

The critical role of state government revenue subsidy in electricity supply

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Abstract

Historically, electricity supply has been considered as an input to catalyse development, but there is an increasing trend to transform it to a market commodity. Revenue subsidy – from the state (state government subsidy) and from commercial and industrial consumers (cross subsidy) – has helped to lower the electricity tariff of small consumers – be it households, shops and establishments, or agriculture. However, increasing cost of electricity supply and sector inefficiencies inflate subsidy requirement. This paper provides a brief background of the role of electricity subsidy in the Indian electricity sector in recent years, emphasising the importance of well- designed and properly targeted subsidy to support basic and productive needs of small consumers. It outlines the current challenges in estimating subsidy requirement, delays in disbursement to distribution companies and targeting of subsidy.

A new challenge to ensure tariff support for small consumers is the inevitable reduction of cross subsidy from large commercial and industrial consumers, driven by changes in technology, economics and electricity distribution business model. Cross subsidising consumers are increasingly opting for their own electricity supply options (via market-based purchase or setting up their own renewable energy plants) and the distribution company has to ensure quality, affordable power supply to small consumers without cross subsidy support. In this situation, adequate state subsidy is essential to ensure good quality supply to small consumers and thus realise the development dividend which investments in electrification aim to achieve. With the unavoidable increase in state subsidy, improving accountability of subsidy estimation and timely payment is necessary. These require changes in governance and accountability processes, and innovations like better subsidy targeting and delivery, and reducing the cost of supply for subsidised consumers.

1. Introduction

Financial health of electricity distribution companies (DISCOMs) plays a pivotal role in ensuring access to affordable electricity supply for small consumers such as households, shops and establishments, and agriculture. This is because they receive electricity supply at a subsidised tariff. State government revenue subsidy (or state subsidy from hereon) to DISCOMs forms a significant portion of their total revenue receipts in various states, and is expected to further increase with recent electrification efforts, as well as changes in the sector.

State subsidy received by all DISCOMs in India was ₹ 98,653 Crore in FY19 (PFC 2020, 2), which was 1.6 times the MGNREGA allocation in the same year (Open Budgets India 2021). Table 1 captures details about state subsidy figures in India between financial years 2016-17 and 2018-19 (FY17-FY19). On an all-India basis, state subsidy is growing at 15% per annum and is 17% of total

revenue of DISCOMs¹. But they range from 22-28% in few states such as Haryana, Karnataka, Madhya Pradesh, and Punjab (PFC 2020).

Table 1: State electricity subsidy in India between FY17 and FY19

	FY17	FY18	FY19
State subsidy committed (₹ Cr)	83,856	93,061	1,10,391
State subsidy received (₹ Cr)	78,938	88,919	98,653

Source: Report on performance of state power utilities 2018-19 (PFC 2020)

Despite the extent of subsidy support, DISCOMs have been plagued with issues of financial viability, and to sustain operations, they have required four major financial bailout packages since 2001². Recently, DISCOMs have been in the news because of their growing dues to the tune of ₹ 1.17 lakh Crore to generating companies (MoP 2020). New reform proposals and bailout packages are being drawn-up and debated in these times of economic slowdown, exacerbated by the outbreak of the nCOVID-19 pandemic³.

Financial issues of DISCOMs persist because of high average cost of supply (ACoS), which is about ₹ 7/kWh (or unit), and growing at 6% per annum (Prayas 2018a). This is largely attributed to years of expensive power procurement contracts and systemic inefficiencies such as high technical and commercial losses.

Consumer tariffs are set by State Electricity Regulatory Commissions (SERCs) based on the type of end use. Typically, tariff of households and agriculture pump set users are much lower than the ACoS. The gap between ACoS and tariff is compensated through two major sources. Firstly, through state subsidy, as discussed above, and secondly, through cross subsidy from commercial and industrial consumers who have a higher tariff than the ACoS. Even after these treatments, if revenue gap persists, it is registered as losses in the books of DISCOMs, to be recovered in future through higher consumer tariff or subsidy. Tariff support from cross subsidy and state subsidy was ₹ 1.43 lakh Crore in FY19 (PFC 2020).

Even though significant subsidy is provided to support DISCOM finances, there are many existing challenges in the subsidy regime such as issues in targeting, part and delayed payments, and correct estimation of subsidy quantum.

Going forward, availability of power from alternate sources at competitive rates will be an added challenge to the subsidy regime. Due to high ACoS, cross subsidising industrial and commercial

¹ The statistics provided are on the basis of state subsidy committed by state governments.

² State Electricity Board bailout in 2001 (₹ 41,473 Crore), Transfer scheme during unbundling of utilities in 2003, Financial Restructuring Plan in 2012 (₹ 1.19 lakh Crore), Ujjwal DISCOM Assurance Yojana in 2015 (₹ 2.79 lakh Crore)

³ Financial measures announced include liquidity infusion of ₹90,000 Crore to address working capital strain, rebate and deferred recovery of fixed charges by Central Public Sector Units such as NTPC (₹ 1,363 Crore rebate and ₹ 2,064 Crore deferred fixed charge) and PGCIL (25% rebate in charges).Sources:

<https://pib.gov.in/PressReleasePage.aspx?PRID=1624496>,

<https://energy.economictimes.indiatimes.com/news/power/ntpc-to-give-rs-1363-crore-rebate-on-fixed-charges-to-discoms/76312478>, https://www.business-standard.com/article/news-cm/power-grid-to-consider-rebate-of-20-25-on-inter-state-transmission-charges-of-discoms-120051800229_1.html

consumers are already paying tariffs of about ₹ 9/unit or higher in many states. Given such high rates, it makes economic sense for these consumers to partially or completely migrate away from DISCOM's services to other supply options. Supported by a national electricity grid and legal and regulatory provisions, high tariff consumers can avail cheaper power through market sources via open access options, or by investing in their own captive renewable generating systems, without being solely dependent on DISCOMs. This results in a reduction in cross subsidy and leaves the DISCOM to cater only to low tariff consumers. Thus, migration of cross subsidising consumers leads to a new challenge of higher state subsidy requirement.

Section 2 of this paper describes the current and emerging challenges in the subsidy regime. Section 3 presents a design framework to improve the subsidy regime with a view to rationalise and target state subsidy support to benefit the sector at large, and small consumers in particular.

2. Current and emerging challenges in the subsidy regime

2.1 Current challenges in state subsidy provision

– *Timeliness of subsidy disbursement*

As per Section 65 of the Electricity Act 2003, all committed subsidy payments by state governments are to be made in advance for the concerned period. Tariff subsidy released by state governments as a percentage of tariff subsidy booked by DISCOMs was 89% in FY19. Some states with partial release of subsidy were Madhya Pradesh (81% released), Chhattisgarh (60%), and Andhra Pradesh (21%) in FY19 (PFC 2020).

It can be seen that there are significant delays and short-falls in payment which lead to worsening of DISCOM finances due to strain in working capital requirements and reliance on short-term borrowings that have high interest rates. For instance, in Haryana, at the end of FY15, the cumulative outstanding subsidy, inclusive of the accrued interest, stood at ₹ 4,334 Crore, which is comparable to 21% of the aggregate revenue requirement of the state's DISCOMs (Prayas 2019).

– *Targeting subsidies*

Agriculture consumers in many states such as Punjab, Tamil Nadu, and Karnataka continue to receive free power. This is not advisable due to two reasons. Firstly, free or very low tariff has been one of the main reasons for poor quality of supply and service. This in turn results in an increase in the trust deficit between agriculture consumers and DISCOMs, as well as encouragement of a culture of non-payment. Secondly, free power is one of the enablers for excessive electricity and water use, though cropping pattern is the more important reason (Prayas 2018b). While it is true that agricultural subsidy can be viewed as a type of food subsidy, there is a need to ensure that only the disadvantaged consumers receive it.

While traditionally subsidy provision was limited to small households and agriculture, to retain industrial consumers, many states, such as Gujarat, Haryana, and Punjab, have been subsidising them (Prayas 2019). This works out to 16% of total subsidy provision in Punjab (Prayas 2019).

Recently, the Delhi government has been providing free supply of up to 200 units /month to all households with sanctioned load up to 5kW⁴, and 50% subsidy for consumption between 201-400 units. But basic requirements such as lighting, fans and TV require only about 50 units/month, which increases to about 100 units/month with a refrigerator. As a result, the total state subsidy committed to the four DISCOMs in Delhi has been increasing, and is projected to be ₹ 2,820 Crore in FY21, amounting to 11% of their total revenue requirement. Similarly, Punjab has been providing free power to some households with a connected load of up to 1 kW using less than 200 units per month. This subsidy accounts for 17% of the total subsidy provision in FY19 (PSERC 2020). Further, increase in household demand due to recent electrification efforts is expected to increase subsidy burden in some states, thus necessitating better targeting.

– *Estimating subsidised sales and subsidy quantum*

Estimation of state subsidy has been a complex issue because historically, most of the subsidy has been allocated for agricultural consumption, with nearly three-fourth of the connections unmetered. The total subsidy requirement of state DISCOMs in the country for agriculture was ₹ 1.1 lakh Crore in FY18⁵. 75-80% of total state subsidy provision is for agriculture in Maharashtra, Punjab, and Telangana. Unmetered sales to households are also prevalent in some states like Uttar Pradesh where 31% of households were unmetered in 2018.

Since a high projection of agriculture sales helps DISCOMs to demand higher subsidy and project lower distribution losses, it has been argued that sales to agriculture, and thus subsidy requirement is overestimated (World Bank 2001, Planning Commission 2011, Prayas 2018b). More accurate methods to estimate agricultural consumption have led to a downward revision in agricultural electricity consumption and upward revision in distribution loss in states like Maharashtra and Punjab. Recently, a working group, constituted by the Maharashtra SERC (MERC) to study agricultural consumption, prepared a report based on field survey and analysis of feeder metering data. It concluded that sales to agriculture was being over-estimated. This resulted in MERC approving 21% lesser sales to agriculture and a 5.78 percentage point increase in losses in FY19. This implies that subsidy of ₹ 4,682 Crore (amounting to 21% of agricultural subsidy in the period) was provided not for agricultural consumers (as committed earlier) but for losses of MSEDCL. (Working group for agricultural consumption study 2020).

⁴ Source: <https://www.hindustantimes.com/delhi-news/electricity-free-in-delhi-for-usage-up-to-200-units-arvind-kejriwal/story-Vah8Ynr5tXiwpbJptJ3eCN.html>

⁵ As presented in Power Ministers Conference held on 03 July 2020. This quantum is inclusive of state subsidy provided as per Section 65 of the Electricity Act 2003, cross subsidy, delayed payments from past years, financing for written-off past arrears and so on.

– *Issues with reporting subsidy related information and accountability*

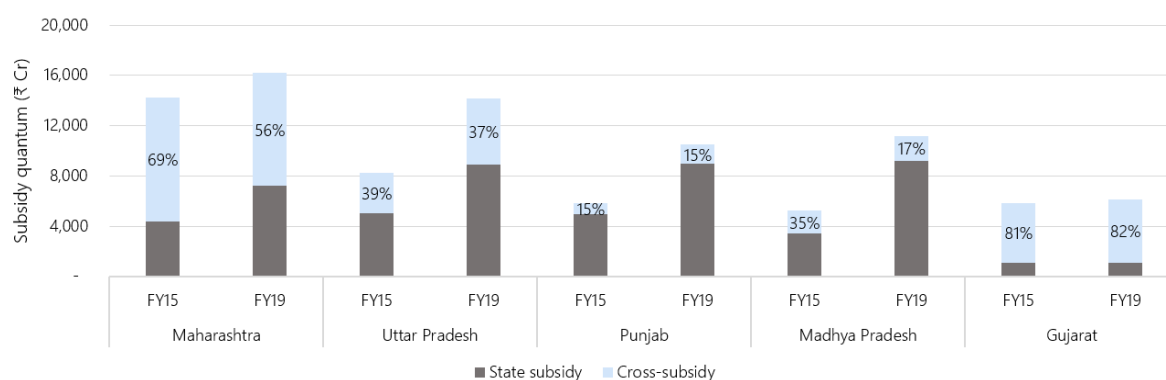
There is surprisingly little information about subsidy in the public domain despite its crucial role in DISCOM finances. Detailed break-up of category-wise subsidy allocation, delays in disbursement and interest burden due to delays are often not available. There are variations in terminologies used and lack of consistency in data availability across states, making it challenging to track trends (Prayas 2019).

There is limited tracking by SERCs to ensure that interest burdens due to delayed subsidy payments are borne by the state government rather than the DISCOM. It is crucial that the practice of the Punjab SERC, which regularly conducts detailed scrutiny of category wise subsidy commitment and payment should be adopted by other states. In addition to scrutiny, interest payments and pending subsidies are carried forward as part of the subsidy commitment of the state government in the next year.

2.2 Emerging challenges in the subsidy regime

In the last few years, though total subsidy requirement has increased considerably, cross subsidy paid by high-tariff consumers has not increased commensurately in many states, as shown in Figure 1. The ratio of tariff support (cross subsidy + state subsidy) to total revenue requirement has been increasing. State subsidy's share in total support has also been increasing, more than that of cross subsidy. At an all India level, the share of cross subsidy in tariff support went down from 29% in FY18 to 23% in FY19 (PFC 2020)⁶. This can be mainly attributed to the migration of high tariff consumers from the DISCOMs⁷.

Figure 1: Subsidy trends across years in some states



Source: Compilation from various regulatory tariff orders and petitions by Prayas (Energy Group)

It has been noticed that migration through open access has been as high as 20% of sales to high tariff High Tension consumers in states like Maharashtra, Rajasthan, and Gujarat. Additionally,

⁶ Analysis provided in Figure 1 is based on regulatory information which typically provides richer insight than aggregate all-India information provided by PFC. Information reported from the latter source is subject to updation in subsequent PFC reports.

⁷ Some states are trying to retain high-paying consumers by tweaking tariff designs and providing explicit revenue subsidy through the state government among other measures.

migration by investing in captive power plants has been substantial in Odisha, Chhattisgarh, and Jharkhand, which is comparable to 20-30% of total sales in these states (Prayas 2018a).

Migrating open access consumers have options of procuring short and medium-term power from power exchanges at about ₹ 4/unit. Viability of smaller kilo-Watt scale solar PV systems, which can be installed on rooftops, costing the consumer about ₹ 5/unit, is also increasing. These could cater to day-time loads of businesses, commercial consumers, as well as big households. Solar power prices are rapidly falling⁸, and so are storage prices of lithium-ion batteries⁹, thus making it more viable for captive consumers to set up generating units within short gestation periods and reducing their dependence on DISCOMs.

Thus, unless DISCOMs become cost-competitive with other sources, it is only a matter of time before most cross subsidising consumers migrate away from them. With reducing cross subsidy, the reliance on tariff subsidy from state governments will need to increase to keep financial losses in check. If all consumers were to pay tariffs at cost of supply in FY19, state subsidy burden would increase by 30% (to ₹ 1.43 lakh Crore) (PFC 2020).

With reducing sale to high tariff consumers, DISCOMs will mostly serve the subsidised consumers like households, farmers and small enterprises. At this stage, there will be a sustained increase in state subsidy requirement, unless cost of supply is reduced or tariff of some of these consumers is gradually raised. It is important to design a better subsidy regime considering this impending transition, and a plan to make it a smooth process over the next few years.

3. Suggestions for a subsidy design framework

Improving the subsidy regime is crucial to meet current and emerging challenges. Given the diversity across states in terms of their consumer and generation mix, demand profile, political economy etc., solutions will have to be tailored for each state and developed based on wide consultations and analytical studies. In this paper, we suggest broad principles for a subsidy design framework and some indicative ideas that can be part of such solutions.

– *Efforts to reduce subsidy burden and ensure subsidy meets developmental goals*

Keeping in mind developmental goals of welfare and overall viability of the sector, it is important to target subsidies. Since the DISCOM, in all likelihood, would be serving only small consumers in the future, there is a need to ensure that such consumers receive quality electricity supply and service through optimum provision of subsidies.

Better targeting involves not providing free power as it contributes to inefficient use of electricity and fosters a culture of non-payment, as has been discussed in Section 2.1.

⁸ In the latest bid, the discovered solar power price for 300 MW was ₹ 2.36/unit at Solar Corporation of India's (SECI) auction (source: <https://energy.economictimes.indiatimes.com/news/renewable/solar-tariff-hits-a-record-low-of-rs-2-36/76714691>)

⁹ Storage prices have fallen by 87% since 2009 in real terms (source: <https://about.bnef.com/blog/battery-pack-prices-fall-as-market-ramps-up-with-market-average-at-156-kwh-in-2019/>)

There is also a need to review highly subsidised power supply to agriculture, households or some other consumers. One option is to have a graded scale of subsidy provision- for example, high subsidy for first few units of consumption and tapering off support after first 100 units for households. Another is to clearly specify exclusion criteria, mostly based on easily measurable electrical parameters like consumption.

Pilots of Direct Benefit Transfer of subsidy could be tested to further implement targeting and prevent leakages. Implementation of metering is crucial and as many consumers should be metered as possible. In cases like that of agriculture consumers, where metering is not easy, at least metering at feeder or distribution transformer level (group metering), pilot metering and periodic field surveys should be ensured for better accountability of subsidised electricity consumption. In such cases, there is a need to explore non-electrical parameters for exclusion from subsidy. Exclusion criteria should be used to stop further subsidies to industrial consumers.

End-use efficiency of appliances such as fans, light bulbs and pump sets, which are used by subsidised consumers, especially newly electrified ones, can be enhanced. This would reduce costs and subsidised demand, and thus reduce subsidy requirement.

While developing ways to reduce subsidy dependence, measures should be undertaken to ensure good quality of supply and service to the small consumers. This will ensure the growth of economic activities like irrigation and small business, as well as proper functioning of facilities like drinking water supply and health centres. These will not only ensure stability of rural livelihoods but also increase their ability to pay for electricity services.

– *Freedom for migration by high tariff consumers*

Since there is a growing trend of high tariff industrial consumers migrating away from the DISCOMs, instead of providing incentives for them to stay, it is better to give them the freedom to migrate and choose their suppliers, while letting them bear the associated risks and sharing part of the historical costs. DISCOMs should allow all large consumers (those with connected load higher than 500 kW) to find alternate sources of power for a period of more than one year, instead of trying to retain them by different methods such as providing rebates, concessions, and subsidies.

However, such migration should be for the long-term rather than short-term (a few hours to a few days), as is currently the practice. Such opportunistic short-term migration results in significant uncertainty regarding demand as well as revenue recovery for DISCOMs. The share of historical costs should be recovered in a time-bound manner through various charges in the medium term. Various surcharges and fees, which once determined, can be fixed for five years. Supply from the DISCOM to these consumers, if needed, should be based on mutually agreed contracts and provision of standby power at premium rates.

– *Reducing cost of supply*

DISCOMs should not sign new power purchase contracts, especially for base-load, long-term power without a rigorous demand assessment. If required, they should only procure low-cost

power competitively rather than relying on 'cost-plus' sources. Future regulatory practices should further focus on incentive-based regulations, rather than on current cost-plus regulations. This needs to be coupled with timely cost-effective investment in infrastructure maintenance to reduce network losses. While efficiency gains will improve DISCOM finances, further cost reduction is possible through innovative options like solarisation of agricultural feeders.

– *Accountability for delays in payment of subsidy through better tracking and reporting*

Various bailout schemes have identified timely payment of subsidy as an important parameter to ensure financial health of DISCOMs. Working capital borrowings and compliance with targets under UDAY¹⁰ should be tracked and reported by the Ministry of Power. SERCs could mandate DISCOMs to publish quarterly reports on crucial issues such as category-wise subsidy quantum committed and disbursed, schedule of subsidy payments, and details of delay in payment. To ensure standardisation of information, the Forum of Regulators could prescribe uniform formats. (Prayas 2019).

– *Meeting agricultural demand through solar feeders*

With solar power becoming increasingly affordable, medium size solar plants of 2-10 Mega Watt capacity at the sub-station level can be used to effectively cater to all the pump sets on a feeder.¹¹ This is easy to implement in states where there are separate feeders for agricultural supply. This would not only meet objectives of reducing costs and subsidy burden but also offer reliable supply to farmers during daytime. These systems can be set up and managed by entrepreneurs, generating companies or community organisations selected through competitive bidding. States like Maharashtra, Haryana, Chhattisgarh, Madhya Pradesh, and Rajasthan¹² have adopted this scheme. Further, Ministry of Power has recently announced its plans to implement solarisation of feeders across the country and potentially provide capital subsidy support for the scheme.¹³

– *Roll out Direct Benefit Transfers only after pilots*

To ensure better targeting and accountability of subsidy disbursal, the draft Electricity Act amendment of 2020¹⁴ proposes Direct Benefit Transfer (DBT) mechanisms, where subsidy is provided to consumers directly by the government, while they pay unsubsidised tariffs to the DISCOMs.

¹⁰ Under the Ujjwal DISCOM Assurance Yojana (UDAY) scheme, which is being implemented jointly by the central and state governments, signatory DISCOMs must keep their working capital borrowing requirements below a specified percentage of their revenue requirement (this is being revised due to nCOVID-19 outbreak).

¹¹ For more details please see: <https://prayaspune.org/peg/resources/solar-feeder.html>

¹² Rajasthan has seen progress under the KUSUM scheme launched by the central government. More information can be found in RERC's order in Petition No. 1757/2020 available here: <https://rerc.rajasthan.gov.in/rerc-user-files/office-orders>

¹³ Source: <https://energy.economictimes.indiatimes.com/news/renewable/govt-plans-to-solarise-agricultural-feeders-under-kusum-scheme/76774285>

¹⁴ More information can be found on: <https://www.prayaspune.org/peg/publications/item/461-comments-and-suggestions-on-draft-electricity-amendment-bill-2020.html>

There is not much clarity whether such direct transfer would take place directly into the consumer's bank account or into the consumer's account with the DISCOM. The latter would not bring much changes to the current structure for metered consumers. For unmetered agriculture and other consumers, it can possibly improve accountability of subsidy disbursement. This is possible if at least group metering is implemented and information on meter reading and subsidy disbursement is available to all concerned.

In case of transfer to bank account, delay in subsidy disbursement will result in significant tariff shock. This could lead to non-payment of bills or delayed payment by consumers, in turn leading up to a build-up of arrears, and even disconnection of the consumer. Tenancy is a common practice with subsidised categories, which further complicates the implementation of the scheme.

Hence pilot projects need to be conducted in different situations. Some of these situations include understanding if subsidy transfers should take place through bank or DISCOM accounts, if group or individual metering drives should be conducted, if subsidies can be disbursed under different types of tenancy conditions, and if quality of internet and banking facilities are adequate to support the scheme. Lessons from these should be consolidated before adoption of DBT of electrical subsidies on a national scale.

4. Conclusion

To conclude, financial sustainability of DISCOMs is absolutely necessary to serve the small consumers, who have no other option available to them. Due to the impending transition in the DISCOM business model, the dependence on state subsidy is bound to increase. During this time DISCOMs will require adequate transitional financing from the central and state governments. Along with this, attention is required to plug inefficiencies in DISCOM planning and operation. This could include optimal power purchase planning, required capital investment, collecting arrears from state institutions, better tariff design, and reasonable tariff increase. Attention to such inefficiencies can ensure adequate, affordable, quality, and safe electricity supply to small consumers, and thus realise the development dividend, which the large investments in electrification sought to achieve.

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