

National Electricity Policy, 2021 (Draft)

The Ministry of Power prepared and notified on 27th April, 2021 the draft National Electricity Policy, 2021. Aims of the policy are:

1. Promote clean and sustainable generation of electricity
2. Development of adequate and efficient transmission system
3. Revitalization of Discoms
4. Development of Efficient Markets for electricity
5. Supply of reliable and quality power of specified standards in an efficient manner
6. Move towards light touch regulation

The National Electricity Policy 2021 (Draft) can be accessed [here](#)

CER Opinion:

“Section 3. (National Electricity Policy and Plan) --- (1) The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for **development of the power system based on optimal utilisation of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.**” (Emphasis added)

1. **Financial Turnaround of Discoms and Discom Level Governance Reform¹:** The historical experience with various central sector schemes has demonstrated limited and short-lived impact of such reform-linked programs that often have limited inputs from the entities (distribution licensees) who are to implement the same. A ‘single-design-fit-all’ approach needs to be replaced with a **menu of alternate set of reform linked programs that allow the target entities to pick the one most suitable (and hence automatically revealing their preferences, thus providing further inputs for policy design)**. Further, the program design process should be include broad-based consultation with stakeholders including think tanks.

Power Sector reform has so far been focussed on sector-level governance and has not been able to significantly influence the utility level governance structure, which continues to hinder turnaround of the sector.

2. **Visibility of Performance of ‘non-licensees’ (Franchisees etc.) in the Distribution:** While Section 13 of the Electricity Act 2003 exempts license requirement for “local authority, Panchayat Institution, users’ association, co-operative societies, non-

¹ Further inputs can be shared, if required.

governmental organizations, or franchisees”, this is construed to mean an absence of visibility of their performance. In order to evaluate the success of such alternate models, there is a need for greater access to information about their performance. **While this may not entail direct regulatory purview, this would serve as an effective performance benchmark for the regulated licensees, and also provide guidance to the licensees in the selection of Franchisees.** NEP should propose a broad framework for data submission by such entities and its evaluation by the SERCs.

3. **Clean Energy Transition:** Increasing share of RE, adoption of cleaner fuels, improvement in efficiency of existing generation assets, and retirement of old, inefficient and polluting plants beyond their existing PPA² should be an integrate part of the clean energy transition to be included in NEP. (Clause 5.6)

Current focus should be on decarbonization rather than de-coaling the sector completely. Improvement of the flexibility of existing coal-based generation can support even higher RE share in the future.

4. **Light handed (touch) regulation:** Greater competition and Performance-based Regulation (PBR) would enable *light handed (touch) regulation*³. Mandate competitive procurement in generation and transmission, and graduated approach in distribution.

Light handed (touch) regulation is applicable in the context of a sector achieving maturity in competition with regulatory oversight. Given the current regulatory dispensation in the sector, competitive segments are subject to light handed regulation. (Clause 2.0 (vi))

If the objective of the policy is to reduce regulatory process burden for determination of tariff, this can be implemented by **graduating from Normative Cost of Service (nCoS) regulation to adopting Performance-based Regulation (PBR).**

In the light of the above, (the objective of) “*Development of adequate and efficient transmission system*” may be modified as ‘Development of adequate and efficient transmission system **at reasonable cost through competitive bidding**’. (Clause 2.0 (ii))

5. **An ABC Approach to Make in India initiative and Aatmanirbhar Bharat:** “Promotion of manufacturing of goods and services in India in the Generation, Transmission and Distribution segments of the Power sector under the Make in India initiative and Aatmanirbhar Bharat” are economically justified policy options. This

² EAL IITK comments on “MoP’s draft proposal on Relinquishment of PPA beyond Tenure”, https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_3_issue_3.pdf

³ See CER’s suggestion on incorporating incentive linked cost recovery under MYT regulations of GERC, CSERC, JSERC, JERC and CERC. https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue02.pdf, https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue01.pdf, https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue03.pdf.

should also be linked to the provisions of the Electricity Act, 2003. To avoid disruption in investment and operation in the sector, a graded approach should be adopted for the implementation of these policy options. An ABC analysis can be used to help identify items based on existing domestic capability, scale economics, relative economics of domestic and international manufacturing, technology requirement, scale of investment required, etc. Three (or more) baskets of identified goods and services can be identified for promoting domestic manufacturing and procurement over varying time horizons. A - very short term (say 6 months), B - short-term 1-2 years and C – medium-term (3-5 years). However, it should be ensured that the policy does not lead to market concentration influencing the availability and price of such goods and services. Further, this should also allow for continuity of supply and services for existing contracts. The Ministry can issue a separate notification for the same. (Clause 2.0 (vii)) and (Clause 4.1 (xiv))

6. **Review of Electric Power Survey and National Electricity Plan (Clause 3.2):** The National Electricity Plan, to be prepared by CEA, has been delayed for a significant time. A regular release of the National Electricity Plan is desirable to ensure that there is a general guideline available about the approach to planning in the sector. The regularity of the Plan needs to be ensured in line with that of the Electric Power Survey. An alternate approach would be to develop a platform that allows necessary changes to be incorporated in the Plan as subsequent reviews till a comprehensive revision of the same is undertaken.
7. Demand Side Management may also be explicitly included in the Clause 4.1 (ix) as one of the areas covered under the policy.
8. **Differential Generation tariffs for peak and off-peak hours:** Time differentiated consumer tariffs provide relevant price signal to the consumers of electricity. However, a similar approach for generation tariff is not desirable and would be complex to implement. Existing beneficiaries of PPAs bear the associated fixed charges and hence have claim over the available generation capacity across the day. Separate determination (u/s 62) of differential tariffs for peak and off-peak hours for such generating stations would not be economically justified. (Clause 5.3)
9. **Wider Applicability of ToD tariff across Consumer Categories:** Mandate ToD tariff for all consumers above 10 kW across consumer categories, to be gradually applicable to all consumers above 5 kW. All EV Charging to be based on ToD tariff to ensure that there is sufficient visibility of this new load to assist load forecast and planning for the distribution network.
10. Determination of adequate primary, secondary and tertiary reserves at national, regional and state level, to be undertaken by CEA should be based on long-term techno-economic feasibility to meet the projected demand under growing RE share, and be

undertaken in consultation with key stakeholders including the Load Despatch Centres. (Clause 5.4)

11. **Competition in Generation and Transmission:** NEP should emphasise the role of competition in power procurement (including power plants to be set up in the state sector) as well as setting up of transmission assets (inter- as well as intra-state) in the country. A UMPP approach, whereby land procurement and necessary clearances have been obtained, would help significantly reduce the investor risk and lead to more competitive price discovery. This would address the growing concern for rising transmission tariff. In the case of asset specificity, particularly in the case of Large Hydro power projects, the **Swiss Challenge**⁴ approach may be adopted. This would ensure **competitive pressure (due to credible threat)** to a tariff determination petition. (Clause 5.20, 6.8)
12. **RE Curtailment:** Curtailment of RE power is undertaken both for operational (system) as well as commercial reasons. The regulatory framework should mandate the system operator to **maintain record of all instances of RE curtailment along with system parameters** enabling its analysis to identify reasons attributable to system constraints. Availability of such detailed data in the public domain would allow its analysis and make the process subject to regulatory scrutiny.

RE electricity generation (wind and solar) primarily have a fixed cost (single part) structure. Artificial segregation of the single-part tariff into two-parts (fixed and variable) would depend on debatable choice of CUF leading to regulatory burden. Furthermore, **given the ‘must run’ status of RE plants, a two-part tariff would not be recommended.** (Clause 5.21)

Separation of SLDCs from the transmission utility (STU) and linking its RoE to curtailment of scheduled RE within a reasonable range would help address curtailment concerns.

13. **Derivatives for risk hedging for RE**⁵: Introduction of derivatives for RE would allow investors **to hedge risk arising out of uncertainty in generation as well as in curtailment.** Curtailment related RE derivatives can also be used to ensure that part of the risk of curtailment be passed on to the discoms who have signed PPAs for such RE procurement. Such approach to risk-sharing/hedging should become an integral part of the RE PPAs in the future.

⁴ Swiss Challenge approach been adopted in PPP projects in India. This was also suggested by CER in response to CERCs’ Determination of levelised generic tariff for FY 2021-22 under Regulation 8 of the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020, and MNRE’s Draft Guidelines for Implementation of Off-Grid Solar Power Plants in RESCO model under MNRE Programme (<https://cer.iitk.ac.in/blog>)

⁵ Further inputs on design of such derivatives can be shared, if required.

14. **Separation of SLDC from STU:** Separation of system operation from the state transmission utility, and further separation of STU function from the intra-state transmission licensee would reduce conflict of interest⁶, and also improve climate for open access and competition in the sector. Independence of SLDC would also help address anomalies in implementation of merit order despatch and RE curtailment due to non-technical reasons.
15. **Incentives for heat recovery systems** (Clause 5.22) should be provided under the available mechanism for energy efficiency **through the Perform Achieve and Trade (PAT) scheme** under the Energy Conservation Act, 2001. This could be supported through an Energy Service Company.
16. **Single RPO Basket for Better Economics of Compliance:** Given that the relative cost of alternate RE sources has converged significantly, it would be economically efficient to specify a single RPO basket. Depending on local resource endowments and economics of access to RE from elsewhere in the country, economically efficient technology choices would be made to ensure overall RPO compliance, which would effectively displace the equivalent amount of non-RE power.

Apart from economics, single RPO basket would also provide flexibility in choosing an appropriate mix of alternate RES that considers the availability of balancing power and other system constraints.

17. **Rejuvenating the REC Market** (Clause 5.24): The Renewable Energy Certificates (REC) market can be rejuvenated by enhancing its scope by issuing REC to all RE generation (including that from non-REC plants) and using RECs to identify the source of origin. The RECs acquired through PPAs as well as the REC market can then be submitted as proof of compliance with the respective SERCs. This would enhance liquidity in the REC market as well.

Further, there are also economic benefits from merging the market for Ecerts under the PAT scheme with REC market⁷.

18. **Technical, Financial and Institutional Sustainability of Mini/Microgrids:** Electricity Access through micro grids is not an end to itself but an intermediate solution with an aim to provide 24x7 reliable and quality power to consumers in rural as well as remote areas. (Clause 5.27). Operational, financial and institutional sustainability of microgrids needs to be ensured by harnessing their role in a grid integrated environment.

⁶ In line with developments in similar separation for the inter-state transmission network.

⁷ Anoop Singh (2009), "A market for renewable energy credits in the Indian power sector", *Renewable and Sustainable Energy Reviews* 13 (3), 643-652. See <https://www.researchgate.net/profile/Anoop-Singh-28>

19. **Solarise Agriculture Pumps:** Solarisation of agricultural load is an important option for the discom to reduce cross subsidy burden and address system losses⁸. Given the experience with development of mini grids and concerns for their sustainability, **policy and regulatory framework for solarized agricultural load should ensure technical, financial as well as institutional sustainability**⁹. To fully utilize the potential of grid-connected solarized agricultural pumps to feed electricity to the grid, such feeders would require to be charged (esp. during day hours). This, along with the growing availability of electricity across most states, may require a reassessment of the overall economic benefits of feeder separation. (Clause 7.6)
20. **‘Sub-licensee’ and, ‘Carriage and Content Separation’**¹⁰: Given the existing legal framework under the Electricity Act 2003, the SERCs would not have a legal basis to implement these proposals in the distribution segment. Further, in the absence of a clarity on rights and obligations of the sub-licensee, there would not be a clarity with respect to regulatory purview for the same, particularly those differentiating it from the distribution licensee and the franchisee. A graduated approach to implement carriage and content separation should begin with its implementation under a ‘policy and regulatory sandbox’ approach in a few identified areas that meet its prerequisite especially with respect to metering.
- The proposal under the draft NEP, being subordinate to the Principal Legislation, suggesting the need for an Amendment of the Act itself needs a suitable legal support; else, it provides little basis for adoption by the SERCs (Clause 7.7)
21. **Recovery of all ‘reasonable and legitimate’ costs:** By design, **the normative cost of service regulation and performance-based regulation do not provide for recovery of all ‘reasonable and legitimate costs’**. Appropriate amendment to Clause 7.8 is thus required to support regulatory evolution in the sector. Further, a number of investments (including that for improving quality of supply) can be and are being undertaken through the OPEX model, hence should be incorporated herein. (Clause 7.8)
22. **Distribution System Operator:** Distribution System Operator (DSO) would play an **important role in supporting growth of RE, improvement in operational performance of the sector and emergence of competition in the retail segment**. To enable active demand side management and load forecasting, there is a need to improve the visibility of behind the meter generation and consumption. The significant growth in rooftop solar, particularly that behind the meter and at the consumer devices, would

⁸ Also see, CER’s opinion on “MNRE: Draft Guidelines for Implementation of Off-Grid Solar Power Plants in RESCO model under MNRE Programme”,

https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue01.pdf

and “RERC (Grid Interactive Distributed Renewable Energy Generating Systems) Regulations, 2020”,

https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue03.pdf

⁹ Please refer to CER’s comments submitted to MNRE and respective SERCs on the same at cer.iitk.ac.in/blog.

¹⁰ For detailed inputs to MoP on the proposed amendment to Electricity Act including aspects related to sub-licensee, see https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue01.pdf

continue to pose challenges in identifying and forecasting short-term electricity demand, plan for distribution and transmission network, strengthening and extension, and make adequate investment in generation capacity. DSOs would also play a key role in emergence of peer-to-peer market in the near future.

The evolution of a DSO should not be dependent on the adoption of separation of carriage and content but, in fact, would enable its introduction later. (Clause 7.9)

23. **Monthly data on feeder-wise energy accounting as well as reliability indices should be available in the public domain to enhance accountability of the discoms.** The distribution network planning should also take into account the proposed rollout of smart grid and deployment of solar rooftops and/or storage by the consumers. (Clause 7.13)
24. **Distribution Plan:** The National Electricity Plan, be prepared by CEA, generally places emphasis on generation and transmission planning while taking into account certain aspects of the distribution segment. Given that the CEA was able to publish the National Electricity Plan for generation and transmission in 2018 and 2019 respectively, it may be a challenging task for the CEA to engage with all the discoms in helping to prepare the distribution plan. Alternatively, **CEA, in consultation with stakeholders, may develop a framework document to enable discoms to prepare their respective distribution plan**, which would then be approved by the respective SERC. (Clause 7.13)
25. **Optimising Long-term as well as Short-term Power Procurement¹¹:** Long-term demand forecasting and power procurement planning studies undertaken by the Energy Analytics Lab (EAL) at IIT Kanpur has demonstrated that significant cost reduction can be achieved through periodical optimisation considering medium to long-term projected demand profile against existing PPAs and available options for power procurement (including that through short-term market) and flexibility of available resources to meet the ramping requirement of a power system with higher VRE share. Thus, need for long-term as well as short-term options should be periodically reviewed to avoid significant fixed cost burden to the utilities, and to the consumers. (Clause 7.14)

Given the growing role of competitive market and the emergence of rooftop solar, solarised agriculture and demand response, the distribution licensees should not be expected to ‘tie-up’ adequate long-term capacity as they can better optimise their power procurement portfolio by partly engaging in the short-term market. Discoms should engage in active portfolio management using available short-term options while minimising risk for availability and cost of electricity (Clause 7.15).

¹¹ Anoop Singh et al. (2019), Regulatory Framework for Long-Term Demand Forecasting and Power Procurement Planning. Online Book available at https://cer.iitk.ac.in/assets/downloads/CER_Monograph.pdf

26. **National Metering Road Map:** A time-bound, consistent and cost-effective metering plan, in the form of a National Metering Road Map, should be designed in consultation with the stakeholders and deployed through assistance of the central government. This should also ensure that existing investment in the meters should not unduly lose its economic value thus burdening the consumers. Further, adequacy of the required digital ecosystem and trained manpower should be ensured through such a program.

To ensure that there is sufficient political support for 100% metering of the consumers, the **subsidy provided by the respective State government should be tied up with the aggressive plan for 100% metering of the consumers**¹². Central government assistance package to a distribution licensee should compulsorily include a sub-package of dedicated funding for consumers' metering. Overall funding should be linked to the achievement of metering targets. (Clause 7.16)

27. **Prepaid Metering:** Prepaid metering is generally adopted in the case of consumers with bad credit history, or vulnerable consumers who would like to limit their energy expenses. Deployment of prepaid metering should be made available as a choice to the rest of the consumers. For a certain class of vulnerable consumers first tranche of 'pre-payment' (in full) through a DBT mechanism (to licensee) would make the consumer indifferent to the cycle of payments to follow.

A comprehensive replacement of all the existing meters with pre-paid metering may result in significant loss of economic value (in the form of unrecovered depreciation) and hence would require appropriate cost-benefit analysis. It is important to highlight that pre-paid metering is not a natural choice of the private discoms, and also does not find universal application in the international context. (Clause 7.17)

28. **Smart Meters and demand response program:** Deployment of smart meters would make it much easier to implement a demand response program, if there are adequate regulatory provisions enabling the distribution companies to offer appropriate financial incentives for consumers' participation, either directly or through an aggregator. A credible demand response also enhances competition in the sector. Further, **investment in smart meters would have limited economic value unless there are appropriate regulatory initiatives**¹³ to capitalise on the capability of smart meters. (Clause 7.18)

29. **Flexibility and Market for Ancillary Services:** Increasingly higher penetration of variable renewable energy (VRE) places additional challenges on the system operator and also demands flexibility from various constituents of the power system. Economic

¹² See CER's Comments on MoP's "Implementation of Budget Initiatives for the Power and Renewable Energy Sector", https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue04.pdf

¹³ CER's Comments on "TSERC (Smart Grid) Regulation, 2020", https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue03.pdf

signals to enhance flexibility¹⁴ of conventional generation should come from the **introduction of a market for ‘fast response ancillary services’**. This would ensure that appropriate technology choice is made on merits of its economic benefits to bring about desired technical characteristics. The market signal would provide adequate incentive for such investment and also encourage better forecasting for short-term demand as well as generation from variable renewable energy sources. (Clause 8.2)

30. **Data Transparency and Data Access:** Unavailability of system-level information¹⁵, particularly at the state level, makes it challenging to develop analytical tools that can help **optimisation** of available resources. This also encourages academic research¹⁶ based on system data in the Indian context rather than that based on available system information for other countries/regions.
31. **Incentivise Feeder Level Performance Improvement:** Monthly data on feeder-wise energy accounting as well as reliability indices should be available in the public domain to enhance the accountability of the discoms. Monthly publishing of such information in the descending order of their AT&C/Distribution losses¹⁷ along with the name of the concerning officers, can have significant impact on operational performance. An incentive structure can be designed to ensure that the associated officials get due recognition and economic benefits of better performance,
32. Adequate **transparency of network’s transfer capability** both for the inter-State as well as **intra-state transmission network** should be available in the public domain to ensure that grant of open access, particularly for intra-State transmission network, is not unfairly denied. (Clause 8.3)
33. **Visibility of Behind the Meter Generation and Consumption:** Increasing capacity for behind the meter electricity generation reduces visibility of such capacity and its generation profile, which will become an increasing challenge to reliably forecast short-term electricity demand for the utilities as well as the system operators. Rooftop solar capacity beyond a certain limit (say, 20 kW) should be enabled for remote access of the real-time generation consumption and storage data. For a small capacity rooftop solar generation, such capabilities should be implemented on a sample of facilities, which should be invested by the respective DISCOM/SLDC. (Clause 8.5)

¹⁴ See EAL, IITK opinion on “POSOCO-NLDC Detailed Guidelines on Ramping Assessment”, which provides framework for implementation of financial incentives (penalty) related to ramping https://eal.iitk.ac.in/assets/docs/Power_Chronicle_Vol_03_Issue_04.pdf

¹⁵ Including availability, schedule and actual generation including that for the intra-state generating stations.

¹⁶ A clear example is an independent modelling research undertaken by EAL, IITK that led to suggestion to POSOCO for adopting multi-period optimisation this leading to significant demonstrated financial savings (Rs. 35-72 Crore per week) . Singh et al. (2019) Security Constrained Economic Despatch – India: A Rolling Block Implementation Framework <https://ieeexplore.ieee.org/document/9067641>

See Detailed inputs of EAL, IITK - https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_2_issue_2.pdf

¹⁷ Anoop Singh, Chapter contributed to Report on “Development of Power Sector in UP”, For a Study Group formed by Planning Commission to Prepare a Road Map for Rapid Economic Development of UP, 2007

34. **Improve Information Access to DEEP Platform:** The DEEP platform remains a black box for most of the market participants, thus reducing overall efficiency of the market. Easy access to information about the contracts available and their economics through the DEEP portal, and the discovered prices and cleared volume thereof would provide sufficient market signals for other market segments. Even while private participants may not have access to the DEEP portal, the bridging of information asymmetry would enhance the competition in the short-term power market as well. Furthermore, it also limits the ability of the developed optimisation tools to assimilate this information in their decision-making on a real-time basis. (Clause 9.3)
35. **Data Sharing Policy:** Development of analytic tools and academic research depend significantly on availability of relevant data. The power sector generates significant amount of data throughout its supply chain. Energy Analytics Lab (EA) at IIT Kanpur has taken the initiative to compile the available data and make it accessible in visualised form through its portal (eal.iitk.ac.in). Unavailability of information, particularly at the state level, makes it challenging to develop analytical tools that can help significant optimisation of available resources (the key objective of NEP u/s 3 of the Act). Given its experience, EAL, IIT Kanpur would be willing to pool resources to further assist in this endeavour.
36. **CER's Regulatory Database:** Centre for Energy Regulation (CER), IIT Kanpur is developing a Regulatory Database that would assist performance benchmarking and further evolution of the regulatory framework in the sector. While most of this data is available in the public domain, significant disparity in data definitions across time and space makes this a very challenging task. A common data format framework should address such anomalies and also enhance its access.
37. **Energy security and clean energy an integral part of all major investment decisions:** To ensure that the country is able to achieve reduction in emission intensity as per its international obligations and also go beyond that, all relevant investment proposals and decisions across the sector (beyond an identified limit) should also assess the contribution of such investment towards achieving this target (in line with the environmental impact assessment undertaken for large projects). **The aim to reduce energy intensity, thus, also becomes an integral part of the decision-making in the sector in the long run and ensures smooth clean energy transition.** (Clause 14.0)
38. **Capacity Building Needs of the Power Sector:** Centre for Energy Regulation (CER), IIT Kanpur has been actively engaged in addressing capacity building needs of the sector particularly that covering aspects related to regulation, power market as well as renewable energy integration. We note that needs for capacity building are widely understood and addressed in the regulatory system; however, the regulatory entities particularly at the state-level have limited participation in such endeavours. This limits the ability of such entities in engaging fruitfully in the regulatory processes at the state as well as central level. A broad-based policy, incentivising such continuous



engagement, would help understand and assimilate various reform-linked programs and contributing more effectively to discussions thereof.