

No. 23/23/2018-R&R  
Government of India  
Ministry of Power

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Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 27<sup>th</sup> April, 2021

To

1. Principal Secretary/Secretary (Energy/Power), All State Governments/UTs.
2. Secretary, Central Electricity Regulatory Commission, New Delhi.
3. Secretaries, All SERCs/JERCs.

**Subject: Preparation of Draft National Electricity Policy 2021.**

Sir/ Madam,

Under Section 3 (3) of the Electricity Act, 2003, the Central Government may, from time to time, in consultation with the State Governments and the Central Electricity Authority, review or revise, the National Electricity Policy. The Central Government had notified the National Electricity Policy on 12<sup>th</sup> February, 2005 (copy enclosed).

2. According to Section 66 of the Electricity Act, 2003 *"the Appropriate Commission shall endeavour to promote the development of a market (including trading) in power in such manner as may be specified and shall be guided by the National Electricity Policy"*.

3. The Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs), in discharge of their functions, shall be guided by the National Electricity Policy under section 79 and section 86 of the Electricity Act, 2003 respectively.

4. In this regard, it is informed that Ministry of Power vide Order dated 12.4.2021 has constituted a Committee under the chairmanship of Shri Gireesh Pradhan, Ex-Chairperson, CERC to prepare and recommend National Electricity Policy (NEP), 2021 (copy enclosed). The Committee comprises Members from State Governments, MNRE, NITI Aayog, CEA, CPSUs etc. The Expert Committee is required to submit its suggested draft NEP 2021 within two months. The Schedules for presentation before the Expert Committee on comments and suggestions for the draft NEP 2021 is at Annexure -I.



5. It is requested that suggestions for framing draft NEP 2021, if any, may please sent to the expert committee within 21 days from the date of this letter. The suggestions alongwith the suggested specific formulations should be brief and in around 1000 words, which you feel that needs to be incorporated in the NEP 2021. The comments may also be emailed at [debranjan.chattopadhyay@nic.in](mailto:debranjan.chattopadhyay@nic.in).

Yours faithfully,

Encl: As above



(Ghanshyam Prasad)

Joint Secretary to the Government of India and  
the Convenor of the committee on NEP  
Tele No. 2371 0389

**Copy to:**

- 1) Chairperson, Central Electricity Authority, New Delhi.
- 2) Registrar, Appellate Tribunal for Electricity, New Delhi.
- 3) Chairman/CMDs for all PSUs under administrative control of Ministry of Power.
- 4) CMDs/MDs of DISCOMs/GENCOs/TRANSCOs of all State Governments.
- 5) CMDs SECI, CMD PTC
- 6) DG, Association of Power Producers, New Delhi.
- 7) President, FICCI, Federation House, Tansen Marg, New Delhi.
- 8) CII, ASSOCHEM, DCPPA, Solar Association, Wind Association, Indian Energy storage Alliance (IESA),
- 9) EPTA
- 10) Head, Prayas (Energy Group), Pune.
- 11) Financial Institutions: REC, PFC, SBI Caps, ICICI, HDFC, IREDA, NIIF
- 12) DG TERI, DG BEE, CEEW

**Copy for information to:**

- i) All Additional Secretaries/Joint Secretaries/Chief Engineer, Ministry of Power.
- ii) PS to Hon'ble Minister, Sr. PPS to Secretary (Power), Sr. PPS to JS (R&R), PS to DS (R&R)

**Schedules for presentation before Expert Committee on comments and suggestions for the draft NEP 2021**

Sl.No.	Group	Date of Presentation Time : 11am to 1pm
1.	CPSUs, PTC, SECI	11.5.2021
2.	Financial Institutions (REC, PFC, SBI Caps, ICICI, HDFC, IREDA, NIIF)	12.5.2021
3.	Industry Associations (APP, FICCI, ASSOCHAM, DCPPA, Solar Association, Wind Association, Indian Alliance of Solar Power, EPTA)	13.5.2021
4.	State Governments (in two groups)	14.5.2021
5.	TERI, BEE, CEEW, Prayas etc	15.5.2021

Note:

1. The date and time is tentative. However, in case of any change the same would be intimated to the concerned.
2. Each presenter will be given maximum of 10 minutes for presentation. Please share your presentation a day in advance.
3. Presentation should be focused and consists of maximum 5 slides. It would be more useful if the exact formulation to be incorporated in the NEP is discussed rather than the general comments and suggestions.





# भारत का राजपत्र

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संकल्प

नई दिल्ली, 12 फरवरी, 2005

राष्ट्रीय विद्युत नीति

सं. 23/40/2004-आर एंड आर ( खंड-II ).—प्रस्तावना :

1.1 विद्युत अधिनियम, 2003 की धारा-3 के अनुपालन में केंद्र सरकार एतद्वारा राष्ट्रीय विद्युत नीति को अधिसूचित करती है ।

1.2 विद्युत हमारे जीवन के हर क्षेत्र में एक अनिवार्य आवश्यकता है इसकी पहचान मूलभूत मानवीय आवश्यकता के रूप में की गई है । यह एक ऐसी बुनियादी जरूरत है जिस पर देश का सामाजिक एवं आर्थिक विकास निर्भर करता है । ग्रामीण भारत को युक्तिसंगत दर पर विद्युत आपूर्ति किया जाना देश के समग्र विकास के लिए आवश्यक है । इसी प्रकार प्रतिस्पर्धात्मक दरों पर विश्वसनीय और गुणवत्ता वाली विद्युत की उपलब्धता भारतीय उद्योग के लिए समान रूप से महत्वपूर्ण है ताकि भारतीय उद्योग विश्व स्तर पर प्रतिस्पर्धात्मक बन सकें और वह रोजगार सृजन कर सक्यता का दोहन कर सकें । सेवाओं के क्षेत्र ने हमारी अर्थव्यवस्था की वृद्धि में महत्वपूर्ण योगदान दिया है । विद्युत की गुणवत्तापरक आपूर्ति की उपलब्धता इस क्षेत्र के वृद्धि के लिए बहुत महत्वपूर्ण है।

1.3 त्वरित आर्थिक विकास एवं गरीबी उपशमन के लिए एक महत्वपूर्ण घटक के रूप में विद्युत की आवश्यकता को समझते हुए देश में अगले 5 वर्षों तक सभी घरों में विद्युत उपलब्ध कराने का लक्ष्य रखा गया है । 2001 की जनगणना के अनुसार देश के कुल 44% घरों में विद्युत उपलब्ध नहीं है । ऐसे में पूरे देश के घरों तक विद्युत पहुंचाने के लक्ष्य को पूरा करने का कार्य एक चुनौतीपूर्ण कार्य है और इसके लिए विद्युत उत्पादन क्षमता में वृद्धि करनी होगी तथा पारेषण एवं वितरण प्रणाली का व्यापक विस्तार करना होगा ।

1.4 भारतीय विद्युत क्षेत्र में व्यापक बदलाव आ रहे हैं । आजादी के बाद भारतीय विद्युत क्षेत्र में हासिल प्रगति वस्तुतः सराहनीय है । किंतु समय के साथ विद्युत की मांग इसकी उपलब्धता से



अधिक बढ़ती रही है। देश में व्यस्ततमकालीन ऊर्जा अभाव एवं सामान्य ऊर्जा अभाव काफी अधिक है और यह अभाव विद्युत उत्पादन, पारेषण एवं वितरण संबंधी खामियों तथा विद्युत के अकुशल उपयोग के कारण है। बहुत अधिक तकनीकी और वाणिज्यिक हानियों तथा यूटिलिटियों के प्रबंधन में वाणिज्यिक दृष्टिकोण की कमी से वित्तीय प्रचालन हुए थे। क्रॉस सब्सिडियां गैर-पोषकीय स्तरों तक बढ़ गई है। वितरण नेटवर्क में कमियां भी खराब गुणवत्तापरक आपूर्ति के मुख्य कारणों में से एक है।

1.5 विद्युत उद्योग में गहन पूंजी की आवश्यकता होती है और इसकी निर्माणाधीन अवधि भी लंबी होती है। देश में विद्युत उत्पादन के संसाधन असमान रूप से वितरित हैं। विद्युत एक ऐसी वस्तु है जिसका संचय ग्रिड में नहीं किया जा सकता जहां कि मांग व पूर्ति में लगातार संतुलन रखना होता है। देश में व्यापक रूप से विस्तारित और बढ़ती हुई मांग को ईष्टतम तरीके से पूरा करने की जरूरत है।

1.6 विद्युत अधिनियम, 2003 में विद्युत क्षेत्र के त्वरित एवं कुशल विकास के लिए एक सक्षम कार्यदाई का प्रावधान किया गया है। यह अधिनियम में विनियामक हस्तक्षेप के साथ प्रतिस्पर्धा को बढ़ावा दिया गया है। प्रतिस्पर्धा के फलस्वरूप कुशलता बढ़ेगी और इससे उपभोक्ताओं को उपयुक्त दर पर एवं गुणवत्ता वाली बिजली मिल सकेगी।

1.7 विद्युत अधिनियम, 2003 की धारा 3(1) के अंतर्गत केन्द्र सरकार द्वारा अन्य बातों के साथ-साथ केंद्रीय विद्युत प्राधिकरण (के.वि.प्रा.) तथा राज्य सरकारों के परामर्श से एक राष्ट्रीय विद्युत नीति तैयार किया जाना अपेक्षित है इससे संबंधित प्रावधान निम्न प्रकार हैं—

*'केंद्रीय सरकार, जैसे कोयला, प्राकृतिक गैस, न्यूक्लियर पदार्थ या सामग्री, हाइड्रो संसाधनों तथा ऊर्जा के नवीकरणीय स्रोतों के अधिकतम उपयोग पर आधारित विद्युत प्रणाली के विकास के लिए राज्य सरकारों और प्राधिकरण के परामर्श से राष्ट्रीय विद्युत नीति और टैरिफ नीति समय-समय पर तैयार करेगी।'*

अधिनियम की धारा 3(3) केंद्र सरकार को समय-समय पर राष्ट्रीय विद्युत नीति की समीक्षा एवं संशोधन करने की शक्ति प्रदान करती है।

1.8 राष्ट्रीय विद्युत नीति का उद्देश्य विद्युत क्षेत्र के त्वरित विकास के लिए दिशानिर्देश प्रस्तुत करना, सभी क्षेत्रों में विद्युत आपूर्ति करना तथा ऊर्जा संसाधनों की उपलब्धता, इन संसाधनों के दोहन के लिए उपलब्ध प्रौद्योगिकी, विभिन्न संसाधनों का उपयोग करते हुए विद्युत उत्पादन में मितव्ययिता तथा ऊर्जा सुरक्षा संबंधी मामलों को ध्यान में रखते हुए उपभोक्ताओं और अन्य स्टेकहोल्डरों के हितों की रक्षा करना है।

1.9 राष्ट्रीय विद्युत नीति राज्य सरकारों, केंद्रीय विद्युत प्राधिकरण, केंद्रीय विद्युत विनियामक आयोग और अन्य स्टेकहोल्डरों के साथ परामर्श करके और उनके विचारों को ध्यान में रखकर तथा राष्ट्रीय साझा न्यूनतम कार्यक्रम के अनुरूप तैयार की गई है।

## 2.0 उद्देश्य एवं लक्ष्य

राष्ट्रीय विद्युत नीति के अंतर्गत निम्नलिखित लक्ष्यों को प्राप्त किया जाना है:

- विद्युत की उपलब्धता-अगले पांच वर्षों में सभी घरों में बिजली की उपलब्धता ।
- विद्युत की उपलब्धता-वर्ष 2012 तक विद्युत की संपूर्ण मांग को पूरा किया जाना । ऊर्जा संबंधी व्यस्ततम एवं सामान्य अभाव को समाप्त किया जाएगा और अतिरिक्त रूप से पर्याप्त विद्युत उपलब्ध रहेगी ।
- युक्तिसंगत दरों पर और दक्ष तरीकों से निर्धारित स्तरों की विश्वसनीय व गुणवत्तापरक विद्युत की आपूर्ति करना ।
- सन् 2012 तक विद्युत की प्रति व्यक्ति खपत 1000 यूनिट से भी अधिक बढ़ाना ।
- सन् 2012 तक अच्छी मैरिट आधार पर हर घर में प्रतिदिन 1 यूनिट की न्यूनतम खपत सुनिश्चित करना ।
- विद्युत क्षेत्र में वित्तीय परिवर्तन और वाणिज्यिक व्यवहार्यता ।
- उपभोक्ताओं के हितों की रक्षा ।

## 3.0 राष्ट्रीय विद्युत योजना

3.1 मांग का मूल्यांकन क्षमता अभिवृद्धि के नियोजन के लिए एक महत्वपूर्ण पूर्व आवश्यकता है । अधिनियम की धारा 3 (4) के अनुसार केंद्रीय विद्युत प्राधिकरण (सीईए) द्वारा प्रत्येक पांच वर्ष में राष्ट्रीय विद्युत योजना तैयार कर इसे राष्ट्रीय विद्युत नीति के अनुसार समय-समय पर संशोधन करना आवश्यक है । साथ ही धारा 73 (क) में यह प्रावधान है कि विद्युत प्रणाली के विकास के लिए अल्पकालिक एवं संदर्शी योजनाएं तैयार करना तथा राष्ट्रीय अर्थव्यवस्था को सुदृढ़ बनाने हेतु संसाधनों के ईष्टतम उपयोग के लिए विभिन्न योजना एजेंसियों के कार्यकलापों का समन्वय करना सीईए का एक प्रमुख कार्य है । सीईए द्वारा तैयार किए गए प्लान को भावी विद्युत उत्पादन कंपनियों, पारेषण यूटिलिटियों और पारेषण/वितरण लाइसेंसधारियों द्वारा संदर्भ दस्तावेज के रूप में उपयोग में लाया जा सकता है ।

3.2 तदनुसार सीईए अल्पकालिक एवं संदर्शी योजना तैयार करेगा । राष्ट्रीय विद्युत नीति पांच वर्ष के अल्प समय के लिए होगी जबकि संदर्शी योजना 15 वर्ष की होगी और इससे निम्नलिखित शामिल होंगे-

- विभिन्न क्षेत्रों के लिए अल्पकालीन और दीर्घकालीन मांग का अनुमान ।
- विद्युत उत्पादन एवं पारेषण में मितव्ययिता, प्रणाली में हानियां, भार केंद्र आवश्यकता, ग्रिड स्थिरता, आपूर्ति सुरक्षा, वोल्टता प्रोफाइल समेत विद्युत की गुणवत्ता इत्यादि तथा पुनर्वास व पुनर्स्थापना समेत पर्यावरणीय विचारों को ध्यान में रखते हुए क्षमता अभिवृद्धियों के लिए सुझाए गए क्षेत्र/स्थान ।
- पारेषण प्रणाली के साथ ऐसे संभावित स्थलों का एकीकरण और अतिरिक्तता की आवश्यकता तथा पारेषण प्रणालियों के प्रकार समेत राष्ट्रीय ग्रिड का विकास और

- दक्ष विद्युत उत्पादन, पारेषण एवं वितरण के लिए उपलब्ध विभिन्न प्रौद्योगिकियां ।

3.3 राष्ट्रीय विद्युत योजना तैयार करते समय के.वि.प्रा. राज्य सरकारों समेत सभी स्टैकहोल्डरों से परामर्श करेगा और राज्य सरकारें वितरण लाइसेंसी/एसटीयू समेत स्टैकहोल्डरों के साथ समन्वय स्थापित करके राज्य स्तर पर यह कार्य करेंगे । अल्पकालीन और दीर्घकालीन मांग का मूल्यांकन करने के लिए आवधिक अध्ययन कार्य करते समय वितरण यूटिलिटियों द्वारा किए गए अनुमानों को उपयुक्त प्राथमिकता प्रदान की जाएगी । के.वि.प्रा., विशेषतः मांग अनुमान के क्षेत्र में आर्थिक विशेषज्ञता रखने वाले संस्थानों और एजेंसियों के साथ पारस्परिक कार्रवाई करेगा । अर्थव्यवस्था के विभिन्न क्षेत्रों के लिए परियोजनागत वृद्धि दरों को भी भावी मांग का अनुमान लगाने में ध्यान में रखा जाएगा ।

3.4 चालू 10वीं योजना और 11वीं योजना तथा 10वीं, 11वीं और 12वीं योजना अवधियों के लिए संदर्शी योजना हेतु राष्ट्रीय विद्युत योजना तैयार की जाएगी तथा के.वि.प्रा. द्वारा तैयार की गई विद्यमान विद्युत योजना को संशोधित और उसकी समीक्षा करके योजना को अधिसूचित किया जाएगा। यह 6 माह के भीतर किया जाएगा ।

#### 4.0 विचारार्थ मामले

नीति के अंतर्गत निम्नलिखित मामलों पर विचार किया जाएगा:

- विद्युत उत्पादन
- पारेषण
- वितरण
- ग्रामीण विद्युतीकरण
- सेवाओं की लागत की वसूली और लक्षित सब्सिडियाँ
- प्रौद्योगिकी विकास तथा अनुसंधान एवं विकास(आर एंड डी)
- उपभोक्ता लाभों के उद्देश्य से प्रतिस्पर्धा
- निजी क्षेत्र की हिस्सेदारी समेत विद्युत क्षेत्र कार्यक्रमों का वित्तपोषण
- ऊर्जा संरक्षण
- पर्यावरणीय मुद्दे
- प्रशिक्षण एवं मानव संसाधन विकास
- सह-उत्पादन एवं नवीकरणीय तथा गैस-परंपरागत ऊर्जा स्रोत
- उपभोक्ता हितों की रक्षा और गुणवत्ता मानक

#### 5.1 ग्रामीण विद्युतीकरण

5.1.1 विद्युत क्षेत्र के विकास का एक मुख्य लक्ष्य ग्रामीण क्षेत्रों समेत सभी क्षेत्रों को विद्युत की आपूर्ति प्रदान करना है जैसा कि अधिनियम की धारा 6 में शासनादेश है । केंद्र सरकार और राज्य सरकारें दोनों इस लक्ष्य को प्राप्त करने के संयुक्त प्रयास करेंगे । सभी उपभोक्ताओं को सभी लागतों

को प्रदर्शित करने वाली टैरिफ पर चौबीसों घंटे गुणवत्ता की अबाधित विद्युत आपूर्ति प्राप्त करने का अधिकार है। अभी तक लगभग 56% ग्रामीण परिवारों के पास विद्युत की पहुंच नहीं है। यह सुनिश्चित करने के निर्धारित प्रयास किए जाने चाहिए कि सभी परिवारों तक विद्युत पहुंचाने के लिए ग्रामीण विद्युतीकरण का कार्य तथा युक्तिसंगत दरों पर समाज के गरीब और सीमांत वर्गों को विद्युत की पहुंच सुनिश्चित कराने का कार्य अगले पांच वर्षों तक पूरा हो जाए।

5.1.2 विश्वसनीय ग्रामीण विद्युतीकरण प्रणाली का उद्देश्य निम्नलिखित का सृजन करना होगा-

(क) प्रत्येक ब्लॉक में न्यूनतम 33/11केवी (अथवा 66/11 केवी) सबस्टेशन और लोड के अनुसार यदि अपेक्षित हो तो इससे अधिक के साथ ग्रामीण विद्युतीकरण वितरण बैकबोन (आरईडीबी) जो राज्य पारेक्षण प्रणाली से उपयुक्त रूप से सम्बद्ध हो और इसके नेटवर्क से जुड़ा हो। यह विद्युत उत्पादन के या तो पारंपरिक या अपारंपरिक तरीकों से किया जाएगा जो भी अधिक उपयुक्त या लाभकारी हो।

(ख) आरईडीबी से आपूर्ति फीडर तैयार होंगे और प्रत्येक ग्रामीण व्यवस्था में न्यूनतम एक वितरण ट्रांसफार्मर होगा।

(ग) मांग आधार पर प्रत्येक घर को जोड़ने के लिए वितरण ट्रांसफार्मर से घरेलू विद्युतीकरण।

(घ) जब भी उपर्युक्त संभव न हो (लागत प्रणाली और ग्रिड कनेक्टिविटी प्रदान करने के लिए ईष्टतम व्यवस्था) तो स्थानीय वितरण नेटवर्क के साथ विकेन्द्रीकृत वितरित विद्युत उत्पादन की सुविधाएं प्रदान की जायेंगी ताकि प्रत्येक घर को विद्युत मिल सके। यह उत्पादन या तो पारंपरिक या फिर अपारंपरिक तरीकों से किया जाएगा, जो भी अधिक उपयुक्त या लाभकारी हो। जहां ग्रिड कनेक्टिविटी बनी हुई है वहां भी अपारंपरिक ऊर्जा स्रोतों का उपयोग किया जा सकता है, यदि इसे किफायती माना जाए।

(ङ) अवसंरचनात्मक विकास सिंचाई पंपसेटों, छोटी व मझौले उद्योगों, खादी एवं ग्राम उद्योगों तथा स्वास्थ्य एवं शिक्षा जैसी सामाजिक सेवाओं समेत कृषि और अन्य आर्थिक गतिविधियों की आवश्यकता को पूरा करेगा।

5.1.3 दलित बस्ती, जनजातीय क्षेत्रों और अन्य कमजोर वर्गों को घरों का विद्युतीकरण किए जाने में विशेष ध्यान दिया जाएगा।

5.1.4 रूरल इलेक्ट्रिफिकेशन कारपोरेशन ऑफ इंडिया, भारत सरकार का उपक्रम अगले 5 वर्षों में सभी घरों को विद्युत उपलब्ध कराने के राष्ट्रीय साझा न्यूनतम कार्यक्रम द्वारा निर्धारित लक्ष्य को प्राप्त करने के लिए कार्यक्रम के कार्यान्वयन हेतु केंद्र सरकार के स्तर पर नोडल एजेंसी होगी। ग्रामीण विद्युतीकरण परियोजनाओं के समयबद्ध कार्यान्वयन को सुनिश्चित करने के लिए इसकी भूमिका को उचित रूप से विकसित किया जाएगा।



5.1.5 वांछित समय-सीमा के भीतर ग्रामीण परिवारों के लिए विद्युत की पहुंच में विस्तार करने का भी लक्ष्य तभी प्राप्त किया जा सकता है जबकि वितरण लाइसेंसधारी कम से कम विद्युत की लागत और प्रचालन और अनुक्षण(ओ एंड एम) खर्चों को प्राप्त कर सके, सिवाय गरीबी रेखा से नीचे रहने वाले परिवारों की जीवन रेखा खपत के संबंध में, जिनके लिए कि पर्याप्त मात्रा में आर्थिक सहायता प्रदान करने की आवश्यकता होगी। आर्थिक सहायताओं का लक्ष्य इस प्रकार बनाया जाना चाहिए कि यह कुशल तरीके में विचारित लाभभोगियों तक पहुंच सके। सरकार ग्रामीण विद्युतीकरण में निवेश के लिए पूंजीगत आर्थिक सहायता और आसान दीर्घकालीन ऋण वित्तपोषण प्रदान करने की आवश्यकता से परिचित है इससे ग्रामीण क्षेत्रों में आपूर्ति लागत कम हो सकेगी। योजना प्रक्रियाओं के जरिए इस के लिए पर्याप्त निधियां उपलब्ध कराए जाने की आवश्यकता है समयपूर्वक क्रियान्वयन हेतु समरूपी संगठनात्मक सहायता भी सृजित किए जाने की आवश्यकता है। इसे प्राप्त करने में केंद्र सरकार राज्य सरकारों की सहायता करेगी।

5.1.6 आवश्यक संस्थानिक कार्यवाही केवल यह सुनिश्चित करने के लिए तैयार नहीं किया जाएगा कि ग्रामीण विद्युतीकरण अवसंरचना का सृजन हो जाए बल्कि इसलिए भी किया जाना चाहिए कि उपभोक्ताओं के लिए विश्वसनीय विद्युत आपूर्ति सुनिश्चित करने हेतु आपूर्ति प्रणाली का प्रचालन व अनुक्षण हो सके। प्रचालन एवं अनुक्षण तथा लागत वसूली की जिम्मेवारी का निर्वहन यूटिलिटीयों द्वारा पंचायतों, स्थानीय प्राधिकारियों, एनजीओ, प्रतिनिधियों आदि के साथ उपयुक्त व्यवस्था बनाकर किया जाएगा।

5.1.7 ग्रामीण विद्युतीकरण के विशाल कार्य के लिए राज्य सरकारों की विभिन्न एजेंसियों और केंद्र सरकार के बीच उपयुक्त सहयोग और समुदाय की भागीदारी अपेक्षित है सामुदायिक भागेदारी के उद्देश्य को प्राप्त करने के लिए शिक्षा और जागरूकता कार्यक्रम आवश्यक होंगे।

## 5.2 उत्पादन

5.2.1 भारत के विद्युत क्षेत्र प्रचालन में अपर्याप्त उत्पादन की स्थिति का पता चलता है। सन 2012 तक 1000 यूनिट से अधिक प्रति व्यक्ति विद्युत उपलब्ध कराने के लिए यह अनुमान लगाया गया है कि वर्ष 2002-2012 की अवधि के दौरान 1,00,000 मेगावाट से अधिक आवश्यकता आधारित क्षमता अभिवृद्धि की जरूरत होगी।

5.2.2 भारत सरकार ने देश में नई उत्पादन क्षमता के समृद्धि हेतु अनुकूल वातावरण बनाने के लिए कई सुधारपरक उपाय किए हैं। विद्युत अधिनियम, 2003 में उत्पादन हेतु बहुत ही उदार ढांचे की व्यवस्था की गई है। इसके अनुसार उत्पादन के लिए किसी प्रकार के लाइसेंस की जरूरत नहीं है। साथ ही थर्मल उत्पादन के लिए सीईए से तकनीकी-आर्थिक स्वीकृति की भी जरूरत नहीं है। जल विद्युत उत्पादन के लिए पूंजीगत व्यय की सीमा, जिसके लिए सीईए की स्वीकृति लेनी पड़ती थी, को वर्तमान स्तर से अधिक किया जाएगा। कैप्टिव उत्पादन को सभी तरह के नियंत्रण से मुक्त कर दिया गया है।

5.2.3 सन 2012 तक ऊर्जा और व्यस्ततमकालीन मांग दोनों की जरूरत को पूरा करने के लिए पर्याप्त भंडारण क्षमता व्यवस्था की जरूरत है। इसके अलावा संस्थापित क्षमता की समग्र उपलब्धता 85% तक बढ़ाने के लिए राष्ट्रीय स्तर पर कम से कम 5% भंडारण आवश्यकता की जरूरत होगी

ताकि ग्रिड सुरक्षा सुनिश्चित हो सके तथा गुणवत्तापरक और विश्वसनीय विद्युत की आपूर्ति संभव हो सके ।

5.2.4 क्षमता अभिवृद्धि योजनाओं के क्रियान्वयन की प्रगति और मांग वृद्धि की निरंतर मॉनीटरिंग करने की आवश्यकता होगी और समय-समय आवश्यक समायोजन किए जायेंगे । नई विद्युत उत्पादन क्षमताओं का सृजन करने के लिए आधार भार और ईष्टतम भार के बीच बढ़ते संभावित अंतर को ध्यान में रखते हुए उपयुक्त प्रौद्योगिकी पर विचार किए जाने की आवश्यकता है ।

### जल विद्युत उत्पादन

5.2.5 जल विद्युत ऊर्जा का स्वच्छ और अक्षय स्रोत है । देश में व्यवहार्य हाइड्रो क्षमता के पूर्ण विकास हेतु अधिकतम जोर दिया जाएगा । 50,000 मेगावाट जल विद्युत उत्पादन की प्रक्रिया पहले ही आरंभ की जा चुकी है और 33,000 मेगावाट क्षमता की परियोजनाओं के लिए डीपीआर तैयार करने के साथ इस पर जोर-शोर से कार्रवाई की जा रही है ।

5.2.6 इस जल विद्युत शक्यता को तेजी से दोहन किए जाने से राज्यों में विशेषतः पूर्वोत्तर राज्यों, सिक्किम, उत्तरांचल, हिमाचल प्रदेश और जम्मू व कश्मीर में आर्थिक विकास भी होगा क्योंकि इन राज्यों में हमारी जल विद्युत शक्यता का अधिक भाग स्थित है । जल शक्यता वाले राज्यों में इस शक्यता के शीघ्र विकास हेतु जोर दिए जाने की आवश्यकता है ।

5.2.7 जल विद्युत परियोजनाओं के लिए अपेक्षाकृत अधिक पूंजी निवेश की जरूरत होती है, अतएव जल विद्युत परियोजनाओं के लिए दीर्घकालिक ऋण व्यवस्था की जरूरत होगी । केंद्रीय सरकार जल विद्युत परियोजनाओं के लिए सीपीएसयू को अधिक निधियां उपलब्ध कराएगी ।

5.2.8 राज्य सरकारों को सलाह दी जाती है की वे भूमि अधिग्रहण और परियोजनाओं के तेजी से क्रियान्वयन हेतु अन्य अनुमोदनों से संबंधित प्रक्रियाओं की समीक्षा करें ।

5.2.9 केंद्रीय सरकार नेशनल हाइड्रोइलेक्ट्रिक पावर कारपोरेशन (एनएचपीसी) जैसी केंद्रीय सार्वजनिक क्षेत्र उपक्रमों की सेवाएं प्रदान करके राज्य सरकारों को उनकी विद्युत परियोजनाओं के त्वरित विद्युत विकास हेतु सहायता प्रदान करेगी ।

5.2.10 इस संबंध में पुनर्वास एवं पुनर्स्थापना(आर एंड आर) संबंधी राष्ट्रीय नीति का उपयुक्त क्रियान्वयन अनिवार्य होगा ताकि यह सुनिश्चित किया जा सके कि परियोजना प्रभावित परिवारों की चिंताओं को पूर्णतः दूर किया जा सके ।

5.2.11 पर्यावरणीय कार्य योजना और आर एंड आर स्कीमों के कार्यान्वयन की मॉनीटरिंग के लिए उपयुक्त कार्यविधि के साथ पर्यावरण संरक्षण के लिए उपयुक्त उपाय किए जायेंगे ।

## ताप विद्युत उत्पादन

5.2.12 देश में व्यवहार्य हाइड्रो क्षमता के पूर्ण विकास के लिए कोयला भावी विद्युत की मांग को पूरा करने की दृष्टि से ईंधन का प्रमुख स्रोत बना रहेगा ।

5.2.13 विशेषतः तटीय स्थलों में आयातित कोयला आधारित ताप विद्युत स्टेशनों को उनकी आर्थिक व्यवहार्यता के आधार पर प्रोत्साहित किया जाएगा । कम राख वाले कोयले के उपयोग से उड़न राख निस्सरण की समस्या कम करने में सहायता मिलेगी ।

5.2.14 देश में महत्वपूर्ण लिग्नाइट संसाधन तमिलनाडु, गुजरात और राजस्थान में अवस्थित है और विद्युत उत्पादन हेतु इनका उत्तरोत्तर उपयोग होना चाहिए । लागत को कम करने के लिए लिग्नाइट खनन प्रौद्योगिकी को उन्नत बनाने की जरूरत है ।

5.2.15 विद्युत उत्पादन के लिए ईंधन के रूप में गैस का उपयोग किया जाना युक्तिसंगत कीमतों पर इसकी उपलब्धता पर निर्भर करता है । गैस टरबाईन/कम्बाइंड साइकिल गैस टरबाईन (जीटी/सीसीजीटी) स्टेशनों में इस समय प्राकृतिक गैस का उपयोग किया जा रहा है, जो कुल क्षमता का लगभग 10% बैठता है । विद्युत क्षेत्र देश में उपलब्ध कुल गैस का 40% खपत करता है । नई विद्युत उत्पादन क्षमता स्वदेशी गैस पर आधारित होगी जो कीमतेँ उपयुक्त होने पर विद्युत उत्पादन के प्रमुख स्रोत के रूप में सामने आएगी । देश के विभिन्न भागों को समाहित करने वाले एक राष्ट्रीय गैस ग्रिड से इस प्रकार की क्षमताओं के विकास में सहायता मिलेगी ।

5.2.16 आयातित एलएनजी आधारित विद्युत संयंत्र भी विद्युत के शक्यता वाले स्रोत हैं और उनके विकास की गति उनकी वाणिज्यिक व्यवहार्यता पर निर्भर करेगी । तरल ईंधनों को प्रयुक्त करने वाले विद्यमान विद्युत संयंत्रों को विद्युत उत्पादन की लागत में कमी लाने के लिए प्राकृतिक गैस/एलएनजी के इस्तेमाल हेतु स्थानांतरिक किया जाना चाहिए ।

5.2.17 थर्मल उत्पादन के संबंध में कम लागत पर उत्पादन और विद्युत की आपूर्ति को ही उपलब्धता विकल्पों में से उपयुक्त ईंधन चयन का आधार होना चाहिए । नये उत्पादन स्टेशनों का ईंधन स्रोतों अर्थात् पिटहैड स्थलों अथवा भार केंद्रों के निकट स्थापित होना किफायती होगा ।

5.2.18 विशेष रूप से आयातित ईंधन के संबंध में वाणिज्यिक व्यवहार्यता और आपूर्ति सुरक्षा के लिए उत्पादन कंपनियों मध्यम एवं दीर्घावधिक ईंधन आपूर्ति करार करेगी ।

## न्यूक्लीयर विद्युत

5.2.19 मूल भार मांग को पूरा करने के लिए न्यूक्लीयर विद्युत ऊर्जा का प्रमाणित स्रोत है । न्यूक्लीयर विद्युत संयंत्र कोयला खानों से सुदूर स्थानों पर स्थापित किए जा रहे हैं । समग्र लागत प्रोफाइल में न्यूक्लीयर विद्युत की भागीदारी को पर्याप्त बढ़ाया जाना अपेक्षित है । अन्य बातों के साथ-साथ विद्युत उत्पादन में मितव्ययिता और परिणामी टैरिफ मुख्य विचार वाले बिंदु होंगे ।

सार्वजनिक क्षेत्र के निवेशों को बढ़ाए जाने की आवश्यकता है। निजी क्षेत्र की भागेदारी को भी सुविधाजनक बनाया जाएगा ताकि लक्ष्यों से अधिक अर्जित किया जा सके।

### अपारंपरिक ऊर्जा स्रोत

5.2.20 अतिरिक्त विद्युत उत्पादन क्षमता सृजित करने के लिए अपारंपरिक स्रोतों मुख्यतः लघु जल विद्युत, पवन, एवं बायोमास संबंधी शक्यताओं के संदोहन की भी जरूरत होगी। विद्युत अनुपात में अपारंपरिक ऊर्जा स्रोतों के कुल हिस्से में वृद्धि करने के उद्देश्य से उपयुक्त प्रोत्साहक उपायों के जरिए निजी क्षेत्र प्रतिभागिता को बढ़ावा देने का प्रयास किया जाएगा।

### नवीकरण एवं आधुनिकीकरण (आर एंड एम)

5.2.21 विगत कुछ वर्षों के दौरान उपलब्धता में महत्वपूर्ण वृद्धि और थर्मल विद्युत स्टेशनों के संयंत्र भार घटक में वृद्धि विद्युत क्षेत्र की प्रमुख उपलब्धि है। अधिक क्षमता स्तर प्राप्ति के लिए नवीकरण और आधुनिकीकरण जरूरतों को तेजी से आगे बढ़ाने की जरूरत है तथा उपलब्ध उत्पादन क्षमता को न्यूनतम स्वीकार्य मॉडकों तक लाया जाना चाहिए। भारत सरकार इस प्रयोजनार्थ वित्तीय सहायता प्रदान कर रही है।

5.2.22 स्वीकार्य मानकों के अनुसार निष्पादन न करने वाली परियोजनाओं के लिए आर एंड एम आवश्यक लागत लॉभ विश्लेषणों की सुपरिभाषित योजनाओं के अनुसार किए जाने चाहिए। यदि आर एंड एम के माध्यम से किफायती आधार पर प्रचालन व्यवहार्य न हो, तो ऐसी स्थिति में ऐसे संयंत्रों को बंद करने के अलावा कोई विकल्प नहीं है।

5.2.23 खराब आर एंड एम रिकॉर्ड और निरंतर प्रचालनात्मक समस्याओं के मामले में स्वामित्व परिवर्तन पर विचार करने की जरूरत है ताकि स्वीकार्य स्तर तक इन विद्युत स्टेशनों की क्षमता सुधार हो सके।

### कैप्टिव विद्युत उत्पादन

5.2.24 न केवल उद्योग हेतु विश्वसनीय, गुणवत्तापरक और किफायती विद्युत सुनिश्चित किए जाने हेतु बल्कि उद्योग के शीघ्र व दक्ष विकास के जरिए रोजगार के अवसरों के सृजन को सुगम बनाने की दृष्टि से भी कैप्टिव संयंत्रों की स्थापना के लिए विद्युत अधिनियम, 2003 में उदार प्रावधान बनाए गए हैं।

5.2.25 समूह में कैप्टिव विद्युत संयंत्रों को स्थापित करने से संबंधित प्रावधान का उद्देश्य ऐसे लघु और मझौले उद्योगों को किफायती लागत से ईष्टतम आकार वाले संयंत्र की स्थापना करने में सक्षम बनाना है, जो इस स्थिति में नहीं हैं। यह नोट करने की आवश्यकता है कि देश भर में लघु और मझौले उद्योगों का दक्ष विस्तार करने से अधिकाधिक रोजगार के अवसर बढ़ेंगे।

5.2.26 भारत के कई कैप्टिव और आरक्षित विद्युत उत्पादक संयंत्रों में अधिशेष क्षमता है जिसकी आपूर्ति कुछ समय अवधियों के दौरान ग्रिड को निरंतर की जा सकती है। इन संयंत्रों में पर्याप्त और



प्रतिस्पर्द्धात्मक क्षमता विद्यमान है जिनका दोहन विद्युत की मांग को पूरा करने के लिए किया जा सकता है। कैप्टिव विद्युत उत्पादकों को अधिनियम के अंतर्गत खुली पहुंच वाले उपभोक्ताओं और लाइसेंसधारियों तक पहुंच प्राप्त है। कैप्टिव विद्युत उत्पादकों के लिए ग्रिड इंटर कनेक्शनों को अधिनियम की धारा 30 के अनुसार सुगम बनाया जायेगा। ऐसा प्राथमिकता आधार पर किया जाना चाहिए ताकि कैप्टिव विद्युत उत्पादन ग्रिड के साथ वितरित विद्युत उत्पादन के रूप में उपलब्ध हो सके। इस उद्देश्य से सह-विद्युत उत्पादन समेत अपारंपरिक ऊर्जा स्रोत भी महत्वपूर्ण भूमिका निभा सकते हैं। कैप्टिव विद्युत संयंत्रों से बची क्षमता ऊर्जा का इस्तेमाल करने के लिए लाइसेंसधारक और कैप्टिव विद्युत उत्पादकों के बीच यथोचित वाणिज्यिक व्यवस्थाएं करने की आवश्यकता होगी। उपयुक्त विनियामक आयोग कैप्टिव विद्युत उत्पादकों और लाइसेंसधारियों के बीच होने वाले ऐसी वाणिज्यिक व्यवस्थाओं पर नियंत्रकीय अवलोकन करेगा और लाइसेंसधारी द्वारा कैप्टिव संयंत्रों से विद्युत खरीदे जाने पर टैरिफ का निर्धारण करेगा।

### 5.3 पारेषण

5.3.1 शक के लिए संतुलित और समेकित विद्युत प्रणाली के विकास हेतु पारेषण प्रणाली में पर्याप्त एवं समयबद्ध निवेश, उसका दक्ष और समन्वित संचालन की आवश्यकता होती है।

5.3.2 उत्पादन में व्यापक वृद्धि और विद्युत बाजार के विकास को भी ध्यान में रखते हुए पारेषण क्षमता पर्याप्त वृद्धि करने की आवश्यकता है। नई उत्पादन क्षमताओं की योजना बनाते समय संबद्ध पारेषण क्षमता की आवश्यकता का साथ-साथ आंकलन किए जाने की आवश्यकता होगी ताकि विद्युत उत्पादन क्षमता और पारेषण सुविधाओं के बीच विसंगति से बचा जा सके। उपरोक्त उद्देश्य की पूर्ति के लिए नीति में निम्नलिखित पर जोर दिया गया है-

- केंद्र सरकार विद्युत के अंतर्राज्यीय पारेषण हेतु पर्याप्त ढांचा तैयार करने के लिए और यह सुनिश्चित करने के लिए कि अधिशेष दिशा में वाले क्षेत्रों से कमी वाले क्षेत्रों में विद्युत का पारेषण करने के लिए विद्युत उत्पादन हेतु दोहित क्षमता का दोहन किए जाने हेतु राष्ट्रीय ग्रिड के निरंतर विकास को आसान बनाए।
- अधिनियम में किए गए प्रावधानों के अनुसार सभी संबंधित एजेंसियों के साथ समन्वयन स्थापित करने की कार्यवाही में राष्ट्रीय विद्युत योजना के आधार पर केंद्रीय पारेषण यूटिलिटी (सीटीयू) और राज्य पारेषण यूटिलिटी (एसटीयू) का प्रमुख उत्तरदायित्व नेटवर्क आयोजना और विकास का है। सीटीयू राष्ट्रीय और क्षेत्रीय पारेषण प्रणाली, योजना और विकास हेतु उत्तरदायी है। एसटीयू राज्य के अंतर्गत पारेषण प्रणाली की आयोजना एवं विकास के लिए उत्तरदायी है। सीटीयू को किफायती तरीके से पारेषण बाधा दूर करने के संयुक्त लक्ष्य की प्राप्ति के लिए एसटीयू के साथ समन्वय स्थापित करने की भी आवश्यकता होगी।
- नेटवर्क विस्तार आयोजना और कार्यान्वयन उन प्रत्याशित पारेषण आवश्यकताओं को ध्यान में रखते हुए किया जाना चाहिए जो कि खुली पहुंच तंत्र की आनुषांगिक होंगी। लाभभोगियों के साथ पूर्व समझौता नेटवर्क विस्तार एक पूर्व शर्त नहीं होगी। केंद्रीय पारेषण यूटिलिटी/राज्य पारेषण यूटिलिटी को स्टेकहोल्डर्स के साथ परामर्श से आवश्यकताओं की पहचान करके और विनियामक अनुमोदनों के बाद निष्पादन किए जाने के पश्चात् नेटवर्क विस्तार करना चाहिए।

- ढांचागत सूचना प्रचार और प्रकटीकरण प्रक्रियाएं सीटीयू और एसटीयू द्वारा यह सुनिश्चित करने के लिए विकसित की जानी चाहिए कि उत्पादन और पारेषण परियोजनाओं और योजनाओं की स्थिति से सभी स्टेकहोल्डर अवगत हो सकें। ये प्रक्रियाएं सम्पूर्ण आयोजना प्रक्रियाओं का भाग होनी चाहिए।
- राज्य विद्युत आयोग जिराने अभी तक विद्युत अधिनियम, 2003 के अंतर्गत ग्रिड कोड अधिसूचित नहीं किया है, को यह सितंबर, 2005 तक अधिसूचित कर लेना चाहिए।

5.3.3 उन विद्युत उत्पादक कंपनियों के मध्य प्रतिस्पर्धा बढ़ाने के लिए पारेषण में खुली पहुंच प्रदान की गई है जो अब देश भर में विभिन्न वितरण लाइसेंसधारियों को बिक्री कर सकते हैं। इससे सस्ती विद्युत उपलब्ध हो जाएगी। अधिनियम प्रारंभ से ही पारेषण में अत्यधिक खुली पहुंच का शासनादेश देता है। प्रतियोगी विद्युत उत्पादकों से प्रत्यक्ष रूप से विद्युत की खरीद करने के लिए वृहत् उपभोक्ताओं को सक्षम बनाने हेतु यदि संबंधित राज्य आयोगों द्वारा वितरण नेटवर्कों में खुली पहुंच प्रदान की जाती है तो बाजार में प्रतिस्पर्धा होने से सस्ती व विश्वसनीय विद्युत आपूर्ति की उपलब्धता बढ़ेगी। इसके लिए न्यूनतम विकसित संचारण के साथ भार प्रेषण सुविधाओं और वास्तविक समय आधार पर आंकड़ा संग्रहण क्षमता की आवश्यकता है। हालांकि यह मामला वर्तमान में क्षेत्रीय भार प्रेषण केंद्रों में है फिर भी यथाचित राज्य आयोगों को यह सूचित करना चाहिए कि जहां भी आवश्यक हो राज्य स्तर पर प्रौद्योगिकी उन्नयन के अनुसार सुविधाएं प्रदान की जाएं और जून, 2006 तक प्राप्त की जाएं।

5.3.4 अधिनियम पारेषण यूटिलिटीयों/पारेषण लाइसेंसधारियों के विद्युत व्यवसाय में लिप्त होने पर प्रतिबंध लगता है। उत्पादन कंपनियों के विद्युत क्रय समझौते(पीपीए) को आपसी समझौते के अधीन वितरण कंपनियों के साथ उचित रूप से निर्धारित किए जाने की आवश्यकता होगी। जहां तक आवश्यक हो, ऐसा निर्धारण इस तरीके से किए जा सकते हैं कि वितरण कंपनियों के विभिन्न लोड प्रोफाइलों का ध्यान रखा जा सके। यथोचित आयोग द्वारा निर्धारित किए जाने वाले पारेषण प्रभार के भुगतान पर लाइसेंसी को विद्युत आपूर्ति करने वाले प्रतियोगी विद्युत उत्पादकों को अत्यधिक खुली पहुंच प्रदान की जायेगी। यथोचित आयोग जून 2005 तक पारेषण प्रभार स्थापित करेगा।

5.3.5 खुली पहुंच और विद्युत बाजार के विकास को सुगम बनाने के लिए और ग्रिड के सुरक्षित और विश्वसनीय संचालन के लिए भी पारेषण प्रणाली में पर्याप्त मार्जिन सृजित किया जाना चाहिए। अंतरराष्ट्रीय मानकों और पद्धतियों के अनुसार अतिरिक्तता स्तरों और मार्जिन दोनों को पूरा करने के लिए पारेषण क्षमता की आयोजना और निर्माण किया जाएगा। एक सुनियोजित और ठोस पारेषण प्रणाली से न केवल पारेषण क्षमताओं बल्कि विद्युत उत्पादन सुविधाओं का ईष्टतम समुपयोजन भी सुनिश्चित होगा और इससे विद्युत की किफायती सुपुर्दगी का अनंतिम लक्ष्य प्राप्त करना सुगम बन जाएगा। क्षेत्र में विद्युत के किफायती पारेषण के लिए सीईआरसी द्वारा एक राष्ट्रीय पारेषण टैरिफ कार्यढांचे को क्रियान्वित किए जाने की आवश्यकता है। टैरिफ तंत्र दूरी व दिशा के प्रति संवेदनशील होगा और आपूर्ति की मात्रा से संबंधित होगा। जहां तक संभव होगा अंतरराज्यीय प्रणाली और राज्य की प्रणाली में भी पारेषण कीमत निर्धारण कार्यढांचे की निरंतर आवश्यकता बनाए रखी जानी चाहिए। इसके अतिरिक्त यह सुनिश्चित किया जाना चाहिए कि विद्यमान नेटवर्क की कमियों के परिणामस्वरूप गैर-युक्तिसंगत पारेषण हानि की प्रतिपूर्ति की आवश्यकता पैदा न हो।

5.3.6 विद्युत उत्पादन संसाधनों का पता लगाने के उपयुक्त विकल्प ढूँढने और विद्युत उत्पादन के इष्टतम समुपयोजन हेतु विद्युत में व्यापार को प्रोत्साहित करने तथा परिणामस्वरूप आपूर्ति लागत कम करने के लिए पारेषण में खुली पहुंच का आवश्यक विनियामक कार्यवाही तैयार किया जाना अनिवार्य है जैसा कि विद्युत अधिनियम, 2003 में शासनादेश है ।

5.3.7 अधिनियम की धारा 27 में प्रावधान है कि केंद्रीय पारेषण यूटिलिटी क्षेत्रीय भार प्रेषण केंद्र (आरएलडीसी) का प्रचालन तब तक करेंगे जब तक कि केंद्रीय सरकार इस प्रयोजनाथ किसी सरकारी कंपनी या प्राधिकरण या निगम को अधिसूचित करती है । आरएलडीसी का प्रचालन करने वाली सीटीयू की प्रबंध व्यवस्था की समीक्षा केंद्रीय सरकार द्वारा विद्यमान प्रबंध व्यवस्था में उनके कार्यकरण के अनुभव के आधार पर की जाएगी । केंद्र सरकार द्वारा दिसंबर, 2005 तक इस पहलू पर विचार किया जाएगा ।

5.3.8 धारा 2(55) के अनुसार क्षेत्रीय विद्युत समितियों का भारत सरकार द्वारा गठन 2 माह के भीतर विभिन्न स्टेकहोल्डर्स के प्रतिनिधियों को सम्मिलित करते हुए किया जाएगा ।

5.3.9 विद्युत अधिनियम, 2003 की धारा 26 के अनुसार राष्ट्रीय भार प्रेषण केंद्र इसकी स्थापना और कार्य को तीन माह के भीतर अधिसूचित किया जाएगा । आरएलडीसी और एनएलडीसी की संपूर्ण जिम्मेवारी होगी और अनुस्क्षण प्राधिकरण पारेषण प्रणाली के स्वामित्व को ध्यान में रखे बगैर ग्रिड के सुगम प्रचालन होगा भले ही प्रणाली सीपीएसयू राज्य यूटिलिटी या निजी क्षेत्र के अंतर्गत हो ।

5.3.10 पारेषण क्षेत्र में निजी निवेश को प्रोत्साहित करने के लिए विशेष प्रणालियों का सृजन किया जाएगा ताकि 2012 तक मांग के लक्ष्य को पूरा करने के लिए पर्याप्त निवेश किया जा सके ।

#### 5.4 वितरण

5.4.1 वितरण विद्युत व्यापार ~~श्रृंखला~~ का अति महत्वपूर्ण हिस्सा है । विद्युत क्षेत्र में सुधार संबंधी वास्तविक चुनौती वितरण क्षेत्र के कुशल प्रबंधन में है ।

5.4.2 अधिनियम में उपभोक्ता हितों की रक्षा करने के लिए वितरण लाइसेंसधारी हेतु एक मजबूत विनियामक कार्यवाही का प्रावधान है । यह खुली पहुंच और समान आपूर्ति क्षेत्र में विविध लाइसेंसधारियों की अवधारणा के जरिए वितरण कारोबार के लिए प्रतिस्पर्धात्मक कार्यवाही सृजित करता है ।

5.4.3 क्षमता लाभ प्राप्त करने के लिए वितरण यूटिलिटियों की उपयुक्त पुनर्संरचना किया जाना अनिवार्य है । इन यूटिलिटियों के लिए पर्याप्त अस्थायी वित्तपोषण सहायता आवश्यक होगी । इस प्रकार की सहायता को नकद हानियों में कमी और पूर्वनिधारित क्षमता सुधारों की प्राप्ति से जोड़ा जाना चाहिए और पारदर्शिता और जिम्मेवारी सुनिश्चित करने के साथ-साथ सेवा प्रदाताओं को अतिरिक्त बाधाओं से अलग करने के लिए उपयुक्त शासन व्यवस्था स्थापित करने से जोड़ा जाना चाहिए । वित्तीय व्यवहार्यता और स्थिरता सुनिश्चित करने के लिए राज्य सरकारों को राज्य विद्युत

बोर्डों की देयताओं की पुनर्संरचना करना आवश्यक होगा ताकि यह सुनिश्चित हो सके कि उत्तराधिकारी कंपनी पर विगत की देयताओं का भार न पड़े। केन्द्रीय सरकार विभिन्न स्रोतों से अस्थायी वित्तपोषण की व्यवस्था करने में भी पूर्ण परिवर्तन की स्पष्ट रूपरेखा तैयार करने वाले राज्यों की सहायता करेगी तथा इसे वित्तीय व्यवहार्यता के लक्ष्यों की प्राप्ति के लिए पूर्व निर्धारित सुधार कार्यों और यथोचित शासन व्यवस्था बनाए जाने से जोड़ा जाएगा।

5.4.4 वितरण में निजी उद्यमियों को आकर्षित करने के लिए वितरण व्यापार में क्षमता पैरामीटरों के पूर्वनिर्धारित सुधारों के साथ पर्याप्त लाभ व उपयुक्त अस्थायी मॉडल के संबंध में अनुकूल व्यापारिक माहौल आवश्यक होगा। यूटिलिटियों एवं उपभोक्ताओं के लिए जोखिम को कम करने, क्षमता में सुधार व प्रणालीगत हानियों में तत्काल कमी की दृष्टि से बहु-वर्षीय टैरिफ (एमवाइटी) के माध्यम से निष्पादन आधारित विनियमन ढांचा महत्वपूर्ण है। आर्थिक और उन्नत सेवा गुणवत्ता के माध्यम से इससे जनहित संभव होगा। विद्युत खरीद कीमतों व मुद्रास्फीति सूचकांकों के ज्ञात संकेतकों तक टैरिफ समायोजन को प्रतिबंधित करके उपभोक्ता टैरिफ का अनुमान और अधिक आसान होगा। पारेषण एवं वितरण हानियों में अपेक्षित कमी प्राप्त करने तथा उपभोक्ताओं के लिए सेवा गुणवत्ता सुधारने के लिए वितरण में निजी क्षेत्र भागेदारी को प्रोत्साहित किया जाएगा।

5.4.5 विद्युत अधिनियम, 2003 प्रतिस्पर्धा विद्युत उत्पादक कंपनियों और क्षेत्रीय वितरण लाइसेंसधारियों के अतिरिक्त व्यापारिक लाइसेंसधारियों को उपभोक्ताओं के लिए विद्युत की बिक्री करने में सक्षम बनाता है जबकि राज्य विद्युत विनियामक आयोगों द्वारा वितरण में खुली पहुंच प्रदान कर दी जाए। जैसे कि अधिनियम में अपेक्षित है एसईआरसी जून, 2005 तक विनियमकों को अधिसूचित करेगा जिससे धारा 42 की उपधारा-2 के संबंध में वितरण नेटवर्कों में खुली पहुंच मिल सकेगी। इस धारा में निर्धारित किया गया है कि जो उपभोक्ता किसी भी समय एक मेगावाट से अधिक विद्युत की अपेक्षा करते हैं उन्हें 5 वर्षों से पहले खुली पहुंच की अनुमति दी जाएगी। अधिनियम की धारा 49 में प्रावधान है कि जिन उपभोक्ताओं को धारा 42 के अंतर्गत खुली पहुंच प्रदान की गई है वे टैरिफ समेत इस प्रकार की शर्तों व निबंधनों, जैसा कि उनके बीच सहमति हो, पर किसी भी व्यक्ति के साथ समझौता निष्पन्न कर सकते हैं। वितरण में खुली पहुंच हेतु विनियम बनाते समय एसईआरसी व्हीनिंग प्रभार और क्रॉस सब्सिडी प्रभार जैसा कि अधिनियम की धारा 42 में अपेक्षित है का भी निर्धारण करेगा।

5.4.6 राज्य विद्युत विनियामक आयोग (एसईआरसी) द्वारा ऊर्जा लेखा सुनिश्चित करके तकनीकी व वाणिज्यिक हानियों की अलग-अलग पहचान करने के लिए एक समयबद्ध कार्यक्रम तैयार किया जाना चाहिए। प्रत्येक विनिर्दिष्ट यूनिट में ऊर्जा गणना और इसके परिणामों की घोषणा, राज्य वि. वि. आयोगों के अनुसार, मार्च, 2007 तक अनिवार्य रूप से होनी चाहिए। शासन व्यवस्था और निवेश में उपयुक्त सुधारों के साथ हानियों में कमी करने का एक कार्यक्रम तैयार किया जाना चाहिए। इन हानियां को सन् 2012 तक अंतरराष्ट्रीय मानकों तक नीचे लाया जा सके।

5.4.7 वितरण में प्रतिस्पर्धा के संबंध में अधिनियम के मुख्य प्रावधानों में एक प्रावधान समान आपूर्ति क्षेत्र में अपने स्वतंत्र वितरण प्रणालियों के जरिए विविध लाइसेंसधारियों की अवधारणा के रूप में शामिल है। राज्य सरकारों को सरकारी यूटिलिटियों की पुनर्संरचना करते समय वितरण जोन बनाने की पूर्ण नम्यता प्राप्त है। किसी मौजूदा वितरण लाइसेंसधारी के क्षेत्र के अंतर्गत दूसरा और



उत्तरवर्ती वितरण लाइसेंस प्रदान करने के लिए छोटे शहरी क्षेत्र हेतु एक नगरपालिका परिषद्, एक राजस्व जिला और बड़े शहरी क्षेत्र हेतु एक नगरपालिका निगम को न्यूनतम क्षेत्र मान लिया जाए जैसा कि भारत के संविधान (74वें संशोधन) के अनुच्छेद 243 (थ) में परिभाषित है। भारत सरकार अधिनियम की धारा 14 में परिकल्पित किए गए दूसरे और उत्तरवर्ती वितरण लाइसेंस हेतु आवेदक द्वारा अनुपालन की जाने वाली आवश्यकताओं 3 माह के भीतर अधिसूचित करेगी। सभी उपभोक्ता वर्गों को प्रतिस्पर्द्धा का लाभ प्रदान करने की दृष्टि से दूसरा तथा उत्तरवर्ती वितरण लाइसेंस धारक विद्युत अधिनियम 2003 के खण्ड 43 के प्रावधानों के अनुसार उसी क्षेत्र में सभी उपभोक्ताओं को आपूर्ति करने का जिम्मेवार होगा। अधिनियम के प्रावधानों के अंतर्गत किसी वितरण लाइसेंसधारी द्वारा बसूली किए जाने वाले कनेक्शन प्रभारों समेत टैरिफ का विनियमन एसईआरसी द्वारा किया जाना अपेक्षित होगा। इसमें यह सुनिश्चित होगा कि दूसरा वितरण लाइसेंसधारक उपभोक्ताओं से गैर-युक्तिसंगत कनेक्शन प्रभार की मांग नहीं कर सकेगा।

5.4.8 अधिनियम में निर्धारित अवधि के भीतर एक सही मीटर के जरिए विद्युत की आपूर्ति करने का शासनादेश है। प्राधिकरण द्वारा 3 माह के भीतर उक्त अधिनियम की धारा 5.5 के अधीन अपेक्षित विनियम बनाए जाने चाहिए।

5.4.9 अधिनियम के अंतर्गत दो वर्षों के भीतर सभी उपभोक्ताओं की मीटरिंग किया जाना अपेक्षित है। एसईआरसी वितरण लाइसेंसधारियों से उनका मीटरिंग प्लान प्राप्त कर सकता है, उसे अनुमोदन प्रदान कर सकता है और उसे अधिसूचित कर सकता है। एसईआरसी को पूर्वदत्त मीटरों के उपयोग को बढ़ावा देना चाहिए। प्रथमतः न्यूनतम एक एमवीए भार वाले बड़े उपभोक्ताओं के लिए टीओडी मीटरों को भी प्रोत्साहित किया जाना चाहिए। एसईआरसी को स्वतंत्र तृतीय पार्टी मीटर परीक्षण व्यवस्था भी करनी चाहिए।

5.4.10 लागत और लाभ को ध्यान में रखते हुए यूटिलिटियों द्वारा प्राथमिकता आधार पर आधुनिक सूचना प्राद्योगिकी प्रणालियां क्रियान्वित की जाए ताकि नेटवर्क सूचना तथा ग्राहक डाटा बेस तैयार किया जा सके जिससे भार प्रबंधन, गुणवत्ता सुधार, चोरी और हेराफेरी रोकने, ग्राहक सूचना और सभी मीटरकृत उपभोक्ताओं को सही-सही और शीघ्रतापूर्वक बिल जारी किए जा सकें और बसूली की जा सके। समयबद्ध तरीके से उपभोक्ता इंडेक्सिंग वे मैपिंग पर विशेष जोर प्रदान किया जाना चाहिए। त्वरित विद्युत विकास एवं सुधार कार्यक्रम (एपीडीआरपी) के अंतर्गत सूचना प्राद्योगिकी आधारित प्रणालियों को सहायता पहले से ही प्रदान की जा रही है।

5.4.11 पारेषण एवं वितरण (टी एण्ड डी) हानियों (तकनीकी एवं वाणिज्यिक) को कम करने चोरी रोकने, उन्नत वोल्टेज प्रोफाइल तथा बेहतर उपभोक्ता सेवा के लिए एलटी/एचटी अनुपात घटाने हेतु उच्च वोल्टेज वितरण प्रणाली को प्रोत्साहित किया जाना चाहिए।

5.4.12 वितरण प्रणालियों के कुशल कार्यकरण के लिए एससीएडीए और आंकड़ा प्रबंधन प्रणालियां अनिवार्य पूर्व आवश्यकताएं हैं। एसईआरसी द्वारा वितरण लाइसेंसधारियों से एससीएडीए और आंकड़ा प्रबंधन प्रणाली के क्रियान्वयन हेतु एक समयबद्ध कार्यक्रम प्राप्त किया जाना चाहिए तथा उनका अनुमोदन किया जाना चाहिए। चरणबद्ध तरीके से सब-स्टेशन ऑटोमेशन इक्विपमेंट के संस्थापन हेतु प्रयास किया जाना चाहिए।

5.4.13 अधिनियम में बिजली चोरी के विरुद्ध कठोर उपायों का प्रावधान किया गया है। राज्यों और वितरण यूटिलिटीयों को इन प्रावधानों का प्रभावी क्रियान्वयन सुनिश्चित करना चाहिए। राज्य सरकारें विशेष न्यायालयों की स्थापना कर सकते हैं, जैसी कि अधिनियम की धारा 153 में परिकल्पना की गई है।

## 5.5 सेवा लागत व लक्षित सब्सिडी की वसूली

5.5.1 विद्युत क्षेत्र को कायम रखने के लिए उपभोक्ताओं से सेवा लागत की वसूली सुनिश्चित करने की अत्यंत जरूरत है।

5.5.2 अत्यंत गरीब श्रेणी के उपभोक्ताओं के लिए विद्युत को वहनीय बनाने के लिए एक न्यूनतम सहायता स्तर की जरूरत है। सभी उपभोक्ताओं, जो गरीबी रेखा से नीचे हैं, और 30 यूनिट प्रतिमाह के विनिर्दिष्ट स्तर से कम उपभोग करते हैं को टैरिफ में विशेष सहायता प्रदान की जा सकती है जो कि क्रॉस सब्सिडी के रूप में होगी। उपभोक्ताओं के ऐसे विनिर्दिष्ट समूह हेतु टैरिफ आपूर्ति की औसत (समग्र) लागत का कम-से-कम 50% होगी। पांच वर्षों के बाद इस प्रावधान की पुनः समीक्षा की जाएगी।

5.5.3 पिछले कई वर्षों से क्रॉस सब्सिडियां गैर-पोषकीय स्तरों तक बढ़ी है। क्रॉस सब्सिडियां प्रचालन में अदक्षताओं और हानियों को छुपाती है। उपभोक्ताओं को बिना कोई टैरिफ हानि पहुंचाए इस असंतुलन को ठीक करने की नितांत आवश्यकता है उपभोक्ताओं की अन्य श्रेणियों के लिए वर्तमान क्रॉस सब्सिडियों को प्रगतिशील रूप से और धीरे-धीरे कम करने की आवश्यकता होगी।

5.5.4 अधिनियम की धारा 65 की शर्तों के अनुसार राज्य सरकार को इस सीमा तक सब्सिडी देना चाहिए जिससे आवश्यक बजट प्रावधान किया जा सके ताकि यूटिलिटी को वित्तीय समस्या का सामना न करना पड़े, जो उसके प्रचालन को प्रभावित कर सकता है। इस प्रकार के प्रयास किए जाएं जिसमें अत्यंत पारदर्शी और दक्षतापूर्ण तरीके से लक्षित किए गए लाभार्थियों तक सब्सिडी की पहुंच को सुनिश्चित किया जा सके।

## 5.6 प्रौद्योगिकी विकास और अनुसंधान तथा विकास (आर एण्ड डी)

5.6.1 कुशल और किफायती प्रौद्योगिकियों के उपयोग के साथ विद्युत उत्पादन, पारेषण व वितरण के सभी उपलब्ध संसाधनों के प्रभावी समुपयोजन का महत्व अधिक है। बृहत और संकीर्ण विद्युत प्रणालियों के प्रचालन एवं प्रबंधन के लिए सम्मिलित विविध एजेंसियों के मध्य समन्वय की आवश्यकता है। राज्य, क्षेत्रीय और राष्ट्रीय स्तर पर विद्युत प्रणाली का प्रभावी नियंत्रण केवल सूचना प्रौद्योगिकी के उपयोग से प्राप्त किया जा सकता है। आईटी के इस्तेमाल में वितरण संबंधी तकनीकी एवं वाणिज्यिक हानियां कम रहने तथा उपभोक्ताओं के लिए उपयुक्त सेवाएं प्रदान करने की विशाल क्षमता विद्यमान है। एकीकृत संसाधन आयोजना और मांग पक्ष प्रबंधन के लिए नवीनतम विकसित प्रौद्योगिकियों को अपनाया जाना भी आवश्यक होगा।

अपारंपरिक ऊर्जा प्रणालियों के संबंध में अनुसंधान, विकास, निदर्शन एवं वाणिज्यिककरण हेतु विशेष प्रयास किए जायेंगे। इस प्रकार की प्रणाली को अंतरराष्ट्रीय मानकों, विनिर्देशों तथा निष्पादन मानदंडों का अनुपालन करना होगा।

5.6.2 विद्युत उत्पादन हेतु सुपर क्रिटिकल प्रौद्योगिकी और आईजीसीसी जैसी कुशल प्रौद्योगिकियों तथा बड़े आकार की यूनिटों को धीरे-धीरे इस्तेमाल में लाया जाएगा क्योंकि इनकी लागत किफायती है। साथ ही, उड़न राख के उत्पादककारी उपयोग के लिए प्रौद्योगिकियों के विकास और उनके प्रयोग को प्राथमिकता एवं प्रोत्साहन प्रदान किया जाएगा।

5.6.3 इसी प्रकार न्यूनतम संभावित हानियों के साथ लंबी दूरी तक उच्च वोल्टता की विद्युत पारेषित करने के लिए किफायती प्रौद्योगिकियों की आवश्यकता होगी। मिश्रित उत्पादन एवं पारेषण प्रचालनों के लिए सुविज्ञ नियंत्रण प्रणालियों समेत विद्युत उद्योग की आवश्यकता को पूरा करने, दक्ष वितरण व्यापार और उपभोक्ता के अनुकूल परिस्थितियों के लिए विशेष सूचना प्रौद्योगिकी विकसित करने की आवश्यकता है।

5.6.4 देश के विद्युत क्षेत्र में ठोस अनुसंधान एवं विकास आधार मौजूद है जिसे और आगे बढ़ाया जाएगा। अभिज्ञात प्राथमिकता वाले क्षेत्रों में वांछित परिणाम प्राप्त करने के लिए आर एण्ड डी कार्यों में तेजी लाई जाएगी और मिशन की स्थापना की जाएगी। विद्युत क्षेत्र में आर एण्ड डी को प्रोत्साहित करने के लिए एक उपयुक्त वित्त पोषण तंत्र तैयार किया जाएगा। बड़ी विद्युत कंपनियों को अपने लाभ में से कुछ भाग आर एण्ड डी के लिए रखना चाहिए।

## 5.7 उपभोक्ताओं के हितों के लिए लक्षित प्रतिस्पर्धा

5.7.1 बाजार के विकास को उन्नत करने के लिए नई उत्पादन क्षमताओं के एक हिस्से की दीर्घकालीन पीपीए से बाहर बिक्री की जाए। जैसे-जैसे विद्युत बाजार विकसित होंगे इससे लंबी अवधि की विद्युत खरीद करार फ्रेमवर्क के बाहर प्रतिस्पर्धात्मक उत्पादन लागत के साथ परियोजनाओं का वित्त पोषण संभव हो सकेगा। आगामी वर्षों में नए उत्पादन स्टेशनों की संस्थापित क्षमता का एक महत्वपूर्ण हिस्सा विद्युत बाजारों में प्रतिस्पर्धात्मक वातावरण बनाने में सहायक होगा। इससे

विद्युत बाजार की गहनता में वृद्धि होगी और उत्पादक और लाइसेंसी/उपभोक्ताओं दोनों के लिए और अधिक विकल्प उपलब्ध होंगे और इससे दीर्घकाल में टैरिफ में कमी आएगी।

इसके लिए नीति में निम्नांकित बातों को ध्यान रख जाए:-

(क) अन्तरराज्यीय व्यापार के लिए लाइसेंस जारी करना केन्द्रीय विद्युत विनियामक आयोग का कार्य है इससे सारे देश में व्यापार का अधिकार प्राप्त हो जाता है। राज्य विद्युत विनियामक आयोग राज्य के अंदर वाणिज्य हेतु लाइसेंस जारी करेंगे।

(ख) राष्ट्रीय स्तर पर केन्द्रीय विद्युत विनियामक आयोग द्वारा शुरू किए गए एबीटी व्यवस्था का सकारात्मक प्रभाव पड़ा है। राज्य विद्युत विनियामक आयोगों को राज्यीय स्तर पर एबीटी व्यवस्था शुरू करने का परामर्श दिया गया है। इससे अधिक्य वाले लाइसेंसों से कमी वाले लाइसेंसों तक इन्द्रा-डे विद्युत स्थानांतरणों के लिए विश्वसनीय समाधान तंत्र भी सुगम बन पाया है।

(ग) कैप्टिव विद्युत उत्पादक संयंत्रों को अनुमति प्रदान की जानी चाहिए कि वे लाइसेंसधारियों और उपभोक्ताओं को विद्युत की बिक्री कर सकें जब उन्हें अधिनियम की धारा 42 के अंतर्गत एसईआरसी द्वारा खुली पहुंच की अनुमति प्राप्त हो जाए।

(घ) उपयुक्त आयोग द्वारा विद्युत बाजार का विकास सभी संबंधितों के साथ परामर्श से किये जाने की आवश्यकता है।

(ङ) केन्द्रीय आयोग और राज्य आयोगों को क्रमशः अधिनियमों की धारा 170 और 181 के अंतर्गत अधिनियम बनाने का अधिकार प्राप्त है। इन विनियमों से प्रतिस्पर्धा को प्रोत्साहन प्रदान करने और उपयोग संरक्षण से संबंधित अधिनियम के विभिन्न प्रावधानों का कार्यान्वयन सुनिश्चित हो सकेगा। विनियामक आयोगों को विभिन्न विनियमों को शीघ्र ही अधिसूचित करने की सलाह प्रदान की जाती है।

(च) राज्य के भीतर और बाहर व्यापार संबंधी विनियम तथा विद्युत विनियम के लिए भी विनियमों को 6 माह के भीतर उपयुक्त आयोगों द्वारा अधिसूचित किया जाएगा।

## 5.8 निजी क्षेत्र भागीदारी सहित विद्युत क्षेत्र कार्यक्रमों को वित्त प्रदान करना

5.8.1 गृह विद्युतीकरण सहित सभी के लिए विद्युत और त्वरित आर्थिक विकास के लक्ष्य को पूरा करने के लिए, यह अनुमान लगाया गया है कि उत्पादन, पारेषण, सब-पारेषण, वितरण और ग्रामीण विद्युतीकरण परियोजनाओं को वित्त प्रदान करने के लिए वर्ष 2002-03 के मूल्य स्तर पर 9,00,000 करोड़ रुपये के निवेश की आवश्यकता होगी। विद्युत बहुत ही महत्वपूर्ण क्षेत्र होने के कारण केन्द्र सरकार और राज्य सरकारों दोनों स्तरों पर सार्वजनिक क्षेत्र निवेशों को बढ़ाना होगा। क्षेत्र के अपेक्षित विस्तार के महत्व पर विचार करते हुए, निवेशों के एक निश्चित भाग को निजी क्षेत्र से लाने की आवश्यकता भी होगी। यह अधिनियम विभिन्न घटकों में प्रवेश अवरोधों को हटाकर सार्वजनिक और निजी दोनों क्षेत्रों के लिए अनुकूल स्थिति उत्पन्न करता है। अधिनियम की धारा 63 विभिन्न घटकों में प्रतियोगी आधार पर आपूर्तिकर्ताओं की भागीदारी का प्रावधान करती है जिससे निजी क्षेत्र निवेश और अधिक बढ़ेगा। सार्वजनिक सेवा दायित्वों जैसे ग्रामीण घरों और छोटे एवं सीमांत कृषकों को विद्युत की पहुंच प्रदान किए जाने को सार्वजनिक वित्तपोषण के संबंध में प्राथमिकता मिलेगी।

5.8.2 सार्वजनिक क्षेत्र को आंतरिक संसाधन विकसित करने में समर्थ होना चाहिए जिससे कम-से-कम एक समयबद्ध तरीके से अपनी निर्माणाधीन परियोजनाओं को पूरा करने के लिए केन्द्र और राज्यों में सरकार से उचित सकल बजटीय सहायता के पश्चात् भी निवेशों की इच्छिणी आवश्यकता को पूरा किया जा सके। इसके लिए यह जरूरी होगा कि निवेशों पर रिटर्न के माध्यम से अधिक उत्पादन किया जाए और इसके साथ-साथ डेप्रीसिएशन रिजर्व सृजित किया जाए ताकि ऋण सेवा



दायित्व से निपटा जा सके । इससे परियोजना सिर्फ वित्तीय समापन में ही समर्थ नहीं होगी बल्कि विस्तार कार्यक्रमों के लिए भी उसकी बैंक संबंधी क्षमता में भी सुधार होगा साथ ही केन्द्र व राज्य स्तरीय सार्वजनिक क्षेत्र संगठनों और निजी क्षेत्र परियोजनाएं भी इक्विटी वित्तपोषण व ऋण पुनःअदायगी संबंधी अपने दायित्वों को पूर्ति करने की स्थिति में आ सकेंगे ।

5.8.3 अधिनियम की धारा 42 की उपधारा (2) के अंतर्गत खुली पहुंच के अंतर्गत वैकल्पिक आपूर्ति प्राप्त करने वाले उपभोक्ताओं पर संबंधित राज्य आयोगों द्वारा अधिभार वसूल किया जाना है । इससे इस प्रकार के उपभोक्ताओं को टैरिफ के कारण क्रास सब्सिडी घटक से होने वाली हानि के लिए धारा 42 (2) के अंतर्गत खुली पहुंच की अनुमति वाले ऐसे उपभोक्ताओं के लिए कार्य कर रहे वितरण लाइसेंसी को प्रतिपूर्ति प्रदान की जा सकेगी । खुली पहुंच वाले उपभोक्ताओं के मामले में आपूर्ति के प्रति अपनी देयताओं से उत्पन्न होने वाले वितरण लाइसेंसी की स्थायी लागत को पूरा करने के लिए धारा 42 की उपधारा (4) के अंतर्गत एक अतिरिक्त अधिभार भी वसूल किया जा सकता है । खुली पहुंच की अनुमति वाले उपभोक्ताओं से वसूल किया जाने वाला अधिभार और अतिरिक्त अधिभार इतना अधिक नहीं होना चाहिए कि अधिनियम की धारा 42 (2) के अंतर्गत खुली पहुंच के प्रावधानों के माध्यम से उपभोक्ताओं को सीधे विद्युत की आपूर्ति करने और विद्युत उत्पादन करने में प्रत्याशित की गई प्रतिस्पर्द्धा समाप्त हो जायेगी । इसके अतिरिक्त यह आवश्यक है कि अधिभार को विद्युत अधिनियम 2003 की धारा 42 (2) में अनुमानित की गई क्रास सब्सिडी में कटौती के साथ ही चरणवार उत्तरोत्तर रूप में कम किया जाए ।

5.8.4 पूंजी की कमी है । निजी क्षेत्र में निवेश के लिए विविध विकल्प मौजूद हैं । अतः निवेश पर प्रतिफल उस ढंग से प्रदान किए जाने की आवश्यकता है जिससे क्षेत्र अन्य क्षेत्रों में निवेश अवसरों के समकक्ष, यदि वरीयता में न हों तो, पर्याप्त निवेश आकर्षित करने में सक्षम हो सके । स्पष्टतः यह अवसरों और जोखिमों के मूल्यांकन और उन्हें स्पष्ट समझे जाने पर आधारित होगा । उपभोक्ताओं की अभिरूचि और निवेशों की आवश्यकता के बीच उपयुक्त संतुलन बनाना पड़ेगा ।

5.8.5 उद्योग के सभी खण्डों में संचालनों की दक्षता को सुधारने के लिए सभी प्रयास किए जाएंगे । प्रोत्साहन और अप्रोत्साहन के साथ प्रचालनों के उचित कार्यक्षमता मानकों को उपभोक्ताओं के साथ तैयार करके दक्ष प्रचालनों के लाभ में हिस्सेदारी के लिए उचित व्यवस्था विकसित किए जाने के साथ तैयार करने की आवश्यकता होगी । इससे एक तरफ तो उपभोक्ताओं के हितों की सुरक्षा सुनिश्चित नहीं होगी वहीं दूसरी तरफ प्रचालनों की दक्षता को सुधार हेतु प्रेरणा प्राप्त होगी।

5.8.6 उन मामलों में उपभोक्ताओं को प्रतिस्पर्द्धा के लाभ प्राप्त होंगे जहां प्रतिस्पर्द्धा प्रचालन मानकों और पैरामीटरों के आधार पर लागत के बजाय कीमत का निर्धारण करेंगे । उपभोक्ताओं के संपूर्ण हित में विद्युत उद्योग को शीघ्रातिशीघ्र इस स्थिति में लाने के लिए सभी प्रयास किए जाने की आवश्यकता है । केंद्रीय सरकार द्वारा प्रतिस्पर्द्धात्मक बोली प्रक्रिया हेतु विस्तृत मार्गदर्शी सिद्धांत, जैसा कि अधिनियम की धारा 63 में निर्धारित है, जारी कर दिए गए हैं।

5.8.7 इसके लिए यह आवश्यक है कि सभी उत्पादक कंपनियों, पारेषण लाइसेंसी तथा वितरण लाइसेंसी धारकों को अपनी प्रचालनात्मक दायित्व निभाने के लिए उचित भुगतान प्राप्त हो ताकि वे विस्तार कार्यक्रमों के लिए नए सिरे से जरूरी निवेश कर सकें । इसलिए क्षेत्र के विकास के लिए

प्रचालन कार्यो व व्यापार की वित्तीय व्यवहार्यता अनिवार्य होगी । क्षेत्र की वित्तीय स्थिति पुनः बहाल करने के लिए अथक प्रयास करने अपेक्षित होंगे । इस प्रयोजन से एसईआरसी द्वारा टैरिफ का योक्तिकरण सुनिश्चित करना आवश्यक होगा । इसमें मूल, अंतरीय व व्यस्ततमकालीन विद्युत हेतु विभिन्न प्रकार से कीमत निर्धारण किया जाना शामिल है ।

5.8.8 विनियामक आयोगों की स्वतंत्रता और निवेशकों के मध्य विश्वास जगाने में उनकी कार्यप्रणाली की पारदर्शिता के आधार पर विनियामक निश्चितता की आवश्यकता का समाधान करने के लिए भी उपाय किए जाएंगे ।

5.8.9 क्षेत्र की बढ़ती निवेश आवश्यकताओं के मद्देनजर विद्युत उत्पादन, पारेषण एवं वितरण में निजी भागेदारी की भूमिका अधिक महत्वपूर्ण होगी । केन्द्र सरकार तथा राज्य सरकारों को सरकारी तथा निजी भागीदारी के लिए कार्यक्षम तथा सफल मॉडल विकसित करने की जरूरत है । इससे सार्वजनिक क्षेत्र वित्तपोषण के साथ-साथ निजी निवेश में भी वृद्धि की जा सकेगी । विद्युत क्षेत्र में निजी भागीदारी प्रोत्साहित करने के लिए प्रक्रियागत सरलीकरण के निमित्त उद्योग से निरंतर बातचीत करने का तंत्र स्थापित किए जाने की आवश्यकता है ।

### पारेषण एवं वितरण हानियां

5.8.10 यह स्पष्ट है कि जब तक कि टी एंड डी हानियों को पर्याप्त रूप से और तीव्रता से कम न किया जाए विद्युत क्षेत्र व्यावहारिक नहीं रहेगा । हाल ही के वर्षों में बड़ी संख्या में राज्य 40% से अधिक हानियां दर्ज करते रहे हैं । किसी भी दृष्टि से ये अस्थिर है और इसमें विद्युत क्षेत्र प्रचालन का निरंतर गिरावट अंतर्निहित है । हानियों में वर्तमान स्तर के जारी रहने से न केवल विद्युत क्षेत्र प्रचालन को चुनौती का सामना करना पड़ेगा बल्कि समग्र रूप से भावी आर्थिक विकास भी खतरे में पड़ जाएगा ।

राज्य सरकारें एक पंचवर्षीय योजना तैयार करेगी जिसमें इन हानियों में तेजी से कमी लाने के लिए वार्षिक लक्ष्य निर्धारित किए जायेंगे इन हानियों में कमी करने के लिए अभियान के प्रयासों में सामाजिक भागेदारी, प्रभावी प्रवर्तन, संस्थाओं के लिए प्रोत्साहन, स्टाफ और उपभोक्ताओं तथा प्रौद्योगिकीय उच्चीकरण को शामिल किया जाना चाहिए । केंद्रीय सरकार को उन राज्यों को प्रोत्साहन आधारित सहायता प्रदान करेगी जो कि सहमत कार्यक्रमों के अनुसार हानियां कम करने में सक्षम है ।

### 5.9 ऊर्जा संरक्षण

5.9.1 ऊर्जा क्षमता और मांग पक्ष प्रबंधन उपायों द्वारा विद्युत की महत्वपूर्ण बचत की जा सकती है । समग्र जरूरतों को कम करने के लिए उर्जा संरक्षण और मांग की दिशा में प्रबंधन को उच्च प्राथमिकता दी जा रही है । ऊर्जा संरक्षण अधिनियम लागू किया गया है और ऊर्जा दक्षता ब्यूरो गठित किया गया है ।

5.9.2 संस्थापनाओं, जहां मांग पक्ष प्रबंधन और ऊर्जा संरक्षण उपाय संबंधी अनेक उपाय किए जाने हैं, की संभावित संख्या काफी अधिक है । इसके लिए ऊर्जा दक्षता ब्यूरो (बीईई) द्वारा कार्य आरंभ

किया जाएगा। राष्ट्रीय विद्युत आयोजना प्रक्रिया हेतु विचार करने के लिए अनुमानित संरक्षण और संभावित डीएसएम लागत अनुमानों सहित उपलब्धि को बीईई द्वारा उपलब्ध कराया जाएगा।

5.9.3 ऊर्जा संरक्षण अधिनियम के अंतर्गत विद्युत सघनता वाले उद्योगों के लिए आवधिक ऊर्जा लेखा परीक्षा को अनिवार्य बनाया गया है। ऊर्जा लेखा परीक्षाओं को अपनाने और ऊर्जा संरक्षण उपायों को बढ़ाने के लिए अन्य उद्योगों को भी प्रोत्साहित किया जाएगा। सभी सरकारी भवनों में ऊर्जा संरक्षण के लिए अनेक उपाय किए जाएंगे जिनसे लगभग 30% ऊर्जा की बचत होने की संभावना है। इस प्रयास में सौर, जल, तापन प्रणाली और सौर ऊर्जा निष्क्रिय आर्किटेक्चर महत्वपूर्ण योगदान दे सकते हैं।

5.9.4 ऊर्जा संरक्षण के क्षेत्र में आरंभिक पहल स्वैच्छिक और स्व-विनियामक होगी जिसके साथ उपकरणों पर लेबल लगाने पर बल दिया जाएगा। जैसे-जैसे जागरूकता बढ़ेगी एक विनियामक एप्रोच के लिए मानकों का गठन किया जाएगा।

5.9.5 कृषि के क्षेत्र में पम्पसेट लगाए जायेंगे और जल की उपलब्धता प्रणाली को अधिक कारगर बनाया जाएगा। औद्योगिक क्षेत्र में ऊर्जा क्षमता प्रौद्योगिकियों का उपयोग किया जाएगा और ऊर्जा संरक्षण उपायों के क्षेत्र को दर्शाने हेतु ऊर्जा लेखा परीक्षा का कार्य किया जाएगा। कृषि व औद्योगिक क्षेत्र में मोटर तथा ड्राइव सिस्टम अधिक खपत के प्रमुख स्रोत हैं। औद्योगिक, वाणिज्यिक और घरेलू संस्थापनाओं में ऊर्जा दक्षता प्रकाश प्रौद्योगिकियां अपनाई जाएगी।

5.9.6 क्षमता अभिवृद्धि की जरूरत को कम करने के लिए अधिकतम आवश्यकता अवधि (पीक पीरियड) के दौरान और ऑफ पीक पीरियड विद्युत क्षेत्र की मांग के अंतर को कम करना होगा। इस प्रयोजन के लिए उपयुक्त भार प्रबंधन तकनीक अपनाई जानी चाहिए। व्यस्ततम और गैर-व्यस्ततमकालीन आपूर्ति के लिए टैरिफ ढांचा और मीटर लगाने की व्यवस्था (दिन के समय मीटरिंग) भार प्रबंध लक्ष्यों के अनुकूल होनी चाहिए। विनियामक आयोगों द्वारा ऊर्जा दक्षता मानकों का अनुपालन सुनिश्चित किया जाना चाहिए।

5.9.7 ऊर्जा संरक्षण उपायों के प्रभावी क्रियान्वयन के लिए ऊर्जा सेवा कंपनियों की भूमिका को बढ़ाया जाएगा। ऐसी कंपनियों को प्रोत्साहित करने के उपाय भी किए जाएंगे।

5.9.8 ऊर्जा संरक्षण के बारे में जागरूकता लाने के लिए राष्ट्रव्यापी अभियान जरूरी होगा ताकि विद्युत का कुशल उपयोग हो सके।

5.9.9 एक राष्ट्रीय कार्य योजना तैयार की गई है। विशेष कार्य योजना के संदर्भ में सभी प्रस्तावित उपायों पर प्रगति की समीक्षा की जाएगी।

## 5.10 पर्यावरण संबंधी मामले

5.10.1 व्यापक पर्यावरणीय प्रभाव मूल्यांकन तथा पर्यावरण कार्य योजना (ईएपी) क्रियान्वयन के माध्यम से उपयुक्त अग्रिम कार्रवाई के जरिए पर्यावरणीय चिंताओं की ओर ध्यान दिया जाएगा।

5.10.2 'लैण्ड बैंक' और फारेस्ट बैंक की स्थापना समेत पर्यावरणीय स्वीकृतियों के बारे में प्रक्रिया को सरल बनाने के लिए प्रयास समन्वयन हेतु उपाय किए जाएंगे ।

5.10.3 हाइड्रो परियोजनाओं के लिए उपयुक्त कैचमेंट एरिया भी सुनिश्चित किया जाएगा और उसकी निगरानी भी की जाएगी ।

5.10.4 कोल वाशरीज की स्थापना को प्रोत्साहित किया जाएगा । पर्यावरणीय दिशानिर्देशों के अनुसार फ्लाई ऐश उपयोग के लिए उपयुक्त कदम भी उठाए जाएंगे ।

5.10.5 अतिरिक्त ऊर्जा के अलावा पर्यावरणीय प्रदूषण को कम करने के लिए नगरीय शहरी क्षेत्रों में टोस अपशिष्ट ऊर्जा परियोजनाओं की स्थापना तथा औद्योगिक अपशिष्टों से ऊर्जा निर्माण को प्रोत्साहन दिया जाएगा ।

5.10.6 सभी उत्पादक संयंत्रों के प्रचालन में निर्धारित पर्यावरणीय मानदण्डों एवं मानकों के पूरी तरह से अनुपालन को सुनिश्चित किया जाए ।

### 5.11 प्रशिक्षण एवं मानव संसाधन विकास

विद्युत अधिनियम 2003 द्वारा घोषित किए गए नए सुधार ढांचे में, यह विशेषतः महत्वपूर्ण होगा कि विद्युत उद्योग की भली प्रकार से प्रशिक्षित मानव संसाधन तक पहुंच हो, इसलिए प्रशिक्षण ढांचे में वृद्धि हेतु संगठित कार्रवाई की जाएगी ताकि उद्योग की आवश्यकता के अनुसार पर्याप्त रूप से प्रशिक्षित मानव संसाधन उपलब्ध कराया जा सके । विद्युत वितरण, विनियमन, व्यापार और विद्युत बाजारों के क्षेत्र में प्रशिक्षण ढांचे की स्थापना पर उद्योग द्वारा विशेष ध्यान दिए जाने की आवश्यकता है । इस प्रकार के प्रयास किए जाएं कि विद्युत आपूर्ति उद्योग के कार्यकर्ता, निजी व सरकारी, दोनों क्षेत्रों में लागत में कमी व उपभोक्ता अनुकूलता के प्रति जागरूक हो सकें ।

### 5.12 सह-उत्पादन और गैर-पारंपरिक ऊर्जा संसाधन

5.12.1 गैर-पारंपरिक ऊर्जा संसाधनों के पर्यावरण के बहुत अनुकूल होने के कारण ऊर्जा के ऐसे संसाधनों पर आधारित विद्युत के उत्पादन को प्रोत्साहित करने की अत्यंत आवश्यकता है । इस उद्देश्य के लिए, गैर-पारंपरिक और नवीकरणीय ऊर्जा संसाधनों पर आधारित परियोजनाओं की पूंजीगत लागत को कम करने के लिए प्रयत्न किए जाने की अत्यंत आवश्यकता है । ऐसी परियोजनाओं में प्रतियोगिता को प्रोत्साहित करके भी ऊर्जा लागत को कम किया जा सकता है । साथ ही साथ, इन संसाधनों की निरंतर वृद्धि और प्रौद्योगिकीय विकास के लिए पर्याप्त प्रोत्साहनपरक उपाय भी करने होंगे ।

5.12.2 विद्युत अधिनियम 2003 में यह प्रावधान है कि राज्य विद्युत विनियामक आयोग (एसईआरसी) द्वारा सह उत्पादन और अपारम्परिक स्रोतों से विद्युत उत्पादन को ग्रीड के साथ संबद्धता हेतु उचित साधन जुटाने और किसी व्यक्ति को विद्युत के विक्रय और ऐसे संसाधनों से

विद्युत की खरीद के लिए वितरण लाइसेंसों के क्षेत्र में विद्युत के कुल उपभोग के प्रतिशत को विनिर्देशन द्वारा प्रोत्साहित किया जायेगा। अपारम्परिक स्रोतों से विद्युत के क्रय हेतु ऐसा प्रतिशत शीघ्रताशीघ्र राज्य विद्युत विनियामक, आयोगों (एसईआरसी) द्वारा निर्धारित किए जाने वाले टैरिफ के लिए लागू होना चाहिए। अपारम्परिक स्रोतों से विद्युत की हिस्सेदारी उत्तरोत्तर बढ़ाई जाएगी जैसा कि राज्य विद्युत विनियामक आयोगों द्वारा निर्धारित किया गया है। वितरण कंपनियों द्वारा इस प्रकार की खरीद प्रतिस्पर्धात्मक बोली प्रक्रिया के माध्यम से की जाएगी। इस तथ्य को ध्यान में रखते हुए कि गैर-पारम्परिक प्रौद्योगिकियों को पूरा होने में, लागत व पर्यावरणीय स्रोतों के संदर्भ में, कुछ समय लगेगा अतएव आयोग इन प्रौद्योगिकियों को प्रोत्साहित करने में कीमतों में पर्याप्त अंतर रख सकता है।

5.12.3 वे उद्योग, जिनमें प्रक्रियागत ताप (प्रोसेस हीट) और विद्युत दोनों की आवश्यकता है, विद्युत के सह-उत्पादन के लिए अधिक उपयुक्त है। देश में, विशेषतया चीनी उद्योग में सह उत्पादन के लिए महत्वपूर्ण क्षमता विद्यमान है। राज्य विद्युत विनियामक आयोग (एससीआरसी) ऐसे संयंत्रों से अधिशेष विद्युत के क्रय के लिए सह-उत्पादक और संबंधित वितरण लाइसेंसों के बीच व्यवस्थाओं को प्रोत्साहित कर सकते हैं। ऊर्जा कुशलता व ग्रिड उपयुक्तता के समग्र हित में सह उत्पादन प्रणाली को प्रोत्साहित करने की भी जरूरत है।

### 5.13 उपभोक्ता हितों और गुणवत्ता मानकों की सुरक्षा

5.13.1 उपयुक्त आयोग द्वारा विद्युत आपूर्ति की गुणवत्ता पर पूर्व निर्धारित सूचियों/मानदंडों के आधार पर यूलिलिटियों को नियंत्रित किया जाना चाहिए। पैसमीटरों में अन्यो के साथ-साथ रूकावट की फ्रीक्वेंसी और अवधि, वोल्टेज प्राचलक, ट्रान्सफार्मर खराबी की दरें, दोषपूर्ण मीटरों का प्रतिशत तथा नए कनेक्शनों की प्रतीक्षा सूची को सम्मिलित करना चाहिए। उपयुक्त विनियामक आयोग निष्पादन के अपेक्षित मानकों को विनिर्दिष्ट करेंगे।

5.13.2 उपभोक्ताओं को विद्युत की आपूर्ति की विश्वसनीयता सूची (आरआई) वितरण लाइसेंसों द्वारा दर्शायी जानी चाहिए। जिला मुख्यालय नगर तक सभी शहरों और नगरों के लिए आरआई की घोषणा के लिए दिशानिर्देश राज्य विद्युत विनियामक आयोगों द्वारा तैयार किए जाने चाहिए। आरआई के आंकड़े केन्द्रीय विद्युत प्राधिकरण द्वारा संकलित और प्रकाशित किए जाने चाहिए।

5.13.3 यह परामर्श दिया गया है कि सभी राज्य आयोग लाइसेंसियों द्वारा शिकायत निपटारा फोरम की स्थापना से संबंधित दिशानिर्देश तैयार करें, ओमबड्समैन को भी सूत्रबद्ध किया जाना चाहिए तथा ओमबड्समैन की नियुक्ति/पदनामित करने से संबंधित विनियम भी छः माह के भीतर तैयार कर लिए जाएं।

5.13.4 केन्द्र सरकार, राज्य सरकारों तथा विद्युत नियामक आयोगों को उपभोक्ता समूहों के क्षमता विकास व नियामक आयोगों के समक्ष उनके प्रभावी प्रतिनिधित्व को सुगम बनाना चाहिए। इससे नियामक प्रक्रिया को प्रतिष्ठा प्राप्त होगी।

## 6.0 समन्वित विकास

6.1 विद्युत समवर्ती विषय होने के नाते विद्युत क्षेत्र के विकास के लिए समन्वित दृष्टिकोण आवश्यक होगा। आगामी 5 वर्षों में सभी परिवारों को विद्युत और सभी उपभोक्ताओं को गुणवत्तापरक निर्बाध आपूर्ति संबंधी उद्देश्य की पूर्ति हेतु भी यह परमावश्यक है। राज्य सरकारों की विशेषतया उत्पादन क्षमता पैदा करने, राज्य स्तरीय पारेषण और वितरण में महत्वपूर्ण भूमिका है। केन्द्रीय सरकार इस उद्देश्य की प्राप्ति के लिए राज्य सरकारों को सहयोग देगी। यह नई क्षमता अभिवृद्धि में सहायक भूमिका और राष्ट्रीय ग्रिड के विकास में मुख्य भूमिका अदा करेगी। राज्य सरकारों द्वारा सुधारों की सफलता और वितरण में वित्तीय स्वास्थ्य के पुनः स्थापन को सुनिश्चित करने की आवश्यकता है क्योंकि केवल यही अपेक्षित उत्पादन क्षमता उत्पन्न कर सकते हैं। विनियामक आयोगों को यह सुनिश्चित करने का उत्तरदायित्व है कि विनियामक प्रक्रियाएं इस उद्देश्य की प्राप्ति को सुगम बनाएं। उनकी विकासात्मक भूमिका है जिसकी पूर्ति के लिए कम औपचारिक और परामर्शीय प्रक्रिया की आवश्यकता होगी।

विद्युत अधिनियम 2003 परामर्शदायी प्रक्रिया को सरल बनाने के लिए "समन्वय फारम" और "सलाहकार समितियों" जैसे तंत्रों की व्यवस्था करता है। अधिनियम विनियामक आयोगों से अपनी शक्तियों के प्रयोग में पारदर्शिता को सुनिश्चित करने और उनके कार्यों के निर्वहन की अपेक्षा करता है। किंतु इसका यह अर्थ नहीं कि विनियामक आयोगों को औपचारिक न्यायिक दृष्टिकोण रखना चाहिए। वास्तविक में, मामलों के शीघ्र निपटारे के लिए स्टैकहोल्डरों के साथ परामर्शों वाले दृष्टिकोण की आवश्यकता होगी।

6.2 अधिनियम के अंतर्गत विनियामक आयोगों को व्यापक स्तर पर जिम्मेवारी निभानी अपेक्षित है। यथोचित सरकारों को अपेक्षित विनियामक भूमिका वाले कार्मिकों को आकर्षित करने के लिए कदम उठाने अपेक्षित होंगे। भारत सरकार अपेक्षित विशेषज्ञता और दक्षता सेटों के संबंध में विनियामक क्षमता बढ़ाने हेतु प्रशिक्षण प्रदान करने के लिए संस्थागत क्षमता स्थापित करेगी। उपयुक्त सरकारों को विनियामक आयोगों को वित्तीय स्वायत्तता देनी चाहिए। अधिनियम व्यवस्था करता है कि उपयुक्त सरकार अधिनियम की धारा 99 या धारा 103 के अंतर्गत जैसी भी स्थिति हो, विनियामक आयोग निधि नामक निधि का गठन करेगी राज्य सरकार को यह निधि शीघ्र स्थापित करने की सलाह प्रदान की गई है।

अजय शंकर, अपर सचिव

**MINISTRY OF POWER****RESOLUTION**

New Delhi, the 12th February, 2005

**National Electricity Policy****No. 23/40/2004-R&R (Vol. II).—INTRODUCTION**

1.1 In compliance with section 3 of the Electricity Act 2003 the Central Government hereby notifies the National Electricity Policy.

1.2 Electricity is an essential requirement for all facets of our life. It has been recognized as a basic human need. It is a critical infrastructure on which the socio-economic development of the country depends. Supply of electricity at reasonable rate to rural India is essential for its overall development. Equally important is availability of reliable and quality power at competitive rates to Indian industry to make it globally competitive and to enable it to exploit the tremendous potential of employment generation. Services sector has made significant contribution to the growth of our economy. Availability of quality supply of electricity is very crucial to sustained growth of this segment.

1.3 Recognizing that electricity is one of the key drivers for rapid economic growth and poverty alleviation, the nation has set itself the target of providing access to all households in next five years. As per Census 2001, about 44% of the households do not have access to electricity. Hence meeting the target of providing universal access is a daunting task requiring significant addition to generation capacity and expansion of the transmission and distribution network.

1.4 Indian Power sector is witnessing major changes. Growth of Power Sector in India since its Independence has been noteworthy. However, the demand for power has been outstripping the growth of availability. Substantial peak and energy shortages prevail in the country. This is due to inadequacies in generation, transmission & distribution as well as inefficient use of electricity. Very high level of technical and commercial losses and lack of commercial approach in management of utilities has led to unsustainable



financial operations. Cross-subsidies have risen to unsustainable levels. Inadequacies in distribution networks has been one of the major reasons for poor quality of supply.

1.5 Electricity industry is capital-intensive having long gestation period. Resources of power generation are unevenly dispersed across the country. Electricity is a commodity that can not be stored in the grid where demand and supply have to be continuously balanced. The widely distributed and rapidly increasing demand requirements of the country need to be met in an optimum manner.

1.6 Electricity Act, 2003 provides an enabling framework for accelerated and more efficient development of the power sector. The Act seeks to encourage competition with appropriate regulatory intervention. Competition is expected to yield efficiency gains and in turn result in availability of quality supply of electricity to consumers at competitive rates.

1.7 Section 3 (1) of the Electricity Act 2003 requires the Central Government to formulate, inter alia, the National Electricity Policy in consultation with Central Electricity Authority (CEA) and State Governments. The 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 materials, hydro and renewable sources of energy".*

Section 3 (3) of the Act enables the Central Government to review or revise the National Electricity Policy from time to time.

1.8 The National Electricity Policy aims at laying guidelines for accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources, technology available to exploit these resources, economics of generation using different resources, and energy security issues.

1.9 The National Electricity Policy has been evolved in consultation with and taking into account views of the State Governments, Central Electricity Authority (CEA), Central Electricity Regulatory Commission (CERC) and other stakeholders.

## 2.0 AIMS & OBJECTIVES

The National Electricity Policy aims at achieving the following objectives:

- Access to Electricity - Available for all households in next five years
- Availability of Power - Demand to be fully met by 2012. Energy and peaking shortages to be overcome and adequate spinning reserve to be available.
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita availability of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012.
- Financial Turnaround and Commercial Viability of Electricity Sector.
- Protection of consumers' interests.

## 3.0 NATIONAL ELECTRICITY PLAN

3.1 Assessment of demand is an important pre-requisite for planning capacity addition. Section 3 (4) of the Act requires the Central Electricity Authority (CEA) 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. Also, section 73 (a) provides that formulation of short-term and perspective plans for development of the electricity system and coordinating the activities of various planning agencies for the optimal utilization of resources to subserve the interests of the national economy shall be one of the functions of the CEA. The Plan prepared by CEA and approved by the Central Government can be used by prospective generating companies, transmission utilities and transmission/distribution licensees as reference document.

3.2 Accordingly, the CEA shall prepare short-term and perspective plan. The National Electricity Plan would be for a short-term framework of five years while giving a 15 year perspective and would include:

- Short-term and long term demand forecast for different regions;
- Suggested areas/locations for capacity additions in generation and transmission keeping in view the economics of generation and transmission, losses in the system, load centre requirements, grid stability, security of supply, quality of power including voltage profile etc. and environmental considerations including rehabilitation and resettlement;
- Integration of such possible locations with transmission system and development of national grid including type of transmission systems and requirement of redundancies; and

- Different technologies available for efficient generation, transmission and distribution.
- Fuel choices based on economy, energy security and environmental considerations.

3.3 While evolving the National Electricity Plan, CEA will consult all the stakeholders including state governments and the state governments would, at state level, undertake this exercise in coordination with stakeholders including distribution licensees and STUs. While conducting studies periodically to assess short-term and long-term demand, projections made by distribution utilities would be given due weightage. CEA will also interact with institutions and agencies having economic expertise, particularly in the field of demand forecasting. Projected growth rates for different sectors of the economy will also be taken into account in the exercise of demand forecasting.

3.4 The National Electricity Plan for the ongoing 10<sup>th</sup> Plan period and 11<sup>th</sup> Plan and perspective Plan for the 10<sup>th</sup>, 11<sup>th</sup> & 12<sup>th</sup> Plan periods would be prepared and notified after reviewing and revising the existing Power Plan prepared by CEA. This will be done within six months.

#### 4.0 ISSUES ADDRESSED

The policy seeks to address the following issues:

- Rural Electrification
- Generation
- Transmission
- Distribution
- Recovery of Cost of services & Targetted Subsidies.
- Technology Development and Research and Development (R&D)
- Competition aimed at Consumer Benefits
- Financing Power Sector Programmes Including Private Sector Participation.
- Energy Conservation
- Environmental Issues
- Training and Human Resource Development
- Cogeneration and Non-Conventional Energy Sources
- Protection of Consumer interests and Quality Standards

#### 5.1 RURAL ELECTRIFICATION

5.1.1 The key development objective of the power sector is supply of electricity to all areas including rural areas as mandated in section 6 of the Electricity Act. Both the central government and state governments would

jointly endeavour to achieve this objective at the earliest. Consumers, particularly those who are ready to pay a tariff which reflects efficient costs have the right to get uninterrupted twenty four hours supply of quality power. About 56% of rural households have not yet been electrified even though many of these households are willing to pay for electricity. Determined efforts should be made to ensure that the task of rural electrification for securing electricity access to all households and also ensuring that electricity reaches poor and marginal sections of the society at reasonable rates is completed within the next five years.

5.1.2 Reliable rural electrification system will aim at creating the following:

- (a) Rural Electrification Distribution Backbone (REDB) with at least one 33/11 kv (or 66/11 kv) substation in every Block and more if required as per load, networked and connected appropriately to the state transmission system
- (b) Emanating from REDB would be supply feeders and one distribution transformer at least in every village settlement.
- (c) Household Electrification from distribution transformer to connect every household on demand.
- (d) Wherever above is not feasible (it is neither cost effective nor the optimal solution to provide grid connectivity) decentralized distributed generation facilities together with local distribution network would be provided so that every household gets access to electricity. This would be done either through conventional or non-conventional methods of electricity generation whichever is more suitable and economical. Non-conventional sources of energy could be utilized even where grid connectivity exists provided it is found to be cost effective.
- (e) Development of infrastructure would also cater for requirement of agriculture & other economic activities including irrigation pump sets, small and medium industries, khadi and village industries, cold chain and social services like health and education.

5.1.3 Particular attention would be given in household electrification to dalit bastis, tribal areas and other weaker sections.

5.1.4 Rural Electrification Corporation of India, a Government of India enterprise will be the nodal agency at Central Government level to implement the programme for achieving the goal set by National Common Minimum Programme of giving access to electricity to all the households in next five years. Its role is being suitably enlarged to ensure timely implementation of rural electrification projects.

5.1.5 Targetted expansion in access to electricity for rural households in the desired timeframe can be achieved if the distribution licensees recover at least the cost of electricity and related O&M expenses from consumers, except for lifeline support to households below the poverty line who would need to be adequately subsidized. Subsidies should be properly targeted at the intended beneficiaries in the most efficient manner. Government recognizes the need for providing necessary capital subsidy and soft long-term debt finances for investment in rural electrification as this would reduce the cost of supply in rural areas. Adequate funds would need to be made available for the same through the Plan process. Also commensurate organizational support would need to be created for timely implementation. The Central Government would assist the State Governments in achieving this.

5.1.6 Necessary institutional framework would need to be put in place not only to ensure creation of rural electrification infrastructure but also to operate and maintain supply system for securing reliable power supply to consumers. Responsibility of operation & maintenance and cost recovery could be discharged by utilities through appropriate arrangements with Panchayats, local authorities, NGOs and other franchisees etc.

5.1.7 The gigantic task of rural electrification requires appropriate cooperation among various agencies of the State Governments, Central Government and participation of the community. Education and awareness programmes would be essential for creating demand for electricity and for achieving the objective of effective community participation.

## 5.2 GENERATION

5.2.1 Inadequacy of generation has characterized power sector operation in India. To provide availability of over 1000 units of per capita electricity by year 2012 it had been estimated that need based capacity addition of more than 1,00,000 MW would be required during the period 2002-12.

5.2.2 The Government of India has initiated several reform measures to create a favourable environment for addition of new generating capacity in the country. The Electricity Act 2003 has put in place a highly liberal framework for generation. There is no requirement of licensing for generation. The requirement of techno-economic clearance of CEA for thermal generation project is no longer there. For hydroelectric generation also, the limit of capital expenditure, above which concurrence of CEA is required, would be raised suitably from the present level. Captive generation has been freed from all controls.

5.2.3 In order to fully meet both energy and peak demand by 2012, there is a need to create adequate reserve capacity margin. In addition to enhancing the overall availability of installed capacity to 85%, a spinning reserve of at least

5%, at national level, would need to be created to ensure grid security and quality and reliability of power supply.

5.2.4 The progress of implementation of capacity addition plans and growth of demand would need to be constantly monitored and necessary adjustments made from time to time. In creating new generation capacities, appropriate technology may be considered keeping in view the likely widening of the difference between peak demand and the base load.

#### Hydro Generation

5.2.5 Hydroelectricity is a clean and renewable source of energy. Maximum emphasis would be laid on the full development of the feasible hydro potential in the country. The 50,000 MW hydro initiative has been already launched and is being vigorously pursued with DPRs for projects of 33,000 MW capacity already under preparation.

5.2.6 Harnessing hydro potential speedily will also facilitate economic development of States, particularly North-Eastern States, Sikkim, Uttaranchal, Himachal Pradesh and J&K, since a large proportion of our hydro power potential is located in these States. The States with hydro potential need to focus on the full development of these potentials at the earliest.

5.2.7 Hydel projects call for comparatively larger capital investment. Therefore, debt financing of longer tenure would need to be made available for hydro projects. Central Government is committed to policies that ensure financing of viable hydro projects.

5.2.8 State Governments need to review procedures for land acquisition, and other approvals/clearances for speedy implementation of hydroelectric projects.

5.2.9 The Central Government will support the State Governments for expeditious development of their hydroelectric projects by offering services of Central Public Sector Undertakings like National Hydroelectric Power Corporation (NHPC).

5.2.10 Proper implementation of National Policy on Rehabilitation and Resettlement (R&R) would be essential in this regard so as to ensure that the concerns of project-affected families are addressed adequately.

5.2.11 Adequate safeguards for environmental protection with suitable mechanism for monitoring of implementation of Environmental Action Plan and R&R Schemes will be put in place.

### Thermal Generation

5.2.12 Even with full development of the feasible hydro potential in the country, coal would necessarily continue to remain the primary fuel for meeting future electricity demand.

5.2.13 Imported coal based thermal power stations, particularly at coastal locations, would be encouraged based on their economic viability. Use of low ash content coal would also help in reducing the problem of fly ash emissions.

5.2.14 Significant Lignite resources in the country are located in Tamil Nadu, Gujarat and Rajasthan and these should be increasingly utilized for power generation. Lignite mining technology needs to be improved to reduce costs.

5.2.15 Use of gas as a fuel for power generation would depend upon its availability at reasonable prices. Natural gas is being used in Gas Turbine /Combined Cycle Gas Turbine (GT/CCGT) stations, which currently accounts for about 10 % of total capacity. Power sector consumes about 40% of the total gas in the country. New power generation capacity could come up based on indigenous gas findings, which can emerge as a major source of power generation if prices are reasonable. A national gas grid covering various parts of the country could facilitate development of such capacities.

5.2.16 Imported LNG based power plants are also a potential source of electricity and the pace of their development would depend on their commercial viability. The existing power plants using liquid fuels should shift to use of Natural Gas/LNG at the earliest to reduce the cost of generation.

5.2.17 For thermal power, economics of generation and supply of electricity should be the basis for choice of fuel from among the options available. It would be economical for new generating stations to be located either near the fuel sources e.g. pithead locations or load centres.

5.2.18 Generating companies may enter into medium to long-term fuel supply agreements specially with respect to imported fuels for commercial viability and security of supply.

### Nuclear Power

5.2.19 Nuclear power is an established source of energy to meet base load demand. Nuclear power plants are being set up at locations away from coalmines. Share of nuclear power in the overall capacity profile will need to be increased significantly. Economics of generation and resultant tariff will be, among others, important considerations. Public sector investments to create nuclear generation capacity will need to be stepped up. Private sector

partnership would also be facilitated to see that not only targets are achieved but exceeded.

#### Non-conventional Energy Sources

5.2.20 Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures.

#### Renovation and Modernization (R&M)

5.2.21 One of the major achievements of the power sector has been a significant increase in availability and plant load factor of thermal power stations specially over the last few years. Renovation and modernization for achieving higher efficiency levels needs to be pursued vigorously and all existing generation capacity should be brought to minimum acceptable standards. The Govt. of India is providing financial support for this purpose.

5.2.22 For projects performing below acceptable standards, R&M should be undertaken as per well-defined plans featuring necessary cost-benefit analysis. If economic operation does not appear feasible through R&M, then there may be no alternative to closure of such plants as the last resort.

5.2.23 In cases of plants with poor O&M record and persisting operational problems, alternative strategies including change of management may need to be considered so as to improve the efficiency to acceptable levels of these power stations.

#### Captive Generation

5.2.24 The liberal provision in the Electricity Act, 2003 with respect to setting up of captive power plant has been made with a view to not only securing reliable, quality and cost effective power but also to facilitate creation of employment opportunities through speedy and efficient growth of industry.

5.2.25 The provision relating to captive power plants to be set up by group of consumers is primarily aimed at enabling small and medium industries or other consumers that may not individually be in a position to set up plant of optimal size in a cost effective manner. It needs to be noted that efficient expansion of small and medium industries across the country would lead to creation of enormous employment opportunities.



5.2.26 A large number of captive and standby generating stations in India have surplus capacity that could be supplied to the grid continuously or during certain time periods. These plants offer a sizeable and potentially competitive capacity that could be harnessed for meeting demand for power. Under the Act, captive generators have access to licensees and would get access to consumers who are allowed open access. Grid inter-connections for captive generators shall be facilitated as per section 30 of the Act. This should be done on priority basis to enable captive generation to become available as distributed generation along the grid. Towards this end, non-conventional energy sources including co-generation could also play a role. Appropriate commercial arrangements would need to be instituted between licensees and the captive generators for harnessing of spare capacity energy from captive power plants. The appropriate Regulatory Commission shall exercise regulatory oversight on such commercial arrangements between captive generators and licensees and determine tariffs when a licensee is the off-taker of power from captive plant.

### 5.3 TRANSMISSION

5.3.1 The Transmission System requires adequate and timely investments and also efficient and coordinated action to develop a robust and integrated power system for the country.

5.3.2 Keeping in view the massive increase planned in generation and also for development of power market, there is need for adequately augmenting transmission capacity. While planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities. The policy emphasizes the following to meet the above objective:

- The Central Government would facilitate the continued development of the National Grid for providing adequate infrastructure for inter-state transmission of power and to ensure that underutilized generation capacity is facilitated to generate electricity for its transmission from surplus regions to deficit regions.
- The Central Transmission Utility (CTU) and State Transmission Utility (STU) have the key responsibility of network planning and development based on the National Electricity Plan in coordination with all concerned agencies as provided in the Act. The CTU is responsible for the national and regional transmission system planning and development. The STU is responsible for planning and development of the intra-state transmission system. The CTU would need to coordinate with the STUs for achievement

of the shared objective of eliminating transmission constraints in cost effective manner.

- Network expansion should be planned and implemented keeping in view the anticipated transmission needs that would be incident on the system in the open access regime. Prior agreement with the beneficiaries would not be a pre-condition for network expansion. CTU/STU should undertake network expansion after identifying the requirements in consultation with stakeholders and taking up the execution after due regulatory approvals.
- Structured information dissemination and disclosure procedures should be developed by the CTU and STUs to ensure that all stakeholders are aware of the status of generation and transmission projects and plans. These should form a part of the overall planning procedures.
- The State Regulatory Commissions who have not yet notified the grid code under the Electricity Act 2003 should notify the same not later than September 2005.

5.3.3 Open access in transmission has been introduced to promote competition amongst the generating companies who can now sell to different distribution licensees across the country. This should lead to availability of cheaper power. The Act mandates non-discriminatory open access in transmission from the very beginning. When open access to distribution networks is introduced by the respective State Commissions for enabling bulk consumers to buy directly from competing generators, competition in the market would increase the availability of cheaper and reliable power supply. The Regulatory Commissions need to provide facilitative framework for non-discriminatory open access. This requires load dispatch facilities with state-of-the art communication and data acquisition capability on a real time basis. While this is the case currently at the regional load dispatch centers, appropriate State Commissions must ensure that matching facilities with technology upgrades are provided at the State level, where necessary and realized not later than June 2006.

5.3.4 The Act prohibits the State transmission utilities/transmission licensees from engaging in trading in electricity. Power purchase agreements (PPAs) with the generating companies would need to be suitably assigned to the Distribution Companies, subject to mutual agreement. To the extent necessary, such assignments can be done in a manner to take care of different load profiles of the Distribution Companies. Non-discriminatory open access shall be provided to competing generators supplying power to licensees upon payment of transmission charge to be determined by the appropriate Commission. The

appropriate Commissions shall establish such transmission charges no later than June 2005.

5.3.5 To facilitate orderly growth and development of the power sector and also for secure and reliable operation of the grid, adequate margins in transmission system should be created. The transmission capacity would be planned and built to cater to both the redundancy levels and margins keeping in view international standards and practices. A well planned and strong transmission system will ensure not only optimal utilization of transmission capacities but also of generation facilities and would facilitate achieving ultimate objective of cost effective delivery of power. To facilitate cost effective transmission of power across the region, a national transmission tariff framework needs to be implemented by CERC. The tariff mechanism would be sensitive to distance, direction and related to quantum of flow. As far as possible, consistency needs to be maintained in transmission pricing framework in inter-State and intra-State systems. Further it should be ensured that the present network deficiencies do not result in unreasonable transmission loss compensation requirements.

5.3.6 The necessary regulatory framework for providing non-discriminatory open access in transmission as mandated in the Electricity Act 2003 is essential for signalling efficient choice in locating generation capacity and for encouraging trading in electricity for optimum utilization of generation resources and consequently for reducing the cost of supply.

5.3.7 The spirit of the provisions of the Act is to ensure independent system operation through NLDC, RLDCs and SLDCs. These dispatch centers, as per the provisions of the Act, are to be operated by a Government company or authority as notified by the appropriate Government. However, till such time these agencies/authorities are established the Act mandates that the CTU or STU, as the case may be, shall operate the RLDCs or SLDC. The arrangement of CTU operating the RLDCs would be reviewed by the Central Government based on experience of working with the existing arrangement. A view on this aspect would be taken by the Central Government by December 2005.

5.3.8 The Regional Power Committees as envisaged in section section 2(55) would be constituted by the Government of India within two months with representation from various stakeholders.

5.3.9 The National Load Despatch Centre (NLDC) along with its constitution and functions as envisaged in Section 26 of the Electricity Act 2003 would be notified within three months. RLDCs and NLDC will have complete responsibility and commensurate authority for smooth operation of the grid irrespective of the ownership of the transmission system, be it under CPSUs, State Utility or private sector.

5.3.10 Special mechanisms would be created to encourage private investment in transmission sector so that sufficient investments are made for achieving the objective of demand to be fully met by 2012.

## 5.4 DISTRIBUTION

5.4.1 Distribution is the most critical segment of the electricity business chain. The real challenge of reforms in the power sector lies in efficient management of the distribution sector.

5.4.2 The Act provides for a robust regulatory framework for distribution licensees to safeguard consumer interests. It also creates a competitive framework for the distribution business, offering options to consumers, through the concepts of open access and multiple licensees in the same area of supply.

5.4.3 For achieving efficiency gains proper restructuring of distribution utilities is essential. Adequate transition financing support would also be necessary for these utilities. Such support should be arranged linked to attainment of predetermined efficiency improvements and reduction in cash losses and putting in place appropriate governance structure for insulating the service providers from extraneous interference while at the same time ensuring transparency and accountability. For ensuring financial viability and sustainability, State Governments would need to restructure the liabilities of the State Electricity Boards to ensure that the successor companies are not burdened with past liabilities. The Central Government would also assist the States, which develop a clear roadmap for turnaround, in arranging transition financing from various sources which shall be linked to predetermined improvements and efficiency gains aimed at attaining financial viability and also putting in place appropriate governance structures.

5.4.4 Conducive business environment in terms of adequate returns and suitable transitional model with predetermined improvements in efficiency parameters in distribution business would be necessary for facilitating funding and attracting investments in distribution. Multi-Year Tariff (MYT) framework is an important structural incentive to minimize risks for utilities and consumers, promote efficiency and rapid reduction of system losses. It would serve public interest through economic efficiency and improved service quality. It would also bring greater predictability to consumer tariffs by restricting tariff adjustments to known indicators such as power purchase prices and inflation indices. Private sector participation in distribution needs to be encouraged for achieving the requisite reduction in transmission and distribution losses and improving the quality of service to the consumers.

5.4.5 The Electricity Act 2003 enables competing generating companies and trading licensees, besides the area distribution licensees, to sell electricity to consumers when open access in distribution is introduced by the State

Electricity Regulatory Commissions. As required by the Act, the SERCs shall notify regulations by June 2005 that would enable open access to distribution networks in terms of sub-section 2 of section 42 which stipulates that such open access would be allowed, in not later than five years from 27<sup>th</sup> January 2004 to consumers who require a supply of electricity where the maximum power to be made available at any time exceeds one mega watt. Section 49 of the Act provides that such consumers who have been allowed open access under section 42 may enter into agreement with any person for supply of electricity on such terms and conditions, including tariff, as may be agreed upon by them. While making regulations for open access in distribution, the SERCs will also determine wheeling charges and cross-subsidy surcharge as required under section 42 of the Act.

5.4.6 A time-bound programme should be drawn up by the State Electricity Regulatory Commissions (SERC) for segregation of technical and commercial losses through energy audits. Energy accounting and declaration of its results in each defined unit, as determined by SERCs, should be mandatory not later than March 2007. An action plan for reduction of the losses with adequate investments and suitable improvements in governance should be drawn up. Standards for reliability and quality of supply as well as for loss levels shall also be specified from time to time, so as to bring these in line with international practices by year 2012.

5.4.7 One of the key provisions of the Act on competition in distribution is the concept of multiple licensees in the same area of supply through their independent distribution systems. State Governments have full flexibility in carving out distribution zones while restructuring the Government utilities. For grant of second and subsequent distribution licence within the area of an incumbent distribution licensee, a revenue district, a Municipal Council for a smaller urban area or a Municipal Corporation for a larger urban area as defined in the Article 243(Q) of Constitution of India (74th Amendment) may be considered as the minimum area. The Government of India would notify within three months, the requirements for compliance by applicant for second and subsequent distribution licence as envisaged in Section 14 of the Act. With a view to provide benefits of competition to all section of consumers, the second and subsequent licensee for distribution in the same area shall have obligation to supply to all consumers in accordance with provisions of section 43 of the Electricity Act 2003. The SERCs are required to regulate the tariff including connection charges to be recovered by a distribution licensee under the provisions of the Act. This will ensure that second distribution licensee does not resort to cherry picking by demanding unreasonable connection charges from consumers.

5.4.8 The Act mandates supply of electricity through a correct meter within a stipulated period. The Authority should develop regulations as required under Section 55 of the Act within three months.

5.4.9 The Act requires all consumers to be metered within two years. The SERCs may obtain from the Distribution Licensees their metering plans, approve these, and monitor the same. The SERCs should encourage use of pre-paid meters. In the first instance, TOD meters for large consumers with a minimum load of one MVA are also to be encouraged. The SERCs should also put in place independent third-party meter testing arrangements.

5.4.10 Modern information technology systems may be implemented by the utilities on a priority basis, after considering cost and benefits, to facilitate creation of network information and customer data base which will help in management of load, improvement in quality, detection of theft and tampering, customer information and prompt and correct billing and collection. Special emphasis should be placed on consumer indexing and mapping in a time bound manner. Support is being provided for information technology based systems under the Accelerated Power Development and Reforms Programme (APDRP).

5.4.11 High Voltage Distribution System is an effective method for reduction of technical losses, prevention of theft, improved voltage profile and better consumer service. It should be promoted to reduce LT/HT ratio keeping in view the techno economic considerations.

5.4.12 SCADA and data management systems are useful for efficient working of Distribution Systems. A time bound programme for implementation of SCADA and data management system should be obtained from Distribution Licensees and approved by the SERCs keeping in view the techno economic considerations. Efforts should be made to install substation automation equipment in a phased manner.

5.4.13 The Act has provided for stringent measures against theft of electricity. The States and distribution utilities should ensure effective implementation of these provisions. The State Governments may set up Special Courts as envisaged in Section 153 of the Act.

## **5.5 RECOVERY OF COST OF SERVICES & TARGETTED SUBSIDIES**

5.5.1 There is an urgent need for ensuring recovery of cost of service from consumers to make the power sector sustainable.

5.5.2 A minimum level of support may be required to make the electricity affordable for consumers of very poor category. Consumers below poverty line who consume below a specified level, say 30 units per month, may receive special support in terms of tariff which are cross-subsidized. Tariffs for such designated group of consumers will be at least 50 % of the average (overall) cost of supply. This provision will be further re-examined after five years.

5.5.3 Over the last few decades cross-subsidies have increased to unsustainable levels. Cross-subsidies hide inefficiencies and losses in operations. There is urgent need to correct this imbalance without giving tariff shock to consumers. The existing cross-subsidies for other categories of consumers would need to be reduced progressively and gradually.

5.5.4 The State Governments may give advance subsidy to the extent they consider appropriate in terms of section 65 of the Act in which case necessary budget provision would be required to be made in advance so that the utility does not suffer financial problems that may affect its operations. Efforts would be made to ensure that the subsidies reach the targeted beneficiaries in the most transparent and efficient way.

## 5.6 TECHNOLOGY DEVELOPMENT AND R&D

5.6.1 Effective utilization of all available resources for generation, transmission and distribution of electricity using efficient and cost effective technologies is of paramount importance. Operations and management of vast and complex power systems require coordination among the multiple agencies involved. Effective control of power system at state, regional and national level can be achieved only through use of Information Technology. Application of IT has great potential in reducing technical & 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.

Special efforts would be made for research, development demonstration and commercialization of non-conventional energy systems. Such systems would need to meet international standards, specifications and performance parameters.

5.6.2 Efficient technologies, like super critical technology, IGCC etc and large size units would be gradually introduced for generation of electricity as their cost effectiveness is established. Simultaneously, development and deployment of technologies for productive use of fly ash would be given priority and encouragement.

5.6.3 Similarly, cost effective technologies would require to be developed for high voltage power flows over long distances with minimum possible losses. Specific information technology tools need to be developed for meeting the requirements of the electricity industry including highly sophisticated control systems for complex generation and transmission operations, efficient distribution business and user friendly consumer interface.

5.6.4 The country has a strong research and development base in the electricity sector which would be further augmented. R&D activities would be further intensified and Missions will be constituted for achieving desired results in identified priority areas. A suitable funding mechanism would be evolved for promoting R& D in the Power Sector. Large power companies should set aside a portion of their profits for support to R&D.

## 5.7 COMPETITION AIMED AT CONSUMER BENEFITS

5.7.1 To promote market development, a part of new generating capacities, say 15% may be sold outside long-term PPAs . As the power markets develop, it would be feasible to finance projects with competitive generation costs outside the long-term power purchase agreement framework. In the coming years, a significant portion of the installed capacity of new generating stations could participate in competitive power markets. This will increase the depth of the power markets and provide alternatives for both generators and licensees/consumers and in long run would lead to reduction in tariff.

For achieving this, the policy underscores the following:-

- (a) It is the function of the Central Electricity Regulatory Commission to issue license for inter-state trading which would include authorization for trading throughout the country.
- (b) The ABT regime introduced by CEREC at the national level has had a positive impact. It has also enabled a credible settlement mechanism for intra-day power transfers from licenses with surpluses to licenses experiencing deficits. SERCs are advised to introduce the ABT regime at the State level within one year.
- (c) Captive generating plants should be permitted to sell electricity to licensees and consumers when they are allowed open access by SERCs under section 42 of the Act .
- (d) Development of power market would need to be undertaken by the Appropriate Commission in consultation with all concerned.
- (e) The Central Commission and the State Commissions are empowered to make regulations under section 178 and section 181 of the Act respectively. These regulations will ensure implementation of various provisions of the Act regarding encouragement to competition and also consumer protection. The Regulatory Commissions are advised to notify various regulations expeditiously.
- (f) Enabling regulations for inter and intra State trading and also regulations on power exchange shall be notified by the appropriate Commissions within six months.



## 5.8 FINANCING POWER SECTOR PROGRAMMES INCLUDING PRIVATE SECTOR PARTICIPATION

5.8.1 To meet the objective of rapid economic growth and “power for all” including household electrification, it is estimated that an investment of the order of Rs.9,00,000 crores at 2002-03 price level would be required to finance generation, transmission, sub-transmission, distribution and rural electrification projects. Power being most crucial infrastructure, public sector investments, both at the Central Government and State Governments, will have to be stepped up. Considering the magnitude of the expansion of the sector required, a sizeable part of the investments will also need to be brought in from the private sector. The Act creates a conducive environment for investments in all segments of the industry, both for public sector and private sector, by removing barrier to entry in different segments. Section 63 of the Act provides for participation of suppliers on competitive basis in different segments which will further encourage private sector investment. Public service obligations like increasing access to electricity to rural households and small and marginal farmers have highest priority over public finances.

5.8.2 The public sector should be able to raise internal resources so as to at least meet the equity requirement of investments even after suitable gross budgetary support from the Government at the Centre and in the states in order to complete their on-going projects in a time-bound manner. Expansion of public sector investments would be dependent on the financial viability of the proposed projects. It would, therefore, be imperative that an appropriate surplus is generated through return on investments and, at the same time, depreciation reserve created so as to fully meet the debt service obligation. This will not only enable financial closure but also bankability of the project would be improved for expansion programmes, with the Central and State level public sector organizations, as also private sector projects, being in a position to fulfil their obligations toward equity funding and debt repayments.

5.8.3 Under sub-section (2) of Section 42 of the Act, a surcharge is to be levied by the respective State Commissions on consumers switching to alternate supplies under open access. This is to compensate the host distribution licensee serving such consumers who are permitted open access under section 42(2), for loss of the cross-subsidy element built into the tariff of such consumers. An additional surcharge may also be levied under sub-section (4) of Section 42 for meeting the fixed cost of the distribution licensee arising out of his obligation to supply in cases where consumers are allowed open access. The amount of surcharge and additional surcharge levied from consumers who are permitted open access should not become so onerous that it eliminates competition that is intended to be fostered in generation and supply of power directly to consumers through the provision of Open Access under Section 42(2) of the Act. Further it is essential that the Surcharge be reduced

progressively in step with the reduction of cross-subsidies as foreseen in Section 42(2) of the Electricity Act 2003.

5.8.4 Capital is scarce. Private sector will have multiple options for investments. Return on investment will, therefore, need to be provided in a manner that the sector is able to attract adequate investments at par with, if not in preference to, investment opportunities in other sectors. This would obviously be based on a clear understanding and evaluation of opportunities and risks. An appropriate balance will have to be maintained between the interests of consumers and the need for investments.

5.8.5 All efforts will have to be made to improve the efficiency of operations in all the segments of the industry. Suitable performance norms of operations together with incentives and disincentives will need to be evolved along with appropriate arrangement for sharing the gains of efficient operations with the consumers. This will ensure protection of consumers' interests on the one hand and provide motivation for improving the efficiency of operations on the other.

5.8.6 Competition will bring significant benefits to consumers, in which case, it is competition which will determine the price rather than any cost plus exercise on the basis of operating norms and parameters. All efforts will need to be made to bring the power industry to this situation as early as possible, in the overall interest of consumers. Detailed guidelines for competitive bidding as stipulated in section 63 of the Act have been issued by the Central Government.

5.8.7 It will be necessary that all the generating companies, transmission licensees and distribution licensees receive due payments for effective discharge of their operational obligations as also for enabling them to make fresh investments needed for the expansion programmes. Financial viability of operations and businesses would, therefore, be essential for growth and development of the sector. Concerted efforts would be required for restoring the financial health of the sector. For this purpose, tariff rationalization would need to be ensured by the SERCs. This would also include differential pricing for base, intermediate and peak power.

5.8.8 Steps would also be taken to address the need for regulatory certainty based on independence of the regulatory commissions and transparency in their functioning to generate investor's confidence.

5.8.9 Role of private participation in generation, transmission and distribution would become increasingly critical in view of the rapidly growing investment needs of the sector. The Central Government and the State Governments need to develop workable and successful models for public private partnership. This would also enable leveraging private investment with the public sector

finances. Mechanisms for continuous dialogue with industry for streamlining procedures for encouraging private participation in power sector need to be put in place.

### *Transmission & Distribution Losses*

5.8.10 It would have to be clearly recognized that Power Sector will remain unviable until T&D losses are brought down significantly and rapidly. A large number of States have been reporting losses of over 40% in the recent years. By any standards, these are unsustainable and imply a steady decline of power sector operations. Continuation of the present level of losses would not only pose a threat to the power sector operations but also jeopardize the growth prospects of the economy as a whole. No reforms can succeed in the midst of such large pilferages on a continuing basis.

The State Governments would prepare a Five Year Plan with annual milestones to bring down these losses expeditiously. Community participation, effective enforcement, incentives for entities, staff and consumers, and technological upgradation should form part of campaign efforts for reducing these losses. The Central Government will provide incentive based assistance to States that are able to reduce losses as per agreed programmes.

## **5.9 ENERGY CONSERVATION**

5.9.1 There is a significant potential of energy savings through energy efficiency and demand side management measures. In order to minimize the overall requirement, energy conservation and demand side management (DSM) is being accorded high priority. The Energy Conservation Act has been enacted and the Bureau of Energy Efficiency has been setup.

5.9.2 The potential number of installations where demand side management and energy conservation measures are to be carried out is very large. Bureau of Energy Efficiency (BEE) shall initiate action in this regard. BEE would also make available the estimated conservation and DSM potential, its staged implementation along with cost estimates for consideration in the planning process for National Electricity Plan.

5.9.3 Periodic energy audits have been made compulsory for power intensive industries under the Energy Conservation Act. Other industries may also be encouraged to adopt energy audits and energy conservation measures. Energy conservation measures shall be adopted in all Government buildings for which saving potential has been estimated to be about 30% energy. Solar water heating systems and solar passive architecture can contribute significantly to this effort.

5.9.4 In the field of energy conservation initial approach would be voluntary and self-regulating with emphasis on labelling of appliances. Gradually as awareness increases, a more regulatory approach of setting standards would be followed.

5.9.5 In the agriculture sector, the pump sets and the water delivery system engineered for high efficiency would be promoted. In the industrial sector, energy efficient technologies should be used and energy audits carried out to indicate scope for energy conservation measures. Motors and drive system are the major source of high consumption in Agricultural and Industrial Sector. These need to be addressed. Energy efficient lighting technologies should also be adopted in industries, commercial and domestic establishments.

5.9.6 In order to reduce the requirements for capacity additions, the difference between electrical power demand during peak periods and off-peak periods would have to be reduced. Suitable load management techniques should be adopted for this purpose. Differential tariff structure for peak and off peak supply and metering arrangements (Time of Day metering) should be conducive to load management objectives. Regulatory Commissions should ensure adherence to energy efficiency standards by utilities.

5.9.7 For effective implementation of energy conservation measures, role of Energy Service Companies would be enlarged. Steps would be taken to encourage and incentivise emergence of such companies.

5.9.8 A national campaign for bringing about awareness about energy conservation would be essential to achieve efficient consumption of electricity.

5.9.9. A National Action Plan has been developed. Progress on all the proposed measures will be monitored with reference to the specific plans of action.

## 5.10 ENVIRONMENTAL ISSUES

5.10.1 Environmental concerns would be suitably addressed through appropriate advance action by way of comprehensive Environmental Impact Assessment and implementation of Environment Action Plan (EAP).

5.10.2 Steps would be taken for coordinating the efforts for streamlining the procedures in regard to grant of environmental clearances including setting up of 'Land Bank' and 'Forest Bank'.

5.10.3 Appropriate catchment area treatment for hydro projects would also be ensured and monitored.

5.10.4 Setting up of coal washeries will be encouraged. Suitable steps would also be taken so that utilization of fly ash is ensured as per environmental guidelines.

5.10.5 Setting up of municipal solid waste energy projects in urban areas and recovery of energy from industrial effluents will also be encouraged with a view to reducing environmental pollution apart from generating additional energy.

5.10.6 Full compliance with prescribed environmental norms and standards must be achieved in operations of all generating plants.

## 5.11 TRAINING AND HUMAN RESOURCE DEVELOPMENT

In the new reforms framework ushered by Electricity Act 2003, it is particularly important that the electricity industry has access to properly trained human resource. Therefore, concerted action would be taken for augmenting training infrastructure so that adequate well-trained human resource is made available as per the need of the industry. Special attention would need to be paid by the industry for establishing training infrastructure in the field of electricity distribution, regulation, trading and power markets. Efforts should be made so that personnel of electricity supply industry both in the private and public sector become more cost-conscious and consumer-friendly.

## 5.12 COGENERATION AND NON-CONVENTIONAL ENERGY SOURCES

5.12.1 Non-conventional sources of energy being the most environment friendly there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. Cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources.

5.12.2 The Electricity Act 2003 provides that co-generation and generation of electricity from non-conventional sources would be promoted by the SERCs by providing suitable measures for connectivity with grid and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution license. Such percentage for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest. Progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies

shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.

5.12.3 Industries in which both process heat and electricity are needed are well suited for cogeneration of electricity. A significant potential for cogeneration exists in the country, particularly in the sugar industry. SERCs may promote arrangements between the co-generator and the concerned distribution licensee for purchase of surplus power from such plants. Cogeneration system also needs to be encouraged in the overall interest of energy efficiency and also grid stability.

### 5.13 PROTECTION OF CONSUMER INTERESTS AND QUALITY STANDARDS

5.13.1 Appropriate Commission should regulate utilities based on pre-determined indices on quality of power supply. Parameters should include, amongst others, frequency and duration of interruption, voltage parameters, harmonics, transformer failure rates, waiting time for restoration of supply, percentage defective meters and waiting list of new connections. The Appropriate Commissions would specify expected standards of performance.

5.13.2 Reliability Index (RI) of supply of power to consumers should be indicated by the distribution licensee. A road map for declaration of RI for all cities and towns up to the District Headquarter towns as also for rural areas, should be drawn by up SERCs. The data of RI should be compiled and published by CEA.

5.13.3 It is advised that all State Commissions should formulate the guidelines regarding setting up of grievance redressal forum by the licensees as also the regulations regarding the Ombudsman and also appoint/designate the Ombudsman within six months.

5.13.4 The Central Government, the State Governments and Electricity Regulatory Commissions should facilitate capacity building of consumer groups and their effective representation before the Regulatory Commissions. This will enhance the efficacy of regulatory process.

## 6.0 COORDINATED DEVELOPMENT

6.1 Electricity being a concurrent subject, a well-coordinated approach would be necessary for development of the power sector. This is essential for the attainment of the objective of providing electricity-access to all households in next five years and providing reliable uninterrupted quality power supply to all consumers. The State Governments have a major role, particularly in creation of generation capacity, state level transmission and distribution. The

Central Government would assist the States in the attainment of this objective. It would be playing a supportive role in fresh capacity addition and a major role in development of the National Grid. The State Governments need to ensure the success of reforms and restoration of financial health in distribution, which alone can enable the creation of requisite generation capacity. The Regulatory Commissions have the responsibility of ensuring that the regulatory processes facilitate the attainment of this objective. They also have a developmental role whose fulfillment would need a less formal and a consultative process.

The Electricity Act, 2003 also provides for mechanisms like “Coordination forum” and “Advisory Committees” to facilitate consultative process. The Act also requires the Regulatory Commissions to ensure transparency in exercise of their powers and in discharge of their functions. This in no way means that the Regulatory Commissions should follow formal judicial approach. In fact, quick disposal of matters would require an approach involving consultations with stakeholders.

6.2 Under the Act, the Regulatory Commissions are required to perform wide-ranging responsibilities. The appropriate Governments need to take steps to attract regulatory personnel with required background. The Govt. of India would promote the institutional capability to provide training to raise regulatory capacity in terms of the required expertise and skill sets. The appropriate Governments should provide financial autonomy to the Regulatory Commissions. The Act provides that the appropriate Government shall constitute a Fund under section 99 or section 103 of the Act, as the case may be, to be called as Regulatory Commission Fund. The State Governments are advised to establish this Fund expeditiously.

AJAY SHANKAR, Addl. Secy



Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 12<sup>th</sup> April, 2021

**ORDER**

**Subject: Constitution of expert committee to prepare draft National Electricity Policy 2021.**

The Central Government, from time to time, in consultation with the State Governments and the Central Electricity Authority, reviews or revises, the National Electricity Policy and Tariff Policy under Section 3 (3) of the Electricity Act, 2003. In compliance of section 3 of the Electricity Act 2003, the Government of India had notified the National Electricity Policy on 12<sup>th</sup> February, 2005. The Working Group on Power for 12<sup>th</sup> Plan had made recommendation for amendment in National Electricity Policy (NEP) in addition to Electricity Act, 2003 and Tariff Policy.

2. In this regard, with the approval of Hon'ble Minister of State (IC) for Power & NRE, the Ministry of Power hereby constitutes a Committee to prepare and recommend National Electricity Policy (NEP), 2021 with following composition:

- i. Shri Gireesh Pradhan – Ex-Chairperson, CERC --- **Chairman**
- ii. Shri Rakesh Nath, Ex-Chairperson CEA and Ex-Member APTEL
- iii. Chairperson, CEA
- iv. Representative of MNRE
- v. Representatives from the States of West Bengal, Andhra Pradesh, Uttar Pradesh, Assam & Gujarat
- vi. Representative of NITI Aayog
- vii. CMD, NTPC
- viii. CMD, NHPC
- ix. CMD, POSOCO
- x. CMD, PGCIL
- xi. CMD, SECI
- xii. Joint Secretary (R&R), Ministry of Power - **Convenor**

3. The committee may co-opt any other member and shall submit the suggested draft NEP 2021 in two months.

4. The committee may call representative from IPP, FICCI, CII, Wind Association, Solar Association, Storage Association etc. as special invitee for the above said committee meetings.



(D. Chattopadhyay)  
Deputy Secretary to the Govt. of India  
Tel: 2371 5250

To

All the Members of the Committee.

Contd.....2/-.



**Copy to with the request to nominate a suitable officer at appropriate level for the aforesaid Committee:**

1. Secretary, MNRE, New Delhi
2. CEO, NITI Aayog, New Delhi
3. Principal Secy/Secy, Energy/Power Deptt. of the States of West Bengal, Andhra Pradesh, Uttar Pradesh, Assam and Gujarat.

**Copy also to:**

Sr. PPS to Secretary (Power), Sr. PPS to JS (R&R), PS to DS (R&R), Ministry of Power

## MINISTRY OF POWER

### RESOLUTION

New Delhi, the ....th February, 2021

### NATIONAL ELECTRICITY POLICY 2021

No. ....-R&R (Vol-..)

#### **1.0 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 The National Electricity Policy was first notified on 12<sup>th</sup> February 2005. Section 3 (3) of the Electricity Act enables the Central Government to review or revise the National Electricity Policy from time to time. In exercise of the powers conferred under this Section, the Central Government hereby notifies the revised National Electricity Policy. Notwithstanding anything done or any activity undertaken or purported to have been done under the provisions of the National Electricity Policy notified in the year 2005, the same shall, in so far as it is not inconsistent with that Policy, be deemed to have been done or undertaken under provisions of the revised National Electricity Policy 2021.

1.3 Since the notification of the National Electricity Policy in the year 2005, a lot of ground has been covered in many areas such as generation capacity addition including from renewable resources, transmission network expansion, rural electrification, grid operation, electricity markets etc. Additional power generation capacity of 2,51,681 MW, inclusive of renewables has been added up to 31.3.2020 since the year 2005 and the per capita consumption of electricity has increased to 1,208 units in the year 2019-2020 from 631.4 units in the year 2005-2006. Further, about 2,52,112 ckt-kms of transmission lines (above 220 kV) have been added up to March 2020 since the year 2005 which has enhanced interregional transmission capacity from 10,150 MW (March 2005) to 1,02,050 MW (March 2020). The process of village electrification has been completed in the month of April 2018. There has been



significant improvement in the quality of power and grid management; the average grid frequency now hovers between 49.98 Hz to 50.02 Hz for most of the time. The share of renewable generation in the year 2019-20 was 9.96% of the total electricity generation compared to share of only 0.75% in the year 2004-2005. A number of regulations have been made by CERC and the SERCs, which has brought discipline in the grid operations, introduced efficiency in generation, transmission and distribution of power and enabled development of Power Markets through operation of Power Exchanges in the country. CEA has also issued several Technical Standards such as Grid Standards, Grid Connectivity Standards, connectivity of Distributed generation Resources, installation and operation of meters, measures related to safety and standards for construction and O&M.

1.4 While the growth in the sector is visible, further work needs to be done to enhance accessibility of electricity 24x7, especially in the rural areas and to the lowest strata of society. The financial health of distribution companies has become a primary concern since the regulatory regime has not been able to provide remunerative tariffs reflecting the true cost of supply and the AT&C loss levels continues to remain substantially high except certain areas, despite the fact that substantial investments have been made towards metering and on other distribution infrastructure.

1.5 Government of India has set a target of having renewable capacity of 1,75,000 MW by the year 2022. Further, India's Nationally Determined Contributions (NDC) includes commitment to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by the year 2030. Such large scale integration of renewables is expected lead to increased balancing and ramping requirements. However, the falling share of hydro generation and shortage of domestic natural gas, has led to difficulties in meeting fast ramping requirement during peak hours. This flexing of generation is therefore, being attempted through coal based thermal generation. The balancing and ramping requirement shall further increase significantly as more renewable capacity comes into the grid.

1.6 The aim of the revised National Electricity Policy 2021 is to find policy interventions to address the issues being faced particularly those mentioned in para 1.4 and 1.5 above.

## **2.0 AIMS & OBJECTIVES OF NATIONAL ELECTRICITY POLICY 2021**

The National Electricity Policy 2021 aims at achieving the following objectives:

- i) Promote clean and sustainable generation of electricity
- ii) Development of adequate and efficient transmission system
- iii) Revitalization of Discoms
- iv) Development of Efficient Markets for electricity



- v) Supply of reliable and quality power of specified standards in an efficient manner.
- vi) Move towards light touch regulation
- vii) Promotion of manufacturing of goods and services in India in the Generation, Transmission and Distribution segments of the power sector under the Make in India initiative and Aatmanirbhar Bharat Abhiyan.

### **3.0 NATIONAL ELECTRICITY PLAN**

3.1 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. 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.

3.2 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.

### **4.0 AREAS ADDRESSED**

4.1 The National Electricity Policy covers the different areas as given below:

- i) Optimal Generation mix
- ii) Transmission
- iii) Distribution
- iv) Grid operation
- v) Power markets
- vi) Regulatory Process
- vii) Research and Development (R&D) and adoption of new technologies
- viii) Power Quality

- ix) Energy Conservation & Energy Efficiency
- x) Environmental Issues
- xi) Skill building and Human Resource Development
- xii) Coordinated Development
- xiii) Creation of Electric Vehicle Charging Infrastructure
- xiv) Make in India initiative and Aatmanirbhar Bharat Abhiyan
- xv) Disaster Risk Reduction

These areas are further elaborated in the following paragraphs.

## **5.0 OPTIMAL GENERATION MIX**

5.1 The installed capacity in the country as on 31.03.2020 is about 3,70,106 MW, including about 87,028 MW (as on 31.03.2020) of renewable sources of energy, which comprises of 37,694 MW wind, 34,628 MW solar, 9,875 MW biomass power (co-generation), 148 MW Waste to Energy and 4,683 MW small hydro and contributes about 19% of the total installed capacity. Currently there is about 75 GW of captive generating capacity in the country. While there has been an appreciable increase in total installed capacity, the share of hydro generating capacity has reduced from 26.12% in March 2005 to 12.35% in March 2020.

5.2 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 store energy with higher efficiency for long duration, are options for meeting the peak demand in the country in an efficient manner. In future, coal based stations may have to resort to two shift operation and may have to be operated at reduced generation levels to provide flexibility to cope with variable generation from renewable energy sources. Further, to make the existing coal based plants more flexible, retrofitting of existing coal based stations and combined cycle gas stations, coupled with adoption of suitable operating practices may be explored to achieve higher degree of flexibility.

5.3 Differential tariffs between peak and off-peak hours for consumers and generating stations by CERC/SERCs, as envisaged in the Tariff Policy, should be introduced expeditiously in order to appreciate the value of peaking power. SERCs need to frame a scheme whereby consumers willing for curtailment in their demand, part or full load, get the benefit of a lower tariff.

5.4A regulatory framework for determination of adequate (national, regional and state level) primary, secondary and tertiary reserves should be developed by CEA 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.

5.5 Along with an increase in the conventional modes of generation, there has also been a significant rise in installed capacity of renewables. While the total installed capacity through renewables was only about 3,812 MW as on 31.03.2005, the capacity has since increased to about 87,027.68 MW as on 31.03.2020. Government has set a target of 1,75,000 MW of generation capacity from renewables by the year 2022. In order to meet the variable generation from renewable energy sources, the long-term requirement of Balancing Capacity should be assessed periodically by CEA in consultation with various stakeholders. Based on the requirement of Balancing Capacity, pumped storage hydro power plants, open cycle gas power plants/ gas engines, new and viable forms of energy storage technologies need to be encouraged.

### **THERMAL GENERATION**

5.6 While India is committed to add more capacity through non-fossil sources of generation, coal based generation capacity may still be required to be added in the country, as it continues to be the cheapest source of generation, though compliance to stricter environmental norms remain a challenge, particularly for the older stations. Therefore, endeavour should be to adopt the most efficient technology for coal-based power stations available at any point of time. All future coal based plants should only be of super critical/ultra super critical technology or other more efficient technology.

5.7 Adequate coal should be made available to meet the requirements of power plants so that generation capacity is not stranded due to shortage of coal. At the same time, coal based power plants should maintain adequate stocks in power stations to meet day to day and seasonal fluctuations of demand since coal cannot be transported instantaneously. In the past, there have been cases where shortages in coal supply and quality of indigenous coal have been constraints for generating plants. However, with the efforts made by the Government, coal shortages have been eliminated. To address concerns regarding quality of coal, third party sampling of coal has been started 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 should be encouraged.

5.8 India has the 4th largest reserves of coal in the world but still we are importing coal and thus, losing huge amount of foreign exchange. The domestic coal production has also been augmented to fully meet the demand of power sector. Therefore, there is need to minimize use of imported coal in the power stations.

5.9 Use of natural gas as a fuel for power generation would depend upon its availability at reasonable prices. At present, about 6.74% of total installed capacity is through gas based plants and the average PLF of such plants is about 22.15% only



because of less availability of domestic gas and high landed cost of imported Re-gassified Liquefied Natural Gas. The possibility of utilizing the existing gas turbine/combined cycle gas based capacities for peaking or balancing may be explored. To facilitate this, wherever possible, the supply of gas should be made flexible with respect to time, depending on requirements, instead of constant flow. These gas stations should be compensated for reduction of efficiency and increased wear and tear due to fluctuations in generation.

## **HYDRO GENERATION**

5.10 The share of hydro power in the country has been steadily on the decline after touching the maximum in early 1960s. Despite the fact that India has been endowed with large hydro power potential of about 1,50,000 MW, its growth has remained sluggish in the country and only about 36% of the identified potential has been developed. Though one-third of the hydro potential lies in the North-Eastern region, only 6.90% of the potential has been developed so far.

5.11 Delay in the construction of hydro projects is primarily due to the reasons like delays in environment and forest clearances, settlement of rehabilitation & resettlement issues, resolutions of inter-state issues, land acquisition, inadequate infrastructural facilities at hydro potential sites, law & order / local issues, funds constraint and contractual issues etc. causing significant time and cost overruns thereby impacting their commercial viability. Geological surprises are major contributors for delay in implementation of hydro projects. Efforts should be made to reduce geological surprise through advanced technological tools. Proper implementation of the National Policy on Rehabilitation and Resettlement (R&R) would be essential so as to ensure that concerns of project affected families are addressed adequately. For faster resolution of disputes with contractors, thereby reducing time and cost overruns, there is need to develop model contract document for award of work in hydro projects.

5.12 In light of the ambitious plan of the 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 country. In this regard, pumped storage power 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. A potential of 96,524 MW of pumped storage capacity has been identified, of which just about 4,785 MW has already been developed so far. Some of the reasons which have impacted the growth of pumped storage plants in the past are continued focus on development of conventional hydro power, non-availability of adequate off-peak power for pumping, lack of differential pricing for peak and off-peak power and relatively costlier tariff vis-à-vis tariff of conventional hydro power. For faster implementation of Pumped Storage Plants, 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. Apart from conventional pumped storage schemes on the rivers, 'off the river' PSPs are also now being 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 stand alone pumped storage schemes, also need to be explored wherever feasible in order to have assured trajectory to power supply.

5.13 The Central Government/ 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 country 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.

5.14 The Government of India had introduced the concept of land bank/ forest bank long back. Delay in identification of land for compensatory afforestation especially in the North Eastern States where most of the area is under forest cover is one of the reasons for delay in processing of forest clearance. Therefore, creation of land bank should be speeded up by the State governments by developing a suitable mechanism. There is also need for greater facilitation by the State Government in the matters relating to land acquisition, maintenance of law and order etc.

5.15 Some of the measures already announced by the Government such as softer loans of longer duration, grant for enabling infrastructure and storage, pre-agreed tariff profile and Hydro Purchase obligations will help in moderating the tariff for hydro stations and thereby enhancing their viability. Further, for faster implementation of hydro projects in general and to ensure the general competitiveness of hydro power in particular, there is even greater need for tools like Standard Bidding Documents for Hydro Power in medium and long-term etc.

## **NUCLEAR POWER**

5.16 Existing Nuclear Stations in the country are suited for operation as a base load stations. It is also a clean source of energy. The overall tariff of existing nuclear power plants is comparable with that of pithead based thermal power plants. However, tariff of new nuclear plants is projected to be high mainly due to very high capital cost.

5.17 The installed capacity, of nuclear power stations as on 31.3.2020 is about 6,780 MW, which is about 2% of our total installed capacity. Government of India plans to enhance the by 10,000 MW in the next 10 years. In order to ensure materialization of such a large capacity, efforts would have to be made to reduce the capital cost. One of the possible options could be arrangement of Longer-term loans



which would help to reduce the tariff in the initial years. The possibility of flexible operation in the existing nuclear generating stations, to the extent possible, should be explored and the future nuclear stations may be designed for flexible operation. There is also need to move towards two-part tariff consisting of fixed and variable charge.

5.18 Although safety concerns of nuclear power plants have been addressed in the country quite successfully, public engagement in the same would help allay fears to prevent delays in setting up such plants.

## RENEWABLE ENERGY SOURCES AND COGENERATION

5.19 There is an urgent need to promote generation of electricity based on renewable energy sources due to its environmental benefits coupled with energy security. Hybrid renewable energy generation like wind-solar, solar-biomass, solar-mini hydel, etc. with or without energy storage system should also be encouraged. Further, hybrid operation of variable renewable source like solar and wind with conventional generation sources and energy storage systems would facilitate self-balanced portfolio with Round-the-clock power supply of acceptable profile.

5.20 All future procurement of power from new and renewable source of energy should be through tariff based competitive bidding, except from Waste to Energy plants which is still at an infant stage in order to reduce the tariff to end consumers. However, exemption to Large Hydro Power Stations from competitive bidding will be subject to conditions laid down in the Tariff Policy.(Should it be covered in Hydro section) Government has already announced vide OM dated 8th March 2019 certain measures which will inter-alia help in rationalization of tariff for Hydro Stations. 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.

5.21 Tariffs for renewable energy sources like wind and solar power which are dependent on nature for generation are presently energy only tariffs and are thus paid only when energy is drawn by the State Distribution Companies. This gives a perverse incentive for them to not draw this power although it is in the 'must-run' category Tariff of such generators must cover the risk for any curtailment of power by the distribution licensee for reasons other than grid security or transmission constraints. Two-part tariff mechanism may be an option, particularly in case of medium/long-term procurement with hybrid operation of renewable energy source with conventional generation.

5.22 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.

5.23 'Long term growth trajectory of RPOs' for non-solar as well as solar sources has been issued by the Ministry of Power uniformly for all States/UTs up to year 2021-22. Trajectory beyond this period, if required, shall be notified by the Ministry of Power in consultation with MNRE from time to time. Large hydropower projects (with capacity more than 25 MW) shall also be treated as renewable source of energy. The Ministry of Power shall also notify a trajectory for Hydropower Purchase Obligation for a period upto 2029-30 and may extend it further, if required.

5.24 In the past it has been seen that the system of Renewable Purchase Obligations (RPOs) supported by REC (Renewable Energy Certificate) mechanism have not worked satisfactorily. However, going forward there may be need for huge and unprecedented investment in the renewable generation. This can be achieved by not only protecting the interest of developers alone but also required to be funded by the end consumer via DISCOMs. There may be need to remove the short-coming of the existing RPO-REC based system and/or supplementing it with market based options. Further, the rapid pace of RE development and falling RE tariffs indicate potential for market-based mechanisms. Market-based options need to be explored, which can help to strike a desired balance between capping investor's price risk while ensuring some exposure to basic market risks of forecasting, scheduling and balancing

5.25 The intermittent renewable sources of electricity are concentrated in certain states. Therefore, power from such states is likely to flow to other states, whereas the host state would be left to bear the variability of generation. There is need to devise a pragmatic mechanism for either sharing of the cost arising due to such variability by entities concerned or sharing such costs on country wise basis. A similar mechanism may be required at intra-state level.

5.26 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 Electricity (Rights of Consumers) Rules, 2020 provide such metering for loads up to 10 kW. State Governments should consider installing solar PV system in office & school building, panchayats and other public service institutions.

## **MICROGRIDS**



5.27 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 India, 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 are increasingly being used in cities or towns, in urban centers, on university or corporate campuses, in hospitals or at data centers having some local renewable energy generation for enhancing the reliability of power supply. Such micro grids may have to be strengthened to enhance reliability of supply and wherever feasible, these should be integrated with the main grid in accordance with the relevant Technical Standards for Connectivity to the Grid notified by the Authority.

5.28 The Discoms, in areas prone to natural disasters, should explore possibility of automatic islanding of the distribution system into multiple micro grids with their own distributed generation during storms/cyclones etc.

5.29 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, respective SERCs/JERCs should make necessary enabling provisions to promote micro grids in the States/ UTs.

### **RENOVATION & MODERNISATION (R&M)**

5.30 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. 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. Government 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.

5.31 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 obviate 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.

5.32 R&M of old wind power plants by replacing them with modern and more efficient wind generating units, results in flexibility of generating power across a higher range of wind speed and thereby generating more power at the same location with high Capacity Utilization factor. The Ministry of New and Renewable Energy, in August 2016 released a Policy for repowering of Wind Power Projects with an objective to promote optimum utilization of wind energy resources by creating a facilitative framework for repowering.

## **6.0 TRANSMISSION**

6.1 According to Section 73 of the Electricity Act 2003, CEA is to formulate short term and perspective plans for development of electricity system. Accordingly, CEA should draw up short term plan for next 5 years and perspective plan for next 10 years period. In doing so, CEA should also coordinate activities of the planning agencies for the optimal utilisation of resources to subserve the interests of the national economy and to provide reliable and affordable electricity in accordance.

6.2 While formulating the perspective plan CEA should consult with all the relevant stakeholders such as Central Transmission Utility(CTU), State Transmission Utilities(STUs), 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 country.

6.3 The CTU and the STUs should draw up implementation plans for Inter-state (ISTS) and Intra-state (Intra-STs), respectively and for up to next five (5) years period identifying specific transmission projects which are required to be taken up along with their implementation time lines, after considering the plans made by CEA and studying the progress of in generation capacity and demand. Regarding ISTS, CTU should take note of the requests made by inter-state transmission customers, congestion in any part of the ISTS and difficulties in obtaining Right of Way for development of transmission corridors. A similar approach should also be undertaken by STUs for development of the transmission system in their respective states.

6.4 The principle for planning of transmission system should be that prior agreement between buyers and seller of electricity might not be a pre-condition for network expansion. 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. However, a system for fair compensation should be developed either through back-to-back standard agreements or through



suitable regulations to facilitate matching completion of two or more transmission systems and /or generating stations.

6.5 While doing the planning, care shall be taken that there is no wasteful investment. Therefore, the economic signal in the form of variable cost of generators, congestion, transmission losses and incremental investment in transmission shall be considered for achieving optimal transmission capacity addition.

6.6 The transmission projects could be of two categories i.e. (i) the generator or drawing customer specific projects which will cater to specific needs of generator or drawing customer, or (ii) system strengthening projects which could be required for transferring power from area/regions where the availability or generation is high or is growing, to areas where demand is high or growing and the supply is constrained or in the process of getting constrained.

6.7 There is a need to stream line the process of approval of transmission projects, before any investment is made in creating these infrastructures. The ISTS projects drawn up by CTU shall be placed before the National Committee on Transmission constituted by the Central Government. A similar mechanism should be drawn by State Governments for approval of Intra-STS projects of STUs.

6.8 The transmission projects as approved by the appropriate government(s) 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, as to be notified by the respective government, in accordance with the Tariff Policy of Government of India.

6.9 To facilitate cost effective transmission of power across ISTS, a transmission tariff sharing framework has been implemented by the CERC. This transmission sharing framework is sensitive to distance, direction and related to quantum of flow. This framework shall be reviewed and revised to remove its inefficiencies that may come up during its application or due to changing market structure of our power sector. As far as possible, consistency needs to be maintained in transmission pricing framework in inter-State and intra-State systems.

6.10 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 uprating by use of new generation High Temperature Low Sag (HTLS) conductors needs to be explored to conserve existing RoWs in order to enhance power flow per unit (per meter) of RoW and to reduce losses.

6.11 India is centrally placed in South Asian region and with cross border interconnections with neighbouring countries, can play a major role in effective utilization of regional resources. India is also a member of BIMSTEC countries.



Presently, India is connected and transacts electricity with Nepal, Bhutan, Bangladesh and Myanmar with transmission capacity of about 4000 MW. In the year 2019-20, India imported a total of 6310 MU of electricity and exported 9369 MU. Further, to facilitate import/ export of electricity between India and neighbouring countries, Ministry of Power, Govt. of India have issued the "Guidelines for Import/Export (Cross Border) of Electricity-2018" on 18th December, 2018. Import/export of power with neighboring countries should be promoted for mutual benefit, which ultimately will lead to optimum utilization of regional resources.

## **7.0 DISTRIBUTION**

7.1 Distribution sector is the most vital part of whole power sector chain which is connected directly to the consumers. However, this sector is marred with many inefficiencies like high AT&C losses, inadequate system planning, poor upkeep & maintenance of equipment etc. which are affecting the financial health of the distribution companies and leading to poor consumer satisfaction. Hence, distribution sector should be the focus area in the power sector.

7.2 Although, many remarkable achievements have been made in distribution sector during last few years and achieving 100% electrification in the country is one of the major achievements. Section 6 of the Electricity Act, 2003 mandates that both the Central Government and the State Governments would jointly endeavour to provide electricity to all areas including villages and hamlets through provision of rural electrification infrastructure and electrification of households. Government of India is committed to improve the quality of life of its citizens by providing 24x7 power to all households.

7.3 Government had launched Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) Scheme for electrification of rural areas in the country in the year 2015. Under this scheme, 100% village electrification has already been achieved in April 2018. Further, Government of India launched "Saubhagya" Scheme to provide last mile connectivity and electricity connections to all un-electrified households in rural areas and all remaining economically poor un-electrified households in urban areas in Oct'2017. Under this scheme also, almost 100% households have been electrified in the country, barring a few households due to remoteness /unwillingness of the consumers to take the electricity connection. However, quality of electricity and the duration for which it is made available in the rural areas need to be improved by taking concrete steps by the distribution companies.

7.4 There is need to strengthen distribution system to ensure 24x7 power supply. In large urban areas, reliable power supply can be ensured to the consumer by installing Ring Main system of power supply to provide an alternate route, in case of any interruption in the supply from one feeder.



7.5 One of the major factors causing financial losses to State Discoms is high AT&C losses. States should reduce the AT&C losses to reasonable levels expeditiously and necessary steps need to be taken on an urgent basis for financial turn-around of the distribution sector. The Government of India supports the states with various schemes for improving the distribution infrastructure and to bring down the losses. Government has launched schemes like Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) Scheme for rural areas and Integrated Power Development Scheme (IPDS) for the urban areas for creation/up-gradation of distribution infrastructure for facilitating 24x7 power supply and reduction of losses., however, the onus lies on the distribution companies to ensure that 24x7 reliable electricity of adequate quality is supplied to consumers. There is need to evolve a unified scheme for development of adequate distribution infrastructure wherein Central assistance to States may be linked to the reform milestones.

7.6 Feeder segregation has been carried out in many states in order to have better load management in the rural areas. This has not only resulted in better load management and increased supply to the rural households and small industries but also helped in correct estimation of agricultural subsidy announced by the state governments. Further, increasing the solarization of agricultural pumps such as under PM-KUSUM scheme, will not only help improve the quality of life of farmers by enabling irrigation during the day time but will also help in reducing the subsidy burden of State Governments. There are various modes of feeder segregation and each state should adopt a model best suited to it based on a cost-benefit analysis for implementation within the time frame.

7.7 For the progressive growth of the electricity distribution sector, it is essential that the sector becomes sustainable. Public Private Partnership (PPP) in electricity distribution sector is one of the effective ways to improve the efficiency, enhancing consumer satisfaction and reduce financial losses of the distribution companies. Franchisee model being one of the PPP model, has emerged as the preferred route for introduction of privatization in the distribution sector by delegating some distributing related responsibilities in an area to a third party on a contract basis and many states have already taken action in this direction. Another variant of the PPP model could be in the form of sub-licensee to be appointed with the approval of the State Commission. Thus, there is a need to create right environment for public private partnership in the distribution sector in the country. An element of competition can also be brought in the distribution sector by separation of the carriage (lines) and content (supply) business. To introduce the system of sub-licensee as well for separation of carriage and content, the Electricity Act 2003 will have to be suitably amended.

7.8 The regulatory commissions should ensure that all the reasonable and legitimate costs are accounted for in the tariff without taking recourse to regulatory assets. Tariffs determined by Regulatory Commissions should be able to finance necessary CAPEX to be undertaken by Discoms for improving the quality of supply. The Regulatory Commissions should ensure that tariff petitions are filed in time and processed expeditiously so that new tariffs could be made applicable w.e.f. the very first day of the following financial year, enabling the utilities to recover full revenue



during each financial year. Trueing up of accounts of the utilities should be done at the earliest possible to ensure that unnecessary carrying costs are not allowed to inflate tariffs.

7.9 Distribution System Operator (DSO) for real-time operation of the Distribution System needs to be introduced. Distribution SCADA systems must be implemented by the utilities as a tool with the DSO, 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. The DSO would play a major role in dealing with distributed generation resources like roof-top solar PV power connected to the grid, to ensure security and reliability of supply to consumers as well as the security of the grid. DSO may be made a separate and independent entity if separation of carriage and content takes place.

7.10 Special emphasis should be placed on consumer indexing and asset mapping in a time bound manner. The Government of India is providing support for the same to the states through information technology based systems under the IPDS program.

7.11 The Forum of Regulators has notified the Model Smart Grid Regulations for improving reliability of supply to consumers, dealing with variability of generation from intermittent type of renewable sources of energy, reduction of theft and bringing about efficiency in operations. All SERCs should either adopt these regulations or bring out their own regulations using this as a base document. Efforts should be made to install substation automation equipment in a phased manner. The focus should be on reducing AT&C losses, improving reliability and quality of power and reducing cost of supply of power to the consumer. Technological interventions should be explored for reduction of technical losses to a minimum level, elimination of commercial losses, prevention of theft, improved voltage profile and better consumer services.

7.12 Ministry of Power has notified the Electricity (Rights of Consumer) Rules 2020 which include the provisions of compensation to the consumers in case of deficiency of any particular service by the DISCOM. The State Electricity Regulatory Commissions have already specified the expected Standards of Performance of Distribution Licensees, however, for strict enforcement, these need to be monitored at regular intervals by them, to make available reliable and quality power supply at consumer's doorsteps. Parameters to be monitored may include voltage variation, harmonics, reliability indices like transformer failure rate, percentage of defective meters, average waiting time for new connections etc. However, all the SERCs must make reporting of three reliability indices namely SAIDI, SAIFI and CAIDI to facilitate fair and transparent comparison of Discoms. All the monitored parameters must be prominently displayed on the website of Discom. The data on Reliability Indices should be submitted by the licensee to the Appropriate Commission and to CEA at the end of each year and this data should be put in public domain and published by SERCs (state-wise)/CEA (All India).



7.13 Integrated Planning by distribution companies is essential to ensure optimum utilization of assets. The inter-State transmission system, intra-State transmission system and the distribution system have to be planned in a harmonious manner so as to avoid stranded assets. The state distribution companies have, by and large, been lacking in this aspect. Discoms should prepare their distribution plan for next five years in consultation with CEA.

7.14 Demand forecasting by the distribution utilities should be done under various time horizons and also on season-wise basis to decide on long-term, medium terms and short-term power procurements. After analyzing the expected load curve, procurement decisions regarding base load capacity and peaking capacity should be taken. The distribution utilities should acquire technological tools of load forecasting, portfolio management etc. for operational planning.

7.15 The State Commissions need to ensure that Distribution licensees tie up adequate supply to meet anticipated demand, which may be reviewed as an Annual process. Distribution licensees shall prepare a power portfolio management policy and get it approved by the State Commissions.

7.16 In accordance with Section 43 and 45 of the Electricity Act, 2003 all consumers shall be metered and shall be required to pay electricity charges for the electricity consumed in accordance with the tariff fixed by the Appropriate Commission. Despite the repeated emphasis on metering, Discoms are yet to achieve hundred percent metering of all consumers. The achievement in the agricultural sector is not satisfactory and requires attention on priority basis. Discoms should take necessary steps to achieve 100% metering of all consumers within one year of the notification of this Policy.

7.17 The use of automation and smart metering can play a pivotal role in bringing the positive transformation in the distribution sector. Smart meters have advantages of remote metering and billing, implementation of peak and off-peak tariff and demand side management through demand response. The shift to the pre-paid system will do away with all the problems associated with meter reading, billing, collection and disconnection in case of non-payment. All new electricity connections should be released with smart pre-paid meters/simple pre-paid meters. Further, existing meters should also be replaced with pre-paid meters in a phased manner so as to achieve 100% pre-paid metering within 3 years from the date of issuance of this policy. The State Commissions should also put in place an independent third-party meter testing arrangement.

7.18 Incentives for demand response also shall be notified by all SERCs. Consumers should 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. Such consumers must have smart meters with appropriate features.



7.19 The process of achieving 100% feeder metering has almost been completed. Meters installed on about 70% feeders have communicating modems and are linked to National Power Portal (NPP) presently. Efforts should be made by all Discoms to connect all the feeders to NPP by replacing non-communicable meters with communicable /AMR meters by December 2022. The status of metering for the distribution transformers is not satisfactory in the country as about 37% Distribution Transformers only are metered presently in the country. As the metering of all Distribution Transformers is essential for accurate energy auditing & accounting, efforts should be made by all Discoms to complete the metering of distribution transformers within next 3 years' time. Any new feeder and distribution transformer should be commissioned only with the associated meter. All the existing meters on feeders and distribution transformers should also be converted into AMR meters so that need for taking manual reading for such meters gets avoided.

7.20 Use of Smart meters along with the energy audit systems is helpful to detect theft of electricity. The Electricity Act, 2003 has provided for stringent measures against theft of electricity. The States and distribution utilities should ensure effective implementation of these provisions.

7.21 If the State Government desires to grant any subsidy to any consumer or class of consumers in the tariff determined by the SERC, the same shall be in the form of Direct Benefit Transfer (DBT).

## **8.0 GRID OPERATION**

8.1 Grid Operation has become an important issue in ensuring reliability and security of supply to consumers. The Grid currently caters to a maximum demand of about 1,84,000 MW on an all-India basis as upto 2019-20, which is likely to increase to about 2,25,000 MW by 2021-22 as assessed in the 19th Electric Power Survey. In view of the large scale integration of renewable sources of energy of intermittent nature, grid operation would become more challenging in the coming years.

8.2 The System Operator 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. Ancillary Services would need to be made available to the System Operator for active and reactive power balancing, black start services etc. Demand response is a quick mechanism for active power balancing for tackling the variability of intermittent sources of generation and should be enabled by the State Regulators through appropriate Regulations. The CERC should introduce regulations on various kinds of ancillary services based on response time in consultation with Central Electricity Authority. SERCs should also introduce matching provisions in their regulations.

8.3 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. NLDC and RLDCs are carrying out studies to assess Transfer Capability. Similar studies should be undertaken by SLDCs as well for ensuring reliability and security in their respective control areas.

8.4 A multi-pronged approach is required for dealing with the variability of generation of intermittent type of renewable energy sources like expanding of the balancing areas, combined operation of renewable energy sources with conventional generation/storage system and development of market for ancillary services. Further, Deviation Settlement Mechanism for inadvertent exchanges and real-time markets may need to evolve continuously depending on emerging requirements.

8.5 Forecasting and scheduling of renewable energy sources, as is being done for conventional generating plants, should be made mandatory by Appropriate Commissions; though a margin for error need to be specified, beyond which deviation charges would become applicable. Till SERCs bring out these standards, the CERC standards should apply by default to help the State Load Dispatch Centers.

8.6 Protection system mal-operation is one of the leading factors for tripping of grid elements. Regional Power Committees should take up protection audit at regular intervals to minimize such tripping. The States 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.

8.7 In order to ensure fair play in grid operation and for implementing non-discriminatory open access, system operators i.e. NLDC, RLDCs and SLDCs should be an independent entity. Towards this, Central Government has already created a new PSU named Power System Operation Corporation Limited for operating RLDCs and NLDC after separation from POWERGRID. The State Governments should take similar action for separation of SLDCs from State Transmission Companies. 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 SLDCs is necessary to ensure availability of real time data and requisite analytical tools.

8.8 NLDC, RLDCs and SLDCs should make information of Real Time system operation as specified by the CERC, available in public domain through its web site.

## **9.0 POWER MARKETS**

9.1 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 in the state distribution companies need to be specifically trained on these aspects so as to optimize power procurement portfolio.

9.2 Government is committed to introduce suitable market mechanisms and also to deepen the spot markets by enhancing its percentage share to about 25% during the year 2023-24. These mechanisms may include capacity markets/auction mechanisms that help do away with the rigidity of the present long term PPA driven arrangements while catering to the need for reliable capacity. The government is also working proactively to usher in the next level of reforms in the power markets by introduction of longer duration forward contracts and derivatives on power exchanges. CERC has already approved a term-ahead product for renewable energy in power exchanges. There is need to take measures for encouraging trade of renewable energy in day-ahead markets as well. Further, the emphasis has to be on broadening the scope of ancillary services and to move towards market based procurement of such services. One important measure to maintain fairness and to minimize possibility of collusion and gaming in power markets is to put in place a strong regulatory framework and infrastructure for market monitoring and surveillance.

9.3 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. All states should use this portal for procuring power on competitive basis under various time horizons.

9.4 A new entity called aggregators may be created to aggregate demand, renewable power generation, demand response, micro-storage etc. to help small consumers, prosumers and producers reach the market. This would also help in promotion of open access which is presently allowed for consumers with a load of only 1 MW and above.

## **10.0 REGULATORY PROCESS**

10.1 Regulatory Commissions should adopt regulatory process consistent with the policy of gradually moving towards light touch regulation. As more and more power is procured on competitive basis either through power exchange or through bidding, the burden of regulatory Commissions in tariff setting would come down. Even in cases where tariff is to be fixed by the regulatory Commission, they should follow performance based cost of service regulations with multi-year tariff (MYT) as laid down in the Tariff Policy. The Regulatory Commissions should focus more on emerging tasks such as market monitoring and surveillance, ensuring resource adequacy, balancing, demand response etc.

10.2 Forum of Regulators may evolve procedures for 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.



10.3 Wherever power or transmission service is being procured based on guidelines issued by the Central Government under Section 63 of the Electricity Act, 2003, the role of Appropriate Commission is primarily to ensure compliance to the process. It needs to be ensured that regulations framed by Appropriate Commission are aligned to the aforesaid guidelines or Standard Bid Documents issued thereunder. In such cases, only those claims or disputes that do not get settled in accordance with the provisions of the contract, should be referred to the Appropriate Commission.

## **11.0 RESEARCH AND DEVELOPMENT (R&D) AND ADOPTION OF NEW TECHNOLOGIES**

11.1 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, regional and national 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.

11.2 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.

11.3 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.

11.4 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.

11.5 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 regulatory commissions in consultation with CEA. To minimize the possibility of cyber attacks, cyber security standards should be made specifically for the power system.

11.6 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.

## **12.0 POWER QUALITY**



12.1 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. With the introduction of Deviation Settlement Mechanism and progressive tightening of the provisions thereof, there has been considerable improvement in operating frequency of the grid. There is need to give due attention to the other aspects of power quality such as interruptions, voltage variation, harmonics, flicker etc. Although there are technical standards by CEA and regulations by CERC and SERCs on these issues, there is need for proper monitoring and enforcement of penalties for violations. Regulatory Commissions should take up this issue on priority basis.

### **13.0 ENERGY CONSERVATION AND ENERGY EFFICIENCY**

13.1 The SERCs must mandate utility-driven DSM programme and customer engagement as a means of peak load management, energy conservation and saving in cost of power.

13.2 The Standards and Labelling programme is to provide consumers an informed choice about the energy and cost saving potential of the labelled appliances/equipment being sold commercially. This scheme entails laying down minimum energy performance norms for appliances / equipment, rating the energy performance on a scale of 1 to 5, 5 star being the most energy efficient one. Energy labelling is one of the most cost-effective policy tools for improving energy efficiency and lowering associated energy cost of appliances or equipment. As on 2020, the programme covers 26 appliances out of which 10 appliances are under the mandatory regime and the remaining 16 appliances are under the voluntary regime. The labelling programme is being extended to more equipment and appliances. State Governments and distribution companies specially in urban areas need to encourage energy efficient lighting and appliances. Further, installation of energy-efficient pumps conforming to standard specifications needs to be encouraged for use in agricultural sector and incentivized by innovative financing schemes.

13.3 Energy efficiency in buildings is being achieved through adoption of the “Energy Conservation Building Code (ECBC)” which sets minimum energy standards for new commercial buildings. The updated version of ECBC code was launched in 2017 which provides current as well as futuristic advancements in building technology to reduce building energy consumption and promote low-carbon growth. The residential building energy conservation code and labeling program for residential building has been launched. In order to promote energy efficiency in residential building sector, “ECO-NIWAS” Portal has been developed.

13.4 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 street lights with smart and energy



efficient LED street lights. These schemes have led to significant savings and reduction in CO2 emission.

13.5 National Mission for Enhanced Energy Efficiency (NMEEE) is one of the eight national missions under the National Action Plan on Climate Change (NAPCC). One of the flagship schemes under NMEEE, the Perform, Achieve and Trade (PAT) scheme is a mechanism designed to achieve emissions reduction in energy intensive industries and it is designed on the concept of reduction in Specific Energy Consumption (SEC). The PAT scheme is in its sixth cycle now and covers 1073 energy intensive industries / establishments from 13 sectors. The recently concluded second cycle of the PAT scheme has resulted in energy savings of 13.28 Million Tonne of Oil Equivalent (MTOE). This saving is worth INR 31,445 crores and contributed in reduction of 61.34 Million Tonne of carbon dioxide.

13.6 MSMEs in India have started to shift from a traditional strictly cost and quality approach to energy efficiency, zero waste and reduced carbon emissions. Further, for bringing more competitiveness and making this sector more energy efficient, it is quintessential to understand the consumption of energy and its flow within the facility along with the classification of energy usage and its relationship to processes and production outputs in present scenario. Bureau has also developed more than fifty (50) multimedia tutorials on energy efficient technologies for more than twenty (20) sectors for knowledge transfer and thereby easy adoption of these technologies. Bureau of Energy Efficiency is also implementing energy efficient technologies in many energy intensive clusters of India with the support from Global Environment Facility through UNIDO and World Bank towards the common goal of facilitating development of the SME sector in India through promotion and adoption of clean, energy efficient technologies and practices. A knowledge portal namely Simplified Digital Hands-on Information on Energy Efficiency in MSMEs (SIDHIEE) was developed. The portal hosts variety of knowledge resources like case studies, best operating practices, details of latest energy efficient technologies etc.

13.7 To promote energy efficiency in the transport sector, average fuel consumption standards for passenger cars were issued. The fuel consumption standards are under implementation from April 2017 onwards, and a second set of standards would come into force from 2022-23. The fuel efficiency norms for Heavy Duty Vehicles and Light Commercial Vehicles have also been issued.

## **14.0 ENVIRONMENTAL ISSUES**

14.1 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.



14.2 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 State Governments 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 sub-stations. Wherever required, MW scale batteries should be installed at the sub-stations to mitigate the requirement of additional land.

14.3 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. The thermal power plant(s) including the existing plants located within 50 km radius of sewage treatment plant of Municipality/local bodies/similar organizations shall in the order of their closeness to the sewage treatment plant, mandatorily use treated sewage water produced by these bodies and the associated cost on this account is to be allowed as a pass through in the tariff as provided in the revised Tariff Policy dated 28.1.2016. 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.

14.4 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.

14.5 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 Regulators 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.

14.6 Disposal of electronic waste is one of the major concerns for solar photovoltaic power projects. The State Governments (Central 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.

## **15.0 SKILL BUILDING AND HUMAN RESOURCE DEVELOPMENT**

15.1 It is very important that the persons employed in the 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. 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.

15.2 Skill building of institutions in the power sector should be done at regular intervals. This would promote institutional capacity building and provide the technical institutions, policy makers and regulators with the necessary skill sets. The respective State Governments should also initiate steps to provide skill building to the staff of their institutions and regulatory commissions since it has been observed that the in-house capacity of most of the SERCs 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.

15.3 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 statutory bodies like CEA, CERC, SERC and other organizations like CTU, STUs, NLDC, RLDCs and SLDCs, to align with new requirements.

## **16.0 COORDINATED DEVELOPMENT**

16.1 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 Forum of Regulators which provides for a common platform for all regulators to deliberate on the policies and regulations which can be uniformly applied to the whole country.

## **17.0 CREATION OF ELECTRIC VEHICLE CHARGING INFRASTRUCTURE**



17.1 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 (NEMMP) 2020. Further, it has launched the FAME – India (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles in India) Scheme as a part of the National Mission for Electric Mobility (NMEM) from 1<sup>st</sup> April 2015. With support of the government, electric vehicles have started penetrating in the Indian market. One of the challenges in faster 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. 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.

17.2 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.

17.3 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 concerned SERC, including that for injection of power back to the grid.

17.4 Distribution Licensee should be proactive in identifying part of distribution network that needs strengthening due to EV charging. SERCs may need to come out with special provision for early approval of the augmentation proposed by Distribution Licensee to facilitate EV Charging.

17.5 Full potential of environmental benefits of electric mobility will be realized when use of renewable energy for charging is maximized. To facilitate this, aggregators may be allowed to aggregate demand of several PCS to purchase renewable energy using open access.

## **18.0 MAKE IN INDIA INITIATIVE AND AATMANIRBHAR BHARAT ABHIYAN**



18.1 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. 'Aatmanirbhar Bharat Abhiyan' aims towards becoming a self-reliant economy.

18.2 Ministry of Power and CEA will continue to take measures for promoting manufacturing of goods and services in India related to Generation, Transmission and Distribution segments of the power sector under the Make in India initiative. In pursuance to Order of Government of India, Department for Promotion of Industry and Internal Trade (DPIIT) Public Procurement (Preference to Make in India), dated..... and subsequent amendments issued from time to time, Ministry of Power has issued Orders giving purchase preference to local suppliers in power sector. These orders are applicable in respect of the procurements made by all attached or subordinate offices or autonomous body under the Ministry of Power, Government of India including Government Companies as defined in the Companies Act, and /or the States and Local Bodies making procurement under all Central Schemes/ Central Sector Schemes where the Scheme is fully or partially funded by Government of India. The aforesaid orders shall also be applicable in respect of funding of capital equipment by PFC/ REC.

18.3 Ministry of Power has constituted two committees for independent verification of self-declarations and auditor's / accountant's certificates produced by the suppliers related to local content percentage on random basis and in the case of complaints and to examine the grievances in this regard, respectively.

18.4 Further, since power is a sensitive and strategically important sector and involves critical infrastructure for economic and social development of the country, Ministry of Power vide OM No.11/05/2018-Coord dated 23<sup>rd</sup> July, 2020 had issued Order to encourage, adopt and use only 'Make in India' equipment/materials/parts/items in the power sector. Accordingly, all equipment/materials/parts/items required in the power sector which are domestically manufactured with sufficient domestic capacity shall necessarily be used from the domestic manufacturers only as per the extant provisions of the Public Procurement (Preference to Make in India) Orders issued by DPIIT and MoP.

18.5 Policy framework for equipment/materials/parts/items, where domestic capacity is not available, through phased manufacturing programme, vendor development, Research & Development, tax & other incentives is under finalization by MoP. Till such time the goods so imported shall be tested in certified laboratories designated by the Ministry of Power to check the presence of any embedded malware/trojans or other cyber threats and also to check adherence to Indian Standards.

18.6 Efforts are being made so that imports of items, which are available in the country, gets restricted. Only those equipment/ components/ raw material which are not manufactured in India will be allowed to be imported. Further, efforts are being



made to incentivize domestic manufacturers to indigenously produce more and more equipment/ components.

18.7 Through transfer of technology route, foreign manufacturers shall also be invited to establish their manufacturing units in respect of the items which are not being manufactured in India at present. They shall be offered suitable incentives and provided with other infrastructure facilities. Government is also planning to create manufacturing zones for manufacturing of power sector equipment. In these zones, the land on concessional rates and other common infrastructure facilities shall be made available on reasonable rates. Rail and road connectivity shall also be ensured. These steps will boost the manufacturing of quality equipment at competitive prices and will be helpful in reducing the dependence on import.

18.8 Testing for cyber security of imported power sector equipment has been made mandatory for prevention of cyber-attacks on the power sector and to protect the strategic interest and national security of the country. Testing facilities shall be developed as well augmented to cater to the need of the sector.

18.9 For ensuring the quality of the indigenous products, Quality Control Orders are being contemplated for certain power products/equipment. Standards are being developed for the products and equipment for which no national standards exist. Where the national standards have become out of tune with the technology or developments, the standards are being upgraded keeping in view fast pace of development of technology and obsolescence.

18.10 Further to ensure the quality and reliability of the equipment, approved list of Models and Manufacturers has been planned. Only those products which have been registered on the portal shall be procured in the Government procurements.

18.11 There should be deavour to promote manufacturing of critical raw materials, such as special steels like CRGO, high pressure tubes etc in India.

## **19.0 DISASTER RISK REDUCTION**

19.1 Power Sector is one of the most important sector 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.

19.2 There is need to incorporate measures for reduction of disaster risk into planning, design, construction and operational aspects of power sector projects. CEA

should review the Standards of Construction and other Technical Standards and carry out changes, wherever necessary to minimize disaster risks.

19.3 All the licensees and generating companies must comply to the provisions of Disaster and Crisis Management Plan prepared by the Central Electricity Authority.

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