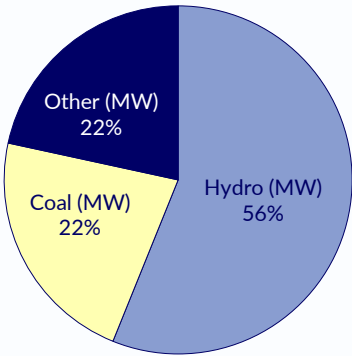


Source: POSOCO

Hydro – investors needs to be compensated for duration

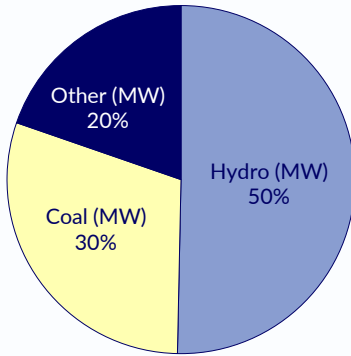


Pan-India 9pm nine-minute lights-out - change in fuel mix during 20:50 - 21:10



Source: POSOCO

Pan-India 9pm nine-minute lights-out - change in fuel mix during 21:10 - 21:25



Thermal power: India's decadal backbone

Resurgence of fossils

- Thermal power needs higher risk premium/RoE
 - To attract global capital – carbon risk
 - Support Govt's 80GW thermal capacity add plan
- Uniform RoE across thermal value chain vs
 - Thermal plants – 15.5%,
 - Emission control – MCLR + 350bps
 - Mining capex – 14%
- O&M–1.5% hike for 500MW in FY25 vs 4-7%

Regulated ROE: for emission control Capex

Provided that return on equity in respect of additional capitalization beyond the original scope, including additional capitalization on account of the emission control system, Change in Law, and Force Majeure shall be computed at the base rate of one-year marginal cost of lending rate (MCLR) of the State Bank of India plus 350 basis points as on 1st April of the year, subject to a ceiling of 14%;

Source: CERC

CERC: O&M cost trend

Rs Lakh/MW	FY20	FY21	FY22	FY23	FY24	FY25New	FY26	FY27	FY28	FY29
200/210/ 250 MW Series	33.0	34.1	35.3	36.6	37.8	40.0	42.3	44.8	47.5	50.3
YoY growth %		3.5%	3.5%	3.5%	3.5%	5.6%	5.9%	5.9%	5.9%	5.9%
300/330/ 350 MW Series	27.7	28.7	29.7	30.8	31.8	33.1	35.0	37.1	39.3	41.6
YoY growth %		3.5%	3.5%	3.5%	3.5%	3.9%	5.9%	5.9%	5.9%	5.9%
500 MW Series	22.5	23.3	24.1	25.0	25.8	26.2	27.8	29.4	31.1	33.0
YoY growth %		3.5%	3.5%	3.5%	3.5%	1.5%	5.9%	5.9%	5.9%	5.9%
600 MW Series	20.3	21.0	21.7	22.5	23.3	24.8	26.3	27.8	29.5	31.2
YoY growth %		3.5%	3.5%	3.5%	3.5%	6.7%	5.9%	5.9%	5.9%	5.9%
800 MW Series and above	18.2	18.9	19.5	20.2	20.9	22.3	23.6	25.0	26.5	28.1
YoY growth %		3.5%	3.6%	3.5%	3.5%	6.7%	5.9%	5.9%	5.9%	5.9%

Source: CERC

Thermal – Sweat assets vs New build

Old thermal plants & PLF incentives – need re-look

- Special incentive package for old – 25 year+ thermal plants to reduce system cost
 - Cost of new thermal plant ~Rs100mn/MW
 - Cost of interest + RoE of new plant will be >Rs1.7/kWh
 - Old thermal is the most competitive & avoids high system costs +
 - Flexibility to switch to RE + PSS
- PLF incentive – should be hiked 50% for peak & off-peak vs 15% only for peak power; Off-peak incentive is flat for a decade vs 2x over FY04-14?

Thermal: Lower NAPAF – should be from 25+ yrs vs 30 yrs

Norms of operation for thermal generating station

70. The norms of operation as given hereunder shall apply to thermal generating stations:
- (A) Normative Annual Plant Availability Factor (NAPAF)
- (a) 85% for all thermal generating stations, except those covered under clauses (c), (c), (d) & (d)
- (b) 80% for coal and lignite based generating stations completing 30 years from COD as on 31.03.2024

Source: CERC

Thermal – PLF incentive – Have been stagnant for decade

- (6) In addition to the capacity charge, an incentive shall be payable to a generating station or unit thereof @ 75 paise/ kWh for ex-bus scheduled energy during Peak Hours and @ 50 paise/ kWh for ex-bus scheduled energy during Off-Peak Hours corresponding to scheduled generation in excess of ex-bus energy corresponding to Normative Annual Plant Load Factor (NAPLF) achieved on a cumulative basis, as specified in Clause (B) of Regulation 70 of these regulations.

Source: CERC

Proposals: thermal power plants – Heat rate – Maintain status quo

	Heat Rate - New	Heat Rate - Old
Thermal Generating Stations achieving COD on or after 1.4.2009	1.05 X Design Heat Rate (kCal/kWh) for 200/210/250 MW Sets 1.04 X Design Heat Rate (kCal/kWh) for 500 MW Sets and above	1.05 X Design Heat Rate (kCal/kWh)
Thermal Generating Stations achieving COD on or before 1.4.2009	2,400kCal/kWh for 200/210/250 MW Sets 2,375kCal/kWh for 500 MW Sets	2,430kCal/kWh for 200/210/250 MW Sets 2,390kCal/kWh for 500 MW Sets

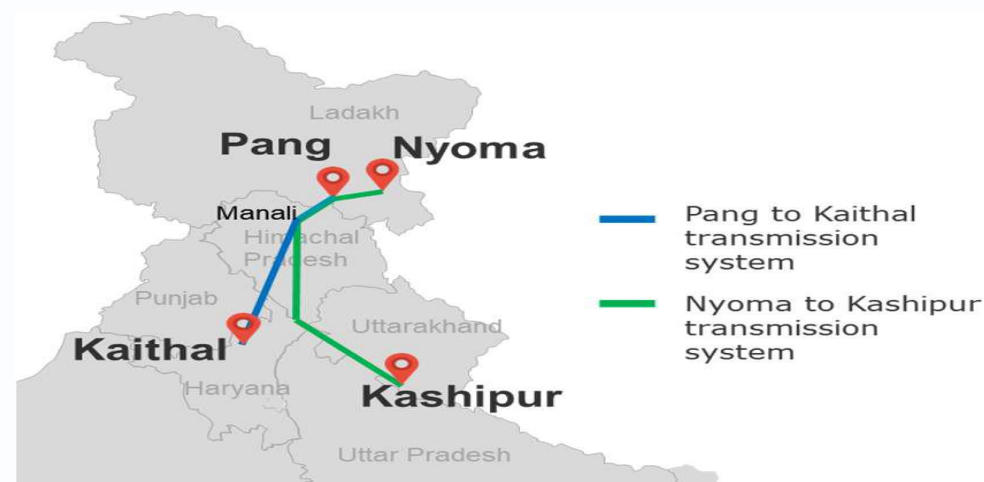
Source: CERC

Transmission – Silent hero

Will rate cut make a difference

- Appreciate 15.5% RoE for block till FY24
- Project under-construction should also get 15.5% as investment decision was taken considering rate
- Special carve-out for mega projects considering duration e.g. Leh Ladakh HVDC– 5 year project – need higher RoE
- O&M cost – tweaks should be avoided
- Will 50bps rate cut be make a difference to DISCOM financials vs global message of RoE cut – esp. when capex is picking-up for 500GW RE + 80GW Thermal

Evacuation of 10 GW Renewable Power from Leh



Prospective cut in transmission RoE by 50bps on new block

- (3) Return on equity for new project achieving COD on or after 01.04.2024 shall be computed at the base rate of 15.00% for the transmission system, including the communication system, at the base rate of 15.50% for Thermal Generating Station and run-of-river hydro generating station and at the base rate of 17.00% for storage type hydro generating stations, pumped storage hydro generating stations and run-of-river generating station with pondage;

Regulatory utilities in a market economy... 1

NTPC: PE valuation near -1stdv @ 1.6x from FY09-18



NTPC: PE valuation @ 15.5x from FY18-FY24YTD



PWGR: PE valuation near -1stdv @ 1.5x from FY09-18



PWGR: PE valuation @ 16.2x from FY18-24YTD



Regulatory utilities in a market economy... 2

- Private B/s are broken / over-leveraged
- Market mechanism has failed in India
- Case I & II bids – trend towards re-regulation in case of losses by IPPs
- DISCOMs – struggle to get quality power supply if terms of trade are favouring them
- Arm twisting by TBCB IPPs with ‘forced shut-downs’ of plants / gaming / Claims
- Regulated utilities have relatively better served its consumers & created wealth for its #1 shareholder – Govt. of India!



Thank You

For important disclosure information please refer to pages 72-73 of this presentation.