

## Power: Yearly Update and Outlook

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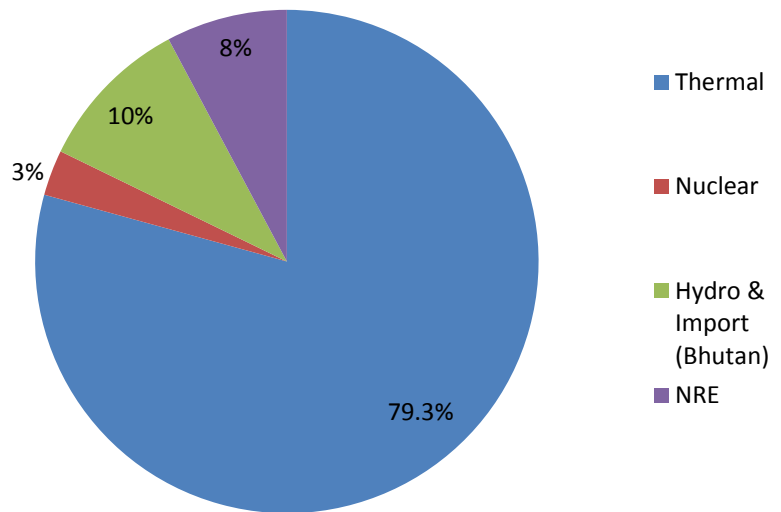
Total electricity generation in the country clocked 1307 BU (billion unit) in FY18, reporting a growth of 5.3% over FY17.

Installed capacity stood at 344 GW in March 2018 vs 329 GW in March 2017. Thermal power's share in installed capacity fell to 65% FY18 vs 67% in FY17. Renewable energy accounted for 20.1% of the total installed capacity in FY18 vs 17.5% in FY17.

Renewable energy added 11.2GW capacity in FY18, accounting for over 2/3<sup>rd</sup> of the new capacity addition during the year. Renewable energy capacity of 12.5 GW was auctioned by various government agencies during FY18.

On the other hand, thermal power, which over the past decade added over 135 GW of new capacity, stood at a distant second with net new capacity addition of close to 4.6 GW in FY18.

**Graph 1 Electricity Generation Mix (FY18)**



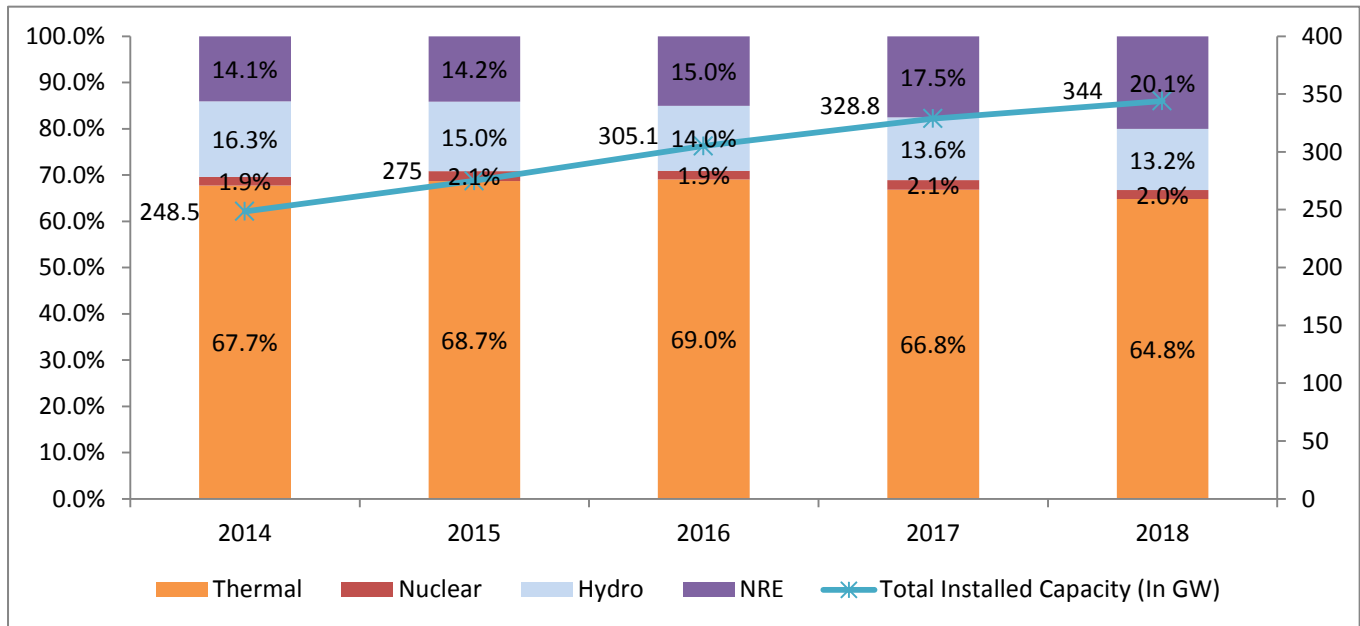
Source: CEA NRE- New and Renewable Energy

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The Union Government has over the past 3 years introduced policies to tackle some of the legacy issues plaguing the sector like debt restructuring of state discoms; availability of domestic coal for thermal power plants, development of robust a national power-grid and developing last-mile power transmission & power-evacuation network. Schemes like UDAY, SHAKTI and SAUBHAGYA aim to address these issues and are at various stages of implementation.

**Installed capacity, addition and utilization:**

**Graph 2 Total Installed Capacity (Source Wise- As a percentage of total)**

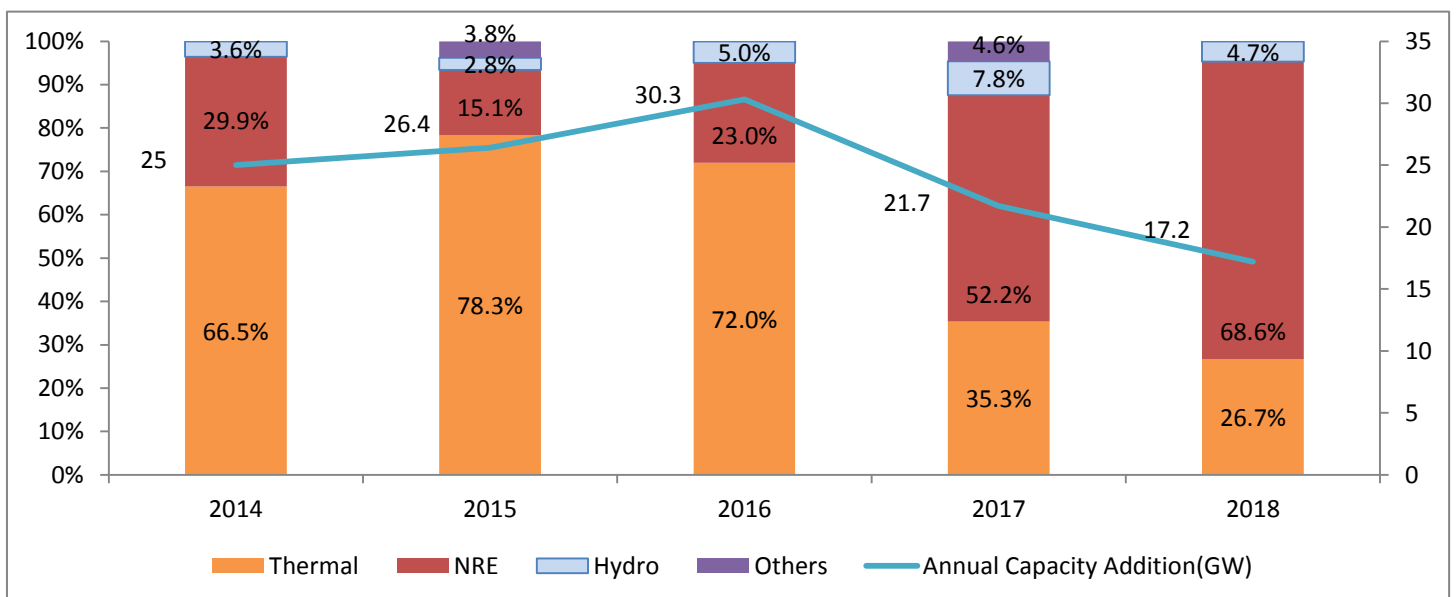


Source: CEA NRE- New and Renewable Energy

**Capacity Addition:**

- FY18 witnessed lowest capacity addition post 2014. Total capacity added during the year stood at 17.2 GW. Renewable energy accounted for almost 69% of the new capacity addition in FY18 whereas coal-based power plants accounted for 27% of the new capacity installed during the year.
- Share of thermal power in total installed capacity dropped from 66.8% in FY17 to 64.8% in FY18. The year witnessed lowest net thermal capacity addition post FY14 (~4.6GW).
- Renewable energy capacity auctioned over the last 24 months has been coming online and FY18 witnessed addition of 11.9GW of new capacity. Solar energy capacity increased by 9.4GW accounting for almost 80% of the renewable energy addition in FY18 followed by wind energy at 1.8GW.

**Graph 3 Capacity Addition by Source (As a percentage of total addition)**

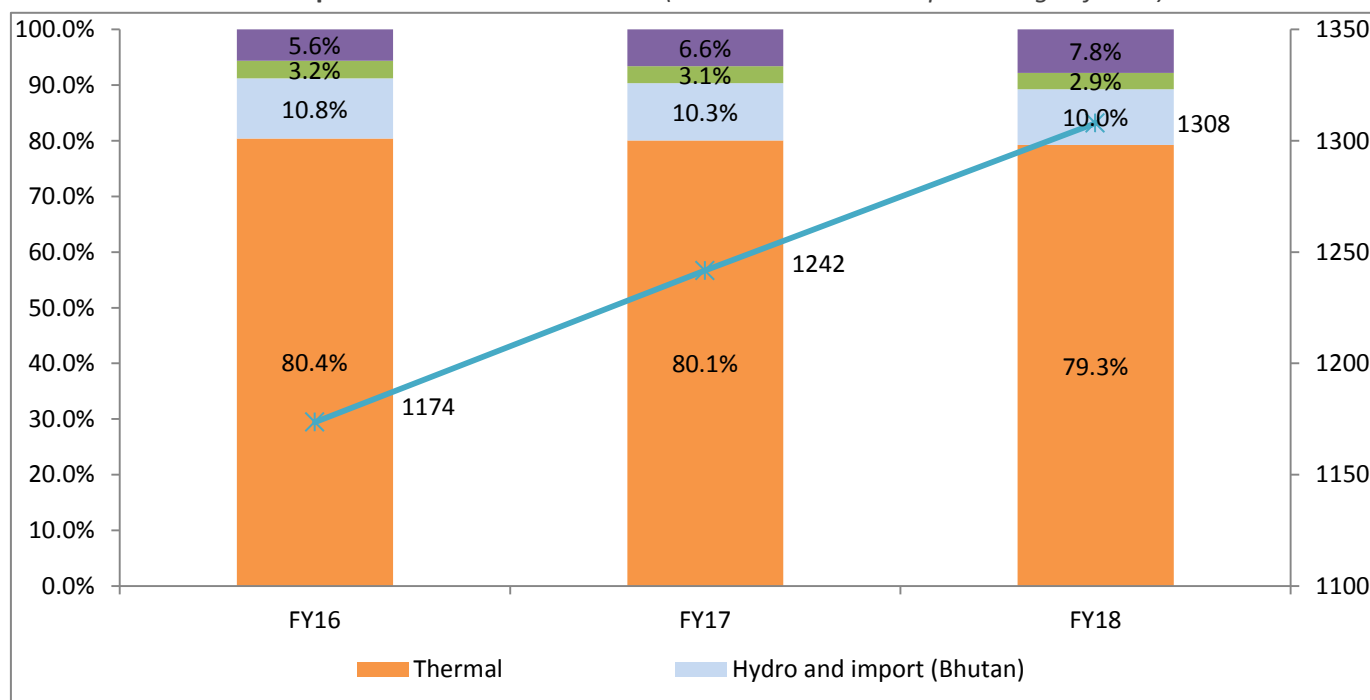


Source: CEA NRE- New and Renewable Energy

**Electricity demand and generation**

- Total energy generated in the country stood at 1307 billion unit (BU) in FY18, growth of 5.3% over FY17. Thermal energy which includes coal-gas-diesel based power plants accounted for 79.7% of the power generated in the country. Nuclear-based, Hydro-power & import from Bhutan; and Renewable energy accounted for 3%, 10% and 8% respectively of the power generated during the year. Renewable power generation recorded 25% increase in generation during FY18 and clocked over 101 BU of electricity generated.

**Graph 4 Total Power Generation (Source-wise and as a percentage of total)**



Source: CEA NRE- New and Renewable Energy

- PLF of thermal plants which includes coal and gas based power plants improved from 59.8% in FY17 to 60.7% in FY18. Gas based power plants continued to witness below-par capacity utilization at 22.9% during FY18. Around 11% of the thermal power plants are gas based and have been facing fuel shortage due to limited production of natural gas domestically and most of the imported and domestically produced natural gas being diverted to other priority sectors like fertilizers, CGD etc.

**Coal supply and consumption:**

- Total coal supplied by Coal India (CIL) & Singareni Collieries Company Limited (SCCL) stood at 507 MT in FY18 vs 477 MT in FY17 to the power sector.
- Total Consumption of coal by the 155 plants monitored by CEA stood at 552.5MT.
- Ratio of coal supplied to coal allocated by CIL and SCCL to CEA monitored power plants stood at 88.6%. This indicates 11.4% shortfall in supply vs allocated quantity.
- Use of imported coal fell by 14.5% to 56.4 MT in FY18 over the previous year.

**Table 1 Coal Import by CEA Monitored Power Plant (In Million Tonnes)**

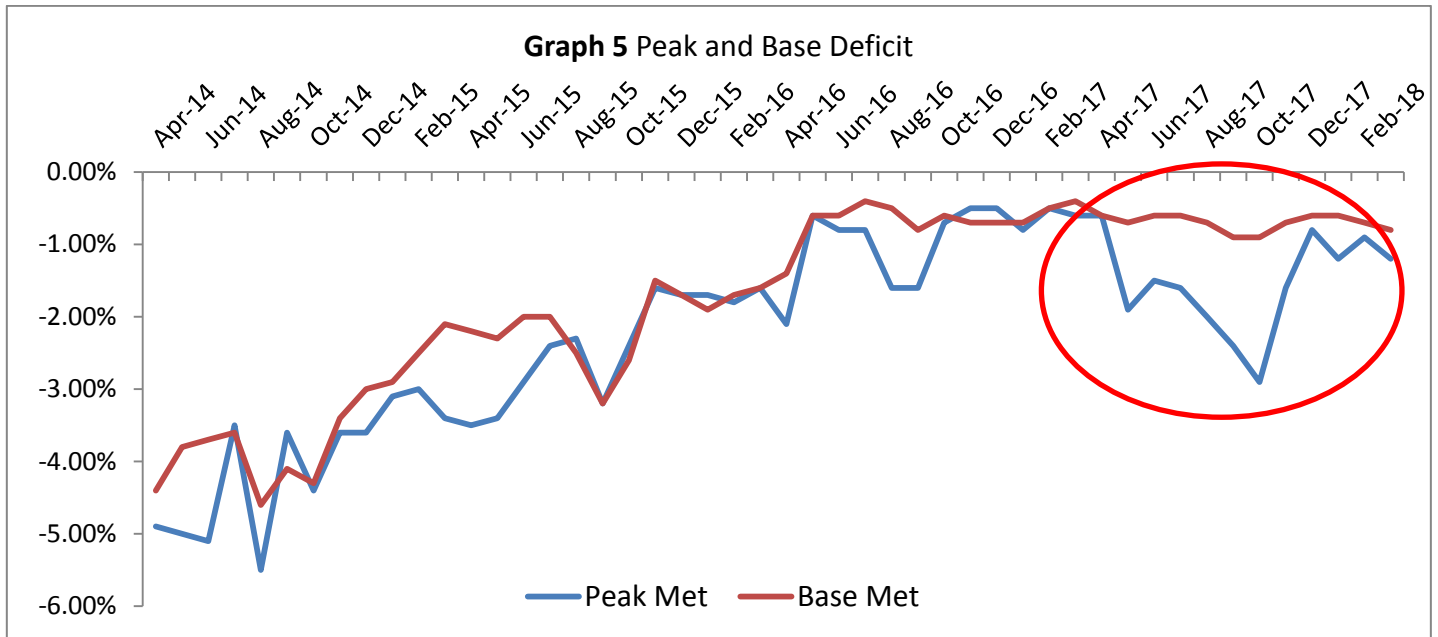
	2016-17		2017-18	
	Program	Actual	Program	Actual
Imported Coal*	48	66	46	56.4

Source: CEA

Domestic coal production grew by 2.53% during FY18. Imports on the other hand grew by around 8%. CIL and SCCL, the two state run coal miners have been finding it difficult to develop infrastructure to mine and transport adequate coal as per demand. Demand from other sectors like metals, cement etc. remained high on the back of improved capacity utilization which led to competitive bidding for coal during e-auctions.

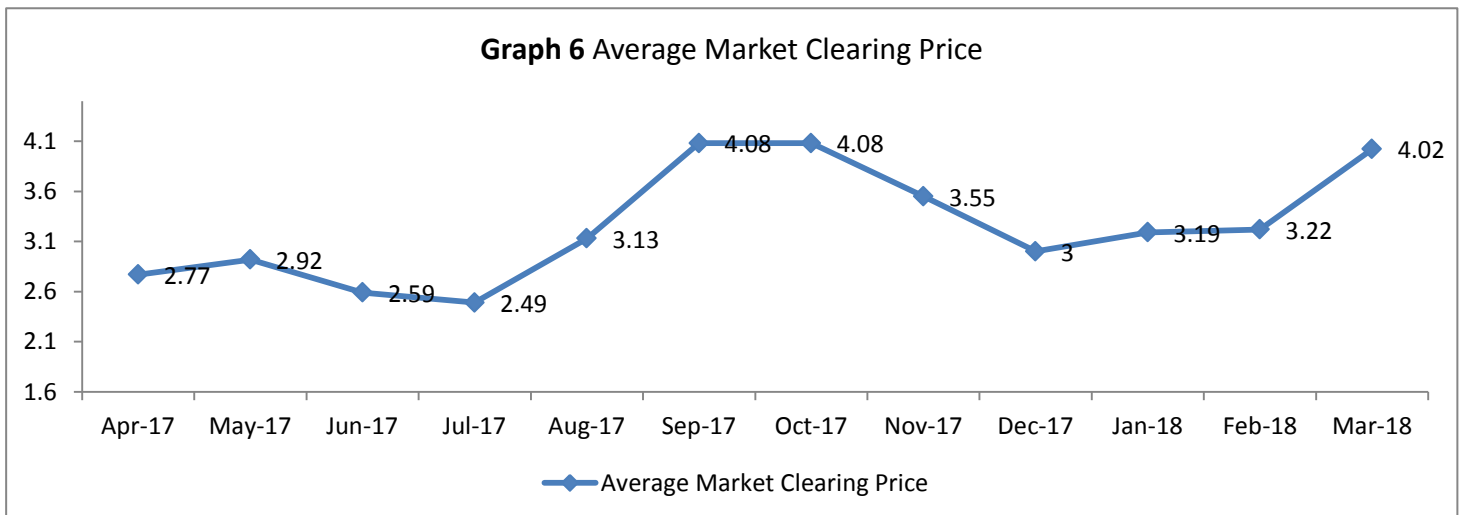
**Contraction in power deficit:**

The demand supply gap for FY18 was range bound between 0.6-0.9% with few months reporting record-low peak and base deficit of 0.6%. Peak deficit climbed sharply in the month of October 2017 at 2.9 per cent owing to lower production from hydel, nuclear and wind energy. Shortage in coal availability led to further widening of peak deficit in the month.



Source: CEA W.r.t. Base Met and Peak Met

**Spot-market tariff trends:**



Source: IEX (Spot Market Prices- Market Data) in Rs. Per unit (kWh)

Energy trading on the country’s largest power exchange (IEX) reported 26% growth in volumes in FY18. 56.8 BU of electricity was traded through IEX in FY18 vs 45.1 BU in FY17. These volumes include Renewable Energy Certificates (REC), Energy Saving Certificates (EScert started from Sept. 17) and Electricity Trade (Day-Ahead and Term-Ahead market).

Electricity Trade (DAM & TAM) accounted for 81.3% followed by REC which resumed trading after a halt of almost 11 months in April 2018, at 16.4% and remaining were ESCert's, of the total volume of power traded on the exchange.

Spot prices of power have witnessed a sharp increase during FY18, ending 45% higher compared with tariffs in the beginning of FY18. The primary reason for spot-market tariff increase is shortfall in supplies from non-thermal sources and shortage in availability of domestic thermal coal. Other factors like transmission network failures and infrastructure issues have also been affecting tariffs.

**Tariffs at PPAs and auctions:** Renewable energy auctions witnessed tariff recovery in the second half of FY18. Solar and wind energy tariffs touched all-time low of Rs. 2.44 per unit, later to recover around Rs. 2.85-3.00 per unit at the latest round of auctions. [Solar and wind energy tariffs](#) now stand at par with other conventional sources.

#### States with power deficit:

As per CEA data, most states were able to meet their power requirement during the year 2017-18. States with power deficit include Jammu & Kashmir, Assam, Bihar, Uttar Pradesh and Rajasthan. Refer Table 2 for details on the most power deficit states.

Table 2 Electricity Deficit States (2017-18)		
State	Energy Not Supplied (Percentage)	AT&C Loss %
Jammu and Kashmir	3,759 MU (20.0%)	57.4%
Assam	315 MU (3.5%)	16.6%
Bihar	417 MU (1.5%)	36.8%
Uttar Pradesh	1,749 MU (1.5%)	27.8%
Rajasthan	591 MU (0.8%)	22.02%
National	8,629 (0.7%)	19.92%

Source: CEA, UDAY MU- Million Units

#### Key Government policy:

##### Hybrid Solar-Wind Energy policy:

- Ministry of New and Renewable Energy has issued National Wind-Solar Hybrid Policy here today. The objective of the policy is to provide a framework for promotion of large grid connected wind-solar PV hybrid system for efficient utilization of transmission infrastructure and land. It also aims at reducing the variability in renewable power generation and achieving better grid stability.
- The Policy provides for integration of both the energy sources i.e. wind and solar at AC as well as DC level. The Policy also provides for flexibility in share of wind and solar components in hybrid project, subject to the condition that, rated power capacity of one resource be at least 25 per cent of the rated power capacity of other resource for it to be recognized hybrid project.
- Hybrid Policy will open-up a new area for availability of renewable power at competitive prices along with reduced variability.

#### Status of Key policy's in FY18:

**UDAY:** Bonds issued under UDAY scheme stood at Rs. 2.32 trillion, achieving 86.3% of its targeted issue of bonds. AT&C losses for All-India have improved to 19.7%. As per earlier Government targets, the same is expected to be brought down under 15% by the end of FY19. Out of the 27 states which are part of UDAY scheme, 25 have implemented tariff revision and the Cost of Supply to Revenue Realisation (ACS-ARR) stood at 26 paise. In terms of operational improvement measures, all rural and urban feeders have been metered and distribution transformer metering of 58% and 51% has been achieved in

urban and rural segments respectively. Feeder metering-DT metering helps in ascertaining quantum of power loss due to theft and improving collection efficiency.

**SHAKTI:** The scheme was launched to provide coal-linkage to private power plants especially the ones which became stressed in the absence of coal linkage. The first bidding which concluded in September 2017 witnessed 27.8 million tonnes of coal getting booked and is expected to benefit power plants with a combined capacity of 10 GW. More auctions are expected to take place during the year which would gradually ease fuel supply to an additional 25-30 GW of capacity.

**SAUBHAGYA:** The scheme launched in September 2017, targeted 100% electrification in the country. Out of the 37.9 million un-electrified households of the scheme, 16% of the households have been electrified as on May 23<sup>rd</sup> 2018. The Government is targeting to connect the remaining households by the end of this year.

### CARE Ratings Outlook:

- Electricity generation during FY19 is expected to grow by 6.0-7.0%. Rural electrification is expected to drive demand for electricity as millions of households get connected to the grid in the coming months.
- Coal availability continues to be the major issue for the power industry. The shortage of coal may sustain, which will in turn lead to surge in power tariff. Power intensive industries would be impacted due to high power tariff on the spot markets. Unavailability of coal is also hampering possible improvement in thermal power capacity utilization.
- AT&C losses are expected to improve, closer to 15% target set by the Union Government, as state discoms focus on achieving 100% distribution transformer metering (DT Metering) by the end of FY19.
- With sizeable increase in Renewable power capacity, State discoms should be mandatorily made to meet their Renewable Purchase Obligations (RPO). Renewable capacity accounts for 20% of total installed capacity and expected to reach 25% by 2020, the Union Government needs to incentivize and provide viable operational environment to renewable energy developers. RPOs should be gradually increased to 10% by 2020 and 12% by 2022 with renewable energy taking-over part of the incremental power demand without impacting capacity utilization of existing conventional power plants.
- Robust Grid and supply transmission network require sizable investments over the next 12-18 months. Supply transmission would be vital in connecting un-electrified households in rural areas thereby improving demand for power. Grid connectivity on the other hand is vital for power-evacuation for new projects especially in the renewable segment.

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