



## Perspectives on Ujwal DISCOM Assurance Yojana (UDAY)

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### Abstract

India has 41 DISCOMs, 106 Million registered consumers, 26,300ckt-km of cables and recorded 1160 BU of power supply during FY 2017. We are the third largest generator and the fourth largest consumer of electricity in the world. To keep such a system up-and-running is no mean feat. DISCOMs are the custodians of this and deserve commendation for the journey they have traversed for the people of India. However, overtime they have accumulated huge losses, constraining distribution firms from expanding their network to cater to the unmet demand.

The following paper talks about the challenges in the Power Distribution Sector of India and how the Ujwal DISCOM Assurance Yojana (UDAY) is addressing them.

**Keywords:** state utilities, UDAY, AT&C, ACS-ARR, power purchase cost

### Introduction

As on March 2015, State Distribution Utilities (DISCOMs) in the country had accumulated losses of approximately INR3,800 billion. The outstanding debt of DISCOMs, primarily utilized in funding of losses, had increased from about INR2,400 billion in 2011-12 to about INR4,300 billion<sup>[1]</sup> in 2014-15. And, DISCOMs were continuing to pile on the losses. The AT&C loss<sup>[2]</sup> and ACS-ARR gap<sup>[3]</sup> figures at national level have been upwards of 20% and INR 0.60/kWh respectively<sup>[4]</sup>. Some DISCOMs reported AT&C losses of higher than 40% and gap of more than INR 1.0 per kWh which means non-recovery of cost by 20-30%.

In December 2015, Ujwal DISCOM Assurance Yojana was launched to turn around DISCOMs from losses to profits by dovetailing existing schemes while adding crucial missing elements to them.

UDAY has accomplished the following in the journey so far:

- 26 states and 1 Union Territory have joined the scheme, which account for 90% of electricity consumption in the country till date.
- INR 150 billion have been accrued as interest cost benefits to DISCOMs on account of takeover & restructuring till March, 2017.
- Target of 100% Feeder Metering (Urban) has been achieved.
- 200 million LED bulbs were distributed in the present year.
- ACS and ARR gap has reduced in 13 states as a result of large scale metering, cost side optimization coupled with revision of tariff structure.

- Within one year of joining UDAY, seven states have reduced their power purchase cost. Power purchase cost optimization has resulted in saving INR 18 billion over the last year.

### Literature survey/research methodology

The literature survey was carried out by reviewing articles, annual reports and summaries of various government agencies like Power Finance Corporation, Central Electricity Authority, Coal India Limited, etc.

### Challenges of the Indian power distribution sector

India, like many other nations started evolving from almost no access to electricity (India's, *per capita electricity consumption in 1947 was ~ 16.3 kWh*)<sup>[5]</sup> to ~ 80%<sup>[6]</sup> electricity access in 2014 (*per capita electricity consumption of 1,010 kWh*)<sup>[7]</sup> with a target of 100% electricity access by 2022. Over the years, electricity sector witnessed several phases of transition through legal, policy and regulatory interventions, namely setting up of Independent Regulatory Commissions, Unbundling, De-licensing, Privatization, Competitive Bidding, Power markets etc. However, the journey has been fraught with numerous bottlenecks and impediments of all types and scale. The sector carries with it a legacy of complications and inefficiencies crept into the system over the years. Old/fragile distribution network, high Aggregate Transmission and Commercial (AT&C) losses, theft, poor customer service, suboptimal linkages and Power Purchase Agreements (PPAs), suboptimal locations of power plants, un-electrified villages, etc. are issues which still lingers

<sup>1</sup> Source: Report on performance of state power utilities, Power Finance Corporation (PFC)

<sup>2</sup> AT&C loss is defined as the sum total of technical and commercial losses and shortage due to non-realization of billed amount.

<sup>3</sup> ACS-ARR gap is defined as Average Cost of Supply per unit of power and per unit Average Revenue Realized

<sup>4</sup> Source: State utilities

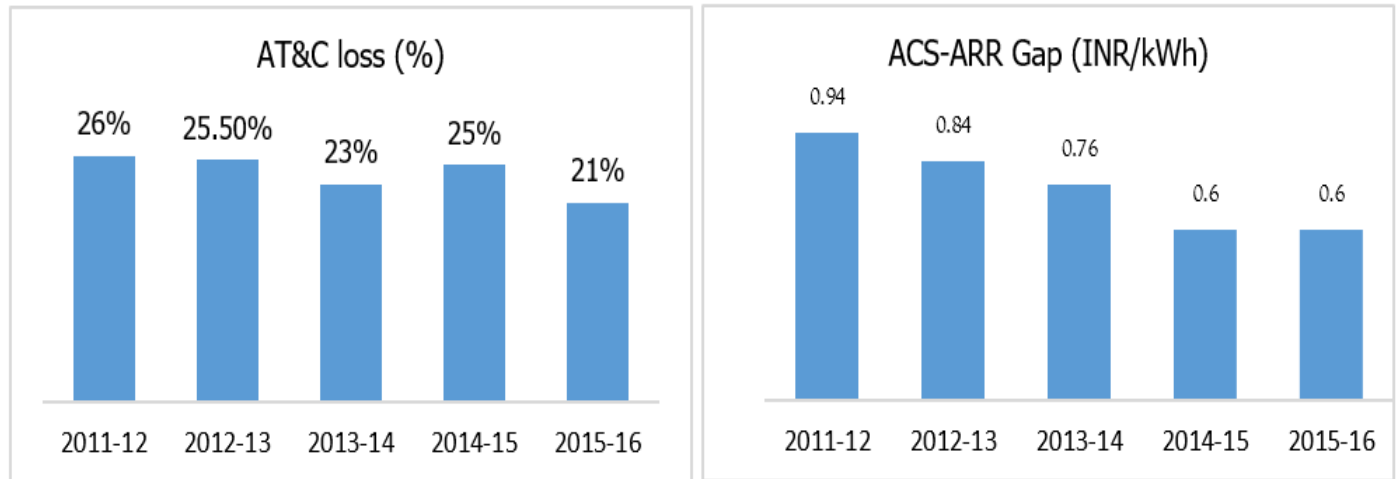
<sup>5</sup> Growth of Electricity Sector in India from 1947-2017, Central Electricity Authority (CEA)

<sup>6</sup> <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>

<sup>7</sup> Executive Summary on Power Sector, Central Electricity Authority (CEA)

and cannot be done away with over-night. Figure 1 indicates the historical AT&C loss and Average Cost of Supply per unit

of power and per unit Average Revenue Realized, i.e., ACS-ARR Gap.



**Fig 1:** Historical AT&C loss and ACS-ARR Gap (National Level)

The regulatory tariff-regime has ensured that cost inefficiencies were not passed on to the consumers. Also, it ensured that DISCOMs were denied any relief through consumer-funding. Evidently, DISCOMs were trapped in a downward spiral leading into a bottomless pit. Although the Electricity demand shall continue to rise in India but financiers, power generators, regulators or consumers did not appear to be convinced of DISCOMs’ future. While all the focus was on DISCOMs, they seemed to have been cornered

by following problems:

**1. Condition of the existing power distribution infrastructure and sub-optimal maintenance**

Weak power distribution network comprising worn-out and overloaded cables, dilapidated transformers, dated technology, suboptimal substation network, defective meters etc. results in loss of more than a quarter of energy injected into the distribution system.

**Table 1:** Key reasons for technical losses in distribution system <sup>[8]</sup>.

Poor Power Factor	In urban areas, the lighting load (comprising fluorescent tube lights) is liable for the poor PF .The fluorescent lights have low power factor of 0.5, while in rural areas, the inductive load comprises of the agricultural pump sets with PF of the order 0.7 to 0.75.
High LT to HT Ratio	This distribution system involves nearly 2:1 ratio of low and high voltage line lengths. This high ratio of LT to HT causes losses.
Inadequate Conductor size	Losses in the feeder are inversely proportional to the conductor size. The conductor size is usually selected based on the thermal loading limit to curtail the capital investment, ignoring the cost of losses. With rapid load growth, the conductor size have become inadequate, causing high power losses
DTs located away from load centre	Distribution transformer should be located at load center. Due to this unequal and unpredictable demand of load it is usually not possible to keep the distribution transformer at load center
Radial conductors in rural areas	11 kV and 415 volts lines, in rural areas are extended over long distances to feed loads scattered over large areas. Thus the primary and secondary distribution lines in rural areas; by and large radially laid, usually extend over long distances. This results in high line resistance and therefore high losses in the line.
Lack of investment in Substation	The erection of a new substation requires substantial investment; say INR 2.0 to 25 crores on an average. The incapability of utilities to execute for long range planning and setting up of new distribution substations at most favourable locations has resulted in high power losses

<sup>8</sup> Review on loss reduction by improving ratio of HT/LT line in Electrical Distribution System, International Journal of Engineering Research and General Science, 2016

Further, issues like insufficient funds, irregular maintenance schedule, delay in tendering and procurement, ineffective execution of Government funded programmes/schemes have also been responsible for poor state of the distribution infrastructure, resulting in losses.

### 2. High and rising cost of power

Inefficiencies due to irrational fuel linkages, long distance coal-transportation, unbalanced PPAs, old generation units and high transmission losses have cost implications resulting in high power purchase cost for the distribution utilities. Increase in coal price and railway freight puts direct burden on cost of power.

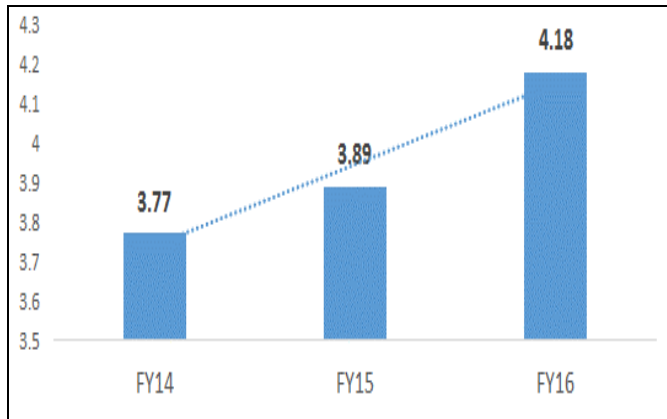


Fig 2: Power Purchase Cost (INR/kWH)

An Inter-Ministerial Task Force had identified more than 20 such power plants which needed linkage rationalization to bring down the transportation cost. Savings in transportation cost to the tune of INR 1114 crores<sup>[9]</sup> was estimated. Besides, cost of power also increases due to poor generation efficiencies in thermal units. India has a significant capacity of thermal generating units with low operating efficiency. High Station Heat Rate (SHR) and Low Plant Load Factor (PLF) are key contributors of inefficiencies and need required interventions. As per the National Perspective Plan of CEA, under 12th Plan, Renovation & Modernization works have been identified on 65 units (17,301 MW)<sup>[10]</sup> during the 12th Plan.

### 3. Electricity-thefts and consumer defaults

Low billing efficiency indicated high thefts while low collection efficiency meant high consumer defaults (see figure 3 and 4 below). On one hand consumers have been increasing their electricity consumption but they were not willing or capable to pay for that. DISCOMs too sent wrong bills, delayed grievance redress and lacked means or mandate to curb it.

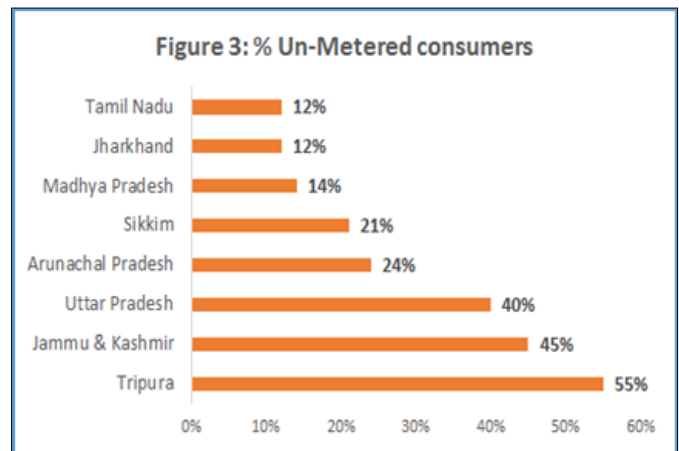
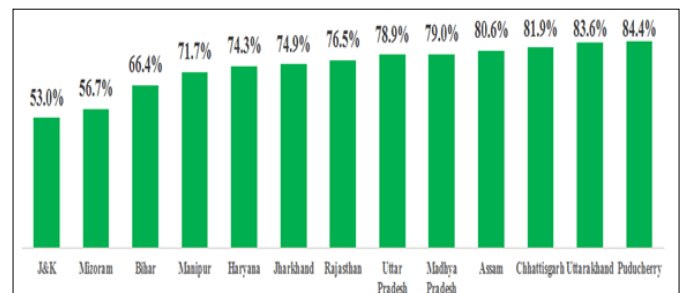


Fig 3: % Un-Metered consumers



Source: www.uday.gov.in

Fig 4: State having lower 85% Billing efficiency in FY17

### 4. Inadequate accounting and lack of transparency

The question of “from where to start the reforms of DISCOMs” was further confounded by lack of proper accounting. The practice of maintaining quarterly statements was absent, with most DISCOMs resorting to manual accounting using inappropriate accounting standards (statements on realization basis against accrual basis). As per the fifth integrated ratings of the state distribution utilities (May’ 2017), following was the status.

- In terms of availability of audited accounts for FY 2016, only 30 out of a total of 41 utilities have submitted audited annual accounts for FY 2016
- Only 14 utilities have timely filed tariff petitions for FY 2018.
- In 8 states tariff orders for FY 2017 were not issued

Without accurate and timely accounting and energy audit; power purchase cost, receivables, payables, energy loss cannot not be accurate calculated. Thus DISCOMs have failed to establish energy discipline in their system resulting in high AT&C loss levels.

### 5. Institutional ineffectiveness and lack of skilled staff

Lack of adequate staff with required skills has been a major issue with the DISCOMs. Most of the functions/ departments/ cells remained understaffed resulting in overloading of work on individuals. Further, DISCOMs have also suffered immensely from unproductive tasks and redundant activities. In order to improve their competitive position, it is vital for DISCOMs to improve the efficiency and effectiveness of their

<sup>9</sup> Minutes of the workshop on rationalization of coal linkages, Coal India Limited

<sup>10</sup> Study Report on Reduction of Barriers to Renovation and Modernization Interventions in Thermal Power Stations in India, CEA

business processes. No load balancing, below-par problem resolution response time, inadequate forward planning of demand and availability of electricity, funds and manpower, sub-optimal skills in managing stakeholders such as regulators, consumers and suppliers, over-reliance on third-party vendors, no benchmarking, poor knowledge management, poor cross-learning, etc.

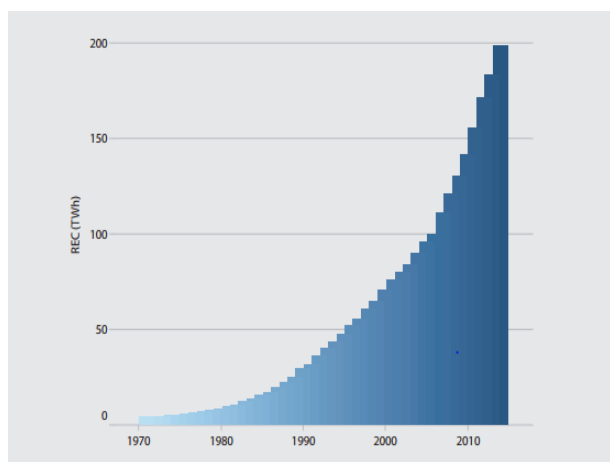
DISCOMs need to prepare themselves for the emerging challenges and opportunities which is set to affect the business as usual of stakeholders in the power sector. Smart technologies, digitization, power market, rooftop solar, new products and services like demand side management, energy efficiency and new and innovative ways of customer interaction etc, will require changes in the way DISCOMs operate both in terms of creation of new functions and hiring of personnel with specific skills.

### 6. Regulated tariffs and consumers' affordability

Regulators are in place to protect consumers from monopolistic practices or collusion of suppliers. The Electricity Act mandates affordable and reliable electricity to every consumer category. Term "affordable" is subjective and regulators have not developed scientific ways of ascertaining consumers' affordability. Regulators have often struggled to strike a balance between imperatives of DISCOMs remaining financially viable, and, administering affordable tariffs to consumers, by ensuring that the inefficiencies of the coal, transportation and power sector value chain do not get charged to consumers.

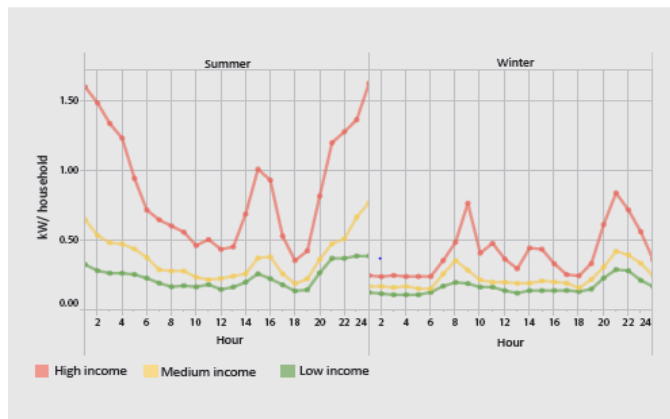
### 7. Rapid changes in Electricity Consumption patterns

The total electricity consumed by households in India is now more than 50 times that of 1971 due to increased number of households, rising incomes, and significant electrification. The share of the Residential Electricity Consumption (REC) <sup>[11]</sup> in the total electricity consumption has also gone up from 4% in 1971 to 22% in 2014 (refer figure 5). Consumption pattern also varies with changes in income levels and time/duration of usage as shown in figure 6 below. These shifts have big implications on how DISCOMs position themselves.



**Fig 5:** Growth in Residential Energy Consumption

<sup>11</sup> Residential Electricity Consumption in India, Prayas (Energy)



**Source:** Prayas (Energy)

**Fig 6:** Load curves for households in Gujarat for summer and winter

### 8. Governance and shared legislation of Electricity

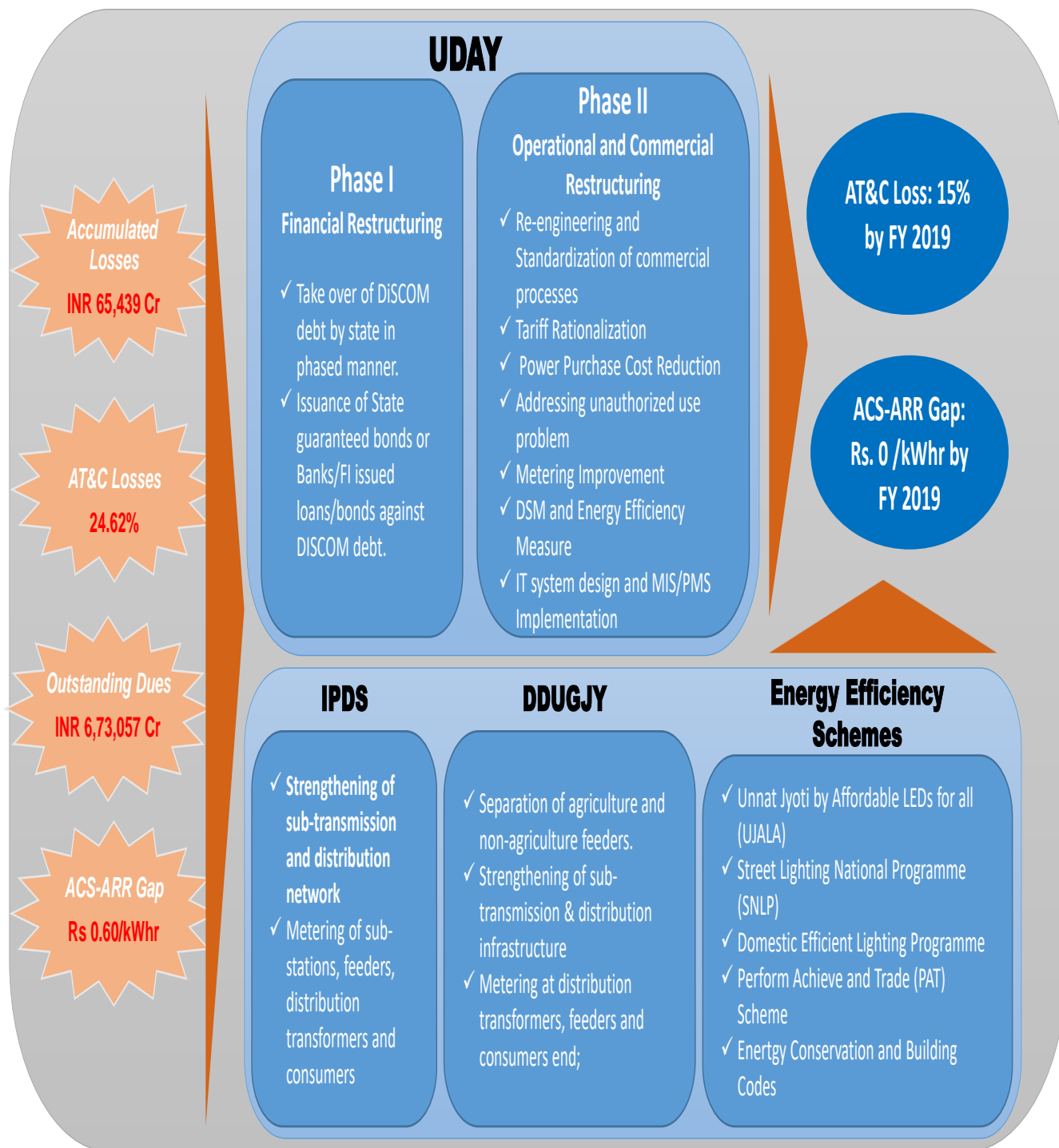
The Constitution of India places electricity in the concurrent list, that is, on which both the central and state governments have jurisdiction. In practice, this means that the central government cannot direct the state governments to improve distribution efficiency or give directives on how to run the power system and vice-versa. With electricity being a necessity, both central and state governments are influenced by the collective pressures and popular requirements. Therefore, concurrent nature of jurisdiction on electricity has led to inefficiencies in the system.

### The Ujwal DISCOM Assurance Yojana (UDAY)

While India's Electricity distribution sector was struggling with extant problems, the Government of India had committed themselves to Electricity-reliant programs such as "Make in India" and "Digital India". Indeed, Government of India had to face up to the challenges of 100% rural electrification, 24x7 power supply for all and adoption of clean energy. All these could further increase the cost of supply for DISCOMs spiraling them further into the vicious cycle of raising unaffordable debts which in turn strangles their capacities to undertake any Capital Intensive reforms.

Therefore, there was an urgent need to overcome this catch 22 situation. A prioritization of problems impairing DISCOMs was in order, but, the first step was to create some leeway by instantly breaking the financial-deadlock. To effect this, Financial Restructuring Packages (FRP) were undertaken in few DISCOMs such as those in UP. But unfortunately, these FRPs proved to be of little help as they could not integrate the rewards of financial restructuring with operational discipline required for their sustenance.

It was then that Ujwal DISCOM Assurance Yojana (UDAY) was conceptualized by the Government of India. The scheme dovetails all existing schemes of the Government while adding missing components to address the problems holistically (See Box 1).

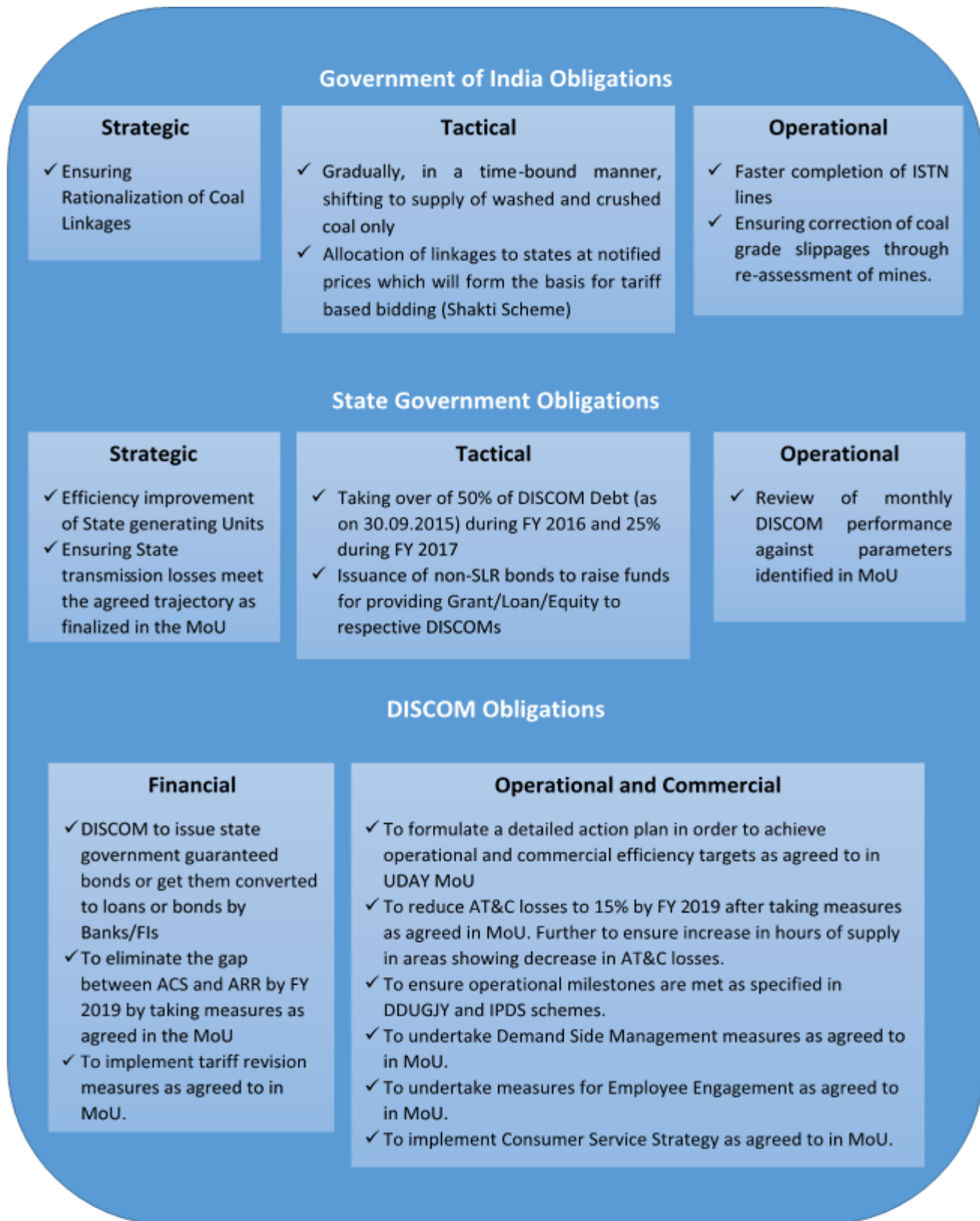


**Box 1** <sup>[12]</sup>: Integration of UDAY with existing schemes

<sup>12</sup> Source Report on Performance of State Power Utilities 2012-13 to 2014-15

As per the scheme, tripartite MoUs have been signed amongst the State Governments, respective DISCOMs and the Government of India (GoI) stipulating responsibilities of each party to achieve operational and financial targets clearly

defined under UDAY. As per these MoUs it becomes imperative on the parties to meet certain time bound obligations.



**Box 1:** Comparative Obligations

It is rather important to mention here that DISCOMs in each state have certain unique features and correspond to different statuses in journey towards the common UDAY goals, and therefore the specific obligations of each of three stakeholders vary in each state to suit their own modalities. The box 2 above mentions the general obligations agreed to by stakeholders in each MoU.

On a high note, we can agree that in UDAY the role of Central and State governments is to facilitate the DISCOMs and institutionalize a suitable review and governance mechanism to ensure close monitoring of performance in order to prevent slippages.

Whereas, the DISCOMs have been mandated with responsibilities to enhance operational efficiency by reducing AT&C loss, reducing cost of supply and tariff rationalisation to improve revenue realization. Further, in lieu they receive help from State and Central Government in their complete financial transformation.

*In effect, UDAY embodies a step-wise approach to be followed in assisting DISCOMs through their Operational, Commercial and Financial turnaround process.*

### Financial Restructuring

Salient features of the financial restructuring <sup>[13]</sup> are as follows:

- Few states will take over 75% of the DISCOM in a phased manner by issuing bonds and transfer the proceeds to DISCOMs in a mix of grant, loan, and equity.
- Balance 25% of debt to be re-priced at lower interest rates.
- Trajectory for states to take over future losses, up to next 5 years only, of DISCOMs.
- Balance losses to be financed through State bonds or DISCOM bonds backed by State Govt. guarantee, to the extent of loss trajectory finalised.
- Henceforth, Banks/FIs will not fund losses.

### UDAY portal: Platform for transparency and beyond

The UDAY portal comprises a public-dashboard on UDAY parameters, DISCOM and state rankings, updates on UDAY implementation, contact information of key personnel, media coverage of UDAY and answers to frequency asked questions. Key benefits envisaged from the portal are as follows:

- **Improved transparency:** Each utility is required to enter quarterly/monthly data through 26 different formats against the target stipulated in the tripartite MoU. The erstwhile opaque functioning of DISCOMs, is now in public domain for scrutiny. The utilities are now bound to prepare quarterly financial and operational statements, which was not the practice in earlier years.
- **Data validation:** Data error-check logics are programmed in the data entry forms to minimize human errors. Automatic alerts, reminders and escalations are incorporated for default or error in data submission. Multi-level manual validation is also done to ensure correctness of information and data provided by individual DISCOMs. Finally, data sent by DISCOMs to various agencies is triangulated and any inconsistency found is highlighted for correction.

- **Increased accountability through public dashboard:** The dashboard contains host of graphical information for each participating DISCOM and state. The information and analysis is aggregated and presented at national level too. A downloadable **health-card** having temporal analysis of all UDAY parameters for each DISCOM and for each state are available to the consumers.
- **Improved monitoring and follow-up:** The portal has provision of auto triggers and alerts at different level, which helps in multi-level monitoring of any non-compliance by the utilities. Also, with the presence of dashboard features in the portal, monitoring and reporting activities for senior management have become easier and error free.
- **Competitive cooperative Federalism:** DISCOMs are objectively ranked on the public dashboard. DISCOMs private dashboards allow them to compare them with rest of the DISCOMs on individual parameters as well as on overall level. UDAY cell has already received interests from DISCOMs on ways to improve their rankings indicating healthy competition. This increased visibility and resultant competition acts towards the betterment of system as a whole.
- **Empowered Consumers/ Other Stakeholders:** A consumer can now decide for himself about the quality of service available. The portal also keeps investors, lenders, analysts, rating agencies well informed about the latest progress of the sector
- Portals of ‘UrjaMitra’, ‘Merit’, ‘Ujala’ and ‘IPDS’ along with their apps provide real time information to consumers of entire distribution sector ecosystem.

*The creation of such portals has ensured complete transparency and a competitive eco-system in the distribution sector.*

### Action-Plan Preparation

Distribution utilities are expected to make detailed action plans to achieve their respective Financial, Operational and Commercial targets. The process would include structured and systematic approach to address key issues of respective DISCOMs hindering in meeting the target. The outcome of the efforts shall be measured by the following two target parameters:

- Reduction in AT&C Loss reduction – 15% by 31<sup>st</sup> March, 2019.
- Elimination of gap between Cost of Supply & Revenue Realization – By 31<sup>st</sup> March, 2019.

*(Few states have been allowed relaxations in time for achieving one or more of the above parameters depending upon the situation existing in the state.)*

These high level targets would require developing action plans around actionable and realistic goal/milestones developed for each high level target. An action plan would mainly address the design of these ‘‘Actionable and Realistic’’ goals and a clear defined strategic path to achieve them. An action plan under UDAY will typically address MoU key issues through milestone bound action plans as outlined in the pictorial presentation below:

<sup>13</sup> Source: Ministry of Power

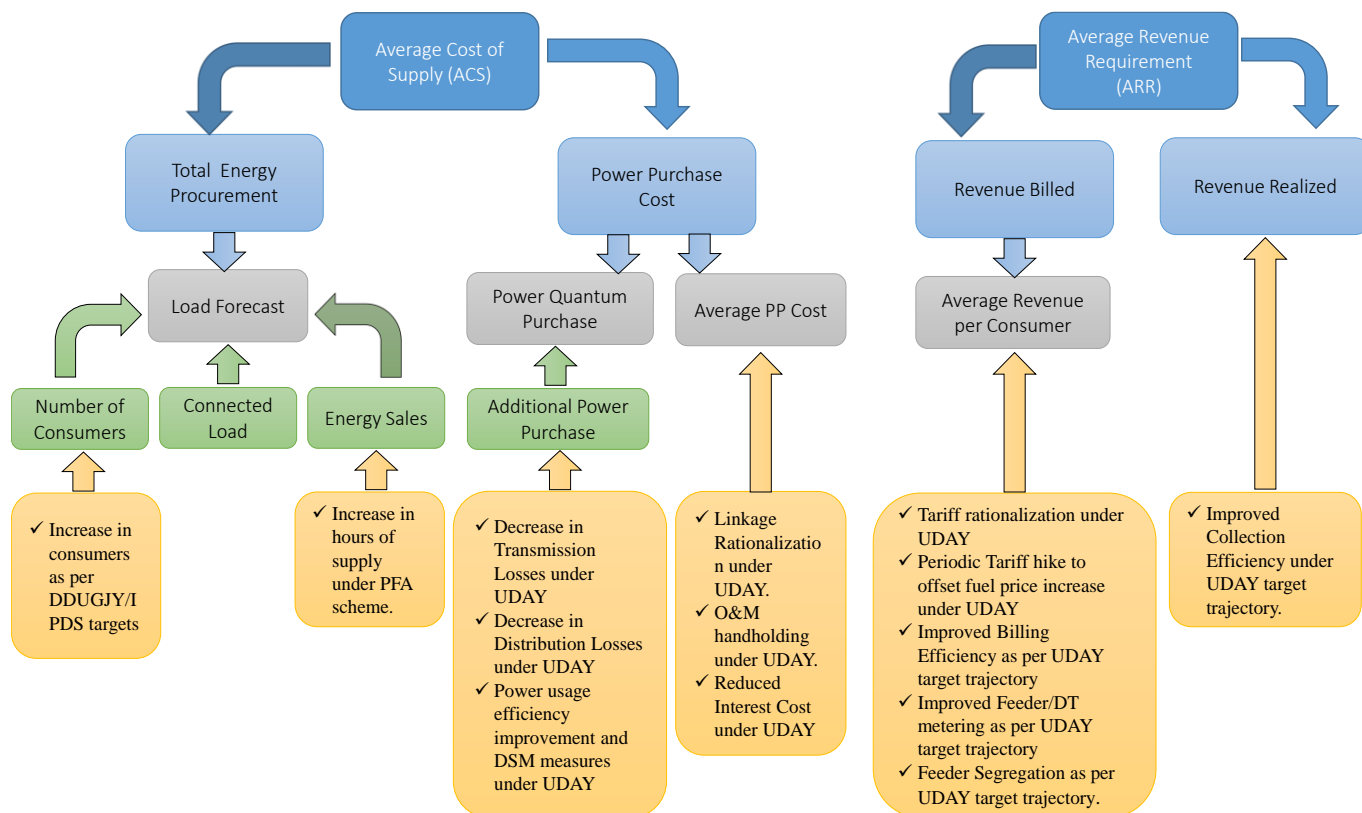


Fig 7: Drill Down of UDAY Action Plan

**a) Support on aspects related to power purchase cost optimization**

Power purchase cost is the key cost component for any distribution utility and consists of 80-90% of the total cost. The action-plan, prepared for each DISCOM under UDAY, addresses power purchase cost optimization by optimizing fuel sourcing, plan power purchase by forecasting demand, identifying right source of power purchase depending on tenure of the demand.

**b) Support to DISCOMs in reducing AT&C losses**

The action plan under UDAY includes following for monitoring and reducing AT&C loss:

- Setting up of loss control cell at each DISCOM Head Quarter
- Evaluation of technology
- Assist in developing Loss reduction action plan
- Focused Metering drive
- Evaluation of rollout of Franchisee Model

**Handholding of state GenCos by NTPC**

Most State run plants grapple under problems of poor efficiency. Their PLF have historically been lower than Central GENCOs (NTPC) and IPPs <sup>[14]</sup>. A quick snapshot:

Table 2

Year	PLF (%)	Sector wise PLF (%)		
	National	NTPC	State	Private
2009-10	77.5	85.5	70.9	83.9
2010-11	75.1	85.1	66.7	80.7
2011-12	73.3	82.1	68.0	69.5
2012-13	69.9	79.2	65.6	64.1
2013-14	65.60	76.10	59.10	62.10
2014-15	64.46	73.96	59.83	60.58
2015-16	62.29	72.52	55.41	60.49
2016-17	59.88	71.98	54.35	55.73
2017-18	60.43	72.40	55.20	56.27

Subsequent to fuel procurement optimization, operational efficiency enhancement of power generating stations would be targeted. As per UDAY scheme utilities would be hand held by NTPC in this journey. NTPC has shown immense turn around capability by having successfully turned around the performance of four sub-optimally performing stations (Badarpur, Unchahar, Talcher and Tanda) over the years. Apart from PLF, NTPC plants have fared far better than State GENCOs in terms of SHR and Auxiliary Consumption, thus making them ideal candidate for handholding exercise. NTPC

<sup>14</sup> Source Ministry of Power

has already started handholding 12 states (Gujarat, MP, Maharashtra, Tamil Nadu, Telangana, Andhra Pradesh, Haryana, Punjab, UP, Rajasthan, Orissa and Bihar) covering 17 power plants.

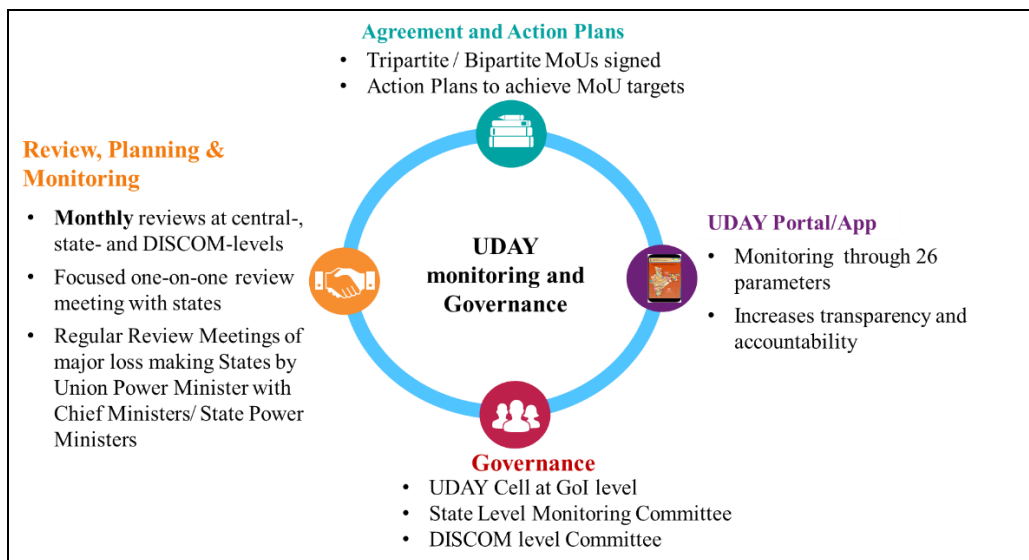
**Monitoring and Review**

By leveraging the state-of-the-art UDAY portal, the Ministry will be able to monitor the progress made by DISCOMs and make future plans/schemes for improving DISCOMs performance. Key areas of interventions are:

- ✓ Design of MIS based Performance measurement and governance frameworks to include:
  - Early Warning and correction for slippage of performance indicators.
  - Ongoing healthiness check to allow monitoring of progress at operational level
  - Monthly Report generation for review
  - Enabling financial projections and scenario planning
  - Root cause analysis for key deviations and suggest

- remedial measures.
  - Centralized customer grievance redressal system
- ✓ Development of customized MIS dashboards, containing all Key Performance Indicators (KPIs) for different levels of officials to enable:
  - Development of roles and responsibilities for officials at multiple levels.
  - Generation of Balance Score Card which shall link KPIs to improvement in AT&C loss and improvement in Metering/Billing/Collection efficiency.
  - Monthly performance review
  - Tools for capacity building of UPPCL employees

The scheme is being monitored through a three-tier mechanism involving the Centre, the State and the DISCOMs. Monthly review meetings are being conducted with participation from all three tiers. Also, the coordinating agency (REC) has constituted a dedicated UDAY Cell to continuously monitor the progress and timely implementation of the scheme.



**Fig 8:** Governance Mechanism

**Performance Analysis**

Periodic performance analysis is being carried out for all DISCOMs based on reported information (financial performance, operational performance, working capital, consumer mix, tariff revision etc.) in the portal and other government sources.

The performance of a DISCOM/State is compared against the target as well as with the performance of other DISCOMs.

**i) Workshops and State-visits**

Based on the study and analysis, focused meetings are held with state representatives in order to highlight the performance of the State/DISCOM(s) along with key achievements, issues and way forward. In addition, several states have been visited to sensitize the performance of DISCOM(s) and to highlight the importance of the program. Capacity building through enhancement of skillsets to drive

and sustain changes is also a key focus area under UDAY..

**ii) Rewards and Recognitions**

DISCOM employees possess the technical expertise, albeit scattered across them and the problem is compounded by lack of clarity for a common purpose and support to go ahead. A unification of expertise among DISCOM employees is envisaged in UDAY through fostering of healthy competition and removal of information asymmetry among them. UDAY envisages a proper Reward and Recognition system to be established right through the employees at grass root level of DISCOMs.

**Summary**

To summarize, various problems marring Distribution sector of the country as envisaged to be addressed under UDAY and/or other schemes such as IPDS, DDUGJY, UrjaMitra, UJALA scheme are as indicated below:

Table 3

S. No.	Problem of Distribution sector	Problems addressed by UDAY	Problems addressed by other schemes/entities
1	Legacy of complications and inefficiencies	UDAY Governance mechanism	
2	Condition of infrastructure and maintenance		IPDS
3	High and rising cost of power	Linkage rationalization, coal swapping, NTPC handholding	
4	Under-skilled, ageing and excess personnel	Workshops, state-visits	
5	Inadequate accounting and lack of transparency	UDAY portal and monitoring	
6	Regulated tariffs and consumers' affordability		Forum of regulators, SERC/CERC.
7	Electricity thefts and consumer defaults	Smart metering, Name & Shame, Special Police Stations, Campaigns (Mhara Gaon, etc.), Feeder managers,	
8	Rapid changes in consumption patterns	DSM and Efficiency improvement measures under UDAY	DSM and Efficiency improvement measures under other schemes.
9	Diversity of conditions and non-fungibility of best practices	Curate best-practices	
10	Governance and shared legislation	Cooperative federalism	
11	Lack of consumer awareness	Myth busters, campaigns, Social media, etc.	

### Achievements of UDAY

This section explores journey of UDAY till date and highlights major achievements of the scheme. At the onset of the scheme, it was necessary to ensure maximum participation from the states. This was imperative to create a competitive eco-system among the utilities. With the scheme completing around 25 months, key achievement in terms of reduction in losses and improvement in operational efficiency have been emphasized.

### Status of participation of states

Although it is a voluntary scheme, the response from the states has been extremely encouraging. Till March 2017, 26 states and 1 Union Territory have joined the scheme, which accounts for 90% of electricity consumption in the country. The states have joined at different stages of the scheme and hence, impact of UDAY is also not same for different states. The first state (Jharkhand) signed the UDAY MoU on 4<sup>th</sup> January 2016 and the last state (Mizoram) signed the MoU on 31<sup>st</sup> March 2017.

States/Union Territories which have joined UDAY till date are [15].

- *Jharkhand, Chhattisgarh, Rajasthan, Uttar Pradesh, Punjab, Bihar, Haryana, Jammu and Kashmir, Andhra Pradesh, Madhya Pradesh, Maharashtra, Himachal Pradesh, Telangana, Assam, Tamil Nadu, Meghalaya, Gujarat, Uttarakhand, Goa, Karnataka, Puducherry, Manipur, Sikkim, Arunachal Pradesh, Kerala, Tripura & Mizoram.*

### Key Achievements

The states have started reaping benefits from UDAY.

Significant improvements have been observed in terms of reduction in AT&C loss and reduction in gap between cost of supply and revenue realization.

### i) Issuance of Bonds

With the commencement of UDAY, Governments of States have to take over around INR. 2,690 billion debt of the distribution companies as per the terms of UDAY agreements. As on August 2017, States have already issued Bonds of INR 2,090 billion and DISCOMs have issued Bonds worth INR 235 billion (~87% of the debt to be addressed). These loans, after the takeover, would service at interest rates ranging from 7%-8.5% against the previous rates of around 11-12%.

Therefore, swift issuance of bonds depict a runaway success of the scheme. Further, a few DISCOMs have also restructured their balance loans at reduced rates, which would also reduce the interest burden by around 3%-4%. The savings accrued to DISCOMs on account of interest benefits due to above, takeover & restructuring works out to INR 150 billion approximately till March, 2017.

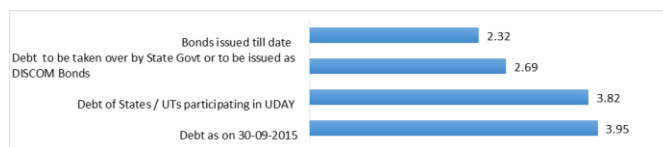


Fig 9: Status of Debt and Bond issuance under UDAY (lakh Crores)

### ii) Augmentation of Operational efficiency

Apart from financial restructuring, UDAY aims at achieving holistic improvement of the DISCOMs. The UDAY scheme helps the utilities in improving operational efficiency through support and handholding from the central level. Also, by continuous monitoring, analysis and action planning, the

<sup>15</sup> Source: Ministry of Power

scheme tracks the parameter progress and thereby helping the utilities attain cost reduction.

UDAY States have shown great commitment towards this cause and the progress on certain operational parameters has been commendable. At the national level, a major highlight has been achieving 100% Feeder Metering (Urban) target. All defective and unmetered feeders for the urban consumers have been replaced with the new meters post UDAY. The cumulative progress for the remaining parameters as available on UDAY Portal is as follows:

**Table 4:** Operational Achievements till date under UDAY

Operational efficiency indicators	Overall Target	Targets (Up to March, 2017)	Achievement (Up to March,2017)	Achievement % (Up to March 17)
Urban Feeder Metering	52,642	43,161	45,506	100%
Rural Feeder Metering	98,708	97,200	94,045	97%
DT Metering Urban <sup>[16]</sup>	71,00,628	16,21,499	8,60,330	53%
DT Metering Rural <sup>14</sup>		41,64,334	16,89,095	41%
UJALA LED-bulb	77,00,00,000	23,42,96,000	23,25,51,339	99%

The states have shown great improvement in the operational parameters over the last year. The distribution of 200 million LED bulbs in the present year, has been one of the major highlights. The country has saved more than INR 100 billion in terms of annual energy savings, reduced peak load by ~4500 MW and avoided ~20 million tons of CO<sub>2</sub> emission.

**Table 5:** Operational improvement over the last year

Operational Efficiency Indicators	Achievement Up to March,2016	Achievement Up to March,2017	Increase (%) From Last Year
Urban Feeder Metering	40,936	45,506	11.1%
Rural Feeder Metering	85,213	94,045	10.4%
DT Metering Urban	764,079	860,330	12.6%
DT Metering Rural	1,392,057	1,689,095	21.4%
UJALA LED-bulb	63,697,000	204,351,339	220.9%

### Significant Improvement In Financial Parameters

As UDAY has progressed, state power distribution companies have started reporting handsome savings and improvements in financial parameters. As a result of large scale metering, cost side optimization coupled with revision of tariff structure in most of the states, which is a primary requirement of the

UDAY scheme, the gap between ACS and ARR has reduced in 13 states.

**Table 6:** State-wise improvement in ACS-ARR gap after joining UDAY

State	FY16 achievement (INR/kWh)	FY17 target (INR/kWh)	FY17 achievement (INR/kWh)
Rajasthan	1.68	0.41	0.5
Goa	1.5	0.68	0.71
Jammu & Kashmir	2.55	0.68	2.15
Chhattisgarh	0.23	-1.21	-0.15
Himachal Pradesh	0.01	-0.04	-0.26
Tamil Nadu	0.6	0.2	0.36
Andhra Pradesh	0.82	0.21	0.6
Uttar Pradesh	0.88	0.94	0.66
Telangana	0.75	0.82	0.64
Haryana	0.18	0.83	0.08
Madhya Pradesh	0.89	0.34	0.83
Maharashtra	0.24	0.3	0.22
Gujarat	-0.02	-0.02	-0.03

About 80% of total costs is formed by power purchase cost for most of the states. Therefore, it is imperative to keep a check on this component. Within one year of joining UDAY, seven states have reduced their power purchase cost. Power purchase cost optimization has resulted in saving INR 18 billion over the last year.

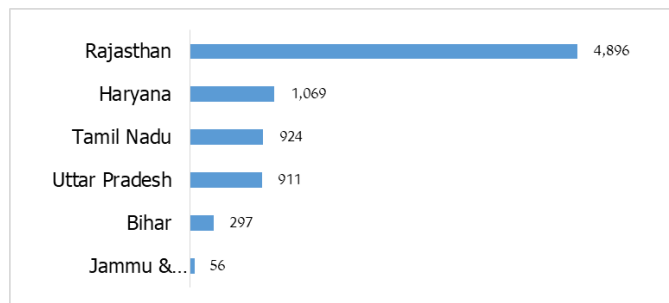
**Table 7:** Improvement in Power Purchase Cost of States after joining UDAY

State	FY16 (INR per kWh)	FY17 (INR per kWh)
Goa	3.34	2.85
Jammu & Kashmir	3.72	3.44
Gujarat	4.25	4.20
Bihar	4.39	4.26
Andhra Pradesh	4.70	4.32
Telangana	5.07	4.66
Haryana	5.05	5.01

Above states have optimized power purchase cost by enhancing tactical procurement from 'Power Exchanges' where power is available at a cheaper rate, rationalizing fuel source, optimizing transportation cost and managing coal quality by better sampling which is an initiative by the Ministry of Power.

On account of interest costs, the states have saved INR 150 billion in FY17 against the interest costs incurred in the last year. Utilities in Rajasthan, Haryana, Tamil Nadu and Uttar Pradesh are among the major gainers in lowering their interest cost. Three state-owned power utilities in Rajasthan have reported that their collective interest cost in 2016-17 will drop by half, compared to what they incurred a year ago. As per the data entered on the portal, interest Costs in Rajasthan dropped to INR 45.40 billion in FY17 against INR 94.36 billion incurred in FY16.

<sup>16</sup> Transformers of Ag Consumers are yet to be metered. Under IPDS, DT metering is being extended to all towns.



**Fig 10:** Interest Cost Savings State wise for FY17 (in INR crore)

Apart from the savings in interest cost from the debt restructuring, turnaround is also evident from the sharp cuts in losses from transmission and theft, achieved by the utilities. States like Goa, Himachal Pradesh and Manipur have reported considerable improvements on this front. Thirteen states have reduced their AT&C losses in 2016-17 from 2015-16 level. This has been achieved in the states by increasing focus on metering, billing and collection.

**Table 8:** Improvement in AT&C loss of States after joining UDAY

State	FY16 (% achievement)	FY17 (% target)	FY17 (% achievement)
Himachal Pradesh	12.9	13.3	4.2
Manipur	44.2	28.9	36.9
Jharkhand	34.7	28.4	29.9
Haryana	29.8	24.0	25.9
Goa	17.1	14.5	13.3
Rajasthan	27.3	23.0	23.6
Uttarakhand	17.2	16.0	14.5
Gujarat	15.0	14.4	13.0
Bihar	43.7	36.4	41.8
Puducherry	20.0	19.0	19.0
Maharashtra	19.1	16.7	18.3
Chhattisgarh	21.8	18.9	21.5
Jammu & Kashmir	61.6	46.0	61.3

If the UDAY targets are met by 2019-20 as envisaged, the country will save ~INR 250 billion by reducing AT&C loss from 20% to 15% and the annual loss level of DISCOMs will be eliminated from the current level of ~INR 400 billion.

## Conclusion

The UDAY scheme has led to significant re-drawing of the balance sheet of the State electricity distribution companies. About 97% of the total outstanding debt of all discoms has been covered under UDAY. The beneficiaries of the scheme have been the banks, which were sitting on unsustainable levels of debt with loss making entities. This debt has now been replaced with high quality government debt. However, the government must follow through with actual operational changes to ensure 100% success.

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