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Staff Paper for inviting comments / suggestions in the matter of Charging Infrastructure, Tariff and other regulatory issues for Electric Vehicles.

Section 1: Background

1.1. The Government of India launched the National Electric Mobility Mission Plan (NEMMP), 2020 to enhance national fuel security and provide affordable and environment-friendly transportation in the Country. Under this mission the scheme for 'Faster Adoption and Manufacturing of Electric and Hybrid Vehicle in India' (FAME) was launched by Department of Heavy Industry (DHI) on 13th March 2015. The policy aimed to promote manufacturing of electric and hybrid vehicle technology and to ensure its sustainable growth. The total outlay of the scheme was Rs. 795 Crore. The scheme focuses on four key areas such as Technological Development, Demand Creation, Pilot Projects and Charging Infrastructure. The scheme was initially approved for 2 years, commencing from 1st April 2015 and was extended from time to time up to 31st March 2019. The total outlay was also increased from Rs. 795 Crore to Rs. 895 Crore.

1.2. After review of FAME I, based on the outcome and experience gained during the implementation of the Scheme, the Department of Heavy Industries recently notified Phase-II of the FAME India Scheme on 8th March 2019. The scheme is proposed to be implemented over a period of three years with effect from 1st April 2019. The scheme is proposed to be implemented through the following verticals.

i. Demand Incentives
ii. Establishment of Network of Charging Stations
iii. Administration of Scheme including Publicity, IEC (Information, Education & Communication) activities

1.3. The Scheme provides upfront incentives for purchase of Electric Vehicles and for setting up necessary Charging Infrastructure for Electric Vehicles. The Scheme also talks about required supplemental support from State governments to offer bouquet of fiscal and non-fiscal incentives to be notified separately in terms of waiver/concessional road tax, toll tax, parking fees, registration charges etc.

2. The Ministry of Power (MoP) issued revised guidelines and standards for Charging Infrastructure for Electric Vehicles on 1st October 2019. The key features of the guidelines are stated below:

2.1 General

i. Private charging at residence/ offices shall be permitted. Distribution Companies (DISCOMs) may facilitate the same.
ii. Setting up of Public Charging Stations (PCS) shall be a de-licensed activity and any individual/entity is free to set up public charging stations provided that, such stations meet the technical, safety as well as performance standards and protocols laid down below as well as any further norms/standards/ specifications laid down by Ministry of Power and Central Electricity Authority (CEA) from time to time.
iii. Any person seeking to set up a Public Charging Station may apply for connectivity and he shall be provided connectivity on priority by the Distribution Company licensee to supply power in the area.
iv. Any Charging Station/Chain of Charging Stations may also obtain electricity from any generation company through open access.
v. For these guidelines, Electric Vehicle Supply Equipment (EVSE) shall mean an element in EV infrastructure that supplies electric energy for recharging the electric vehicles.

3. Public Charging Infrastructure (PCI)-Requirements:

Every Public Charging Station(PCS) will have the following infrastructure:

i) An exclusive transformer with all related substation equipment including safety appliance, if required.

ii) 33/11 KV line/cables with associated equipment including line termination etc, if required.

iii) Appropriate civil works.

iv) Appropriate cabling & electrical works ensuring safety.

v) Adequate space for Charging and entry/exit of vehicles.

vi) Public Charing Station shall have, any one or more chargers or any combination of chargers from the table given below in one or more electric kiosk/boards :

Charger Type	**S.No.**	**Charger Connectors***	**Rated Output Voltage (V)**	**No. of No. of Connector guns (CG)**	**Charging vehicle type (W=wheeler)**
Fast	1	Combined Charging System (CCS) (min 50 kW)	200-750 or higher	1 CG	4 W
	2	CHArge de Move (CHAdeMO) (min 50 Kw)	200-750 or higher	1 CG	4 W
	3	Type -2 AC (min 22 kW)	380-415	1 CG	4 W, 3W, 2 W
Slow/Moderate	4	Bharat DC-001 (15 kW)	48	1 CG	4 W, 3W, 2 W
	5	Bharat DC-001 (15 kW)	72 or higher	1 CG	4 W
	6	Bharat DC-001 (15 kW)	230	3 CG of 3.3 kW each	4 W, 3W, 2 W
*In addition, any other fast/slow/moderate charger as per approved DST/BIS standards whenever notified. Note: Type-2AC (min 22 kW) is capable of charging e-2W/3W with the provision of an adapter.					

vii) Charging Station for e-two/three wheelers shall be free to install any charger other than those specified above subject to compliance of technical & safety standards as laid down by CEA.

viii) Tie up with at least one online Network Service Providers (NSPs) to enable advance remote/online booking of charging slots by EV owners. Such online information to EV owners should also include information regarding location, types and numbers of chargers installed/available, service charges for EV charging etc.

ix) Share charging station data with the appropriate DISCOM and adhere to protocols as prescribed by CEA for this purpose. CEA, Central Nodal Agency (CAN) and State nodal Agency (SNA) shall have access to this database.

3.1. Electric Vehicle Supply Equipment (EVSE) shall be type tested by an agency /lab accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) from time to time.

3.2. The above minimum infrastructure equipment do not apply to Private charging Points meant for self-use of individual EV owners (non-commercial basis).

3.3. Captive charging infrastructure for 100% internal use for a company's own /leased fleet for its own use will not be required to install chargers as per para3.1 and to have NSP tie ups.

3.4. Charging Station may also be installed by Housing societies, Malls, Office Complexes, Restaurants, Hotels etc. with a provision to allow charging of visitor's vehicles which are permitted to come in its premises.

4. Public charging Infrastructure (PCI) for long range EVs and /or heavy duty EVs:

4.1 Fast Charging Stations (FCS) i.e. Public charging stations for long range EVs and /or heavy duty EVs (like trucks, buses etc) will have the following :

i. At least two chargers of minimum 100 kW (200-750 V or higher) each of different specifications (CCS/CHAdeMO or any fast charger as approved by DST/BIS for above capacity) with single connector gun each.

ii. Appropriate Liquid Cooled Cables for high speed charging facility as above [4.1 (i)], for onboard charging of Fluid Cooled Batteries (currently available in some long rage EVs), if required.

4.2 Such Fast Charging Stations (FCS) which are meant only for 100% in house/captive utilisation, for example buses of a company, would be free to decide the charging specifications as per requirement for its in -house company EVs.

5. Location of Public Charging Stations:

5.1 In case of Public charging Stations, the following requirements are laid down with regard to density / distance between two charging points.

i. At least one Charging Stations shall be available in a grid of 3 KmX 3 Km. Further, one Charging Station shall be set up at every 25 Km on both sides of highways/roads.

ii. For long range EVs and /or heavy duty EVs like buses/rucks etc., there shall be at least one Fast Charging Station with Charging Infrastructure Specifications as per para 4.1 above at every 100 Kms, one on each side of the highways/road located preferable within/alongside the stations laid in para 3 above. Within cities, such charging facilities for heavy duty EVs may be located within Transport Nagars, bus depots.

5.2 Additional PCS/FCS can be installed even if there exists a PCS/FCS in the required grid or distance.

5.3 The above density/distance requirement shall be used by the concerned state/UT Governments/their Agencies for the purposes of land use planning for public charging stations as well as for priority in installation of distribution network including transforms/feeders etc. This shall be done in all cases including where no central/state subsidy is provided.

5.4 The appropriate Government (Central /State/UTs) may also give priority to existing retail outlets (Ros) of Oil Marketing Companies (OMCs) for installation of Public EV Charging Stations (in compliance with safety norms) to meet the requirements as laid above. Further, within such Ros, Company Owned and Company Operated (COCO) Ros may be given higher preference.

6. Database of Public EV Charging Stations:

Central Electricity Authority (CEA) shall create and maintain a national online database of all he Public Charging Station through DISCOMs. Appropriate protocols shall be notified by DISCOMs for this purpose which shall be mandatorily complied by the PCS. This database shall have access as finalised by CEA and Ministry of Power.

7. Tariff for Supply of Electricity to EV Public Charging Stations:

7.1 The tariff for supply of electricity to EV Public Charging Station shall be determined by the appropriate commission in accordance with the Tariff Policy issued under section 3 of Electricity Act 2003 as amended from time to time.

7.2 The Tariff applicable for domestic consumption shall be applicable for domestic charging.

7.3 The Separate metering arrangement shall be made for PCS to that consumption may be recorded and billed as per applicable tariff for EV charging stations.

8. Service charges at PCS:

8.1 Charging of EVs is a service as already clarified by Ministry of Power vide letter No. 23/08/2018 – R & R dated 13.04.2018.

8.2 In such cases where the PCS/FCS has been installed with Government Incentives (financial or otherwise), State Nodal Agency/State Government/ Appropriate Commission shall fix the ceiling of Service Charges to be charged by such PCS/FCS.

9. Priority for Rollout of EV Public Charging Infrastructure:

After extensive consultations with State Governments and different Department/Agencies of Central Government, phasing as follows are laid down as national priority for rollout of EV Public Charging Infrastructure.

9.1 Phase I (1-3 Years): All Mega Cites with population of 4 million plus as per census 2011, all existing expressways connected to these Mega Cities & important Highways connected with each of these Mega Cities may be taken up for coverage. A list of these Mega Cities and existing connected expressways is attached at Annexure-1.

9.2. Phase-II (3-5 Years): Big Cites like State Capitals, UT headquarters may also be covered for distributed and demonstrative effect. Further, important Highways connected with each of these Mega Cities may be taken up for coverage.

9.3. The above priorities for phasing of rollout may be kept in mind by all concerned, including, different agencies of Central/State Governments while framing of further policies /guidelines for Public Charging Infrastructure of EVs, including for declaring further incentives/subsidies for such infrastructure and for such other purpose.

10. Implementation Mechanism for Rollout:

10.1. Bureau of Energy Efficiency (BEE) shall be the Central Nodal Agency for rollout of EV Public Charging Infrastructure. All relevant agencies including Central Electricity Authority (CEA) shall provide necessary support to Central Nodal Agency.

10.2. Every State Government Shall nominate a Nodal Agency for that State for setting up charging infrastructure. The State DISCOM shall generally be the Nodal Agency for such purpose. However, State Government shall be free to select a Central / State Public Sector Undertaking (PSU) including Urban Local Bodies (ULBs), Urban/area Development Authorities etc as its Nodal Agency.

11. Selection of Implementation Agency for Rollout:

11.1 The Central Nodal Agency shall finalize the cities and expressways/ highways to be finally taken up from the priority as given at para 10 above, in consultation with the respective State Governments.

11.2. An Implementation Agency may be selected by the respective State Nodal Agency and shall be entrusted with responsibility of installation, operation and maintenance of PCS/FCS for designated period as per parameters laid down in this policy and as entrusted by the concerned Nodal Agency. The Implementation Agency may be an Aggregator as mutually decided between Central and State Nodal Agencies. However, they may also decide to choose different PCS providers for bundled packages are carved for bidding, such packages may include at least one identified expressway/highway or part thereof to prepare a cohesive regional package; the selected identified cities may be divided into one or more parts as necessary for such purposes.

11.3 In such cases where the PCS/FCS has been installed with Government Incentives (financial or otherwise), State Nodal Agency / State Government/Appropriate Commission shall fix the ceiling of Service Charges to be charged by such PCS/FCS. The appropriate agency as mentioned above shall have the option for giving subsidy such as bidding for lower service charges or bidding for quantum of subsidy for fixed service charges etc.

Section 2: Business Models for Setting up Public Charging Infrastructure

1. The Charging Infrastructure for Electric Vehicles shall be set up in the State based on the following models.
    A. DISCOM owned Public Charging Stations
    B. Privately owned Public Charging Stations

A. DISCOM owned Public Charging Station

DISCOM can set up Public Charging Station in their own premises or at any other location suitable for setting up Charging Station as part of other business in accordance with the provisions of Section 51 of the Act and relevant Regulations.

B. Privately owned Public Charging Station

i. Any interested party/private investor can set up Public Charging Station with the minimum technical requirements specified by MoP in its Guidelines and Standards for Charging Infrastructure for electric Vehicles.

ii. The privately-owned Public Charging station shall adhere to the norms/ standards/ specifications laid down by MoP and CEA from time to time.

iii. The DISCOM shall publish on its website, a list of standard procedures and protocols to be followed by the Station owners/operators before and after setting up the Charging stations.

iv. The Authorized Official of the Nodal Agency shall have the right to inspect/examine the procedures/protocols of privately-owned Charging station at all times.

v. The Authorized Official designated by the Nodal Agency shall inspect and validate whether the Charging Station is adhering to the minimum Technical requirements of MoP/CEA and has followed standard procedure and protocols.

vi. The privately-owned Public Charging station shall be operational to public only after receipt of Clearance certificate signed by Authorized Official designated by the Nodal Agency.

Section 3: Procedures to be followed by DISCOMs/ Nodal Agency to be nominated by the State Government (preferably the Discom)

a. 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 Stations on priority basis on payment of charges as per prevailing orders/ Regulations

b. 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.

c. 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.

d. All Charging Stations are required to adhere to the guidelines specified in the 'Standard Procedures and Protocols for Charging Infrastructure' published by DISCOM as well as the guidelines and standards notified by MoP/CEA.

e. The Public Charging Station set up by Discom or privately-owned model, shall require a clearance certificate from the Authorized Official designated by the Nodal Agency for such purpose, before it is operational and accessible to the public.

f. The connectivity shall be granted to the Public Charging Station only after the issuance of Clearance certificate from the Authorized Official designated by the Nodal Agency.

g. The Authorized Official designated by the Nodal Agency shall have the right to inspect all Public charging Stations set up in the State. The Authorized Official shall verify that the standard guidelines and protocols are followed by the Public Charging Station at all times.

h. The DISCOM shall set up a separate EV cell for monitoring of charging stations installed by individuals/private players. The EV cell shall be responsible for monitoring and facilitation of the functioning/operations/safety standards etc. adopted by charging station operator. The DISCOM may charge a fee for this purpose which shall be determined the Commission in respective Tariff Orders.

i. An Implementation Agency may be selected by the State Nodal Agency and shall be entrusted with responsibility of installation, operation and maintenance of PCS/FCS for designated period as per parameters laid down in this policy and as entrusted by the concerned Nodal Agency. The Implementation Agency may be an Aggregator as mutually decided between Central and State Nodal Agencies. However, they may also decide to choose different PCS providers for bundled packages are carved for bidding, such packages may include at least one identified expressway/highway or part thereof to prepare a cohesive regional package; the selected identified cities may be divided into one or more parts as necessary for such purposes.

j. The Nodal Agency 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.

Section 4: Incentives to Public Charging Stations

a. The Public Charging Stations may be allowed to purchase power from any source through open access route in accordance with the provisions of Terms and Conditions for Open Access Regulations, 2016.
b. The Public Charging Station may also set up battery swapping stations with due intimation to the Distribution Licensee. The tariff applicable for Public Charging Stations shall also be applicable to Battery swapping Stations. However, the Commission may notify separate tariff for battery swapping stations in its subsequent Tariff Order.
c. The Public Charging Stations may also be set up with rooftop solar facility under applicable Regulations.

Section 5: Tariff Structure for Public Charging Stations

a. The tariff applicable for public charging stations shall be as per Commission's tariff order issued from time to time. The current position is as follows:
b. The tariff for Electric Charging Station shall be Rs. 6.20/kWh or Rs. 5.58/kVAh and Rs. 100/kW/month as fixed charges.
c. In such cases where the PCS/FCS has been installed with Government Incentives (financial or otherwise), State Nodal Agency/State Government/ Appropriate Commission shall fix the ceiling of Service Charges to be charged by such PCS/FCS.
d. With smart charging and metering in place and growth in solar applications, the Discom shall review the ToD hours and propose variable time differentiated pricing to take maximum benefit of available day time power.

Section 6: Other consumers

e. The consumers desirous of charging their private vehicles will be charged as per tariff applicable to their respective category or to say they need not to take a separate connection. They can charge Electric Vehicles within their respective connection, provided that load with EV charging does not exceed the Sanctioned connected/contracted load or demand as the case may be.

   In case connected load or contract demand exceeds the sanctioned connected load or contracted demand as the case may be, the consumers shall apply to DISCOMs for increase in their connected /contract load on account of EV charging in their premises. The DISCOM shall take utmost efforts to upgrade its system as per the requirements of load for EV charging in its area of supply.

f. 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.
g. DISCOMS may also encourage other energy companies (like IOCL, HPCL, IGL etc.) to invest in providing a charging network, specially the fast charging stations at inter-city routes like state and national highways.
h. The DISCOM shall also promote Smart Charging features by optimizing the charging process according to distribution grid constraints and local renewable energy availability, whereby EV charging patterns could be controlled to flatten the peak demand and support real time balancing of the grid by adjusting their charging levels. For implementation of Smart Charging and to give benefit of ToD rebate, the DISCOM may install smart meter at all Public Charging Stations. Smart Charging will not only help DISCOM manage its load but also provide grid security in the long run.

   The Commission before finalizing the draft order invites comments/suggestions from the stakeholders including the State Government and the Discoms on the same.