

Newer Challenges for Open Access in Electricity Need for Refinements in the Regulations

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Executive Summary¹

For the last 15 years or so, introduction of competition has been one of the main aims of reform in the electricity sector in India. One of the key measures to bring about competition is open access (OA) whereby, mainly, large consumers have access to the transmission and distribution (T&D) network to obtain electricity from suppliers other than the local electricity distribution company (discom). Unfortunately, success of OA has been very limited in spite of numerous attempts to facilitate it. Two reasons have been discussed in the literature. First, some states have restricted OA transactions on export of power when there is a shortage, and import of power when there is a surplus. Second, some of the OA charges such as the cross-subsidy surcharge have been too high, making OA uneconomical.

More recently, there has been another challenge that creates problems for discoms: in some states, large consumers are using OA to switch frequently between the market and the discom's regulated tariffs. This behaviour creates greater volatility in the load to be served by the discom, which makes power procurement planning difficult for the discom and can also lead to stranded generation capacity. Such behaviour by large consumers is likely to further harden the resistance to OA by discoms.

In order to tackle the problem of frequent switching, consumer choice needs to be redefined.

- Consumer choice is more than open access to the T&D network. Effective functioning of choice also requires well defined rules that govern the relationship between the discom and the consumer exercising choice of supplier, defining the rights and responsibilities of each. Because consumer choice is more than simply allowing open access, labelling it as 'open access' has, unfortunately, muddled the discussion.
- Service to consumers exercising choice should be seen as a distinct service, and not an extension of regulated service. Large consumers should not be able to treat the discom as a mothership to which they can return whenever market prices rise.
- Consumers exercising choice should be required to get all their electricity from the supplier of their choice, not just part of it, otherwise the discom has to handle all the variability of load.
- In order to discourage opportunistic use of consumer choice, if a consumer returns to the discom after electing to get supply from a competitive supplier, that consumer should be required to stay with the discom for a certain period, say one year. These restrictions

¹This paper is an extension of the work for a background working paper (Singh, 2016) for the Mapping Power project, and draws substantially from that work for the introductory sections.

should apply only to switching between the discom and the market and there should be no restrictions on switching between competitive suppliers.

- Access to the T&D network is required by competitive suppliers (generators, traders and retailers) so that they can deliver power to their customers. OA is not required by customers, even those who want to exercise choice, and therefore OA requests should be made only by competitive suppliers and not by customers. Recognition of this distinction between OA and choice leads to another important refinement: OA requests can be for the short-, medium- or long-term, but decisions to switch to supply from the market should not be for the short-term.

These refinements for consumer choice of supplier can be added to the regulations for open access, which most states already have. No changes are required to the existing laws. It is suggested that the Forum of Regulators (FoR) initiate proceedings to deliberate on these issues so that model terms and conditions can be developed to implement these refinements uniformly across states. The National Tariff Policy should also be revised to incorporate these changes.

In order to address the other impediments to OA, it is important to recognise the mismatch in the perspectives of the Centre and the states about the power sector. The Centre is more focused on creating a vibrant power market while the states have more immediate concerns – mostly about affordable tariffs, an issue that has electoral and political repercussions. It may be difficult to bring about a consonance in perspective between the Centre and all states. Therefore, it may be better to focus on one or two progressive states and persuade political players that an effective power sector would lead to a more successful state economy with wide-ranging benefits. As part of the message, states could be persuaded to keep industrial tariffs low, which would help reduce the cross-subsidy. If there is success in one state, other states may follow.

Introduction

For the last 15 years or so, introduction of competition has been one of the main aims of reform in the electricity sector in India. The Electricity Act of 2003 (EAct) provides an enabling framework for competition in the sector. One of the main measures in the EAct to bring about competition and choice in the distribution of electricity in India is open access (OA). OA currently allows mostly large consumers, typically defined as having a load greater than 1 megawatt (MW)², to access the transmission and distribution network to obtain electricity from suppliers other than the local electricity distribution company (discom). The wires continue to belong to the discom, but the supplier of energy is chosen by the OA consumer.

OA is said to be “the soul of the Electricity Act” (Kumar and Chatterjee, 2012:189), and it was expected that allowing choice of supplier to consumers would lead to a vibrant and competitive market, which in turn, would encourage greater investment in the sector (Kumar and Chatterjee, 2012). In addition, OA would provide greater surety of payments to private power plant developers. Unfortunately, success of OA has been very limited. Over the years, since the passage of the EAct, there have been various attempts to facilitate OA. However, most of these attempts have been peripheral, such as changes to the formula recommended in the National Electricity Policy for calculating the various charges OA consumers have to pay.

More recent challenges in implementing OA have been due to surplus capacity in some states, which has led to opportunistic use of OA by large consumers. This reveals the need to rethink how consumer choice of electricity suppliers in India is conceptualised. As we discuss in the paper, even the term ‘open access’ may be a misnomer and may be muddling the discussion. This paper reviews the experience with OA and covers some of the earlier attempts to facilitate it. A major part of the paper discusses more recent challenges involving opportunistic use of OA provisions, the need for a more fundamental rethink of ‘open access’, and how consumer choice should be provided. The use of OA provisions to get supply from renewable energy (RE) sources exacerbates these problems. These issues will become even more important in the future as greater amounts of RE are added to the resource mix.

The next section provides a brief background on the provisions in the EAct regarding OA and the status of OA. Then the paper looks at two issues that have impeded OA: the actions of state governments to control OA; and the cross-subsidy surcharge (CSS) and its role in making OA less attractive. This is followed by a discussion, in some depth, of one of the main newer challenges – frequent switching between the discom and market by OA consumers. The paper

²Some states, for example Tamil Nadu, have set lower thresholds for load that can avail of open access.

discusses this phenomenon and the problems it causes for discoms. It also discusses what can be done regarding frequent switching, including insights from the experience of other countries. Finally, conclusions and recommendations are presented for making consumer choice a success, addressing not only the newer challenges mentioned above, but also earlier issues of state government action and high CSS.

Background

According to the EAct, non-discriminatory OA to the transmission system is to be provided to:

- (1) any licensee or generating company on the payment of transmission charges; and
- (2) any consumer when open access is permitted by the respective State Electricity Regulatory Commission (SERC) on payment of transmission charges, and a cross-subsidy surcharge as specified by the SERC (Sections 38, 39, and 40 of EAct).

SERCs are to develop a schedule to allow open access to consumers in their respective states in phases, and to introduce open access as per that schedule (Section 42 of EAct). However, OA was to be allowed for any consumer having load greater than 1 MW by January 2009. Further, the surcharge and cross-subsidies are supposed to be reduced progressively, according to a trajectory to be specified by the respective SERC.

For open access to the inter-state transmission system, CERC has developed two sets of regulations: one for short-term OA, and another for medium- and long-term OA (CERC, 2008; CERC, 2009). For the purpose of these regulations, short-term is defined as up to one month; medium-term as between three months and three years; and long-term as between 12 and 25 years.^{3,4} The regulations describe the process for requesting OA, and the rules for determining priority if there are conflicts between two or more requests. Along similar lines, the Forum of Regulators (FoR) has developed model regulations for open access to the intra-state transmission and distribution system (FoR, 2010). These model regulations have been used by states to establish open access regulations for their own intra-state systems (see for example MERC, 2016).

³There are gaps between the three terms – small, medium and long. It is expected that these gaps will be covered by multiple requests for OA. For example, if a customer wanted OA for two months, he would request ST-OA from the discom twice for one month each time.

⁴The Central Electricity Regulatory Commission (CERC) is considering modifying these definitions. Draft regulations propose that long term be defined as seven to 25 years, and medium term be defined as one to five years (CERC, 2016a).

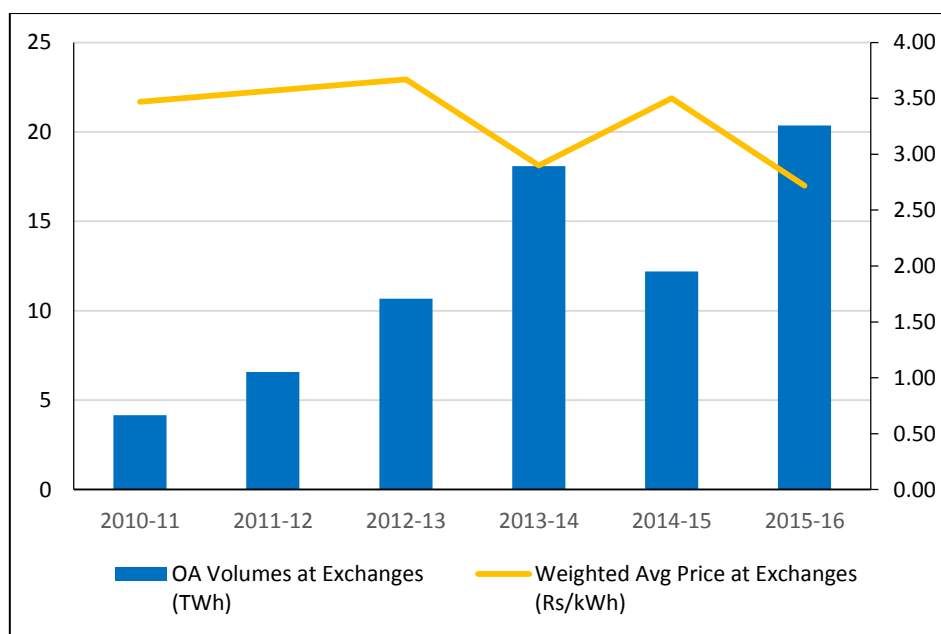
Status of OA

Most states have issued regulations for open access, allowed open access for consumers with loads greater than 1 MW, and have specified transmission charges, wheeling charges and cross-subsidy charges. Open access to the transmission system sought by generating stations has been granted in most cases⁵ (SCE, 2015; Kumar and Chatterjee, 2012:189).

Transactions using open access to supply end consumers were few in the initial years after the passage of the EAct, but more recently there has been an increase in the volume of open access transactions. OA transactions for end consumers can be inter-state or intra-state and can be bilateral, or carried out through the two power exchanges. Data for all OA transactions for end-consumers at the national level is not readily available, but data for OA transactions at the power exchanges is available.

As Figure 1 shows, over the five years since 2010, OA transactions at the power exchanges grew five times. As the dip in the volume of transactions in 2014-15 in the figure shows, short-term open access (ST-OA) transactions at the exchanges are sensitive to the market price at the exchanges.

Figure 1. Trends in Open Access Transactions at Power Exchanges



Source: Reports of the Market Monitoring Committee of the Central Electricity Regulatory Commission for the years 2010-11 through 2015-16 (CERC, 2011 through 2015, 2016d).

⁵Recently there have been concerns about excessive use of ST-OA by generators for long-term transactions to avoid charges for augmentation of the transmission system. This has led to problems with transmission planning which is usually based on demand for long-term transactions. These issues are being addressed in draft regulations. Please see (CERC, 2016b and 2016c) for details.

There are two main reasons for this increase in ST-OA over the recent past:

- (1) There is excess generating capacity⁶ in many regions which has led to power being available in the market at low rates. This can also be seen in the trajectory of the market price at the exchanges shown in Figure 1.
- (2) Retail supply from renewable energy sources has become economically attractive because of reduction in prices for energy from these sources, and because cross-subsidy surcharge and other charges for supply from renewables are much lower in several states compared to supply from conventional sources (PwC, 2015:9, Prayas, 2016a:34). The revised National Tariff Policy issued in 2016 waives inter-state transmission charges and losses for RE resources (MoP, 2016).

In spite of this increase in the level of OA transactions, the experience with open access for end consumers has been disappointing. There is a feeling that OA has not been implemented in the spirit of developing the market for power as envisaged in the EAct (SCE, 2015:80). It is felt that state governments are blocking the flow of electricity across their boundaries, and discoms are not in favour of OA due to the potential loss of subsidising consumers. These issues are discussed in the next few sections.

Role of State Governments

State governments play a significant role in the success or failure of OA. Some state governments are restricting in-state generators from exporting power or restricting consumers from importing power. Restriction on export of power is usually done when the state is short of power, and restriction on import of power is done when the state has surplus of power. For imposing these restrictions, the state governments invoke Section 11 of EAct which states:

The Appropriate Government may specify that a generating company shall, in extraordinary circumstances operate and maintain any generating station in accordance with the directions of that Government.

⁶Because there continues to be load-shedding, at least in some parts of India, it would be difficult to argue that there is truly an excess of generating capacity in the country. Some discoms may be claiming to have excess capacity but may shed load for some hours to categories of their own consumers that are seen as loss-making. In any case, normally it would be expected that if there is shortage in one of part of the country while another enjoys excess capacity, there would be sale from the area of excess to the area of shortage. But it seems that does not always happen. In this paper, the term “excess capacity” is used in a restricted sense to describe a situation where a discom has more generating capacity than it wants to supply its consumers or to sell to other areas.

For example, in March 2014, the Karnataka government directed all generating companies to produce the maximum exportable electricity and supply it to the state grid at a tentative tariff of ₹5.50 per kWh, subject to final tariff determination by KERC (KERC, 2014). The state had been facing a severe power shortage due to breakdowns at one of the generating units, underperformance of other plants and a drop in generation from wind. About 900 MW of load had to be shed at peak time and about 500 MW during the off-peak period (Power Line, 2014).

Around the same time, Gujarat restricted open access for short-term power purchases which were being used by industrial consumers to buy power from power exchanges. Industrial tariffs at the time were about ₹6 per kWh, while power from the exchanges was available at about ₹4 per kWh. As a result about 1500 MW was being procured from out of the state, while about 4000 MW was lying idle due to excess capacity (Power Line, 2014).

Over the years, many other states have put restrictions on exports or imports of power, such as Tamil Nadu (TN), Odisha, Andhra Pradesh (AP) and Rajasthan (Kumar and Chatterjee, 2012:196; SCE, 2015). CERC has issued several orders declaring that Section 11 cannot be used to restrict open access. In a case involving Karnataka, the Karnataka High Court quashed the CERC order on petition by the Government of Karnataka. The matter is now with the Supreme Court.

For enforcing their directives and controlling OA transactions, state governments use the respective State Load Dispatch Centre (SLDC) as the instrument for control. Over the years there have been many cases where the SLDCs have denied open access. There are 239 orders that pertain to the “denial of open access” on the CERC website (www.cercind.gov.in). A review of some of them shows that there are a variety of reasons given by SLDCs to deny OA; some are accepted by the CERC, while others are rejected. While it was difficult to review all the cases, a review of some of them yielded the following reasons:

- The proposed transaction purportedly violates some government directive regarding export or import of power during periods of shortage and excess capacity respectively.
- There is a complaint, usually from a state-owned company, that the power being exported is actually covered in an existing Power Purchase Agreement (PPA).

On this issue, CERC has said that a SLDC has to allow an open access transaction if it fulfils two conditions: (1) adequate metering and accounting infrastructure; and (2) adequate transmission capacity. Other issues could not be used to reject a request for transfer of power under open access (CERC, 2009).

Cross Subsidy Surcharge (CSS)

Another issue that has impeded the rapid expansion of OA is the level of charges that OA consumers have to pay, which tends to reduce the economic benefit for OA consumers to shift to competitive suppliers. One of the main charges that has to be paid is CSS, and there have been numerous attempts to lower the level of CSS to make OA economically attractive.

When the EAct was being drafted, it was known that OA would be most economically attractive to commercial and industrial consumers whose tariffs were higher than the cost to serve them because these high paying consumers were subsidising residential and agricultural consumers. OA would lead to a loss of these subsidising consumers affecting discoms' finances, and thus, discoms and state governments would resist OA. Therefore, the EAct included the CSS to compensate, at least to some extent, for this loss of revenue. The surcharge and cross-subsidies are to be progressively reduced in a manner specified by the respective SERC.

Right from the beginning, there has been an effort to balance compensation to the discom and creating conditions conducive for competition. The National Electricity Policy of 2005 states:

The amount of surcharge and additional surcharge levied from consumers who are permitted open access should not become so onerous that it eliminates competition that is intended to be fostered in generation and supply of power directly to consumers through the provision of Open Access under Section 42(2) of the Act.

The National Tariff Policy of 2006, citing this provision, suggested a formula for calculating CSS as the difference between (1) the tariff charged to the consumer and (2) the marginal cost of power, defined as the weighted average cost of power purchase for the top 5 per cent of the power bought by the discom. Distribution charges and losses were, of course, appropriately accounted for on both sides. It was also recommended that the CSS be brought down, at a linear rate, to 20 per cent of its starting value over a five-year period.

There were critiques that the marginal cost of supply resulted in a low CSS, and it was suggested that the average cost of supply be used instead. The recently revised National Tariff Policy of 2016 recommends the use of the average cost of supply. However, it does remove the influence of any costs that are for recovery of regulatory assets. Furthermore, it says that the CSS not be more than 20 per cent of the tariff for the respective consumer category.

While the CSS varies across states, it has generally been quite high, and as discussed earlier, has been a deterrent for consumers considering opting for OA. In spite of the advice in

successive versions of the Tariff Policy to reduce the CSS over time, there has been a reluctance by states to reduce CSS without reducing the actual cross-subsidy in the tariffs. In turn, it has been difficult to reduce cross-subsidies because cost of supply has increased.

The issue of an appropriate CSS is particularly difficult to resolve, because as explained by Singh (2005) it would be difficult to fully compensate a discom for lost subsidising revenue while simultaneously making OA economically attractive for a potential consumer. A similar argument is made by Kumar and Chatterjee (2012:201-202), where they point out that the cost of power in the market is generally higher than the average cost of power procurement by the discom, the utility procurement is mostly from older contracts while power in the market is from newer plants which have a higher cost of generation on a per kWh basis. Under these conditions, if a discom is fully compensated for lost subsidising revenue, the resulting cost to a potential OA customer will be higher. Therefore, OA is likely to be uneconomic if you also want to fully compensate a utility. More recently, with surplus generation in the country and hence lower prices for power at the exchanges, this scenario has changed and as discussed earlier, this has led to greater interest in OA.

Frequent Switching Between Discom and Market

We now turn our attention to some of the newer challenges in expanding OA. Not so long ago, there was great concern about persistent shortages of electricity in the country. Now, many states are experiencing excess capacity which has brought on its own problems. As there is excess generating capacity in the country, the price of electricity at the exchanges has dropped. Many large consumers have started taking advantage of this situation by using 'open access' to get less expensive power from the market when the market price is low enough to be attractive relative to the utility price, even after the CSS and other charges are added. In this way, these large consumers switch a part, or all, of their load back and forth between the market and the discom's regulated tariff. Such short-term transactions form a major part of OA transactions.

Problems with Frequent Switching

There are three problems with such opportunistic use of OA: (1) stranding of generation capacity and the consequent need for an additional surcharge; (2) difficulties in planning of power procurement by discoms; and (3) impact on non-OA consumers, some of whom are smaller consumers.

i. Stranding of Generation Capacity

When a discom procures power for its consumers, the Power Purchase Agreements (PPAs) it enters into have a fixed and variable cost component. When a large consumer opts for supply from an alternative supplier, some of the fixed costs are no longer fully covered. Section 42 (4) of the EAct provides for an additional surcharge to be paid by OA consumers to cover these fixed costs. The National Tariff Policy states that the additional surcharge, "...should become applicable only if it is conclusively demonstrated that the obligation of a licensee, in terms of existing power purchase commitments, has been and continues to be stranded, or there is an unavoidable obligation and incidence to bear fixed costs consequent to such a contract." Recently, as some states have sufficient or excess capacity, discoms have been asking for an additional surcharge on open access consumers and SERCs have been granting it. For example, in Gujarat GERC has allowed a rather modest surcharge of Rs. 0.42 per kWh (GERC, 2014). In Maharashtra, in its recent order, MERC has allowed an additional surcharge, which is considerably higher, of Rs. 1.11 per kWh for 2016-17 (MERC, 2016 Tariff Order). In Punjab, in a recent order, PSERC allowed an additional surcharge of Rs. 1.25 per kWh (PSERC, 2016). While the additional surcharge does compensate the discom for stranded capacity due to OA, its calculation and imposition can become cumbersome. The additional surcharge can only be known *ex post facto*, thus, adding another charge that needs to be reconciled with actuals.

ii. Difficulties with Power Procurement Planning

Because power plants are long-lived assets, and it takes several years to put up a generation plant and only a small amount of power can be bought on the spot market, discoms need to have a long-term plan to procure power to meet the electricity needs of their customers. Discoms plan their power procurement on the basis of demand forecasts several years into the future in order to minimise overall costs. The movement of large consumers back and forth between supply from the discom and the market results in large swings in load for the discom. This creates considerable uncertainty for the discom in predicting the demand for power. The uncertainty, in turn, increases the risk for the discom in that the amount of electricity it purchases will be either too much or too little. As the discom tries to reduce this risk, the cost of procurement of power increases. For example, the discom may decide to rely more on short-term purchases in order to avoid surpluses or deficits of power. However, short-term power purchases are generally more expensive than long-term contracts and, thus, this strategy leads to an increase in the overall cost of the supply portfolio of the discom. See Box 1 to get, in the words of the discom management itself, a flavour of the difficulties a discom faces when there is frequent switching.

Box 1. Reaction of a Discom to Frequent Switching by Customers

In its petition for approval of ARR for the FY 2011-12, Punjab State Power Corporation Limited (PSPCL) has described the problems caused by frequent switching by OA customers. The following paragraphs provide a brief description of PSPCL's complaints in order to illustrate the level of difficulty caused by OA and provide an example of the experience of discoms.

PSPCL stated that OA increased by four times in one year, seriously affecting the quality and cost of service for its other customers. PSPCL procures power from its own generating units, CPSUs, and short-term purchases. Short-term purchases can come from bilateral contracts or the day-ahead market at the power exchanges. However, PSPCL relies on bilateral contracts three months in advance because the prices at the power exchange are volatile and the availability of power is uncertain. The tendering for these bilateral contracts has to start six months in advance based on estimates of load made by PSPCL. These short-term power contracts carry heavy penalties for cancellation.

In contrast to these constraints on PSPCL, OA customers have had the freedom to take, or not take, power from PSPCL at any time. PSPCL asserted that instead of an "assured customer-supplier" relationship, this led to PSPCL being treated as a "stand by supplier." Summarising the situation, PSPCL stated:

- The power scheduled by OA consumers through open access varied on an hourly basis depending on the prevailing market price, and PSPCL was required to supply the residual requirement of these consumers. This made the power demand on the PSPCL system vary unpredictably, making system operation and its associated economics "unmanageable or rather impossible."
- The total open access power scheduled by all of PSPCL's OA consumers through the day-ahead market could be known only by 5 pm of the previous day. This left very little time for PSPCL to deal with the resulting excess power causing it financial harm.
- Frequent shifting of OA consumers between PSPCL and the market affected the quality of power provided to other consumers.

PSPCL characterised this behaviour as "...OA consumers are indulging in foul play for pure profiteering thus jeopardising the system reliability & economics."

Source: (PSPCL, 2010)

iii. Non-OA Consumers Bear the Burden of Increased Cost

Any increase in the cost of procurement, beyond the amount that is compensated through the additional surcharge, is borne by those consumers who cannot or do not avail supply of electricity through open access. Most of these consumers are smaller consumers. It is unfair to burden them with additional costs just so some larger consumers can enjoy lower cost power.

Redefining Consumer Choice

Given the problems with open access discussed above, particularly regarding frequent switching by consumers between the discom and the market, there is a need for a fundamental rethink of how consumer choice should be provided. The following paragraphs highlight the main issues on which such rethinking is required.

i. Consumer Choice is More than OA

OA for large consumers as discussed in the EAct, is intended to allow choice of supplier or retail competition. Effective functioning of consumer choice requires two main conditions: (1) open access to the transmission and distribution system; and (2) well-defined rules that govern the relationship between the discom and the consumer, who chooses to get its electricity from a competitive supplier, and that define the rights and responsibilities for each.

ii. Open Access to the T&D Network Is Required by Competitive Suppliers Not Consumers

Open access to the transmission and distribution network is a pre-requisite for consumer choice, but consumer choice is considerably more than merely allowing open access. Access to the T&D network is required by competitive suppliers comprising of generators, traders, and retailers who contract to supply large consumers. However, OA is not required by customers, even those who want to exercise choice. Customers need only to shop around for the best deal from competitive suppliers and it should be the responsibility of the supplier to obtain access to the T&D network so that it can transfer that power to the consumer. Therefore, it may be worthwhile to consider that OA requests should be made only by competitive suppliers and not by customers. This distinction may help resolve another issue. Open access to the T&D network needs to be of almost any duration (short, medium and long-term) in order to ensure efficient transfer of power. However, as we discuss later, exercise of choice of supplier by a consumer should not be a “short term” transaction. If it were short-term, then there would be frequent switching by the customer back and forth between the market and the discom, which would be problematic. By requiring suppliers only to seek open access, we allow short-term, medium-term, and long-term OA so that these suppliers can assemble a portfolio of resources with various time profiles to

service their customers efficiently. However, it precludes a consumer exercising choice for the short term.

iii. Choice for Supply from Market Should Not be Partial or Short-Term

Electricity service provided by a discom to a customer who has chosen to get electricity from a competitive supplier should be seen as a service different from that provided to customers who remain with the discom. Service to a customer who exercises choice should not be seen as a mere extension of regulated supply. In countries where retail competition has been implemented, service to a consumer who exercises choice has at least two specific characteristics. First, the competitive supplier provides electricity to fulfil all the electricity requirements of that consumer. This is different from the way 'open access' has been operationalised in India, where many OA consumers get only part of their requirements from the market and rely on the discom for the remaining requirements. This shifts all the risk of variation of load on the discom, which is unfair. The second characteristic is that the service from that provider is not envisioned to be for a short time, even though customers may switch suppliers to get the best deal. This is again different from how 'open access' works in India with many OA consumers getting supply from competitive suppliers for very short periods, sometimes as short as just a few hours, and relying on the discom to supply them for the remaining time.

Given these characteristics that distinguish supply for a customer that exercises choice from regulated supply to other customers, it becomes obvious that terms and conditions for service to consumers exercising choice need to be developed carefully. While regulations for open access have been developed by most SERCs, they focus mainly on the procedures for requesting access to the T&D network. Almost no attention has been paid so far to the relationship between the discom and the consumer who exercises choice.

iv. Lessons from Default Service in Other Countries

In countries with retail competition, the discom continues to provide wire services. In addition, in order to ensure that electricity continues to be provided to the consumer even when the supplier cannot, or will not, provide electricity, there is default service⁷. Default service is provided either by the discom or by another entity. Because the terms and conditions of default service form a major component of the relationship between the discom and consumers who opt for choice of supplier, the experience with default service in these countries is useful for India as we develop

⁷In some jurisdictions, default service is known as basic service or standard service. We will use the term default service to avoid confusion.

terms and conditions (T&Cs) for the relationship between discoms and consumers who opt to get electricity from a competitive supplier.

1. Key Role of Design of Default Service in Success of Consumer Choice

The design of default service has played a major role in the success or failure of retail competition and consumer choice (Tschamler, 2006). When default service has been designed to pursue goals other than the development of a robust retail market, such as price reductions and other forms of consumer protection, retailers are unable to attract a sufficient number of consumers resulting in a stunting of the retail market (Joskow, 2006). Some observers have referred to these measures as “killing the market with kindness” (Graves and Wharton, 2001; as cited in Jurewitz, 2002:68). This is particularly relevant in India. While a case could be made for some form of protection for small consumers, it would be very difficult to argue that large C&I consumers need some form of protection or price stability, particularly if this is done at the expense of smaller consumers who remain with the discom. These large consumers have tremendous resources and expertise at their disposal and are generally very well-informed about playing in the market for electricity. It is also important to remember that one of the major objectives of allowing choice of supplier in EAct was to promote competition with the expectation that a vibrant, dynamic, and competitive market would lead to optimal use of resources. Clearly, then the T&Cs for the service that the discom provides these consumers should ensure that no special protection is built in for them.

2. Concern about Excessive Flexibility to Go Back and Forth Between Default Service and Competitive Supply

Earlier in the paper, the problems caused by frequent switching of supply by consumers between the market and the discom were discussed. Even in other countries that have allowed choice of supplier, observers and researchers have echoed similar concerns about giving excessive flexibility to consumers to move back and forth between the market and default service (Jurewitz, 2002; Joskow, 2006). They argue that default service providers would find it very difficult and expensive to hedge against the risks posed by these swings in load. As Joskow (2006) observes:

Regulatory rules that allow customers to come and go between regulated default service prices and competitive market prices, whichever happens to be lower at a point in time, further undermines the ability of competitive retailers to build a stable customer base.

Based on these observations, commenters have been advocating that some limits must be placed on consumers switching between the market and default service. One suggestion was to

have a minimum notice period of, say, two years for consumers to stay with default service once they return to it from the market (Jurewitz, 2002). In many states in the US, when default service was being designed there was concern about potential gaming behaviour by customers opting for supply from competitive suppliers, and some states did experience this behaviour. Box 2 provides details of the discussions around these issues in four North-Eastern states in the United States of America (USA), and the ways in which the issues were addressed.

The experience in these four states leads to two insights regarding switching behaviour relevant to India. First, frequent switching by large consumers between default service and the market was a concern because it would lead to volatility in load for the default service provider. The increased volatility, in turn, would lead to higher costs for other default service customers who were usually small customers unable to switch to competitive supply because they were not economically attractive to retailers. Second, the concern about frequent switching was mainly about the behaviour of large consumers. Therefore, corrective measures were applicable to them but small consumers were exempted. It was reasoned that frequent switching by large customers could create large swings in load while switching by small consumers was unlikely to have a significant effect. Furthermore, retail markets for small consumers at the time were not fully developed, making default service much more necessary for them.

In the four states, the problems of frequent switching were dealt with by one of two methods: (1) Placing restrictions on the time that had to elapse before a customer could either leave default service (Connecticut, Massachusetts) or return to default service (Pennsylvania); or (2) Charging fees for leaving default service too soon to discourage frequent switching (Maine). Restrictions on default service were removed when either the threat of frequent switching did not materialise (Connecticut) or other features of default service addressed the problem (Pennsylvania).

v. Efforts in India to Deal with Issue of Frequent Switching

Until now, not much attention has been paid to the problems caused by frequent switching by open access consumers. We describe two efforts to deal with this issue: one by Prayas (Energy Group) and the second by Rajasthan Electricity Regulatory Commission (RERC). For several years, in its comments on MERC's open access regulations, Prayas has been pointing out the difficulties for discoms in power procurement due to short-term open access (Prayas, 2016, 2013). It has recommended that the minimum duration for open access be one year, or at least 6 months.

RERC recently released its regulations for open access and they differ from the Model Regulations issued by FoR. The Model Regulations allow an application for short-term open

access up to 1.00 pm on the day before the transaction is to take place; i.e. down to 11 hours before the proposed use of the transmission system. In its regulations, RERC has increased this minimum notice time so that an application has to be made before 10.00am of the day, two days before the proposed use of the transmission system (RERC OA Regs, Jan 2016). This deviation from the Model Regulations may have been made to make it a little easier for the discom to manage the load swings caused by open access consumers switching between the market and discom retail rates. While the RERC modifications will help somewhat, much stronger measures will be needed such as the minimum notice period used in some jurisdictions in the USA.

Box 2. Experience with Frequent Switching in USA

In many states in the US, when default service was being designed there was concern about potential gaming behaviour by customers opting for supply from competitive suppliers. We describe how this issue was dealt with in four states: Connecticut, Maine, Massachusetts, and Pennsylvania.

Connecticut (CT)

When retail competition was first introduced in Connecticut, there was concern that if there was no restriction on leaving or returning to standard offer service, customers and retailers would manipulate the service by returning to it during times of high market prices, usually the summer and winter peak load periods. This concern was reinforced by potential bidders for supplying standard offer service, who said that if there were no restrictions on customers moving back and forth, their risk would increase and they would either not bid at all or that their bids would be “inordinately high” (CT DPUC, 1999:3). Under these conditions, the Commission concluded that there was “very real potential” (CT DPUC, 1999:6) for gaming which would affect rates for all customers, and therefore it required that customers returning from receiving supply from a competitive supplier would have to remain on standard offer service for at least 12 months from the date of their return. (CT DPUC, 1999)

About six years after that decision, the DPUC reduced the period for which the customer was to remain on standard offer service, upon returning from competitive supply, from 12 months to six months. In 2007, the Commission found that the experience in the retail market had shown that customers were unlikely to game the market as had originally been feared. Furthermore, the restriction limited the freedom to move from product to product that exists in other retail markets. Therefore, the Commission rescinded the anti-gaming policy for standard service. (CT DPUC, 2007)

Maine (ME)

In 2002, the Maine PUC released a report titled, “Standard Offer Study.” The report recommended that after the transition period ending in March 2005, standard offer service remain. However, it recommended that for medium and large C&I customers the service would be only a “last resort” service (EIA, 2008). For small consumers (residential and small C&I), because the retail markets for them were not as fully developed, the service would be both a status quo and a last resort service. For medium and large consumers, in order to discourage frequent switching back and forth, termination of standard offer service would be free if done after 12 months from moving to the service. However, if the service was terminated within 12 months of re-joining the service, the customer would have to pay an opt-out fee equal to twice the highest bill paid during the most recent period the customer took the service (ME PUC, 2016). For small consumers, termination of standard offer service is unlimited and without any opt-out charges.

Massachusetts (MA)

In 2005, about seven years after retail competition was introduced, NSTAR Electric, one of the distribution companies in Massachusetts filed a petition requesting a change in the terms and conditions for distribution services and competitive suppliers. NSTAR contended that the proposed changes were required because many large commercial and industrial (C&I) customers were being shifted on and off default service many times in a short period (MA DTE, 2006). NSTAR alleged that retailers would shift these large C&I customers onto default service when the wholesale market price was higher than the default service price, and sell the power at a higher price in the market. NSTAR asserted that these shifts greatly increased the volatility of load for the distribution company. It stated that with a default service demand of about 960 MW, the load swing was about 160 MW (about 16 per cent) over a few months; with some load swings of 50 MW (about 5 per cent) over a few days. NSTAR stated that this increased volatility led to higher default service prices which affected smaller C&I customers who were of lower credit quality and were served mainly through default service.

The Commission said that default service should be seen by larger customers as “a short-term, last resort service, rather than a longer-term alternative to competitive supply.” The switching practice being used by the large C&I customers showed that they were treating it as a long-term competitive option. Therefore, the Commission agreed with the company’s proposed change

that if a customer switched from a competitive supplier to default service, it could not go back to the same supplier for a period of six months.

Pennsylvania (PA)

In the early years of retail competition in Pennsylvania, some retailers were offering customers “donut” (Jurewitz, 2002:83) contracts whereby they would return customers to default service when the market price was high in the summer, and return them to retail service when market prices were low (Jurewitz, 2002). In response to this problem, a few distribution companies included “stay-out” (D.Mumford, personal communication, December 08, 2016:1) provisions in their tariffs, whereby a customer who left default service for competitive supply could not return to default service for a specified period, usually between six and 12 months. These stay-out provisions were usually applicable to large C&I consumers only. There were some concerns that these stay-out provisions were inconsistent with the relevant statute and were therefore eventually eliminated. Moreover, over the years some features of default service have changed that make donut contracts less attractive. One such feature is that now the default service for large C&I customers is based on hourly-pricing, obviating concerns about donut contracts (D.Mumford, personal communication, December 08, 2016).

Key Takeaways from US Experience

1. Frequent switching by customers between default service and the market is undesirable because it leads to volatility in load for the default service provider and results in higher costs for other default service customers, usually small customers who are often unable to switch to competitive supply as they are not economically attractive to retailers.
2. Corrective measures in the rules for default service are applicable to large customers to check their behaviour and exempt smaller customers. This is for two reasons. Frequent switching by large customers can create large swings in load while switching by small consumers has little effect. Furthermore, retail markets for small consumers at the time were not fully developed making default service much more necessary for them.
3. The problems of frequent switching were dealt with by one of two methods:
 - a. Restrictions on the time that had to elapse before a customer could either leave default service (CT, MA) or return to default service (PA).
 - b. Fees for leaving default service too soon (ME) to discourage frequent switching.

4. Restrictions on default service were removed when either the threat of frequent switching did not materialise (CT) or other features of default service addressed the problem (PA).

Notes:

1. *In Massachusetts, the Commission exempted from the minimum period restriction those customers that were put on default service at the end of a contract period.*
2. *Information on how Pennsylvania dealt with donut contracts is based on communication with Daniel Mumford, Director – Office of Competitive Market Oversight, Pennsylvania Public Utility Commission.*

vi. Greater Challenge with Increasing RE

As the cost of electricity from renewable energy (RE) sources has been decreasing, the amount of RE generation has been growing by leaps and bounds. Several states have offered concessions in OA charges if the competitive supply is based on RE. These concessions are provided in the form of reductions in CSS, transmission charges, or energy-banking charges. As a result, RE based power through open access can be less expensive for consumers than power from conventional resources (Prayas, 2016a; PwC, 2015:9). In addition, in some states RE providers are not being paid regularly by discoms, making sale of RE-based power through OA an attractive alternative because of the greater certainty of payment. Together, these two factors are leading to increasing sale of RE-based power through OA.

Generation from RE must be incentivised because of its environmental benefits and it is heartening to see rapid increases in the amount of RE in the generation mix. However, use of RE in OA transactions greatly exacerbates the problems with frequent switching discussed in this paper. Because of intermittency and uncertainty, RE greatly increases the volatility in the load the discom must serve. The increased volatility, in turn, increases the cost of providing power to other consumers. In these cases, large OA consumers are able to avail lower priced power from RE, while the discoms must make up the shortfall in revenues from those who cannot or do not avail OA, many of whom are small consumers. It would be unfair that the costs for environmental benefits fall on small consumers, while some large consumers are able to lower their electricity rates.

Conclusions and Recommendations

Open Access for end-consumers as envisioned in the EAct has had limited success, in spite of considerable attention given to it over the 14 years since the EAct was passed. There are some

fundamental issues that need to be addressed if we are to get true retail competition and consumer choice in the electricity sector.

Rework Definition of Consumer Choice

The term 'open access' is a misnomer for consumer choice. First, as discussed in the paper, consumer choice requires more than just open access to the T&D network. Second, and more importantly, the term blurs the distinction between supplier and consumer. Request for access to the T&D network should be the responsibility of the supplier (retailer, generator, or trader), and not the responsibility of the consumer. The consumer's responsibility is to indicate to the discom that it wants to exercise its choice of supplier, and to shop around among competitive suppliers for the best deal for itself. When this distinction is recognised, we can see that short-term OA can, and should be allowed for retailers as they assemble the most efficient portfolio of supply resources for their customers. However, a decision to shift to the market for supply cannot be for a short term.

Electricity service for consumers who choose to get their supply from a competitive supplier should be treated as a separate service and not as an extension of regulated supply from the discom. Therefore, T&Cs need to be carefully developed that cover the responsibilities of the discom and the consumer, and how and when a consumer can return to regulated supply. This service must cover the full electricity requirements of the consumer that exercises choice. Consumers should not be allowed to get part of their requirements from the market and part from the discom's regulated supply. Given the difficulties created by frequent switching by consumers between the discom and the market, limits must be imposed. It is suggested that once a consumer returns to regulated rates, they cannot return to the market for at least a year. OA consumers should not be able to use the discom as a mother ship which they can return to whenever market prices are high, because that is unfair to non-OA consumers who must pay the additional cost due to frequent switching by OA consumers. Furthermore, such behaviour will impede the development of a robust retail market. This restriction should only apply to moving back to the discom's regulated rates. There should be no restriction on switching between competitive suppliers.

Restrictions on the time that has to elapse before a consumer can either leave or return discom service is better than charging an additional fee as it would be difficult to decide the right level for the fee. The appropriate level of the fee could change due to extraneous forces making it difficult to stay with a particular level of additional charge and yet be sure that frequent switching was being deterred. Furthermore, it would be easier to require the consumer to stay with the discom for a certain period (one year) rather than keeping a consumer out of the discom's regulated

service for that period. The consumer may need to return to discom service for reasons beyond his control, for example, if his competitive supplier goes bankrupt.

Mismatch of Perspectives of the Centre and the States

The review of the experience so far with open access shows that the states are at best, reluctant participants in promoting open access. Examples of reluctance on the part of states are the slowness with which cross-subsidy and cross-subsidy surcharge are being reduced. This reluctance turns into active resistance in some states, with the blocking of export of power through open access during periods of power shortages and import of power during periods of surplus of power.

One reason that the Centre and the states seem to be working at cross-purposes is due to a mismatch in their respective visions. The Centre is more focused on creating a vibrant power market where demand is met 24x7, and the market system is such that generation capacity is created almost automatically driven by the invisible hand of the market. This vibrant power sector in the future is also visualised as the main driver of growth, which in the mind of the Centre is the link to prosperity for the nation. In contrast, the states' concerns about their respective power sectors are much more immediate – mostly on affordable tariffs being an issue with electoral and political repercussions. Hence states are concerned about protecting the revenues of the discoms. Competition and efficiency do not seem to be as important to them.

This dissonance in visions is particularly debilitating for the power sector because almost all the conceptualisation of reform and ideas about bringing in more competition and choice seems to be initiated by the Centre, while almost all the implementation falls on the states. Development of a shared perspective or vision for the sector by the Centre and the states is highly desirable. However, that would be difficult to achieve in the current political climate.

In this situation, it should be recognised that states will reform most expeditiously when the impetus for reform comes from the states themselves. An example of this approach was seen in the US where the restructuring effort was initiated and driven by the states. Most of the states that had high electricity rates turned to restructuring their electricity sector; for example, the New England states, New York, the PJM states, and California. Therefore, it would be better to focus on ensuring the success of power sector reforms generally, and consumer choice more specifically, on one or two states in India. One way to do so would be to pick one or two progressive states and persuade political players that an effective power sector would make industry more competitive, leading to more and better jobs, and possibly help with success in the elections. If there is success in one state, other states may follow.

Road Map to Reduce Cross-Subsidy

The presence of a large cross-subsidy in the tariffs of many discoms leads to the imposition of large cross-subsidy surcharges, which then make moving to competitive suppliers economically unattractive for consumers. Therefore, in order to make it more attractive to get supply from competitive suppliers, efforts must be made to reduce the surcharge. As discussed earlier, most state governments and hence state-owned discoms are focused on keeping tariffs for residential consumers low. These low tariffs are achieved mostly through cross-subsidy by large consumer and industrial consumers. In order to keep industrial tariffs competitive, state governments should be persuaded to provide direct subsidy instead of a cross-subsidy.

Avoid Burdening Small Consumers with Subsidy for RE

RE has environmental benefits, compared with energy from fossil fuels, and it is reasonable for society to subsidise it. However, the burden for such a subsidy should not fall unfairly on small consumers while large consumers are able to lower their tariffs. Some may argue that large consumers still have higher tariffs that include a cross-subsidy to benefit small consumers. But two wrongs do not make a right. Both kinds of cross-subsidisation should be reduced and ultimately removed. Therefore, any reduction in CSS for RE should be provided by the government directly and not through higher tariffs on the non-OA consumers, many of whom are small consumers.

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