

COMMENTS ON
SUO-MOTO DRAFT
ORDER
(CHARGING INFRASTRUCTURE, TARIFF
AND OTHER REGULATORY ISSUES
FOR ELECTRIC VEHICLES)

SUBMITTED BY
CUTS INTERNATIONAL

Contents

Approach Adopted by CUTS	3
An overview of the Draft Order in the P-O-O-C-R Matrix.....	4
CUTS' Value Addition	4
Table of Comments.....	5
Sample Illustrations for Cost-Benefit Analysis	16
Illustration 1: Public Private Partnership in Business Models	16
1. Issue at hand: Business Models Envisaged for Setting up of Public Charging Station	16
2. Cost-Benefit Analysis Calculations (Illustrative)	16
3. Risk Sharing with PPP Model	19
4. Final Recommendation	20
Illustration 2: Cost-Benefit Analysis for Tariff Options.....	21
1. Issue at hand: Source of Power Procurement for the Public Charging Station	21
2. Cost Benefit Calculations (Illustrative).....	21
3. Final Recommendation	23
Way Forward	23

Approach Adopted by CUTS

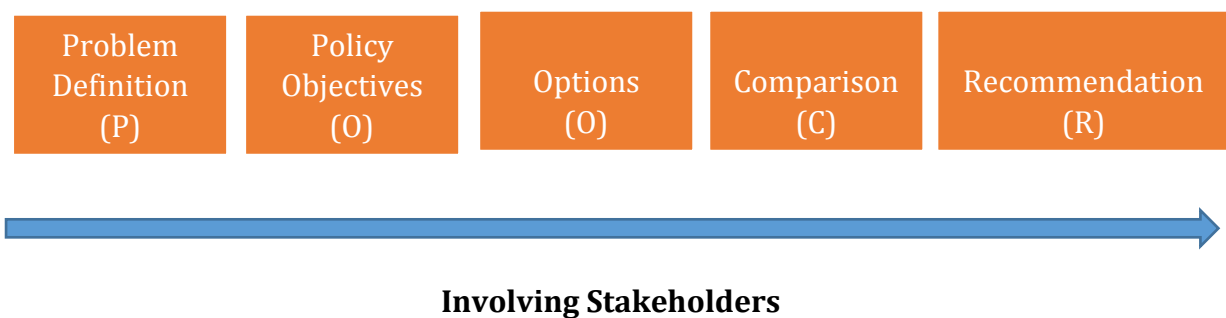
The Suo Moto Draft Order and Concept Paper developed by Rajasthan Electricity Regulatory Commission has been analysed by CUTS using a cost-benefit assessment *approach*. This approach has been adopted in order to understand the effectiveness of the provisions.

Contemporary research tools like Regulatory Impact Assessment (RIA) and Cost-Benefit Analysis (CBA) serve the much-needed purpose of informing the design of regulations, effectively monitoring and evaluating the progress of implementation and provide continuous feedback for policy corrections owing to externalities in the future.

RIA is an evidence-based research, which involves estimation and comparison of costs and benefits of different regulatory alternatives. It necessitates justification of regulation and consequently aids in avoiding adoption of unnecessary regulations. Therefore, it is imperative to assess the cost and benefits of regulatory proposals on different stakeholders to facilitate and develop charging infrastructure of EVs.

The process of conducting an RIA involves defining the problem and the corresponding identifying the corresponding policy objectives, developing multiple alternatives for achieving those objectives, comparing the objectives using a CBA approach for identifying the one that is most effective and efficient and finally developing recommendations based on that approach. Figure 1 highlights the P-O-O-C-R process while Table 1 integrates the Concept Paper and Suo Moto Draft order into this matrix.

Figure 1: Process of Regulatory Impact Assessment



An overview of the Draft Order in the P-O-O-C-R Matrix

POOCR Matrix	Current Status	Draft Order of RERC
Identifying the Problem (P)	Given	<ul style="list-style-type: none"> • Lack of a specific EV charging framework which leads to grey areas and uncertainty • Lack of sufficient EV charging Infra which deters consumers to shift from ICE vehicles to EV • Increase in EV uptake will increase EV charging activity which may have an impact on the load of the DISCOM and grid stability
Defining the Objectives (O)	Given	<ul style="list-style-type: none"> • Regulatory support, incentives and guidelines for facilitating smooth transition to E-mobility • Policy push to encourage public charging for efficient load management • Framework for a tariff that is conducive for private investors to set up charging infrastructure in the State • Determination of a model or combination of models for setting up of charging infrastructure
Developing Alternative Policy Options (O)	Partially Given	<ul style="list-style-type: none"> • Business Models for Setting up PCS: <ul style="list-style-type: none"> ○ DISCOM-owned vs Privately-owned • Power Supply Arrangements for PCS: <ul style="list-style-type: none"> ○ DISCOM supply vs Open Access
Comparing the Alternatives (C)	Partially given in the Concept Paper	<ul style="list-style-type: none"> • Chapters of the Concept Paper
Providing final Recommendations (R)	Given	<ul style="list-style-type: none"> • Provisions of the Draft Order

CUTS' Value Addition

- Analysis of the recommendations, in the Suo-moto order, and assess the efficacy of the provisions to meet their intended objectives
- Cost-Benefit Analysis of the alternate approaches for few of the provisions

Table of Comments

Section	Draft Provisions	CUTS Comments
1.4(vii)	Tie-up with network service provider to enable advance remote/online booking of charging slots. Online information to be provided to EV owners on location, type and number of chargers installed at each station.	<ul style="list-style-type: none"> • While this provision was included in the guidelines issued by the Ministry of Power (MoP), however, it was not discussed further in draft Suo-Moto order. • This link is crucial for smooth service delivery and remote operations. This provision would likely help Public Charging Station (PCS) in rendering better services to the consumers. Further, International experiences from Germany and USA highlight the crucial role played by a NSP in real-time data collection from charging stations and transmission to DISCOM, which facilitates grid management, dynamic pricing and payment facilitation. • While different PCS could have tie-ups with different NSPs and/ or DISCOMs could have tie-up with single NSP in their respective areas, it is imperative that consumers should have access to all the PCS at a single platform. • Therefore, CUTS recommends that while this provision should be included in the draft order, however, clarity should be brought upon regarding the collaboration with NSPs. It is also recommended that a mobile application could be developed wherein consumers could have one-point access to all the different types and location of PCS at a city or DISCOM level.
2	Business Models for Setting up Public Charging Infrastructure	<p><u>General Comments for Section 2</u></p> <ul style="list-style-type: none"> • Public charging station has a crucial role in the transition to a mainstream electric vehicle market. It is the most publicly

Section	Draft Provisions	CUTS Comments
		<p>visible component of the charging ecosystem.</p> <ul style="list-style-type: none"> • Cost-benefit analysis of other business models for PCS such as Public Private Partnerships (PPP) which are not included in this draft order should be undertaken to assess their viability. Refer to Illustration 1 for a sample cost-benefit analysis of business models • While the draft order talks about two different types of business models on the basis of ownership there is also a need to look at business models on the basis of end usage. In order to do that the following factors may be considered. <ul style="list-style-type: none"> ○ Housing concentration ○ Commuting patterns ○ Vehicle mix ○ Typical driving patterns
2.3	Privately owned Public Charging station	<ul style="list-style-type: none"> • De-licensing for setting up of Public Charging Station appears to be a progressive regulation. This would encourage private actors to invest in charging infrastructure • Additionally, there should be a mapping of priority cities in Rajasthan for deployment of EV charging infrastructure. The cities should map priority areas for private investment through consultation with the relevant stakeholders including city-level authorities, state departments, DISCOMS and grid operator, amongst others. These sites should be made available on an online, public map showing the number and type of chargers approved the electrical connections, and conditions.

Section	Draft Provisions	CUTS Comments
3	Procedures to be followed by DISCOM (General Section Specific Comments)	<p><u>General Comments for Section 3</u></p> <ul style="list-style-type: none"> • There is a need for the DISCOM to set up a consumer grievance redressal mechanism for providing the consumers as well as service providers a platform to raise their concerns. This can be facilitated through the EV monitoring cell to be set up by the DISCOM (Clause 3.8 of the Suo-Moto Draft Order) or through the creation of a mobile application. • Therefore, it is recommended that draft order should also include provisions for setting up of grievance redressal mechanism/ units for both service providers (PCS) and service users (consumers). • Demand Assessment is essential prior to setting up of charging stations for assessing maximum coverage, grid management and greater emphasis on locations where demand is higher. • Thus CUTS recommends that the draft order include a mandatory provision for DISCOMS to carry out an assessment themselves on a periodic basis or mandate the private players to carry out this exercise prior to application for clearances
3.1	The DISCOM shall facilitate growth of Electric Vehicle Charging Infrastructure either by setting up charging stations on its own or through franchisee agreement and also release connections to privately owned Charging	<ul style="list-style-type: none"> • Although this provision mandates the DISCOMs to prioritise the electricity connection to public charging stations, there needs to be a more detailed timeline for supply of electricity as is prevalent in other States. This will facilitate ease of doing business and enhance efficiency and accountability in

Section	Draft Provisions	CUTS Comments
	Stations on priority basis on payment of charges as per prevailing orders/Regulations.	<p>the process. For example: In Andhra Pradesh¹ a DISCOM is required to release power to charging/battery swapping stations within 48 hours of application. On the other hand, in Maharashtra² there is a window of 15 days.</p> <ul style="list-style-type: none"> • Thus, it is recommended that this clause be amended to include a definite timeline. Failure to do so by DISCOMs should lead to penalty. Thus, it is recommended that the order should include provision for penalty against non-compliance by DISCOMs. • Further, for improving efficiency, transparency and accountability in the procedures digital technology may be leveraged. A unified platform can be created for providing single-window clearances. Or the existing Single Window Clearance System (SWCS) of the Govt. of Rajasthan can be used for this purpose. This will bring down the transaction costs involved in the process.
3.2	DISCOM shall facilitate slow/fast charging at residence/offices by increasing its system capacity to avoid grid disturbances and make necessary provision for this in the Investment Plan.	<ul style="list-style-type: none"> • As the largest shares of charging for most drivers occur at home and at the workplaces, hence, this provision was included in the guidelines issued by the Ministry of Power (MoP). • While this provision allows for installation of EV charging facilities at residences and offices it does not delve into the operational procedures. The draft order should include a provision for redefining City and Building codes for integrating the need for charging infrastructure in urban infrastructure

¹ https://www.acma.in/uploads/doc/AP%20Policy_final.pdf

² https://www.msins.in/guidelines_docs/english/EV_Policy.pdf

Section	Draft Provisions	CUTS Comments
		<p>planning. Further the draft order should include a provision for installation of charging infrastructure in public buildings, offices, malls etc, through viable business models.</p> <ul style="list-style-type: none"> • Along with that, financial incentives for encouraging slow/fast charging at residence/offices will need to be detailed out in the order. • Further, there has been no discussion to collect data on private charging (consumption, metering and performance) in the draft order. This data can inform governments and other stakeholders about the gaps in charging infrastructure and effective solutions to bridge these gaps. Hence, CUTS recommends that, going forward, a data collection mechanism for private charging at home and at office should be mandated in the order.
3.3	<p>The DISCOM shall publish 'Standard Procedures and Protocols for Charging Infrastructure' on its website and shall be made available in all its offices for access to public at large.</p>	<ul style="list-style-type: none"> • The standard procedures and protocols should be developed in consultation with relevant scientific bodies, academia, industry representatives and government departments. The needs and business viability of private players should also be taken into account in this process. Further, Environmental, Social and Governance (ESG) criteria³ should also be integrated into the protocols. This will distribute the onus among the stakeholders while retaining the authority with the DISCOM. • Along with standard procedures and protocols the DISCOM must specify the minimum facilities required at the

³ Environment friendliness, Social Responsibility and Effective Governance

Section	Draft Provisions	CUTS Comments
		<p>charging station which must be mandatorily be adhered to by the PCS operators.</p> <ul style="list-style-type: none"> The finalised protocols along with being uploaded on the DISCOM website should also displayed at the charging stations through posters or electronic media, to ensure effective and transparent dissemination of information
3.5	<p>The Public Charging Station set up by DISCOM or privately-owned model, shall require a clearance certificate from the Authorized Official designated by the DISCOM for such purpose, before it is operational and accessible to the public.</p>	<ul style="list-style-type: none"> While this provision recognises the absolute need for scrutiny and clearances for operationalization of a PCS, there is a need for distribution of the responsibility on the DISCOM. For improving efficiency, transparency and accountability in the procedures CUTS recommends that digital technology be leveraged. A unified platform may be created for providing single-window clearances. Or the existing Single Window Clearance System (SWCS) of the Govt. of Rajasthan can be used for this purpose. This will bring down the transaction costs involved in the process.
3.6 and 3.7	<p>The connectivity shall be granted to the Public Charging Station only after the issuance of Clearance certificate from the Authorized Official designated by the DISCOM.</p> <p>The Authorized Official designated by the DISCOM shall have the right to inspect all Public Charging Stations set up in the area of license of the DISCOM. The Authorized</p>	<ul style="list-style-type: none"> To ease the regulatory burden on the DISCOM, CUTS recommends that digital technology be integrated into the process of scrutiny prior to granting of the clearance certificate. There may be provisions for online provisional permissions based on digital scrutiny followed by physical scrutiny and award of final clearance certificate.

Section	Draft Provisions	CUTS Comments
	Official shall verify that the standard guidelines and protocols are followed by the Public Charging Station at all times.	
3.9	The DISCOM shall maintain a database of all the Public Charging Stations set up in its area of License. The database shall include details of type of connectors/rated voltage/number of charging points and type of charging available at different locations. The database shall be accessible to CEA.	<ul style="list-style-type: none"> • Creation and management of a database is crucial for data collection and maintenance of records. • Thus, it is recommended that each DISCOM shall create and manage a database of all Public Charging Station set up in its area of license. This should feed into a larger database of PCS under all DISCOMS in the State. This larger database and the DISCOM level database should be accessible to the CEA. Further the larger database should have a component accessible in the public domain to provide information to the consumers so that they can make informed choices. This can be facilitated through the creation of a mobile application. • Further, the draft order should emphasize on the use of transparent, accountable and participatory methods for creation and maintenance of the database. There should be periodic updation of the data and monitoring of the database to ensure credibility of information. The private charging station owners should regularly share data with the DISCOM through the database
4.1	The Public Charging Stations may be allowed to purchase power from any source through open access route in accordance with the	<ul style="list-style-type: none"> • Allowing PCS to purchase power from open source is a welcome step and would be crucial in optimizing competition in the sector. • Moreover, according to draft Industrial

Section	Draft Provisions	CUTS Comments
	provisions of Terms and Conditions for Open Access Regulations, 2016.	<p>Policy 2019 of Rajasthan⁴, to attract business community, it was proposed to waive of cross-subsidy on open access. However, it is not clear whether such PCS owners would have access to such proposed benefits under the said industrial policy.</p> <ul style="list-style-type: none"> • Therefore, it is recommended that efforts should be made to pass on the benefits of the Draft Industrial Policy 2019 of Rajasthan to PCS owners under this draft order as well.
4.3	The Public Charging Stations may also be set up with rooftop solar facility under applicable Regulations.	<ul style="list-style-type: none"> • Facilitating charging stations at residence/ offices will strengthen the adoption of EVs among the masses. However, it might affect grid stability and requires capital investment in the sector. • Also, setting up of rooftop solar is a progressive step in developing charging stations. • Therefore, it is recommended that while DISCOMs may develop systemic grid infrastructure, the draft order should emphasise on adoption of solar rooftop and net metering for residential and office premises, under applicable regulations. While this would limit the additional load exerted on grid due to EV charging, it also might help in achieving solar rooftops targets set under country renewable targets. • For a state such as Rajasthan where solar energy is in abundance, the solar rooftop could play a crucial role in enabling residential charging infrastructure.

⁴ <https://timesofindia.indiatimes.com/city/jaipur/industrial-draft-policy-bets-big-on-making-of-electric-vehicles/articleshow/71209545.cms>

Section	Draft Provisions	CUTS Comments
5.	Tariff Structure for Public Charging Stations	<p><u>General Comments for Section 5</u></p> <ul style="list-style-type: none"> • There should be an institutionalised review, monitoring and feedback structure prescribed in the draft order on matters related to tariff, service charges, Time of the Day and other rebates. • Role of consumers and civil society organisations in consultation processes and discussions should be explicitly mentioned.
5.2	Provides for existing tariff applicable to PCS and Time of Day Structure	<ul style="list-style-type: none"> • A sunset clause should be inserted in this section limiting the period for which concessional tariff will be provided to PCSs. While it is a welcome step to incentivize and optimize charging of vehicles at a station. However, other time of the day slots could also be pondered upon on the basis of use-type of target vehicles as the load curve of these PCS will be different for different stations on the basis of the types of vehicles it caters to. For instance, PCS targeted for corporate fleets can be allowed to provide TOD benefits during the office working hours (day time around lunch). • Similarly, highway PCSs could be allowed for TOD tariff on times when frequency of buses is not high. In addition, provisions should be made to ensure safety of vehicles and consumers at night as time of charging of vehicle could vary from 30 minutes to several hours. • The DISCOM can supply the power to PCS at its Average Cost of Supply and any subsidy that the Appropriate Commission computes, after due Cost-Benefit Analysis (refer to Illustration 2 for a sample CBA exercise), for PCS can

Section	Draft Provisions	CUTS Comments
		<p>be directly transferred to the beneficiary's account through DBT (as envisaged in proposed Electricity Amendment Bill and Draft Tariff Policy 2018).</p>
5.3	<p>Voltage rebate, Load factor rebate, rebate for incremental consumption and rebate for new HT connections shall not be applicable for this category. Other general terms and condition as applicable to industrial consumers shall also apply to EV charging station.</p>	<ul style="list-style-type: none"> • This provision should be modified as it is not in line with the objectives of issuing this order. As the EV market segment and its charging infrastructure ecosystem is a highly price sensitive segment, the existing rebates and performance-linked incentives should be provided for PCS category too. A sunset or review clause can be added for the time being.
5.6	<p>DISCOM shall propose Capital Investment Plan for upgrading its network for accommodating Charging Infrastructure in order to facilitate smooth and efficient EV Charging at respective Charging Stations. The Capital Investment Plan shall be prepared after rigorous discussions with investor/stakeholders/private players who are keen to set up charging stations in the License area of the DISCOM.</p>	<ul style="list-style-type: none"> • This clause mentions that the Capital Investment Plan shall be prepared by the DISCOMS after rigorous discussions with investors/stakeholders/private players. In addition to these, there is a need to explicitly state other relevant consumers including end-users, consumer representatives and NGOs. • The rationale being the significance of end-users and their perspectives in actually utilising the services provided by PCS. This would directly impact the future prospects of setting up PCS and therefore, the proposed Capital Investment Plan.
5.7, 5.8, 5.9 & 5.10	<p>Provisions related to Smart Charging features</p>	<ul style="list-style-type: none"> • The word 'may' in clause number 5.7 and 5.9 should be replaced with 'shall'. This is required to make the provisions

Section	Draft Provisions	CUTS Comments
		<p>regarding installation of smart meters binding on all PCS. This will help DISCOMS to manage its load, ensure efficient grid balancing and flattening the energy load curve by meeting energy demand through renewable sources of energy in the long-run.</p> <ul style="list-style-type: none"> • Also, a sub-section should be added after these sections to make it binding on DISCOMS to submit a monitoring and evaluation report to the State Nodal Agency or the Appropriate Commission of Smart Charging features after a fixed period of time, preferably, half-yearly. This report should be made available for public scrutiny and research purposes

Sample Illustrations for Cost-Benefit Analysis

Illustration 1: Public Private Partnership in Business Models

1. Issue at hand: Business Models Envisaged for Setting up of Public Charging Station

1.1 The draft order proposes two types of business model for setting up Public charging Infrastructure i.e. DISCOM owned and privately owned public charging station. Although, privately owned charging station is a progressive step towards promotion of electric mobility, the current market demand of EVs in the sector can hinder the private investments. In the present scenario, public charging station is not viable for individuals/entities to invest.⁵ The government may fail to encourage private parties to set up public charging stations to accelerate electric mobility.

1.2 Nevertheless, we cannot disregard the private sectors' financial resources and professional skills and, hence, we propose an alternate business model of Public-Private Partnership (PPP). While the proposed franchisee models can be adopted as an interim measure, long-term sustainability can be ensured through a PPP model. The PPP model has a better regulatory oversight and encourages capital investments to transform the sector.

2. Cost-Benefit Analysis Calculations (Illustrative)

2.1 Business Models and Costs

The following table summarises the main types of costs borne by the respective stakeholders under the business models under consideration.

Criteria	DISCOM Owned PCS	Private PCS	PPP Model
Ownership	DISCOM	Private Player	Depends on model (CAPEX vs OPEX)
Capital Cost Incurred	DISCOM/ State	Private Player	Usually DISCOM (State Agency)
Variable Costs Incurred (Electricity Charges & O&M)	Recovered Directly from Customers by DISCOM	Paid to DISCOMS	Usually Private Player
Revenue Realisation	Service Charge	Service charge	Service Charge plus Revenue/Profit Sharing Model

⁵ <https://www.pluginindia.com/blogs/cost-estimates-and-revenue-model-for-a-public-charging-station-pcs>

2.2 Annual Cost (Capital and Operational) for Setting up a PCS⁶

Type of Charger	Number of Charger in PCS	Power Output	Approx Cost including 18% GST (INR)
CAPEX			
CCS	1	50kW	1450000
CHAdEMO	1	50kW	
Type 2 AC	1	22kW	125000
Bharat DC - 001	1	15kW	240000
Bharat AC - 001	1	3*3.3kW	70000
New Electricity Connection (250KVA), Transformer, Cabling (100 meters), Panel, Breakers, Energy Meters			750000
Civil Works			250000
EVSE Management Software Installation			40000
CCTV Camera Setup			30000
Total			2955000
OPEX			
Technicians (1 technician @ 30000 per month for 6 months)			180000
Site maintenance (1 personnel @ 15000 per month for 12 months)			180000
Network Service Provider Fee			6000
Land Lease Rental (Assuming land size = 3000 sq ft and lease rental at Rs 24.44/sq ft) ⁷			73333.33333
Electricity Charges (At 6 Rs/unit)			6438600
Advertisement (@3000/month)			36000
Total			6913933.333
Total Cost of a PCS (Annual)			Rs 69.14 lakhs

⁶ Costs are taken as per requirements of GoI from the webpage with certain modifications:
<https://www.pluginindia.com/blogs/cost-estimates-and-revenue-model-for-a-public-charging-station-pcs>

⁷ As per existing lease rental rate for commercial land in Jaipur, Rajasthan (www.99acres.com)

2.3 Existing benefits realised by the different stakeholders⁸

2.3.1 For computing the benefits (revenue realisation), the maximum power sold to EVs is computed first as follows:

Type of Charger	Number of Evs that can be charged simultaneously	Maximum Power Sold to Evs per day (20 hours a day operations) (in kWh)
CCS	1	1000
CHAdeMO	1	1000
Type 2 AC	1	440
Bharat DC - 001	1	300
Bharat AC - 001	3	200
Total Power		2940

2.3.2 The following table summarises the annual revenue realised by the PCS under different rates of service charges:

Service Charge (in Rs/unit)	Annual Revenue
6	Rs 64.38 lakhs
7	Rs 75.11 lakhs
8	Rs 85.85 lakhs

2.4 Costs and Benefits under different Business Models of PCS

The following table summarises the comparative assessment of major costs and benefits under the different business models considered for PCS.

Net Costs Incurred				
Business Models →	DISCOM Owned	Private Owned	PPP (OPEX Model)	
Net Costs	Rs 69.14 lakhs	Rs 69.14 lakhs	Rs 29.55 lakhs	Rs 39.59 lakhs
Borne By	DISCOM/ State	Private Player	State/DISCOM	Private Player

⁸ As given in the webpage: <https://www.pluginindia.com/blogs/cost-estimates-and-revenue-model-for-a-public-charging-station-pcs>

Net Revenue Realised				
Business Models →	DISCOM Owned	Private Owned	PPP (50:50 revenue sharing)	
Revenue (at 6 Rs/unit service charge)	Rs 64.30 lakhs	Rs 64.30 lakhs	Rs 32.15 lakhs	Rs 32.15 lakhs
Revenue (at 7 Rs/unit service charge)	Rs 75.11 lakhs	Rs 75.11 lakhs	Rs 37.56 lakhs	Rs 37.56 lakhs
Revenue (at 8 Rs/unit service charge)	Rs 85.85 lakhs	Rs 85.85 lakhs	Rs 45.92 lakhs	Rs 45.92 lakhs
Accrued to	DISCOM/ State	Private Player	State/DISCOM	Private Player
Profits (Benefits - Costs) (in Rs lakhs)				
Business Models →	DISCOM Owned	Private Owned	PPP (50:50 revenue sharing)	
At 6 Rs/unit Service Charge	-4.84	-4.84	2.6	-7.44
At 7 Rs/unit Service Charge	5.97	5.97	8.01	-2.03
At 8 Rs/unit Service Charge	16.71	16.71	16.37	6.33
Realised by	DISCOM/ State	Private Player	State/DISCOM	Private Player

3. Risk Sharing with PPP Model

Therefore, in order to share the risk (See Table 1) and reduce the overall operation and maintenance costs, a specific concession agreement can be adopted. The private party can be given the exclusive concession right to build and operate the charging infrastructure within the defined area.

Risk allocation in the PPP EV charging Infrastructure⁹

Risk Category	Public/Government	Private
<i>Design/construction risk</i>		
Planning and site selection risk	√	
Land delivery	√	
Labour		√
Plant and machineries acquisition		√
Project Cost Overruns		√
Expansion of Power Supply capacity		√
<i>Operation risk</i>		
<i>Financial risk</i>		
Interest rate change		√
Debt risk/Liquidity risk		√
Foreign exchange risk		√
Financing risk		√
<i>Legal risk</i>		
Contract document conflict	√	√
Third party default		√
<i>Other risk</i>		
Industry Standard Violation	√	√
Technology Variation	√	√

4. Final Recommendation

As evident from the aforementioned table of costs and benefits, there is a strong case for introducing PPP model in Public Charging Stations. This not only allows for sharing of risks but with correct policy framework, can create a win-win situation for all stakeholders.

⁹ Wang K and Ke Y (2018), *Public-Private Partnerships in the Electric Vehicle Charging Infrastructure in China: An illustrative Case study*, Vol 2018, Hindawi, Advances in Civil Engineering

Illustration 2: Cost-Benefit Analysis for Tariff Options

1. Issue at hand: Source of Power Procurement for the Public Charging Station

1.1 Alternate Options Considered:

- DISCOM Supply
- Open Access

1.2 Other costs remaining same, the affected cost parameter will be the electricity charges borne by the Public Charging Infrastructure (which is equal to the the revenue to the DISCOM)

2. Cost Benefit Calculations (Illustrative)

This section highlights the computation process behind some major costs and benefits entailing to the alternate options considered for the supply of power to the PCS.

2.1 Preliminary calculations:

2.1.1 Additional EVs on Jaipur Road by 2020-21 (Estimates)

Vehicle Segment	2020-21	Source
2W	323.4822	Down-scaled to Jaipur City on the basis of total 2W EVs in India in proportion to the number E-2W in Jaipur as compared to India ¹⁰
3W	17247	Statistical Abstract: Rajasthan Transport Department 2018-19 (CAGR Adjusted for 2020-21) ¹¹
Buses	100	Allotted number of buses in FAME-II ¹²

2.1.2 Additional Electricity Consumption¹³

Vehicle Segment	Average Distance Travelled in a year	Electricity Consumption (kWh/100 km)	Electricity Consumption (kWh/km)	MUs required
2W	8000	8	0.08	0.207028593

¹⁰ <https://www.ceicdata.com/en/india/number-of-registered-motor-vehicles/registered-motor-vehicles-two-wheelers>

¹¹ <http://www.transport.rajasthan.gov.in/content/dam/transport/transport-dept/pdf/statistical-abstract2018-19/Trasport%20Department%20Abstract%20Book%2018-19.pdf>

¹² <https://www.patrika.com/jaipur-news/jaipur-will-get-100-electric-buses-in-2020-5503492/>

¹³ Methodology adopted from Forum of Regulators
<http://www.forumofregulators.gov.in/Data/study/EV.pdf>

3W	25000	15	0.15	64.67625
Buses	50000	175	1.75	8.75
Total				73.63327859

2.1.3 Additional Capacity Requirement¹⁴

Additional Capacity Requirement	MU	Annual hours	PLF	MW	HP	VA
Values	73.63	8760	0.7	12.008	16090.77	12008036

2.2 Annual Electricity Cost of PCS (annual) if power procurement is through DISCOM¹⁵

- At existing tariffs and for the entire capacity and consumption of power at the scale of Jaipur City
 - If LT Connection: 44.95 crores
 - If HT Connection: 46.12 crores

2.3 Annual Electricity Cost of PCS (annual) if power is procured through Long Term Open Access¹⁶

- If LT Supply: 18.51 crores
- If HT Supply: 22.41 crores

Tariff at which cost incurred by PCS through DISCOM route will be comparable with Open Access Route for in Jaipur: Rs 3/kWhr & Zero fixed charges (Electricity Cost for PCS = Rs 22.08 crore)

2.4 Sub-alternative

If DISCOM provides power to PCS at 3 Rs/unit energy charge

2.4.1 Net annual revenue loss to DISCOM:

(Average Cost of Supply – Concessional Rate)* (Number of Electricity Units Consumed)

= (8.45 – 3)*73.63 (MUs)

= Rs 40.13 crores

2.4.2 Net Revenue Benefits to PCS

= Annual Electricity Charges at Original Tariff – Annual Electricity Charges at New Tariff

= 24 crores

¹⁴ Methodology adopted from Forum of Regulators

<http://www.forumofregulators.gov.in/Data/study/EV.pdf>

¹⁵ At existing tariff for EV consumers prescribed by RERC vide Order dated 06.02.2020

¹⁶ At existing rates of Open Access Charges taken from RERC Order:

<https://energy.rajasthan.gov.in/content/dam/raj/energy/corporate-one-lines-viewer/pdf/OPENACCESS/OA2018-19.pdf>

Currently, in this scenario, the costs will be greater than the benefits. But, if the State Government provides for the subsidy amount (equal to the concessional tariff) through Direct Benefit Transfer to the PCS, the cost to the DISCOMs will become 0. This will make this a win-win proposition.

3. Final Recommendation

The DISCOM can supply the power to PCS at its Average Cost of Supply and any subsidy that the Appropriate Commission computes, after due Cost-Benefit Analysis as illustrated here, for PCS can be directly transferred to the beneficiary's account through DBT (as envisaged in proposed Electricity Amendment Bill and Draft Tariff Policy 2018).

Way Forward

Comprehensive cost-benefit analysis to ensure regulations meets its intended objectives

To ensure maximum benefits for consumers and optimize the profitable working for distribution license, comprehensive cost-benefit analysis (regulatory impact assessment- RIA) is required to ensure regulations meet its intended objective. It can be done on the basis of an evidence-based research highlighting grassroots challenges in facilitating and developing charging infrastructure of EVs.

Consequently, a complete overhaul in regulatory mindset will be required while dealing with the electricity sector. However, regulation comes with a cost and a sub-optimal regulation has the potential to increase the cost on the stakeholders significantly.

Therefore, it is imperative to assess the cost and benefits of regulatory proposals on different stakeholders to ensure maximum net benefits to the society at minimum cost. RIA is a highly scientific and systematic process, which involves estimation and comparison of costs and benefits of different regulatory alternatives.

It necessitates justification of regulation and consequently aids in avoiding adoption of unnecessary regulations. Adoption of regulatory impact assessment (RIA) framework could go a long way in designing optimal regulatory framework for such technologies. Thus, it is recommended that government should adopt RIA in rule making process. In particular, the Government of Rajasthan and RERC will benefit from conduct of RIA on the draft order.

CUTS have vast experience in conducting RIA in electricity and Rajasthan Government. Our work on RIA could be accessed - <https://cuts-ccier.org/ria-advocacy/>