

JHARKHAND POWER POLICY,  
2023 (Draft)

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## LIST OF ABBREVIATIONS

AC	Alternating Current
ACC	Advanced Chemistry Cell
ACS	Aggregate Cost of Supply
ADMS	Advanced Distribution Management System
AMR	Automatic Meter Reading
ARR	Aggregate Revenue Requirement
BEE	Bureau of Energy Efficiency
CAGR	Compound Annual Growth Rate
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CKm	Circuit Kilometer
CNA	Central Nodal Agency
CPP	Captive Power Plant
DEEP	Discovery of Efficient Electricity Price Portal
Discoms	Distribution Companies
DSM	Demand Side Management
DVC	Damodar Valley Corporation
EM	Electro-Mechanical
EV	Electric Vehicle
FAME	Faster Adoption and Manufacturing of Hybrid & Electric Vehicles
FY	Financial Year
GDP	Gross Domestic Product
GIS	Geographic Information System
GSS	Grid Sub-station
GW	Gigawatt
HEP	Hydroelectric Power Plant
HT	High Tension
HVDC	High Voltage Direct Current
Hz	Hertz
IPTC	Independent Power Transmission Company
ISTS	Inter-State Transmission System
IT-ITES	IT & IT Enabled Services
JBVNL	Jharkhand Bijli Vitran Nigam Limited
JREDA	Jharkhand Renewable Energy Development Agency
JSERC	Jharkhand State Electricity Regulatory Commission
JUSNL	Jharkhand Urja Vikas Nigam Limited
JUUNL	Jharkhand Urja Utpadan Limited
JV	Joint Venture
KV	Kilovolt
MMT	Million Metric Tonne
MOEFCC	Ministry of Environment, Forest and Climate Change
MOP	Ministry of Power
MVA	Mega Volt Ampere

MW	Megawatt
MYT	Multi- Year Tariff
NDC	Nationally Determined Contributions
NEMMP	National Electric Mobility Mission Plan
NEP	National Electricity Policy
NHPC	National Hydroelectric Power Corporation
NTPC	National Thermal Power Corporation
PAT	Perform, Achieve, Trade
PLF	Plant Load Factor
PPP	Public Private Partnership
PVUNL	Patratu Vidyut Utpadan Nigam Limited
R&M	Renovation & Modernization
R&R	Resettlement & Rehabilitation
SAS	Substation Automation System
SCADA	Supervisory Control and Data Acquisition
SLDC	State Load Dispatch Centre
STPP	Super Thermal Power Plant
ToD	Time of Day
ToD	Time of the Day
TPS	Thermal Power Station
VGf	Viability Gap Funding

## 1. INTRODUCTION

1.1. Section 3(1) of the Electricity Act, 2003 requires the Central Government to formulate, inter alia, the National Electricity Policy (NEP) in consultation with the Central Electricity Authority (CEA) and the State Governments. This provision is quoted below:

"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 utilization of resources such as coal, natural gas, nuclear substances or material, hydro and renewable sources of energy"

1.2. Section 3 (4) of the Electricity Act, 2003 requires the Central Electricity Authority to frame a National Electricity Plan once in five years and revise the same from time to time, in accordance with the National Electricity Policy. According to Section 3(5) of the Electricity Act, the Authority may review or revise the National Electricity Plan in accordance with the National Electricity Policy.

1.3. Also, Section 73(a) of the Electricity Act, 2003 provides that CEA shall formulate short-term and perspective plans for development of electricity system and coordinate the activities of various planning agencies for optimal utilization of resources, keeping in view the interests of the national economy and to provide reliable and affordable electricity to all consumers.

1.4. One of the primary components for preparation of the National Electricity Plan is the estimation of power demand in the years to come, which is done in Central Electricity Authority (CEA) periodically every five years by way of 'Electric Power Survey'. The exercise of Electric Power Survey needs to be carried out in consultation with the State Governments and other state utilities. Increasing thrust of Government of India on improving efficiency, deployment of electric vehicles, adoption of newer technologies like storage etc. are likely to affect the electricity demand in future; therefore, CEA should carry out mid-term review of the Electric Power Survey and may make appropriate modifications in the projected demand, if required and accordingly also revise the National Electricity Plan.

1.5. In line with the provision of the Electricity Act, 2003 the State Government of Jharkhand feels it is imperative to have a guiding document for the State to fulfill its objectives Specific to the Power Sector. In cognizance to these a State Level Power Policy in alignment with the National Electricity Policy has been prepared.

1.6. The Jharkhand Electricity Policy was first notified in 2012. Section 3 (3) of the Electricity Act enables the Central Government to review or revise the National Electricity Policy from time to time. Accordingly, the State Government of Jharkhand also revises its State level Power Policy from time to time as per requirements and necessities.

1.7. In exercise of the powers conferred under this Section, the State Government of Jharkhand hereby notifies the revised Jharkhand Power Policy 2023.

## 2. BACKGROUND

- 2.1. Electricity is a strategic input providing a source of livelihood for various segments of society and is a prime mover and an effective engine of economic growth. Electricity consumption is recognized as a universally accepted indicator of progress in the agricultural, industrial, and commercial sectors, thereby contributing to the socio-economic development of the people of the state. Electricity sector plays a critical role in employment generation, poverty eradication, improving human development indices and regional economic development.
- 2.2. Since the notification of the Jharkhand Power Policy in the year 2012, a lot of ground has been covered in many areas such as generation capacity addition including renewable resources, transmission network expansion, rural electrification, grid operation etc. Additional power generation capacity of 2,678.50 MW, inclusive of renewables has been added up to 31.04.2023 since the year 2012. Further, about 5,306 ckt-kms of transmission lines at 400 kV, 220 kV, 132 kV levels have been added up to November 2021 since the year 2012 which has enhanced intra-regional transmission capacity. The process of village electrification has been completed. There has been significant improvement in the quality of power. The share of renewable generation in the year 2023 is 11.84% of the total electricity generation compared to share of only 2.06% in the year 2018.
- 2.3. A number of regulations have been made by Jharkhand State Electricity Regulatory Commission (JSERC), which has brought discipline in the grid operations, introduced efficiency in generation, transmission, and distribution of power to provide quality power to end consumer within the State.
- 2.4. Availability of adequate and reliable power is necessary for meeting the basic requirements of people of the state in general and industrial development in particular. One of the key parameters to measure the prosperity of a state is the per capita energy availability and per capita energy consumption. While the former indicates the energy access or simply energy availability to people, the later depicts the penetration of energy and its usage in day-to-day activities of people. Improvement in these parameters signifies the changing lifestyle and enhancement in standard of living of people.
- 2.5. While the growth in the power sector is visible within the State, further work needs to be done to enhance accessibility of electricity 24x7, especially in the rural areas and to the lowest strata of society by ensuring proper coordination among all utilities.
- 2.6. Government of India has set a target of having renewable capacity of 500 GW by the year 2030. Further, India's Nationally Determined Contributions (NDC) includes commitment to reduce the emissions intensity of its Gross Domestic Product (GDP) by 45% by the year 2030, and to have installed capacity for non-fossil fuel-based power sources equivalent to the country's 50% requirement by 2030. Such large-scale integration of renewables is expected to lead to increased balancing and ramping requirements. The aim of the revised Jharkhand Power Policy 2023 is to find policy interventions to address the existing concerns within the energy sector within the State and fulfill the objectives those mentioned below.

### 3. VISION & OBJECTIVES OF JHARKHAND POWER POLICY 2023

#### 3.1. Vision Statement:

"To transform the State's power sector into a dynamic catalyst for socio-economic progress to ensure energy sufficiency, positioning Jharkhand as a leading hub of sustainable energy innovation in India. The policy strives to embrace cutting-edge technologies, to uplift communities, reduce poverty, foster local entrepreneurship, create employment opportunities, and enhance the quality of life for all, especially marginalized groups like the Primitive Tribes and the Socially Weaker Classes."

3.2. The main objective of this power policy is to ensure that the State power sector acts as a driver to the socio - economic development in the state and brings it at par with other developed States taking advantage of the latest available technologies. It endeavors to reduce the level of poverty, offer new avenues for local entrepreneurship, generate employment, provide impetus to industries particularly prevailing in rural areas and improve the standard of living of the people specially belonging to the Primitive Tribes and other Socially weaker classes.

3.3. Jharkhand is endowed with natural resources with immense potential for coal-based power plants; and it also has potential for the development of new and renewable energy sources like solar energy, hydel power, and biomass. Government of Jharkhand will strive to develop Jharkhand as a 'Power Hub' of India from where power could be utilized in other parts of the country, after meeting state's demand. Jharkhand Power Policy, 2023 is structured keeping customers as the focal point & aims at making available the people of state reliable supply of power at affordable prices with improved energy security, greater sustainability, and economic growth. The following are the principal objectives in this direction:

- (a) Distribution of power to provide 24X7 quality power to all end consumer of the state.
- (b) This policy emphasis on providing cheaper and stable power to primitive tribes and other Socially weaker classes residing in rural areas of the state of Jharkhand.
- (c) Encourage Energy Transition to meet net zero objectives. (Explore opportunities within areas such as ethanol, green hydrogen, green mobility, & other sources of renewable energy).
- (d) Encouraging Prosumers within the State.
- (e) Developing Jharkhand as the power generation hub of India with surplus power by FY 2025-26.
- (f) Optimize and improve efficiency of existing plants through system improvement as well as through renovation & modernization initiatives.
- (g) Encouraging the use of renewable energy in the state with focus on decentralized generation of power using renewable energy.
- (h) Promote investment in generation in the state and also encourage existing Thermal IPPs.

- (i) Augmentation of the transmission and distribution network and refurbishment of the existing network with a view to improve efficiencies, reliability & quality of supply and reducing losses.
- (j) Achieving AT&C losses at par with national levels.
- (k) Financial Turnaround and Commercial Viability of power utilities, thereby reducing the financial burden on the State.
- (l) Sourcing competitive and reliable bulk power from sources both within and outside the state.
- (m) Introduction of new technologies to enhance customer services such as smart meters, MBC, CIS, ERP, advance metering infrastructure, net metering, smart grid, SCADA etc.
- (n) Improving efficiency in the Power Sector of Jharkhand through deployment of emerging and sustainable technologies.
- (o) Improve customer service delivery through digitization and technology interventions.
- (p) Protection of customer rights and interests by establishing consumer grievance redressal forum in each district.
- (q) Increasing per capita electricity consumption of the state at par with national level.
- (r) Capacity building of employees and promoting innovation within the organization through collaboration with premier state Technical & Management Institutions.
- (s) Encourage efficient usage of electricity & facilitate energy conservation measures including demand side management.
- (t) Supporting the Jharkhand State Electricity Regulatory Commission with policy and other administrative measures.
- (u) Encouraging Distributed small Power Generating plants in backward & remote areas for ensuring stable power at last mile consumers
- (v) Encouraging energy storage systems like Pumped Hydro Storage Plant, Grid Scale Energy Storage Systems (GESS), etc.



#### 4. GOVERNANCE STRUCTURE

- 4.1. Within three (3) months from date of notification of these Energy Policy, the Department of Energy, Govt. of Jharkhand shall constitute the State Power Committee with the idea of cross functional collaboration between suitable departments leading to effective, efficient implementation of the Energy policy within the State, which in turn will form a robust framework for the Sate Power Sector and boost investors' confidence in state machineries.
- 4.2. The State Power Committee shall be led by Energy Secretary Government of Jharkhand and shall have one representative of senior officers from Finance Department, all State power utilities, JREDA, Land Revenue Department, Water Resources Department, Drinking water & Sanitation Department, Forest Department, Mines Department, Pollution control Department, Industries Department, Labour & Training Department & Municipal corporation Department.
- 4.3. The State Power Committee shall hold a monthly meeting for the following activities:
  - (a) Provide necessary support and advice to the Department of Energy in reviewing, coordinating, monitoring existing provisions, practices within the Energy policy.
  - (b) Guide the Department of Energy to address implementation difficulties, if any.
  - (c) Review the Energy Policy from time to time and suggest suitable modifications, if required, within the existing Energy Policy.

## 5. AREAS ADDRESSED WITHIN JHARKHAND POWER POLICY 2022

- 5.1. The Jharkhand Electricity Policy covers the different areas as given below:
- (a) Generation
  - (b) Transmission
  - (c) Distribution
  - (d) Grid operation
  - (e) Power markets
  - (f) Regulatory Process
  - (g) Power Quality & Reliability
  - (h) Energy Conservation & Energy Efficiency
  - (i) Adoption of Electric Vehicles and creation of Electric Vehicle charging infrastructure
  - (j) Consumer Grievance Redressal Mechanism and Consumer Satisfaction
  - (k) Environmental Issues
  - (l) Investment, Ease of Doing Business and Multilateral Financing
  - (m) Research and Development (R&D) and adoption of new technologies
  - (n) Skill building and Human Resource Development
  - (o) Coordinated Development
  - (p) Make in India initiative and Atmanirbhar Bharat Abhiyan
  - (q) Safety and Disaster Risk Reduction
- 5.2. These areas are further elaborated in the following Chapters.

## 6. GENERATION

6.1. The total installed capacity of Jharkhand has grown at a CAGR of 12% in the last three years. The total installed capacity stands at 2,678.50 MW as on 31.04.2023 , which includes 2,361.25 MW from Coal and 317.25 MW of renewable energy. Out of the total installed capacity the share of State government, Central government and Private players are 22%, 51% and 27% respectively. While there has been an appreciable increase in total installed capacity and within the share of thermal and solar generation; the share of hydro generating capacity has remained stagnant over the years.

6.2. In the state of Jharkhand, several power generating plants are operating mainly:

- State Generating Power Plants:
  - Tenughat Vidyut Nigam Ltd, Coal Based Thermal Power Plant (2x210 MW)
  - Subernarekha Hydrel Project, Hydro based Power Plant (2X65 MW)
- Central Generating Power Plants:
  - NTPC, North Karanpura Thermal Power Plant (3X660 MW)
  - DVC, Bokaro Thermal Power Station-A (1X500 MW)
  - DVC, Chandrapura Thermal Power Station (2X250 MW)
  - DVC, Koderma Thermal Power Station (2X500 MW)
  - DVC, Panchet Hydrel Station (2X40 MW)
  - DVC, Tilaiya Hydrel Station (2X2 MW)
- Private Generating Power Plants:
  - Adani Power Limited, Godda Thermal Power Station (2X800 MW)
  - Tata Power Co. Ltd., Jojobera TPS (2X120 MW)
  - Adhunik Power & Natural Resources Ltd., Mahadev Prasad STPP (2X270 MW)
  - Maithon Power Ltd., Maithon RB TPP (2X525 MW)
  - Inland Power Ltd. (2X63 MW)

6.3. As highlighted above that the share of State-Owned generating plants in the total installed capacity is only around 11%, it is evident that the State needs to increase its generation capacity. To address the twin challenge of power deficit in the state and procurement of costlier power from outside sources, the State Government has already taken some initiatives like:

- (a) Formation of Patratu Vidyut Utpadan Nigam Limited (JV of Government of Jharkhand & NTPC Limited) for development of 4000 MW (Phase-I: 3 x 800 MW & Phase-II: 2 x 800 MW) coal based thermal power plant whose Phase - I is expected to be completed by FY 2022.
- (b) Expansion of existing Tenughat Vidyut Nigam Limited from 2 x 210 MW to 2 x 660 MW and various efficiency improvement measures in existing units for maintaining high PLF.

6.4. The base demand of the state is met by State thermal generation and allocations from Central generating plants. Adequate hydro capacity with storage or pondage including pumped storage hydro power plants /combined cycle power plants, battery storage and other emerging technologies such as Hydrogen Storage, which are capable of relatively quick ramp up and ramp down and storing energy with higher efficiency for long duration, are options for meeting the peak demand in the state in an efficient manner.

- 6.5. A regulatory framework for determination of adequate state level primary, secondary and tertiary reserves should be developed by JSERC in consultation with all the stakeholders, so that demand can be met at all the times even with planned outage/tripping of generating units, variability of generation and fluctuation of load so that the frequency is maintained at the nominal value of 50 Hz.
- 6.6. A suitable mechanism should be developed to Create land banks by the concerned department in consultation with all the stakeholders. The State Government will undertake suitable actions & interventions required in the matters relating to land acquisition, maintenance of law and order etc.
- 6.7. THERMAL GENERATION
- 6.7.1. Jharkhand has high reserve of coal. While the state govt is committed to add generation capacity through right mix of fossil & non-fossil sources of energy, coal-based generation capacity will still be required for catering the base demand of power and to meet the long-term power demand needs of the state through compliance to stricter environmental norms. Therefore, Govt of Jharkhand intends to develop efficient coal-based plants of super critical/ultra-super critical technology with compliance of all the prevailing environmental norms for sustainable development.
- 6.7.2. Also, through planned works of Repair, Maintenance and Augmentation the Plant Load Factor (PLF) of the existing units of Tenughat Thermal Power Station (TTPS) is expected to reach the levels of 75-80%.
- 6.7.3. Adequate coal is required to meet the requirements of power plants so that generation capacity is not stranded due to shortage of coal. In the past, there have been cases where shortages in coal supply and quality of indigenous coal have been constraints for the State generating plants. The established coal linkages for the power plants currently operational and under construction in the state shall ensure that the instances of coal shortages are minimized, and power reliability is assured. To address concerns regarding quality of coal, third party sampling of coal is being carried out at loading as well as at receipt end. To reduce the margin of error in sampling, automated coal sampling and on-line quality control measurements are some of the planned initiatives.
- 6.7.4. Use of natural gas as a fuel for power generation would depend upon its availability at reasonable prices. At present, minimal power is generated with the help of natural gas in Jharkhand due to supply and price issues. The possibility of utilizing the existing gas turbine/combined cycle gas-based capacities for peaking or balancing may be explored.
- 6.7.5. To supply 24x7 power at remote areas of the state where it is difficult to deliver power as per requirement , Development of small thermal plants in these areas , may also be explored where electricity generation via Renewable Generation, Distributed Renewable Generation, Waste to Energy & pump storage is not feasible . These plants will be set up by State Govt. agency or under PPP or by any private entity .The power generated from these plants will be offered to State Power Distribution Utilities through Department of Energy, Govt. of Jharkhand for first right of refusal. The Tariff of such plants will be determined by Jharkhand State

Electricity Regulatory Commission.

## 6.8. HYDRO GENERATION

- 6.8.1. The share of hydro power in the state has been steady with current installed capacity including state and Central generation being 191 MW as on 31.04.2023. Subernarekha Hydel Project (2\*65 MW) is the major state-owned hydro power station under Jharkhand Urja Utpadan Limited (JUUNL) apart from Tilayya and Panchet Hydel Stations of Damodar Valley Corporation.
- 6.8.2. The state has considerable potential for power generation through the installation of mini/micro hydel projects due to the number of major rivers flowing across the state of Jharkhand. The state plans to encourage investment regarding the same through different modes like Private participation, Public private participation (PPP) model, and collaborative model with central entity like NHPCs etc. for development and operation of hydro power projects. Sites for various such projects at different locations based on water availability and feasibility are being identified.
- 6.8.3. To avoid delay in the construction of hydro projects, the Energy Department, Govt. of Jharkhand will coordinate with the State Power Committee to reduce and mitigate risks associated with clearances and approvals.
- 6.8.4. The State Government agencies involved in the construction of hydro projects should review their procedures in order to ensure speedy execution of hydro projects. Further, Basin-Wise Cumulative Environment Impact Assessment and Carrying Capacity Study for all the river basins in the State should be carried out expeditiously so that e-flows are known in advance to the project developers and the projects are not delayed on this account.
- 6.8.5. The need for development of Standard Bidding Documents for hydro power in medium and long term can be explored in the near future.
- 6.8.6. The measures such as soft loans of longer duration, grant for enabling infrastructure and storage, pre-agreed tariff profile and Hydro Purchase obligations which helps in moderating the tariff for hydro stations will be encouraged & implemented by the State government to enhance the viability of hydro generation within the State.
- 6.8.7. Development of small hydro power plants (up to 25 MW) may also be explored for its utilization in off-solar period. The small hydro plants may be set up solely by the state or under PPP mode or by private entity. The power generated from these plants, will be offered to state power distributing utilities through Energy Department, Govt. of Jharkhand for first right of refusal. The Tariff of Such plants will be determined by Jharkhand State Electricity Regulatory Commission

## 6.9. PUMPED HYDRO STORAGE PLANTS

- 6.9.1. In light of the ambitious plan of the State Government for large scale capacity addition from renewable energy sources in the coming years there would be need for huge balancing power for smooth integration of renewables in the system and for grid security and stability. Special efforts have to be made to promote more storage or pondage based hydro generation units in order to meet the peaking and

balancing requirements of the State. In this regard, pumped hydro storage plants, assume significant importance since they are considered as one of the best sources for renewables integration and for supply of balancing power for grid stabilization.

- 6.9.2. For faster implementation of Pumped Storage Plants (PSPs), there is need to expeditiously identify and develop Pumped Storage Schemes on existing hydro stations which are likely to be cost effective as well as likely to have lesser environmental issues due to availability of one or both the reservoirs.
- 6.9.3. Apart from conventional pumped storage schemes on the rivers, 'off the river' PSPs can also be identified. These off the river PSPs do not involve the issues like optimal development of the river basin or e-flow or inter-state issues, and do not have any complex civil structures like spillways, de-silting chambers etc. associated with conventional stations. As such, these can be accomplished in a relatively shorter time frame. Moreover, these projects, as the name suggests, are located away from the main rivers and as such involve minimal environmental and R&R issues. Further, development of hydro project wherein solar and wind power shall be integrated with standalone pumped storage schemes, also need to be explored wherever feasible in order to have assured trajectory to power supply within the State.
- 6.9.4. Establishment of Pumped Hydro Storage Plant may be explored to run the plant in off-solar period. The Hydro Pumped Storage Power Plant may set up by the state government or under PPP mode or private entity. The power generated from these plants established by private entity, will be offered to State Power Distributing Utilities through Department of Energy, Govt. of Jharkhand for first right of refusal. Tariff of such plants will be determined by Jharkhand State Electricity Regulatory Commission.

#### 6.10. SOLAR & DISTRIBUTED RENEWABLE ENERGY SOURCES

- 6.10.1. As such, Government of Jharkhand with JREDA launched the "Jharkhand Solar Policy 2022" in July 2022 which is aimed at developing solar power generation capacity of 4000 MW in the next 5 years comprising of 3000 MW of utility scale solar power, 720 MW of distributed solar generation and 280 MW of off-grid solar power. This would enable Jharkhand to become a leader in solar energy adoption and contribute to meeting India's clean energy ambition by bringing energy transition closer to communities, businesses, and industries, enabling ease of doing business, promoting efficient technologies, creating enabling infrastructure, promoting innovation and locally relevant business models, and equipping its implementing agencies and technical institutions to become best in class.
- 6.10.2. Some of the key objectives laid down in the "Jharkhand Solar Policy 2022" are given below:
  - (a) Increase the share of solar electricity in DISCOM'S energy purchase to 12.5% by 2023-24, subsequently increasing in line with the State Commission's notified RPO trajectory.
  - (b) Deploy a cumulative capacity of 4000 MW in the state by 2026 through a diversified project portfolio across scales, locations, and applications.

- (c) Provide a deployment roadmap across various categories and applications with dedicated programmes on utility solar through solar park and non-park solar installations, distributed grid connected and rooftop solar systems, and off-grid systems.
- (d) Provide avenues for private sector players and all electricity consumers to collaborate with the Government and invest in projects across various categories and applications.
- (e) Support creation of solar villages, cities and/or districts through community solar and off-grid projects.
- (f) Scale energy storage in the state through identifying viable use cases, providing financing options, and promoting research and development activities.
- (g) Support domestic manufacturing of solar PV technologies and its components and energy storage.
- (h) Support new deployment mechanisms including processes, incentives, and business models.
- (i) Support innovative non-electricity applications of solar energy with financing options and business models to create new solar based livelihood activities, employment opportunities and foster an entrepreneurial ecosystem in the state.
- (j) Provide trainings for skill development across geographies to create employment opportunities through solar project deployment.
- (k) Providing last mile connectivity to rural consumers in remote areas, who are off-grid.
- (l) Ensure gender inclusiveness in skilling and promoting livelihood applications.
- (m) Create more investment and employment opportunities in the state for bringing in overall development of the state and its people.

6.10.3. All the Stakeholders must abide by the provisions mentioned within the “Jharkhand Solar Policy 2022” in order to achieve the objectives laid down within the policy.

6.10.4. There are a number of advantages of distributed generation, as most of the energy generated is used at the point of consumption and, therefore, it reduces the requirement of transmission and distribution infrastructure. It also helps to reduce congestion and transmission & distribution losses. Therefore, renewable distributed generation such as solar roof top need to be promoted. Central Government is promoting Off-grid solar PV applications through various schemes for use in home lighting systems, street lighting systems, solar power plants, solar pumps etc. One way of promoting solar PV systems, particularly in household applications and small industries is through net metering. The State Government should consider installing solar PV system in office & school building, panchayats and other public service institutions, government residences and colonies.

6.10.5. Traditionally, microgrids with distributed generation, have been used to supply electricity in areas where it is not feasible or cost effective to provide electricity to the consumers through the main grid. For example, in Jharkhand, solar generation based microgrids have been used to electrify some remote villages. The distributed generation sources should preferably be, renewable sources of energy. Micro grids should be used in remote towns/ villages, hospitals or at data centers in rural areas or unelectrified tolas and habitats having some local renewable energy generation

for enhancing the reliability of power supply.

- 6.10.6. The State Discom, in areas prone to natural disasters, may explore possibility of automatic islanding of the distribution system into multiple micro grids with their own distributed generation during storms/cyclones etc.
  - 6.10.7. In view of the fact that micro grids are beneficial for the environment, power system and consumers by enabling deployment of greater quantity of renewable energy, creating efficiencies by reducing transmission and distribution losses and ensuring more reliability, JSERC should make necessary enabling provisions to promote micro grids in the State.
  - 6.10.8. JREDA will provide a guideline for setting up Mini/Micro grids in consultation with all stakeholders.
  - 6.10.9. The private developers of solar power plant may also be encouraged to establish Solar Power Plants in the state and the power generated from these plants will be offered to state power distribution utilities through Department of Energy, Govt. of Jharkhand for first right of refusal. Tariff will be determined by JSERC.
  - 6.10.10. Also, there is an urgent need to promote hybrid operation of variable renewable source like solar and wind with conventional generation sources and energy storage systems which would facilitate self-balanced portfolio with Round-the-clock power supply of acceptable profile.
  - 6.10.11. Long term growth trajectory of RPOs' for non-solar as well as solar sources has to be issued by the JSERC from time to time. The State regulatory Commission may also explore the possibility of issuing Hydropower Purchase Obligation for the State for a period in alignment with the notification issued by the Ministry of Power.
  - 6.10.12. The development of Floating Solar Power Plant may also be explored in all type of reservoir.
- 6.11. MUNICIPAL SOLID WASTE (MSW)
- 6.11.1. Utilization of Municipal Solid Waste (MSW) for generation of energy is a good measure for utilization and disposal of municipal waste on one side and generation of clean energy on another side. However, in order to make the power from such plants affordable and also to encourage development of such new technology-based initiatives, policy interventions are required to promote the development of such plants. Thus, JREDA may work with relevant departments to come up with a "Policy for Waste to Energy".
  - 6.11.2. Waste to Energy plants producing electricity needs hand holding and incentives commensurate with efficiency of the process because such plants free up the landfilling/dumping grounds besides avoiding pollution.
  - 6.11.3. Energy intensive industrial processes such as those occurring at refineries, steel mills, glass furnaces, cement kilns, etc. release considerable amount of heat after doing the useful work in the form of hot exhaust gases. These exhaust gases, if not put into any practical use, get otherwise wasted or dumped into the environment. A system of recovering the waste heat provides efficiency gain, benefits to the concerned industry and benefits to environment. Since waste heat recovery



systems require capital investment, there is a need to give incentives to the industries which implement such systems.

6.11.4. Small Municipal Solid Waste (MSW) plants within 15 km radius of any Sewage Treatment Plant (STP) should be setup to use up both solid waste and the water waste from STP for lowering emissions and increase the share of non-solar Renewable Energy for the State.

#### 6.12. GREEN HYDROGEN POWER PLANT/ ETHANOL-BASED GENERATION

6.12.1. Government of India has approved the National Green Hydrogen Mission, which aims to make India a Global hub for production, utilization, and export of Green Hydrogen. This will help India become energy independent and decarbonize major sectors of the economy. The objective of this mission is to develop a green hydrogen production capacity of at least 5 MMT (Million Metric Tonne) per annum with an associated renewable energy capacity addition of about 125 GW in the country by 2030.

6.12.2. Green hydrogen is set to become a game changer in the global energy landscape as it can be used across various sectors such as transport, power, and industries. Thus, Government of Jharkhand must explore its opportunities within the space.

6.12.3. Hence, in alignment with the national level policies and guidelines, the State Regulatory Commission in association with all the key stakeholders must issue a "State Level Hydrogen Policy" which will facilitate the adoption of Green Hydrogen and development of robust framework within the State.

6.12.4. The State will prepare a vision roadmap to enable smooth and sustainable 'just transition' for a future ready Jharkhand by constituting a Task Force for wider adoption of Green Hydrogen & other emerging technologies.

6.12.5. Ethanol is also a low carbon alternative of electricity generation and could also be an option for generation of electricity with low emissions. A separate policy for electricity generation using Ethanol shall be introduced

#### 6.13. RENOVATION & MODERNISATION

6.13.1. Traditionally, Renovation and Modernization of old thermal power stations was being done for achieving higher efficiency level with state-of-the-art technology, life extension, raising the operative capacity with improvements in performance parameters and complying with prevailing environmental norms. Recently, CEA has issued revised guidelines for R&M to facilitate compliance to environmental norms, enhancing flexibility, facilitating biomass firing and lowering water consumption. Government of India has, under the National Mission on Enhanced Energy Efficiency (NMEEE), introduced the PAT scheme, to incentivize efficiency improvements including that for thermal power plants. Penalties under PAT scheme would also enable the owners to take a rational economic decision.

6.13.2. The State Government may abide by all the necessary guidelines issued by CEA and other concerned departments.

6.13.3. Also, before undertaking any renovation and modernization exercise a proper cost benefit analysis needs to be done to decide whether to undertake renovation and

modernization of the stations or to retire it and replace it with a new generating station with more efficient supercritical units of higher size, especially in view of the revised environmental norms introduced in December 2015 by the MOEFCC.

6.13.4. In the case of hydroelectric power plants (HEP), the significance of R&M is even more as civil works, contributing to significant part of capital cost and considered to have a useful life of about 100 years, whereas the Electro-Mechanical (EM) works have a life of about 40 years. Therefore, the life of old HEP can be further extended by about 40 years with operational performance, the same as that of a new HEP, at a cost of about 20-30% of a new HEP. This would also avoid the need for obtaining various statutory clearances involved in case of new HEPs i.e., Forest & Environment clearances, Resettlement & Rehabilitation (R&R) etc. besides saving a lot of time, as the civil activities take the longest time. Further, there would be no civil/geological surprises in a running plant as could be the case in new HEPs.

#### 6.14. CAPTIVE POWER PLANT FOR INDUSTRIES

6.14.1. Option of setting up Captive Power Plants (CPP) by customers is based on the availability, reliability, and tariff of power prevalent for that category of customers in the state.

6.14.2. Keeping in view the State Government's vision to make Jharkhand 'Power Hub' of the Nation, State Government shall encourage power generation through captive power plants.

6.14.3. Captive power plant owners would be allowed to sell power to their affiliates. Any surplus post meeting their own demand, will be given to the Government of Jharkhand as first right of refusal.

6.14.4. In case of synchronization of CPP with DISCOM/Transmission utilities, the procedures will be laid out by JSERC.

6.14.5. The state government may exempt from the payment of 100% of electricity duty for a period of five years from the date of its commissioning, for electricity utilized for self – consumption or captive use for New or existing industrial units, with a captive power plant (i.e., in respect of power being used by the plant). For this Energy Department, G.O.J will provide separate notification.

6.14.6. In order to encourage Captive Power Generation in IT-ITES locations, 40% of the capital expenditure incurred in soundless captive power generating sets may be reimbursed.

#### 6.15. INITIATIVES TO ATTRACT INVESTEMENTS

6.15.1. To facilitate new investments in generation, Government resolves to undertake the following actions:

(a) Up to 35% of the coal-based power generated from Independent Power Producers (IPPs), may be procured by state under first right of refusal. In case of provision of coal linkage, the rate of 18.2% share, tariff will be paid by the State DISCOM as approved by JSERC (variable + fixed + other regulatory costs) and rate of remaining 16.8% share will be as on variable cost only. In case no coal linkage is obtained by IPPs, then the rate of 35% of power will be

as per the approved rate of JSERC. The existing IPPs shall continue to be guided by their MoUs signed with Government of Jharkhand.

- (b) An annual contribution @6 paise per unit of the energy sent out from the private thermal power generating stations, during the relevant financial year for the energy sold outside the state, is to be deposited in Environment Protection Fund.
- (c) Government of Jharkhand shall also encourage power generation from Waste of Coal washeries.
- (d) Investment in promotion of clean coal technologies: Washing of coal with minimum water consumption, gasification of coal for power generation through IGCC, Carbon capture and storage (CCS) technologies and other clean coal technologies shall be adopted for such plants.
- (e) All clearances shall be facilitated through CAF (Combined Application Form) and Single Window Portal as per the Jharkhand Single Window Clearance Act 2015. Indicative time period for clearances related to the pertinent issues, under the purview of State Government, shall be 45 to 60 days subject to submission of all the necessary documents.
- (f) Coal Linkages Allocation Mechanism shall be granted to Joint Ventures formed by JUVNL or its subsidiaries and IPP's based on new and more transparent allocation policy for power sector, 2017, Shakti (Scheme for Harnessing and Allocating Koyla Transparently in India).
- (g) Government of Jharkhand shall facilitate in:
  - Arrangement of Land through Land Bank,
  - Creation/ strengthening of connecting infrastructure to the project site like roads etc.
  - Right of way,
  - The availability of water for the project.
  - Evacuation facilities for the project.
- (h) Government of Jharkhand shall provide fiscal incentives through:
  - 100% reimbursement of stamp duty and registration fee for land directly purchased from the raiyats/ acquired through consent award (lessee of IADA/ industrial parks will not be eligible for this benefits). This facility will be granted only for the first transaction for a particular plot of land.
  - No tax on sale of electricity shall be levied for sale of electricity outside the State of Jharkhand.

## 7. TRANSMISSION

- 7.1. As mentioned in the previous sections, a large power generation capacity addition is in pre-commissioning stages in the state majority of which being solar power which is intermittent and is expected to pose a challenge to grid stability and operation. As such, the power evacuation capacity needs to be stepped up. The intra-state power transmission in Jharkhand is mainly catered by JUSNL and DVC (in its command area where it supplies power to 180 nos. of HT consumers).
- 7.2. The State Transmission Utility, JUSNL presently has 9,885 MVA sub-station capacity at 400KV, 220kV and 132kV with 54 GSS and 6,421.17 CKm of transmission line length. As the power demand in the state is likely to increase more than two-folds, significant investments are planned in the intra-state transmission systems of the State.
- 7.3. In order to meet the expected demand growth and to build in adequate and robust intra-state transmission infrastructure for the massive renewable generation capacity planned, JUSNL has planned various augmentation and new schemes. A total of 6,978.80 Ckm of transmission lines shall be added on to the network of JUSNL by FY 2025-26. Further, 13,940.00 MVA of capacity shall be added to the JUSNL network by FY 2025-26. The above capacity additions of JUSNL is likely to place Jharkhand in a comfortable position, from transmission system availability perspective, to adequately cater to the increase in power demand.
- 7.4. JUSNL must draw up a State perspective plan & Implementation plan specific to Intra State Transmission System (Intra-STTS) for up to next five (5) years period with the objective of identifying specific transmission projects which are required to be taken up along with their implementation time lines, studying the progress of in generation capacity and demand. While formulating the State perspective plan JUSNL should consult with all the relevant stakeholders such as State Transmission Utility(STU), SLDC, System Operators, generating and distribution companies, industry associations and the State Governments etc. and after assessing the rate of growth in demand as well as the rates of growth of generation in different areas of the State.
- 7.5. In the scenario of Jharkhand becoming a surplus power producing state, the need assessment for a robust transmission network becomes even more critical for enhanced utilization of the grid. Network expansion needs should supersede any prior agreement between buyers and seller of electricity. The transmission system should be available as per the requirements of transmission customers and developed matching with growth of generation and load, as far as possible. While doing the planning, care shall be taken that there is no wasteful investment. Also, variable cost of generators, congestion, transmission losses and incremental investment in transmission shall be considered for achieving optimal transmission capacity addition.
- 7.6. Additionally, there is a need to stream line the process of approval of transmission projects before any investment is made in creating these infrastructures. The Intra-STTS projects drawn up by STU shall be placed before the State Committee on Transmission constituted by the State Government.

- 7.7. The transmission projects as approved by the state government would be executed either through regulated tariff mechanism under Section 62 of the Act or through tariff based competitive bidding under Section 63 of the Act, or any regulation as to be notified by the state regulatory commission, in accordance with the Tariff Policy of Government of India. To facilitate the cost-effective transmission of power across ISTS, a transmission tariff sharing framework has been implemented by the CERC. The JSERC in alignment with framework implemented by CERC must issue a State level framework of transmission tariff sharing.
- 7.8. Right-of-way (ROW) issues are increasingly affecting construction of new transmission lines. Upgradation of existing AC transmission lines to higher voltage AC lines with multi circuits / multi voltages and by use of new generation High Temperature Low Sag (HTLS) conductors is planned to be explored to conserve existing RoWs in order to enhance power flow per unit (per meter) of ROW and to reduce losses.
- 7.9. To perform the various functions as enlisted in Section 32 of Indian Electricity Act, 2003, a state-of-the-art State Load Dispatch Centre (SLDC) has been established and is operational situated in Kusai Colony, Doranda, Ranchi to monitor grid operations and for optimum scheduling and dispatch of electricity within the state. It functions under the aegis of the state transmission utility, JUSNL. Also, there is an urgent need for State Load Dispatch Centre (SLDC) to work independently and fulfill its roles and responsibilities as mentioned in EA 2003.
- 7.10. In the near future, GIS mapping of all transmission assets and automation of all grid sub-stations is planned in phases to create a robust and reliable transmission system capable of handling load fluctuations and other challenges.
- 7.11. The State Government is also looking at possible private participation in the transmission sector. For encouraging Public Private Partnership (PPP) in transmission, few transmission lines may be selected and the same may be developed on PPP models like IPTC (Independent Power Transmission Company), VGF (Viability Gap Funding) etc. JUSNL shall identify the suitable lines and the models which may be taken up on PPP basis as per the guidelines for PPP by Government of India.
- 7.12. Some of the initiatives which may be explored by JUSNL are as follows:
- (a) Deploying a comprehensive SCADA (Supervisory Control and Data Acquisition) System with sensors for generating real-time high geographic resolution data on grid conditions and analytical engines to provide real time information and insights for grid operation.
  - (b) Implementation of SAMAST (Scheduling, Accounting, Metering, and Settlement Transaction in Electricity) System to provide for robust, scalable and dispute free scheduling, metering, accounting and settlement system.
  - (c) Installation and implementation of SAS (Substation Automation System) for a comprehensive substation control and monitoring solution.
  - (d) Upgrading the technology through appropriate technical interventions for strengthening of load dispatch function.
  - (e) Introduction of modern technologies in upgradation and R&M of existing substations.

- (f) At transmission level, Advanced Distribution Management System (ADMS) has been implemented in SLDC. At distribution level, ADMS has been implemented in few of the 33kV feeders and shall be implemented in rest of the 33kV feeders.

### 7.13. INITIATIVES TO ATTRACT INVESTEMENTS

7.13.1. To facilitate new investments, expedite implementation process and enhance operational efficiencies in Transmission, State Government may undertake the following actions:

- (a) Installation of transmission projects require infusion of up-front capital cost. Thus, to successfully implement such projects collaboration of public and private players is evident. Hence awarding projects under the TBCB route must be encouraged.
- (b) ~ 3% of the generated electrical energy is lost between the generating source and the end user due to transformer losses. Making amends at the transformer level could thus have a considerable impact on improving grid stability. Inefficient transformers result in a lower quantum of usable energy and high operations and maintenance costs. To end this, one possible measure is to replace the current fleet of transformers with amorphous metal transformers, which are more efficient. Further, using a better grade of core material and making more turns in the coil could reduce non-load losses. Using copper instead of aluminum can also significantly reduce load losses. Deploying efficient transformers can reduce losses by as much as 60 per cent.
- (c) Single Window Clearance: Currently, several transmission projects are facing right-of-way (RoW) problems and land acquisition issues, which delay stringing and commissioning. These problems can be addressed by better coordination of Government bodies with all stakeholders. Further, technology can be used for better planning, prediction and forecast which will help in determining potential obstructions and troubles and reduce the possibility of unexpected RoW issues.
- (d) Transmission utilities require advanced analytics capabilities to make effective strategic decisions in a fast-changing energy world. Further, the onset of Covid-19 and subsequent lockdowns required transmission companies to rely on remote monitoring systems and data analytics for decision-making. Remote monitoring systems capture data on system availability, tripping, outages, etc. in a granular way. This in turn enables them to actively supervise the system and respond more rapidly. It also helps them predict operational issues across the value chain and address them. Asset management centres should be encouraged to enable more meticulous data acquisition.
- (e) Usage of drones must be encouraged as it helps fast and safe stringing of high voltage power lines. With drones, it is possible to wire high voltage lines from one high voltage tower to another, in a safer, faster, and less expensive way than traditional stringing (helicopters, manual stringing).
- (f) Several transmission companies are using helicopters for stringing lines over long distances, thereby reducing their de-pendence on manpower. Stringing wires also presents a workplace hazard for employees and helicopter stringing helps in minimizing these risks. Moreover, helicopter stringing enables faster execution of conductor installation, which is otherwise a tedious and time-consuming process. Helicopter stringing is also more precise and does not lead to long pe-riods of shutdown of transmission lines. Also, heavy-lift Helicopter

cranes enables easy transportation of transmission towers and substation components in hilly terrain. Thus, usage of Helicopter for stringing and Helicopter cranes for transportation of heavy items to hilly sites, difficult terrain may also be encouraged.

- (g) Usage of STATCOM & SVC technology may be explored. STATCOM is one of the most sophisticated technologies under the umbrella of flexible AC transmission systems. STATCOM helps control re-active power flow through a power network and increases network stability by reducing frequency fluctuations, impedance disturbances and voltage disturbances. This technology is an attractive choice due to its faster response time and smaller footprint as compared to the static VAR compensator (SVC). Installing an SVC at one or more suitable points in the network can increase the transfer capability and reduce losses while maintaining a smooth voltage profile under different network conditions. For instance, two SVCs with 140 MVAR inductive capacity each were installed at the Kanpur substation on the Rihand-Delhi HVDC line. These SVCs helped avert a cascade tripping across the network when the grid voltage dipped by 10 per cent on a faulty line. It can improve power system transmission and distribution performance in a number of ways.
- (h) Wireless power transmission is another nascent non-grid technology that could upend the transmission segment given that it involves the transmission of electricity by optically beaming laser to portable 5G base stations in close proximity to the consumer's household. New innovations are also being brought in asset management. Transmission companies are installing travelling wave fault locators (TWFLs) in their operation, which help locate a fault or disturbance on an overhead or underground cable transmitting power across an electrical network. It helps to pinpoint a fault or issue in transmission line at a faster speed. Such measures may also be explored.

## 8. DISTRIBUTION

- 8.1. Distribution sector is the most vital part of whole power sector value chain as it is connected directly to the consumers. However, this sector has been marred with many inefficiencies like high AT&C losses etc. which has affected the financial health of the state-owned distribution company.
- 8.2. The Government of Jharkhand is keen that the distribution utilities in the state should operate efficiently and provide reliable and affordable power to the consumers. The utilities in the state need to benchmark their operational parameters with similarly placed utilities across India and globally. The operational parameters like AT&C losses, quality & reliability of supply need to improve to address the financial stress in the sector and meet regulators' expectations on the cost and efficiency benchmark.
- 8.3. Although, many remarkable achievements have been made in distribution sector during the last few years, Government of Jharkhand is committed to improve the quality of life of its citizens by providing 24x7 power to all households.
- 8.4. The State has successfully achieved 100% electrification and now is targeting to improve the per capita consumption in Jharkhand (i.e., 867 kWh for FY2021-22, as per CEA), which is lower than the national average of 1,255 kWh for FY2021-22 (as per CEA). The State is presently being served by 5 different utilities, with JUSCO and DVC having overlapping areas with JBVNL
- 8.5. The State Government is committed to providing power supply to each household left post SAUBHAGYA Scheme, in the State of Jharkhand
- 8.6. The State intends to provide cheaper power to Tribal & economically backward consumers.
- 8.7. The state has expanded its distribution network on a massive scale through the successful implementation of Central Government Schemes such as DDUGJY, AGJY, SAUBHAGYA, R-APDRP and IPDS and State Government Schemes such as JSBAY and TMGKPY which has led to enhanced power demand across all consumer categories and ensured last mile connectivity.
- 8.8. To further improve the quality and reliability of supply, Jharkhand is focused on strengthening the existing Distribution Infrastructure with the help of Central Government schemes such as Revamped Distribution Sector Scheme (RDSS) which would focus on metering, AB cabling and UG cabling works thus minimizing losses across the vast sub-transmission and distribution network.
- 8.9. The Government of Jharkhand lays huge emphasis on constant monitoring of the Breakdown and Tripping on various feeders in order to improve the power supply quality and thus the Customer satisfaction.
- 8.10. Apart from this, Implementation of Outage Management System (OMS) after GIS mapping is planned to commence in Urban Areas and then gradually extend to rural areas to proactively manage outages and supply restoration for increased Customer Satisfaction.
- 8.11. The State Govt. has taken up the implementation of feeder segregation schemes



which has helped in providing reliable supply and better load management in the rural areas.

- 8.12. The State Govt. has also taken initiative to separate Agricultural load from Mixed feeders for establishing dedicated Ag feeders. Such Ag feeders are being solarized under PM-KUSUM scheme, that will not only help improve the quality of life of farmers by enabling irrigation during the daytime but will also help in reducing the subsidy burden of State Governments in addition to correct estimation of agricultural subsidy announced by the state government.
- 8.13. The State Government is committed to implement Electricity (Rights of Consumers) Rules, 2020 and subsequent amendments, as notified by Ministry of Power (Govt. of India), which include the provisions of compensation to the consumers in case of deficiency of any- particular service by the DISCOM. The Jharkhand State Electricity Regulatory Commissions have already specified the expected Standards of Performance of Distribution Licensees and upgradation of the same must be done in cognizance with the notified Electricity (Rights of Consumer) Rules 2020.
- 8.14. The Electricity Act, 2003 facilitates introduction of competition in the distribution sector through mechanisms such as open access and multiple licensees through creation of own distribution network. The State Government is of the view that such mechanisms would introduce competitive pressure on various players in the power distribution sector to improve quality of supply and service at competitive prices as well as enhance consumer choice. JSERC must make a mechanism for open access and multiple licensees so that the treatment of Power Utilities operating in the State is transparent, unbiased and restricts cherry-picking of consumers.
- 8.15. The State Government is committed for implementation of non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission as per provisions of the Electricity Act, 2003.
- 8.16. The State Government is committed to ensure fair play in State grid operation and for implementing non-discriminatory open access. In this context, the Govt. shall make efforts for making SLDC (at present under JUSNL) an independent entity and action may be taken for separation of SLDC from JUSNL. The autonomy of system operation needs to be ensured by providing its fee and charges through a regulatory mechanism so that it is not dependent on the government. The functioning of the SLDC should be ring fenced, in letter and in spirit, and made completely independent. Technical upgradation of SLDC is necessary to ensure availability of real time data and requisite analytical tools.
- 8.17. Government of Jharkhand would pursue private sector participation in the distribution business to improve efficiency and promote investment for system improvement in distribution business. PPP in distribution business may be explored through DBFOO models as per the recommendations of the Task Force on Private participation in power distribution by NITI Aayog. In addition to reduction of the burden on Government finances, involvement of private players in power distribution is expected to improve efficiencies on a sustainable basis and ensure

sector viability. A policy shall be formulated for safety & security of employees when privatization happen.

- 8.18. Differential tariffs between peak and off-peak hours for consumers and generating stations by SERCs, as envisaged in the Tariff Policy, which should be introduced expeditiously in order to appreciate the value of peaking power. JSERC needs to frame a scheme whereby consumers willing for curtailment in their demand, part or full load, may get the benefit of a lower tariff.
- 8.19. Jharkhand also plans to introduce Time of the Day (ToD) tariff sequentially in order to appreciate the value of peaking power so that proper Demand Side Management (DSM) can be ensured.
- 8.20. Some of the initiatives planned by the Distribution Utilities to become a robust and consumer centric utility are mentioned below:
  - (a) Becoming a utility with 100% smart metering at all levels including rural consumers, SCADA systems & Distributed Renewable Generating & storage Systems (DRGSS) along with utilization of technology and robust energy accounting shall ensure that the reasons for T&D losses can identified and mitigated. The use of automation and smart metering can play a pivotal role in bringing the positive transformation in the distribution sector.
  - (b) The up gradation of existing distribution infrastructure with feeder improvement program coupled with infrastructure investments under various central government schemes such as RDSS etc. shall ensure 24X7 reliable power to all consumers in the state.
  - (c) Central and State government schemes such as PM-KUSUM and Jharkhand Sampoonn Bijli Achadan Yojana (JSBAY), have been envisioned to boost the adoption of renewable energy and to bolster the electricity distribution infrastructure thereby meeting increasing energy demands resulting from 100% electrification of rural and urban households in the state.
  - (d) Initiatives related to energy efficiency, focus on optimization of power purchase cost along with reduction in overall cost of power generation due to coal swaps etc. shall have an impact on creating the affordability of power for all consumers.
  - (e) Consumers shall be given a choice to offer their part or full load for interruption in case of exigencies in the grid in lieu of a lower tariff as a part of demand response program. Such consumers must have smart meters with appropriate features.
  - (f) The impact of measures to be taken for reduction of AT&C Losses, including feeder segregation, improving billing and collection efficiency through various means shall not only be instrumental in reducing the overall cost of supply but also result in optimal utilization of national resources at large.
  - (g) Digital transformation initiatives like augmentation of IT infrastructure through cutting edge cloud-based solutions, ERP implementation, GIS, and SCADA for monitoring of key parameters is expected to consolidate the ongoing institutional strengthening initiatives. Special emphasis is placed on consumer indexing and asset mapping in a time bound manner.
  - (h) Implementation of a power portfolio management tool for demand forecasting under various time horizons and also on season-wise basis to decide on long-term, medium terms and short-term power procurements.

- (i) Metering of all distribution transformers and feeder meters within next 3 years' time under projects such as RDSS and multilateral funded projects for accurate energy auditing & accounting. All the existing meters on feeders and distribution transformers shall be converted into AMR meters so that need for taking manual reading for such meters gets avoided.
- (j) Distribution SCADA systems are planned to be implemented as a tool with the system operator on a priority basis, to facilitate creation of network information and customer data base and to help in the management of load, improvement in quality, detection of theft and tampering, customer information and also for prompt and correct billing and collection.
- (k) As Power Utilities in Jharkhand endeavors to become a regulatory compliant entity with enhanced discipline in tariff filing and recovery of cost impact through Fuel and Power Purchase Cost Adjustment (FPPCA) mechanism, it can be ensured that the gap between the ACS and ARR gets timely addressed. They will also be able to recover its actual cost of supply and the tariff shocks can be avoided.

8.21. Thus, it is expected that a pace will be set for the Distribution Sector Companies, which will be characterized by robust infrastructure, monitoring of performance, motivation of employees and technological interventions. Effectively, it will reduce the dependence of State Utilities on State Government and pave foundations for a financially sustainable and a self-sufficient power sector in Jharkhand.

## 9. GRID OPERATION

- 9.1. Grid Operation has become an important issue in ensuring reliability and security of supply to consumers. The State of Jharkhand currently caters to a maximum demand of about 3,696 MW as up to 2021-22, which is likely to increase to about 3,944 MW by 2022-23 as assessed in the 19th Electric Power Survey. Also, in view of the large-scale integration of renewable sources of energy of intermittent nature as declared within the “Jharkhand Solar Policy 2022”, grid operation would become more challenging in the coming years.
- 9.2. The State SLDC has to be equipped with state-of-the-art technologies to ensure safety and security of supply with load variations and variations of the intermittent generation, causing fluctuating active and reactive power injection and drawal and consequent stability implications. It must ensure that all grid connected entities adhere to their schedule and grid security and discipline should be enabled by the State Regulators through appropriate Regulations. Also, there is a need for proper monitoring and enforcement of penalties for violations/deviations. The Jharkhand State Electricity Regulatory Commission (JSERC) should introduce DSM regulations in alignment with existing CERC DSM regulations such that grid operation becomes smooth, and reliability and security of the grid is sustained.
- 9.3. With rapid expansion of the grid to meet the requirements of electric power of all consumers along with integration of renewable sources of energy to the grid, reliability of the grid is becoming a major issue. The State SLDC should carry out studies to assess the Transfer Capability as well for ensuring reliability and security within the State.
- 9.4. Forecasting and scheduling of renewable energy sources, as is being done for conventional generating plants, should be made mandatory by Jharkhand State Electricity Regulatory Commission (JSERC); though a margin for error need to be specified, beyond which deviation charges would become applicable. Till JSERC bring out these standards, the CERC standards should apply by default to help the State Load Dispatch Center.
- 9.5. Protection system mal-operation is one of the leading factors for tripping of grid elements. The State shall be encouraged for implementation of schemes such as Automatic Demand Management System (ADMS) and scheme for intra state deviation settlement, to enhance the security and reliability of the grid. Also, the State may perform protection audit at regular intervals to minimize such tripping.
- 9.6. Real Time system operation data should be made available by the SLDC in its public domain through its web site as specified by the CERC.
- 9.7. State SLDC/ Distribution Utilities must plan to implement Machine learning driven power portfolio management, that is based on weather forecasts from the Indian Meteorological Department (Ministry of Earth Sciences), to improve accuracy of demand forecasting in different time horizons (long-term, medium-term & short-term), for an optimum generation schedules.

## 10. POWER MARKETS

- 10.1. The Tariff Policy already mandates that all future procurement of power by state distribution companies should be on competitive basis, based on which power procurement is being done through the competitive bidding route. The Short-term markets provide a platform for taking care of any variation in actual load from the anticipated load. The relevant personnel of the state distribution utilities need to be specifically trained on these aspects so as to optimize power procurement portfolio.
- 10.2. State Distribution utility of Jharkhand (JBVNL) must be committed to participate and procure power from market in a judicious manner under the ambit of suitable market mechanisms introduced at the national level by maintaining adequate fairness and transparency.
- 10.3. Also, the State Government urges all the Stakeholders participating within the power market to abide by the existing regulatory framework in place at national or central level, until CERC/JSERC comes up with a strong regulatory framework and infrastructure for market monitoring and surveillance to minimize possibility of collusion and gaming in power markets.
- 10.4. DEEP portal has been created by Ministry of Power for e-bidding for procurement of short-term and medium-term power. This has resulted in lower lead time for procurement as well as highly competitive prices. State Government of Jharkhand urges all the stakeholders to use this portal for procuring power on competitive basis under various time horizons.
- 10.5. In addition to DEEP portal, Short-term power purchase may be explored from different power exchanges as made available for power trading under different modes of bidding of power purchase or any other mode as approved by CERC/JSERC or M.O.P, for purchase of short-term power.

## 11. REGULATORY PROCESS

- 11.1. The present tariff structure for electricity suffers from a number of issues such as lack of uniform method for determining tariff of various categories; presence of number of categories and sub-categories; non-reflective cost of service of a particular consumer category; and lack of promotion of use of efficient and clean energy. The State Regulatory Commission shall rationalize the tariff structure and should follow performance-based cost of service regulations with multi-year tariff (MYT) as laid down in the National Tariff Policy.
- 11.2. Also, State Regulatory Commission should take in to consideration procedures formed by Forum of Regulators to move towards light touch regulation. For example, certain pass-through costs may be get added to tariff after calculations are carried out based on pre-defined formula or algorithm and shared with stakeholders in a transparent manner.
- 11.3. As more and more power is procured on competitive basis either through power exchange or through bidding, the burden of State regulatory Commission in tariff setting would come down. The State Regulatory Commission should focus more on emerging tasks such as market monitoring and surveillance, ensuring resource adequacy, balancing, demand response etc.
- 11.4. The State Regulatory Commission must emphasize on the following points:
  - (a) Voltage wise costs should be determined, and tariffs should be aligned with voltage wise costs. Later on, the tariff should ultimately move towards actual category wise costs.
  - (b) The tariff should be rationalized over an extended period of 5 years to palliate tariff hikes and for a smooth transition.
  - (c) Two-part tariffs with demand and energy charges for recovering fixed and variable costs respectively, should be implemented for all tariff categories
  - (d) Unmetered connections should be eliminated immediately as they promote wasteful consumption.
  - (e) As Smart meters gets progressively installed across customer categories, Time of Day (ToD) tariffs may be introduced in categories other than HT, as they reflect the time varying costs in tariffs for demand management.
  - (f) State Discoms should conduct consumption and affordability studies to determine the consumption slab ranges for Domestic and Commercial category consumers
  - (g) Full disclosure of costs should be ensured in consumer bills with per unit components such as generation cost, renewable cost, transmission cost, distribution cost, etc.
  - (h) Consumers should be incentivized to adopt renewable energy generation and feed excess power into the grid at Discom's avoidable or opportunity costs
  - (i) Introduction to net metering system and installation of two-way or net meters at the consumer end.

## 12. POWER QUALITY & RELIABILITY (24X7 SUPPLY OF POWER)

12.1. The State of Jharkhand is at the cusp of transforming itself into one of the most progressive states in the country. Availability of 24X7 Power for All in Jharkhand is, therefore, not only critical to improve the living standards of its citizens but also to support its plan for rapid industrialization and economic growth. Also, COVID induced pandemic has highlighted the importance of healthcare and associated facilities within the society. Providing reliable and quality power to all the vital cogs of the State namely, Industry, Healthcare, Agriculture and Education will positively impact the economic development of the State.

### 12.2. POWER FOR ALL

12.2.1. Ensuring an uninterrupted 24x7 power supply is a cornerstone of the state's vision for prosperity and progress in Jharkhand. The 'Power Quality & Reliability' aspect of our policy is dedicated to achieving this goal by implementing a range of strategic measures.

12.2.2. The State recognizes that a strong power infrastructure is essential for delivering reliable electricity. Through modernizing our transmission and distribution networks, it is committed to reducing technical and commercial losses.

12.2.3. Meeting the ever-evolving energy needs of our society requires us to embrace a diverse range of energy sources. The policy entails investments in renewable energy such as solar, wind, and hydro, contributing to a sustainable energy mix. Furthermore, the State acknowledges the challenges of consistent power provision, particularly during non-solar periods. To address this, the State is exploring the establishment of compact thermal facilities in areas where stability is hard to achieve.

12.2.4. The State believes in the active involvement of citizens in the energy ecosystem. It encourages the adoption of prosumer models, enabling individuals to both consume and generate electricity. This approach not only instills a sense of ownership but also contributes to local energy production and reinforces grid stability.

12.2.5. Acknowledging the significance of affordable access to power, the State is dedicated to transparent and equitable tariff determination. The pivotal role of the Jharkhand State Electricity Regulatory Commission ensures that tariffs strike a balance between consumer affordability and the financial viability of the sector.

### 12.3. POWER FOR INDUSTRIES

12.3.1. For giving impetus to industrial investment the State Government resolves to make reliable power available to industries at affordable prices so that in the present competitive scenario, new industries get attracted to the State. Following steps shall be taken to encourage the same:

- (a) Assured connections for industries within stipulated time period from time of application.
- (b) Assured 24x7 power supply & no-load shedding for feeders supplying power to more than 75% industrial load.
- (c) Segregation of feeders with industrial load and creation of dedicated industrial feeders having 24x7 power supply.

- (d) All industrial consumers to have mandatory smart metering infrastructure.
- (e) Government to be fully committed towards ease of doing business initiatives.
- (f) Information Technology, Biotechnology and Tourism related activities (existing or new) which are treated as industrial activity will be entitled to have power at industrial or commercial rate of tariff, whichever is lower, subject to JSERC approval.
- (g) Provide 24x7 power supply to tourist places through grid or off grid solutions in order to promote the tourism industry
- (h) The Jharkhand Power Policy also envisages the introduction of Jharkhand Cold Storage Policy in near future, recognizing the essential role of a robust cold storage infrastructure to align with our commitment to holistic progress, as power's impact extends to sectors like agriculture and food preservation.
- (i) The Jharkhand Cold Storage Policy shall be formulated by the State Government to address the need for efficient storage facilities. By combining power availability and technology with perishable goods' storage demands, the State aims to cut wastage and enhance agricultural produce value. This integration mirrors the State's dedication to uninterrupted power and sustainability.

#### 12.4. POWER FOR AGRICULTURE

- 12.4.1. Keeping in view the important role of agriculture in the State's economic development and low irrigation percentage, priority shall be accorded to energization/solarization of agriculture pump sets. For this purpose, where power lines exist and the required formalities are completed by the farmers, energization of their agriculture pumps shall be done within a fixed time limit. Where lines do not exist, transmission and distribution infrastructure shall be developed for energizing agriculture pumps.
- 12.4.2. 100% waiver in new connection charges shall be provided to farmers for new electricity connection for agriculture purposes including tube wells and procession of agriculture produce including chaff cutter, thresher, cane crusher and rice hauler operated on farms. Moreover, 50% waiver in new connection charges shall be granted to Cooperatives & Agriculture societies for new electricity connections for operating cold storages.
- 12.4.3. New dedicated feeders for agriculture connections will be erected and existing feeders predominantly serving agriculture load will be segregated for assured and quality supply of power to agriculture consumers.
- 12.4.4. New dedicated feeders for agriculture connections erected and existing feeders predominantly serving agriculture load will be solarized for quality supply of power to agriculture consumers.
- 12.4.5. The Government of India has notified 'Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM) scheme which provides for installation of grid-connected solar power plants in the rural areas, installation of standalone off-grid solar water pumps, solarization of existing grid-connected agriculture pumps and also enable agricultural consumers to sell surplus solar power generated to DISCOM and get additional income; and solarization of tube-wells and lift irrigation projects of Government sector.



## 12.5. POWER FOR HEALTHCARE

- 12.5.1. Power reliability is the backbone of a healthcare facility. High-quality health care operations require high-quality power. Outages of a few seconds can compromise patient care as well as damage sensitive and expensive medical equipment.
- 12.5.2. Keeping in view the importance of healthcare within the society. Assured 24x7 power supply & no-load shedding for feeders supplying power to Hospitals and associated health care activities.
- 12.5.3. Frequency excursions, supply interruptions, voltage variations and harmonics injection are the critical power quality issues that result in problems for the grid and for consumers like unnecessary losses, false readings of electronic meters, burning of equipment and appliances etc. Thus, there is need to give due attention to the other aspects of power quality such as interruptions, voltage variation, harmonics, flicker etc.
- 12.5.4. State Regulatory Commissions should take up this issue on priority basis. JSERC in alignment with existing CEA rules and standards should issue regulations regarding the same

## 12.6. POWER FOR EDUCATION

- 12.6.1. Education is a cornerstone of progress and empowerment. To ensure that educational institutions have uninterrupted access to quality power, the state has formulated the 'Power for Education' initiative as part of its commitment to power quality and reliability.
- 12.6.2. Enhancing Learning Environments: Reliable power supply is essential for educational institutions to create conducive learning environments. The State is dedicated to providing 24x7 quality power to schools, colleges, and universities across Jharkhand. Uninterrupted power will enable the use of technology in education, facilitate online learning, and enhance teaching methods, ensuring that students receive a comprehensive and up-to-date education.
- 12.6.3. Skill Development and Vocational Training: Quality power is not only about illuminating classrooms but also about powering vocational training centers. These centers play a crucial role in equipping our youth with practical skills for diverse industries. By guaranteeing uninterrupted power for these centers, the State aims to enhance skill development, foster entrepreneurship, and contribute to Jharkhand's economic growth.

### 13. ENERGY CONSERVATION AND ENERGY EFFICIENCY

- 13.1. The Government of Jharkhand realizes the importance of energy conservation as a major thrust of the energy policy and the need to have a system that encourages energy conservation and provides disincentives for inefficient use of energy. Government of Jharkhand has put in significant efforts in promoting measures for economy and efficiency in energy consumption.
- 13.2. Looking at the importance of energy and its high generation cost, it is not only essential to stop misuse of energy but also to conserve energy by way of demand side management. Effective measures for creating awareness about energy efficient appliances like agriculture pump sets, energy efficient bulb tube lights etc. are being taken by the State Government.
- 13.3. JREDA/Energy Department of the state has taken the following measures in the state in the area of energy conservation and energy efficiency: -
  - (a) Lighting sector DSM for domestic projects under Bachat Lamp Yojana
  - (b) Energy Conservation Building Code (ECBC) and efficiency measures in government buildings
  - (c) Implementation of municipal DSM project, including LED based street lighting under PPP
  - (d) Agriculture DSM project.
- 13.4. In order to promote the use of LEDs in household sector and reduce the energy consumption, Energy Efficiency Services Limited (EESL) in consultation with Jharkhand Bijli Vitran Nigam Limited (JBVNL) and Government of Jharkhand, has successfully implemented the DELP (Demand Side Management based Efficient Lighting Programme) in Jharkhand. In line with the National Mandate for implementation of Domestic Efficient Electric Programme (DELP) through Energy Efficiency Services Limited (EESL).
- 13.5. Government of India has launched the National UJALA programme, which aims to provide LED bulbs to domestic consumers and the Street Light National Programme (SLNP) programme to replace conventional streetlights with smart and energy efficient LED streetlights. JBVNL launched LED lighting program on 15th November 2015, in order to encourage consumers to replace incandescent bulbs by LEDs which results in voltage stabilization and energy efficiency thereby helping in reduction of power purchase.
- 13.6. The State has also launched Energy Efficient Solar Street Lighting program under which all Towns with Municipal Corporation/ Municipality are covered.
- 13.7. As a stepping stone towards promoting energy efficiency in the State, following initiatives/projects have been undertaken.
  - (a) State Energy Conservation Fund (SECF) has been created, with BEE's contribution of Rs. 2.0 Crore and State govt. has also provided matching grant of Rs. 2.0 Crore.
  - (b) Tendering for 1,400 (1, 2 & 5 HP) efficient agricultural pumps.
  - (c) Revamping of Ranchi Drinking Water System at Rukka, Ranchi.

- (d) LED Village Campaign- replacement of GLS bulb with LED bulbs in Gagi village, Kanke, Ranchi.
  - (e) Replacement of Sodium Vapour Street Light of 250 watt with 90-watt LED Street Light from Rajbhawan to Booti More, Ranchi.
  - (f) LED Village Campaign: - replacement of GLS bulbs with LED bulbs and installation of LED Street Light in Childag village, Ranchi and Suryapura village, Hazaribagh.
- 13.8. The Government of Jharkhand also plans to formulate a comprehensive Demand Side Management Policy in consultation with JSERC covering the following measures: -
- (a) State Government shall facilitate replacement of 100% incandescent and CFL bulbs with LED bulbs under central and state schemes by FY 2024-25.
  - (b) As per guidelines of Bureau of Energy Efficiency and MoP, Government of India energy audit will be made compulsory for all major industrial and large commercial establishments.
  - (c) Government of Jharkhand would initiate measures through specific goals to improve efficiency of major energy consuming sectors such as:
    - Efficiency Improvement program for AC, pump, and fans
    - Revision of AC standards
    - National buildings program for residential and commercial buildings
    - Expansion of the Perform Achieve Trade (PAT) program and adoption of Best Available Technologies (BAT) to reduce the industrial energy consumption.
  - (d) All key appliances, equipment and electric vehicles should be covered by mandatory standard and labelling programme by 2024 by the State Government/ Central Government.
  - (e) Promote electric vehicles by exempting road tax and vehicle registration fees. Also create a separate category of tariff for electric vehicles charging stations.
  - (f) Initiate award and tax rebate for facility and enterprise to create awareness about energy efficiency.
  - (g) A communication campaign would be launched for consumer guidance and education programme for spreading mass awareness about energy conservation measures.
- 13.9. JBVNL-driven DSM programme is being promoted as a means of peak load management, energy conservation and saving in cost of power.
- 13.10. The State Government and the distribution companies have encouraged energy efficient lighting and appliances. Further, installation of energy-efficient pumps conforming to standard specifications are being encouraged for use in agricultural sector and incentivized.
- 13.11. The State Government will introduce and notify Energy Conservation Building Code (ECBC) Code/ Green Factory Building Code (GFBC) Code to encourage energy efficient buildings for which JREDA shall be nodal agency.
- 13.12. Energy efficiency sector is a technical one wherein the role of R&D is very significant. The State Government will encourage Research, Development and Deployment through public funding, both to private and public sectors.

## 14. ADOPTION OF ELECTRIC VEHICLES (EV) AND CREATION OF CHARGING INFRASTRUCTURE

- 14.1. The shift to electric mobility has become necessary on account of fast depletion of fossil fuels, rapid increase in energy costs, impact of transportation on the environment and concerns over climate change. The Government of India has given a thrust to electric vehicles (EVs) and launched the National Electric Mobility Mission Plan (Adoption of electric mobility is lack of charging infrastructure. Ministry of Power has issued "Charging Infrastructure for Electric Vehicles — Guidelines and Standards" mentioning the roles and responsibilities of various stakeholders at Central & State level for expediting the development of public EV charging infrastructure across the country.
- 14.2. Ministry of Power has designated Bureau of Energy Efficiency (BEE) as the Central Nodal Agency (CNA) for the National-level rollout of charging infrastructure in the country. CEA has also amended their technical standards to ensure safety aspects and to minimize impact of EV charging on the supply system.
- 14.3. In alignment with the national level policies and guidelines, Government of Jharkhand has launched the "Jharkhand Electric Vehicle Policy 2022" which is aimed at creating favorable atmosphere for setting up of Electric Vehicle manufacturing units in the state through creation of infrastructure facilities, skilled manpower, encouragement of capital investment and technology up-gradation, development of marketing network, development promotion, grants, and concessions. This would enable Jharkhand to become an EV hub in India.
- 14.4. Some of the key objectives laid down in the "Jharkhand Electric Vehicle Policy 2022" are given below:
- (a) To make Jharkhand as most preferred destination for electric vehicle manufacturing units in Eastern India.
  - (b) Faster adoption of EVs in state with a vision of achieving carbon neutral transport system.
  - (c) To identify and address the key existing infrastructure gaps affecting the growth of Electric Vehicle industry in the State.
  - (d) To create a conducive environment for phase wise shift from Internal Combustion Engines (ICE) to Electric Vehicles (EVs) by 2030.
  - (e) Establishment of projects for the manufacturing of advanced chemistry cell (ACC) batteries in Jharkhand by 2027.
  - (f) To establish center of excellence for EV in partnership with Industry and Academia by 2027.
  - (g) Target of 10% share of Electric Vehicle in overall new vehicle registration in the State by 2027 (All vehicles: 10%, 2 wheelers: 10%, 3 wheelers: 20%, 4 wheelers: 10%).
  - (h) Setting up of at least one public charging station in a 3 km x 3 km grid or minimum of 50 charging stations per million population, whichever is higher.
  - (i) Setting up of public charging station on highways at 25 km distance (on both sides of all National highways and major State Highways).
  - (j) Target for conversion of 15 years old Government owned/leased vehicles with Electric Vehicle.

- 14.5. All the Stakeholders must abide by the provisions mentioned within the “Jharkhand Electric Vehicle Policy 2022” in order to achieve the objectives laid down within the policy. This will facilitate faster adoption of electric vehicles and development of robust EV charging infrastructure and manufacturing units within the State.
- 14.6. Quick charging stations are likely to come up in malls, metro stations, office complexes etc. There could also be a provision of injecting power back to the grid from the electric vehicle batteries when the grid needs the same, when these vehicles are parked and are connected to charging points. Thus, there is a need to fix the tariff and rules of EV charging by the JSERC, including that for injection of power back to the grid. JSERC must introduce a separate category of tariff in its tariff order for electric vehicles and associated activities.
- 14.7. Certain tariff related measures may be required to be undertaken for Public Charging Stations (PCS). For example, there may be a need to create a separate consumer category due to specific nature of load. Time of the Day tariff may also be desirable to avoid charging load during peak demand hours. This in turn should be reflected in the rates for charging levied by the PCS on EV owners to discourage them from approaching PCS during peak demand hours.
- 14.8. Distribution Licensee should be proactive in identifying part of distribution network that needs strengthening due to EV charging. The establishment of EV infrastructure must be done in accordance with the provisions in Jharkhand Electric Vehicle Policy, 2022 (incl. amendments), notified by the Department of Industries, Govt. of Jharkhand or any other associated applicable policy notified in this regard. JSERC may need to come out with special provision for early approval of the augmentation proposed by Distribution Licensee to facilitate EV Charging.
- 14.9. Full potential of environmental benefits of electric mobility will be realized when use of renewable energy for charging is maximized.

## 15. CONSUMER GRIEVANCE REDRESSAL MECHANISM AND CONSUMER SATISFACTION

- 15.1. The Electricity Act, 2003 provides a comprehensive framework for the protection of consumer interests. Section 42 of the Act provides for the establishment of a forum for redressal of consumer grievances by the distribution licensee. It empowers State Commissions to frame guidelines for grievance redressal mechanism in their respective states. This section also provides for the consumer to make representation of his grievance to Ombudsman in case he is aggrieved by non-redressal of his grievance by the forum.
- 15.2. Section 3 of the Electricity Act 2003 gives power to the Central Government, from time to time, for preparing the National Electricity Policy and National Tariff Policy. These policies were notified by the Central Government in 2005 and 2006 respectively. These policies also lay emphasis on protecting the interests of the consumers.
- 15.3. Section 5.13 of the National Electricity Policy, 2005 lays emphasis on safeguarding the interest of the consumers and promoting the quality standards of supply of power. It reiterates the role of SERCs in setting up the mechanisms of CGRF and the Ombudsman
- 15.4. The State is committed to the effective implementation of the Electricity (Rights of Consumers) Rules, 2020, ensuring high consumer service standards.
- 15.5. Customer complaints needs to be redressed on a time bound manner. Utilities should deploy technological solutions to track status of complaints of all categories of consumers viz - agriculture, industry, domestic and others.
- 15.6. The JSERC must take all initiatives to robust the CGRF and Ombudsman infrastructure of the State such that the process of resolving the issues of Consumer are fast tracked. Also, JSERC may think of increasing the number of CGRF offices across the State to enhance its outreach within the Consumers. Additionally, the State Regulatory Commission must ensure that all the stakeholders associated within the power sector must abide by the "Guidelines for establishment of forum for redressal of Grievances of the Consumers Electricity Ombudsman and Consumer Advocacy Regulations 2020" issued by it.
- 15.7. State Government is focused to improve customer service and enhance customer satisfaction levels. It is keen to work with the regulator on developing a robust Supply Code and Standards of performance.
- 15.8. Facilities like online new supply connection application, online bill payments, self-billing system will be implemented for consumers. 24x7 customer care centres to be made operational by utilities for speedy redressal of consumers grievances.

## 16. ENVIRONMENTAL ISSUES

- 16.1. India's Nationally Determined Contributions (NDC) builds on its goal to reduce its emissions intensity per unit GDP by 33 to 35 percent below 2005 level by 2030. In accordance with the global concerns, carbon emissions need to be minimized. This is being done through the National Mission on Energy Efficiency through the PAT and other Schemes of the Government of India and the clean energy thrust given by the Government of India.
- 16.2. Power sector projects involve substantial land usage. In view of increasing difficulty in getting land, land usage should be minimized. All new plants must reduce land usage for the same quantum of power generated. Land banks may be identified by the concerned nodal agency of the State Government for setting up power plants. Right-of-way for transmission lines is also becoming increasingly difficult to obtain. In order to economize use of land for sub-stations, Gas Insulated Sub-stations (GIS) should be adopted, particularly in urban areas, which require about 30% less land as compared to conventional substations. Wherever required, MW scale batteries should be installed at the sub stations to mitigate the requirement of additional land.
- 16.3. There is also substantial usage of water for coal-based stations. There is a need to conserve water, keeping in view the demand for water in the future years.. Air cooled condensers may be considered for future coal-based plants instead of water-cooled condensers provided a techno-economic analysis supports the same. Solar PV plants should consider use of robotic dry cleaning instead of water cleaning based on cost-benefit analysis.
- 16.4. Indian coal is of low grade having high ash content of the order of 30-45% which produces large quantity of fly ash. The disposal of fly ash requires large area of land and causes pollution of air and water. It is, therefore, necessary to enhance the gainful utilization of fly ash in various modes e.g., manufacturing of cement, preparation of concrete, in making bricks, blocks and tiles, in raising of ash dykes, in reclamation of low-lying areas, in mine filling, in agriculture and waste land development and in other modes as per MOEF&CC norms. Hence, it is mandatory for all the thermal power plants to setup fly ash brick plants, the income from which will form a part of their non-tariff income, potentially reducing their ARR.
- 16.5. Stringent emission norms have been notified by MoEF&CC for SO<sub>2</sub>, NO<sub>x</sub>, mercury and water which are required to be achieved in accordance with a notified time schedule and have cost implications on the operation/design of coal-based plants. In addition to the equipment cost to be incurred to meet the revised norms, there will be auxiliary power consumption. Efforts must be made to meet the compliance norms in the most cost-effective way in order to minimize cost to consumers. These impacts should be captured by the State Regulatory Commission in the tariff determined under Section 62 of the Electricity Act. In case of tariff determined through tariff based competitive bidding under Section 63 of the Electricity Act 2003, these impacts should be allowed under "Change of Law" provision. Additionally, the use of biomass pellets (agro residue based) in co-firing with coal for power generation should be encouraged in order to curtail environmental

pollution due to burning of crop residues.

- 16.6. Disposal of electronic waste is one of the major concerns for solar photovoltaic power projects. The State Government should formulate a disposal policy so that the developer can easily dispose of the waste materials in line with the policy. With reduction in prices of batteries, usage of batteries is likely to increase in future. Recycling/disposal policy for the batteries also need to be formulated.



## 17. INVESTMENT, EASE OF DOING BUSINESS AND MULTILATERAL FINANCING

- 17.1. The State of Jharkhand is in the verge of becoming a power hub. Further, there are large amounts of untapped resources within the State. Thus, Jharkhand in order to realize its full potential requires huge amount of investments across the sectors of generation, transmission, and distribution.
- 17.2. Thus, it is imperative for the State Government to take initiatives in the right direction which will make Jharkhand a lucrative place for doing business. Some of the initiatives include providing all statutory clearances via a single window system, Fastrack the process of obtaining approvals from government department etc. Such initiatives will attract investors to infuse capital within the power sector.
- 17.3. Additionally, the State Government must be open enough to obtain financial assistance from multilateral donor agencies such as World Bank, Asian Development Bank, KFW, PFC, REC etc.
- 17.4. The State Government should introduce a detailed guideline for enhancing the “Ease of Doing Business” within the State encompassing all the sectors, which will cover standard practices for providing clearances, availing financial assistance from multilateral organizations etc.

## 18. RESEARCH AND DEVELOPMENT (R&D) AND ADOPTION OF NEW TECHNOLOGIES

- 18.1. Effective utilization of all available resources for generation, transmission and distribution of electricity using efficient and cost-effective technologies is of paramount importance. Effective control of power system at state level can be achieved through use of Information Technology. Application of IT has great potential in reducing technical and commercial losses in distribution and providing consumer friendly services. Integrated resource planning and demand side management would also require adopting state of the art technologies.
- 18.2. Special efforts should be made for research, development, demonstration, and commercialization of various types of renewable energy technologies, retrofitting of existing coal-based power plants with new equipment to make them act as flexible generating plants and energy storage systems. Demonstration projects for new types of balancing technologies for intermittent generation including MW scale batteries, hydrogen storage etc. should also be encouraged.
- 18.3. There is a need to progressively introduce various components of Smart Grid technologies, particularly those which would contribute towards demand side management, reliability improvement, efficiency improvement and integration of renewable resources.
- 18.4. Pilot Demand Response Programs in Urban, Semi-Urban and Rural areas of the State must be conducted to assess the requirement of Grid-scale Energy Storage Systems (GESS). Installation of GESS is critical for grid balancing in both Day Peak and the Evening Peak hours and a separate 'Jharkhand State Electricity Storage Policy' must be drafted and issued by the Energy Department.
- 18.5. An efficient and reliable communication system is a pre-requisite for Smart Grid technologies. After implementation of extensive Information technology and communication infrastructure, there would be vast amounts of useful data. available with the various players in the power sector. However, this data needs to be processed and analysed to obtain useful inferences, which requires faster adoption of data mining and data analytics techniques. The concerned stakeholders must have specialized personnel to examine this data and use it for the benefit of the utility,
- 18.6. In addition, cyber security would need to be ensured to (a) thwart an undesirable action to control or manipulate one or more elements of power system and (b) to deny access to a confidential data to outside parties. The confidential data should be defined by the State regulatory commission in consultation with CEA Guideline if any. To minimize the possibility of cyber-attacks, cyber security standards should be made specifically for the power system.
- 18.7. The country has specialized institutions engaged in research and development in the electricity sector which should be further augmented. Large power companies should set aside a portion of their profits for support to R&D.

## 19. SKILL BUILDING AND HUMAN RESOURCE DEVELOPMENT

- 19.1. It is very important that the persons employed in the State power sector have the required skills to enable them to adopt good operating practices so as to improve the efficiency of operation of power plants, transmission and distribution system, power procurement etc. of the State. Skill building in the sector, especially at the State level, has so far been neglected. The National Training Policy of 2012 had recommended that each Ministry/Department/Organization should set aside at least 2.5 percent of its salary budget for training. The Electricity Act 2003 also emphasizes about the importance of trained human resources for the electricity industry. Training infrastructure especially in the field of electricity distribution, regulation, trading and power markets needs to be strengthened. Availability of adequate man power needs to be ensured by the power utilities as per the requirement of the job.
- 19.2. Skill building of institutions in the State specific to the power sector should be done at regular intervals. This would promote institutional capacity building and provide the technical institutions, policy makers and regulators of the State with the necessary skill sets. The State Government should also initiate steps to provide skill building to the staff of their institutions and regulatory commissions since it has been observed that the inhouse capacity JSERC is inadequate. Specialized training programme should be organized covering all facets of power sector including that of the distribution sector in the form of On-the-Job Training (OJT), refresher courses, etc.
- 19.3. With increase in size and complexity of our power sector, there should also be a review of roles/functional skill set of personnel in the Power entities like JBVNL, JUSNL, JUUNL, JREDA, SLDC, etc. to align with new requirements.

## 20. COORDINATED DEVELOPMENT

- 20.1. Power being a concurrent subject, it is imperative that there is uniformity in the policies which are being promoted by the Centre and the States. The Electricity Act 2003 provides for a mechanism like the Coordination Forum and the Advisory Committee to facilitate this consultative process. While these mechanisms are in place, an important role has to be played by the Energy Department of the State which provides for a common platform for JSERC and all statutory bodies, stakeholders to deliberate on the national level policies and regulations which can be applied to the State
- 20.2. The State's Energy Department must serve a vital role that gathers representatives from the Jharkhand State Electricity Regulatory Commission (JSERC), statutory bodies, and relevant stakeholders. This convergence creates an environment for in-depth discussions on the assimilation of national-level policies and regulations into the State's power framework.
- 20.3. The coordination efforts by the Energy Department allows for comprehensive deliberations on how national policies and regulations can be effectively implemented in Jharkhand. This collaborative approach ensures that decisions are well-informed, drawing from the insights of diverse stakeholders.
- 20.4. By fostering a cooperative atmosphere between the State's regulatory bodies, stakeholders, and the central coordinating mechanisms, the Jharkhand Power Policy underscores its commitment to synchronized development. This approach ensures that the State aligns its policies with national standards, ultimately contributing to a harmonized and efficient power landscape.

## 21. MAKE IN INDIA INITIATIVE AND AATMANIRBHAR BHARAT ABHIYAN

- 21.1. The primary goal of Make in India initiative is to establish India as a global manufacturing hub, by encouraging both multinational as well as domestic companies to manufacture their products within the country. 'Atmanirbhar Bharat Abhiyan' aims towards becoming a self-reliant economy.
- 21.2. In orientation with the Orders issued by Government of India, Department for Promotion of Industry, and Internal Trade (DPIIT) Public Procurement (Preference to Make in India) and Ministry of Power the State Government will continue to take measures for promoting manufacturing of goods and services within the State related to Generation, Transmission and Distribution segments of the power sector under the Make in India initiative.
- 21.3. Public Procurement Preference: Our State Government recognizes the importance of giving preference to locally manufactured goods and services in public procurement processes. By doing so, we contribute to building a robust domestic manufacturing ecosystem and propelling the nation towards self-reliance.
- 21.4. Strengthening Power Sector Manufacturing: With a focus on Generation, Transmission, and Distribution aspects of the power sector, we pledge to create a conducive environment for manufacturing activities. This not only drives economic growth but also enhances our energy infrastructure's resilience and self-sufficiency.
- 21.5. Collaborative Industry Growth: Our commitment to the Make in India initiative extends to fostering collaboration among industry players, investors, and innovators. By promoting indigenous manufacturing, we contribute to job creation, skill enhancement, and the overall progress of the state.
- 21.6. Through our alignment with the Make in India initiative and Atmanirbhar Bharat Abhiyan, our State Government envisions a future where self-reliance and indigenous manufacturing form the bedrock of our economic and industrial growth. This strategic alignment reinforces our determination to contribute to the nation's journey towards self-sufficiency and global manufacturing excellence.

## 22. SAFETY AND DISASTER RISK REDUCTION

- 22.1. Power Sector is one of the most important sectors of the overall economic development of the country and healthiness of the power sector has to be given top priority. Any disruption in the functioning of the sector affects the process of economic development. The impact can be minimized or reduced significantly if adequate risk reduction measures are incorporated.
- 22.2. There is need to incorporate measures for reduction of disaster risk into planning, design, construction, and operational aspects of power sector projects. JSERC in alignment with CEA Standards of Construction and other Technical Standards should issue Standard Guideline highlighting measures to mitigate risk and evade disaster within the State power sector.
- 22.3. All the licensees and generating companies of the State must comply to the provisions of Disaster and Crisis Management Plan prepared by the Central Electricity Authority
- 22.4. In the realm of the Jharkhand Power Policy, inclusivity stands as a core principle. Acknowledging the varied workforce within the sector, including unorganized employees, the policy emphasizes the importance of their social security. As part of this commitment, provisions for insurance coverage shall be extended to such employees. By safeguarding their well-being through insurance, we not only uphold their dignity but also contribute to a resilient and caring power ecosystem. This approach encapsulates our dedication to the holistic development and welfare of all individuals associated with the power sector in Jharkhand.
- 22.5. Embedded within the Jharkhand Power Policy is an unwavering commitment to safety. This extends to a robust accident policy that safeguards the well-being of all stakeholders within the sector. This policy framework shall be designed to swiftly address accidents and incidents, ensuring timely assistance, medical support, and compensation for affected individuals, whether general public or employees. By prioritizing accident prevention and rapid response, we forge a safer working environment, reinforce accountability, and uphold the welfare of those contributing to the state's power landscape.
- 22.6. The State Government will come with the separate policy for the common man who get electrocuted from live transmission line/ lines belongs to DISCOM.

## 23. SCOPE OF POLICY

- 23.1. The ambit of this policy extends its reach to encompass all stakeholders vested within the Jharkhand Power Sector. This comprehensive inclusivity ensures that the guidelines outlined herein resonate across the sector's spectrum. It is imperative to note that any instances of deviation from these directives shall be subject to alignment with the overarching National Electricity Policy. In such cases, the prevailing national policy shall take precedence over the Jharkhand Power Policy of 2022, ensuring a harmonized approach towards power sector growth and development.
- 23.2. All-Encompassing Reach: This policy extends its influence to cover every stakeholder within the Jharkhand Power Sector. From regulatory bodies to power producers, distributors, consumers, and beyond, its provisions resonate across the entire spectrum of the sector.
- 23.3. Unification of Efforts: By embracing all stakeholders, the policy fosters a sense of collective responsibility and collaboration. This unification strengthens the sector's ability to address challenges, optimize resources, and chart a path towards sustainable growth.
- 23.4. Empowerment through Knowledge: The policy's inclusive nature ensures that every participant, from large entities to smaller contributors, is well-versed with the principles and objectives outlined. This empowerment facilitates informed decision-making and alignment with overarching sector goals.
- 23.5. Unity in Policy Landscape: This hierarchy of policies guarantees a cohesive approach to sector development. By aligning with the prevailing national framework, Jharkhand's power sector ensures consistent growth and adherence to overarching energy standards.

## 24. PERIOD OF VALIDITY

- 24.1. State Government has declared the above 'Jharkhand Power Policy 2023' for the State of Jharkhand vide Resolution dated \_\_\_\_\_.
- 24.2. This Power Policy would be valid for five years w.e.f. date of notification of the policy or issuance of new policy whichever is earlier and can be extended further by Government Order.

Order: It is ordered that a copy of the resolution should be sent for publication in the special edition of the Jharkhand Gazette, Reputed Journals and Newspapers and be circulated among all the Departments/Departmental heads and Subordinate office of the Government.

By the order of the Governor of Jharkhand,  
Sd/- Additional Chief Secretary,  
Energy Department  
Government of Jharkhand