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

Shram Shakti Bhawan, Rafi Marg,
New Delhi, 27th 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.


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 12th 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.

[Signature]
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 along with 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.

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/TRANSCCs 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, ASSOCHAM, 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

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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.
विध्युत मंत्रालय
संकल्प
नई दिल्ली, 12 फरवरी, 2005
राष्ट्रीय विध्युत नीति
सं. 23/40/2004-आर एंड आर (खंड-II).-प्रस्तावना:
1.1 विध्युत अधिनियम, 2003 की शासन के अनुसार में केंद्र सरकार एवं उड्डयन राष्ट्रीय विध्युत नीति की अधिसूचित करती है।

1.2 विध्युत 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 जल्द है जिस पर देश का सामाजिक एवं आर्थिक विकास निर्माण करता है। ग्रामीण भारत को युक्तिसंगठन द्वारा विध्युत आपूर्ति किया जाना देश के समग्र विकास के लिए आवश्यक है। इसी प्रकार प्रतिष्ठापन कार्यपीठ पर विद्युत संसार और गुणवत्ता वाली विध्युत की उपलब्धता भारतीय उड्डयन के लिए समर्पित सूची से महत्वपूर्ण है ताकि भारतीय उड्डयन विविध रूप से प्रतिभागिता बन सके और वह वित्तपोषण सुरू कर शकता का दौड़ाना कर सके। सेवाओं के क्षेत्र में हमारी अर्थव्यवस्था की वृद्धि में महत्वपूर्ण योगदान दिया है। विध्युत की गुणवत्तात्मक आपूर्ति की उपलब्धता इस क्षेत्र के वृद्धि के लिए बहुत महत्वपूर्ण है।

1.3 स्तरित आर्थिक विकास एवं गारीबी उपचार के लिए एक महत्वपूर्ण घटक के रूप में विध्युत की आवश्यकता को समझते हुए देश में अगले 5 वर्षों तक सभी घरों में विध्युत उपलब्ध कराने का लक्ष्य रखा गया है। 2001 की जनगणना के अनुसार देश के कुल 44% घरों में विध्युत उपलब्ध नहीं हैं। ऐतिहासिक देश के घरों में विध्युत पहुंचने के तकनीकी कार्य का अभाव है। और इसके लिए विध्युत उपचार क्षेत्र में वृद्धि करने की होगी। तथा परेर्याप्त वित्त प्राप्ति का आयाम विकास करना होगा।

1.4 भारतीय विध्युत क्षेत्र में व्यापक विकास आ रहे हैं। आजादी के बाद भारतीय विध्युत क्षेत्र में हार्मोनिया प्रगति वसूल: सशक्तीकरण है। किसी समय के साथ विध्युत की संगी उपलब्धता से
अधिक बढ़ती रही है। देश में व्यस्ततमालिकाओं ऊर्जा अभाव एवं सामान्य ऊर्जा अभाव काफी अधिक है और यह अभाव विद्युत उत्पादन, परेरण एवं वितरण संबंधी खामियों तथा विद्युत के अनुप्रयोग के कारण है। भविष्यते अधिकतर लोगों के लिए वाणिज्यिक खामियों तथा वृद्धि होंगे क्षेत्र में वाणिज्यिक वृद्धि की कमी से वित्तीय प्रबंधन हुआ था। क्रोड़ समूहदियों गरे-पोषकता रखने तक बढ़ गई है। वितरण नेटवर्कों में कमियां भी खराब गुणवत्तापरक अपूर्ति के मुख्य कारणों में से एक है।

1.5 विद्युत उद्योग में नवीन पूंजी की आवश्यकता होती है और इसकी निर्माणशील अवधि भी लंबी होती है। देश में विद्युत उत्पादन के लक्ष्य साधन अनुप्रयोग से होती है। विद्युत एक ऐसी वस्तु है जिसका संचालन ग्रिड में संचालन पूर्व तय किया जा सकता जबकि मांग व पूर्ति में लागू किया होता है। ग्रिड में व्यापक रूप से होती है। वितरण एवं वित्तीय अपूर्ति वित्तीय कार्यालय के मुख्य कारणों में से एक है।

1.6 विद्युत अभियान, 2003 में विद्युत क्षेत्र के स्वरूप एवं वस्तुत विकास के लिए एक सक्षम कार्यक्रम का अभ्यास किया गया है। देश में वित्त क्षेत्र की विशेष निगरानी के साथ प्रतिबंध का पूरा विकास का भाग बनाया गया है। प्रतिबंध के उपलब्ध संसाधनों के लायक उपयोग करने के लिए निर्माण निर्माण निर्माण निर्माण के कारण का पूरा विकास का भाग बनाया गया है।

1.7 विद्युत अभियान, 2003 की धारा 3(1) के अंतर्गत केंद्र सरकार द्वारा अन्य बातों के साथ-साथ केंद्रीय विद्युत प्राधिकरण (के.विद.प्रा.) तथा राज्य सरकारों के परम्परा से एक राष्ट्रीय विद्युत नीति तैयार किया जाना अपेक्षित है। इस नीति संबंधित प्राधिकरण निर्देशों में विद्युत नीति और आवश्यक नीति सामना-समय पर तैयार करेगी।

अभियान की धारा 3(3) केंद्र सरकार को समान-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 न्यूनतम मापक के लिए दिशानिर्देश प्रस्तुत करना, समी कोशियों में विद्युत अपूर्ति करना तथा ऊर्जा संसाधनों की संचालना। इन संसाधनों के दोनों के लिए उपलब्ध प्राथमिक विकास के लिए निर्माण का उपयोग करने हेतु विद्युत उत्पादन में निवेश किया गया है। उर्जा गुणवत्ता संबंधी मामलों को ध्यान में रखते हुए उपभोक्ताओं और अन्य रेतोल्मेट्रिस्ट्स के मिले रखने की शक्ति करता है।

1.9 राष्ट्रीय विद्युत नीति राज्य सरकारों, केंद्रीय विद्युत प्राधिकरण, केंद्रीय विद्युत निर्माण अधिकारियों और अन्य रेतोल्मेट्रिस्ट्स के साथ प्रामाण्य करने और उनकी अधिकारों को ध्यान में रखने का अनुमोदन 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 गांच, वर्ष में सभी घरों में बिजली की उपलब्धता।
• विद्युत की उपलब्धता-वर्ष 2012 तक विद्युत की संपूर्ण मांग को पूरा किया जाना। ऊर्जा संबंधी
  व्यवस्थापन एवं सामाजिक अभाव को समाप्त किया जाएगा और अन्तर्क्रिया सुविधा से पर्याप्त विद्युत
  उपलब्ध रहेगी।
• गृहस्थिति संगठन दर्शन पर और दस तर्कों से निर्माण स्तर की विश्वसनीय व गृहस्थिति संगठन विद्युत की
  आपूर्ति करना।
• सन् 2012 तक विद्युत की प्रति व्यक्ति खप्त 1000 यूनिट थे भी अधिक बढ़ाना।
• सन् 2012 तक अच्छी मैंटेन आपार पर हर घर में प्रतिदिन 1 यूनिट की खप्त खप्त सुनिश्चित
  करना।
• विद्युत क्षेत्र में विश्वविद्यालय एवं वाणिज्यिक व्यवहार का।
• उपभोक्ताओं के हितों की ख्ता।

3.0 राष्ट्रीय विद्युत योजना

3.1 मांग का मूल्यांकन क्षमता अभिवृद्धि के नियोजन के लिए एक महत्वपूर्ण पूर्व आयोजन है।
  अधिनियम के तहत वर्ष 3 (4) के अनुसार विद्युत नीति प्रावधिकरण (सीई) द्वारा प्रत्येक पाँच वर्ष में
  राष्ट्रीय विद्युत योजना तैयार करें इसमें राष्ट्रीय विद्युत नीति के अनुसार समय-समय पर संशोधन करना
  आवश्यक है। राष्ट्रीय नीति द्वारा तैयार करना तथा राष्ट्रीय अर्थव्यवस्था को सुधारने हेतु संसाधनों
  के इकाइयों उपयोग के लिए भिन्न योजना एजेंसियों के कार्यक्रमों का समन्वय करना
  सीई से का एक प्रमुख कार्य है। सीई द्वारा योजना लिखे गए ज्ञान को राष्ट्रीय उद्यान कंपनियों,
  परिवहन विद्युतलोगों और परिवहन/वितरण लाइसेंस्ड एजेंसियों द्वारा संदर्भ व्यापकता के रूप में उपयोग में
  लाये जा सकता है।

3.2 तदनुसार सीई अत्यधिक एवं संदर्भी योजना तैयार करें। राष्ट्रीय विद्युत नीति पांच वर्ष
  के अत्य समय के लिए होनी जबकि संदर्भी योजना 15 वर्ष की होगी और इससे निम्नलिखित
  शामिल होगी—

• भिन्न क्षेत्रों के लिए अत्यधिक और दीर्घकालीन मांग का अनुरोध।
• विद्युत उद्यान एवं परिवहन में संतुलन, प्रणाली में हानियां, भार केन्द्र आवश्यकता, ग्रिड
  स्थिति, आपूर्ति सुरक्षा, वोल्टने प्रोफाइल समेत विद्युत की गुणवत्ता इत्यादि तथा पुनर्याप्तिक
  पुनर्निर्माण समेत वर्तमान विद्युत विद्युतों के ध्यान में रखते हुए शामिल भिन्न तथा अभिवृद्धि के
  लिए सुझाए गए क्षेत्र/स्थान।
• परिवहन प्रणाली के साथ ऐसे संपादित स्थलों का एकीकरण और अनिवार्यता की
  आवश्यकता तथा परिवहन प्रणालियों के प्राकार संयुक्त राष्ट्रीय ग्रेनल विकास और
3.3 सार्वजनिक विद्युत योजना तैयार करते समय के विशेष, राज्य सरकारों समेत सभी स्टेकहोल्डर्स से प्रारंभ करेगी और राज्य सरकारों वितरण लाईसेंसी/एसटीपी समेत स्टेकहोल्डर्स के साथ समांतर स्थापित करके राज्य सतर्क कर रही है। अत्यक्षरद्वारा दो सालकालीन मांग का गूल्लुकन करने के लिए आपातकालिक अध्ययन कार्य करते समय वितरण यूटिलिटीयों द्वारा किए गए अनुमानों को उपयुक्त प्राथमिक प्रदान की जाएगी। के.वि.प्रा., विशेषतः मांग अनुमान के क्षेत्र में आर्थिक विशेषज्ञों द्वारा वाले संस्थानों और कंपनियों से साथ पारस्परिक कार्यरता करेगा। अर्थव्यवस्था के विभिन्न क्षेत्रों के लिए परियोजनागत हृदय दोनों को भी भावी मांग का अनुमान लगाते में व्यापार में रखा जाएगा।

3.4 या तौर पर, 10वीं योजना और 11वीं योजना तथा 10वीं, 11वीं और 12वीं योजना अवधियों के लिए संदर्भों योजना हेतु सार्वजनिक विद्युत योजना तैयार की जाएगी तथा के.वि.प्रा. द्वारा तैयार की गई विद्युत योजना को संशोधित और उसकी समीक्षा करके योजना को अवधिकृत किया जाएगा। यह 6 माह के भीतर किया जाएगा।

4.0 विचारार्थ मामले

नीति के अंतर्गत निम्नलिखित मामलों पर विचार किया जाएगा:

- विद्युत उत्पादन
- परिवहन
- वितरण
- ग्रामीण विद्युतीकरण
- सेवाओं की लागत की सूची और लक्षित संक्षिप्तियों
- प्रौद्योगिकीय विकास तथा अनुसंधान एवं विकास(आर एंड डी)
- उपभोक्ता लाभों के उद्देश्य से प्रतिसंपर्क
- निजी क्षेत्र की हिस्सेदारी समेत विद्युत क्षेत्र कार्यक्रमों का विषय प्रश्न
- उद्योग संस्करण
- पर्यावरणीय गृह
- प्रशिक्षण एवं मानव संसाधन विकास
- राह-उत्पादन एवं नवीकरणीय तथा गैस-परिपथगत क्षेत्र खोज
- उपभोक्ता हितों की रखा और गुणवत्ता मानक

5.1 ग्रामीण विद्युतीकरण

5.1.1 विद्युत क्षेत्र के विकास का एक मुख्य लक्ष्य ग्रामीण क्षेत्रों रामेक सभी क्षेत्रों को विद्युत की आपूर्ति प्रदान करना है जैसा कि अधिनियम की धारा 6 में शासनदेश है। केन्द्र सरकार और राज्य सरकारों द्वारा इस क्षेत्र को प्राप्त करने के संयुक्त प्रावधान करेगी। सभी उपभोक्ताओं को सभी लागतो
को प्रदर्शित करने वाली टेंडर पर विविध घटनाओं द्वारा एकाधिक विधुत आपूर्ति प्राप्त करने का अधिकार है। अम्बी तक लगभग 56% ग्रामीण परिवारों के पास विद्युत की पहुँच नहीं है। यह सुनिश्चित करने के लिए निर्यात प्रयास करें जाने वाले के लिए कि सभी परिवारों का विद्युत पहुँचने के लिए ग्रामीण विद्युतीकरण का कार्य तथा युक्ति कर्म डे पर समाज के गरीब और सीमित क्षेत्रों को विद्युत की पहुँच सुनिश्चित करने का कार्य अगले पांच वर्षों तक पूरा हो जाए।

5.1.2 विद्युतीकरण प्रणाली का उद्देश्य निम्नलिखित का सूचना करना होगा।

(क) प्रत्येक ब्लॉक में न्यूनतम 33/11 के वोल्ट (अथवा 66/11 के) सबसे तेज और लोड के अनुसार यदि उपलब्ध हो तो इससे अधिक के साथ ग्रामीण विद्युतीकरण वितरण बैंकोन (आरएसआई) जो राज्य परिषद ग्रामीण से उपयुक्त रूप से सम्बद्ध हो और इसके नेटवर्क से जुड़ा हो। यह विद्युत उपयोग के या तो पारंपरिक या अपरंपरिक तरीकों से किया जाएगा जो भी अधिक उपयुक्त या लाभकारी हो।

(ख) आरएसआई से आपूर्ति प्रिंटर तैयार होगे और प्रत्येक ग्रामीण ज्वालमुखी में न्यूनतम एक वितरण हंगामा होगा।

(ग) मांग आचार पर विद्युत घर को जोड़ने के लिए वितरण हंगामा से घरेलू विद्युतीकरण।

(घ) जब भी उपयुक्त संबंध न हो (लागत ग्रामीण और ग्राम केन्द्रित विद्युत कार्य करने के लिए इंटरटेन्मेंट व्यवस्था) तो स्थानीय वितरण नेटवर्क के साथ वितरण के बिना विद्युत उपयोग की सुविधाएं प्रदान की जाएंगी ताकि प्रत्येक घर को विद्युतित किया जा सके। यह उपयोग या तो पारंपरिक या अपरंपरिक तरीकों से किया जाएगा, जो भी अधिक उपयुक्त या लाभकारी हो। जहां ग्रेड केन्द्रित विद्युतों नष्ट कर देंगे इसे किफायती माना जाए।

(ड) अवसंरक्षण के बारे में विवाद पर ग्रामीणों के बीच घटना घटियों, घटना व घटना उद्धेश्यों, घटना व घटना उद्धेश्यों तथा स्वास्थ्य और शिक्षा स्वास्थ्य और शिक्षा सामाजिक उपयोग संस्थाओं से सहभागी और अन्य आर्थिक गतिविधियों की आवश्यकता को पूरा करें।

5.1.3 विद्युति रक्षा, जनजातीय क्षेत्रों और अन्य क्रांतिक स्वयं का विद्युतीकरण करने जाने के लिए विशेष ध्यान दिया जाएगा।

5.1.4 रुपये इलेक्ट्रिफिकेशन कार्यों को इंडिया, भारत सरकार का उपक्रम अगले पांच वर्षों में सभी घरों को विद्युत उपलब्ध कराने के राष्ट्रीय साक्ष्य न्यूनतम कार्यक्रम द्वारा निर्मित ईंधन को प्राप्त करने के लिए कार्यक्रम के कार्यक्रम हेतु वेतन सरकार के स्तर पर योजना रचने होगी। ग्रामीण विद्युतीकरण परियोजनाओं का समयबद्ध कार्यचयन को सुनिश्चित करने के लिए उनकी पूर्वनिर्धारित को उचित रूप से विकसित किया जाएगा।
5.1.5 वांछित समय-सीमा के भीतर ग्रामीण परिवारों के लिए विद्युत की पहुँच में विस्तार करने का भी लक्ष तम्मी प्राप्त किया जा सकता है जबकि किसी लाइसेंसवार कम से कम विद्युत की लागत और प्रबाधन और अनुसूचणा (अर्थात खरीद के प्राप्त कर सके, सिवाय गरीबी रेखा से नीचे रहने वाले परिवारों की जीवन रेखा खपत’ के संबंध में, जिन्हें लिए कि पर्यावरण मान्यता में आर्थिक सहायता प्रदान करने की आवश्यकता होगी। आर्थिक सहायताओं का लक्ष्य इस प्रकार बनाया जाना चाहिए कि यह कुल तरीके में विद्युत लाभार्थियों तक पहुँच सके। सरकार ग्रामीण विद्युतीकरण में निवेश के लिए भूमिगत आर्थिक सहायता और आसान दौरानकील जग मिश्रित प्रदान करने की आवश्यकता से परिचित है इसलिए ग्रामीण क्षेत्रों में अपूर्वत लागत कम हो सकेगी। योजना प्रक्रियाओं के लिए यह निश्चित जानकारी उपलब्ध कराए जाने की आवश्यकता है सामान्य संस्कृतिक साधनों में सम्मिलित जानकारी भी सुविधा दिए जाने की आवश्यकता है। इसे प्राप्त करने में केंद्र सरकार राज्य सरकारों की सहायता करेगी।

5.1.6 आवश्यक संस्थापिक कार्यबांध के लिए यह सुनिश्चित करने के लिए ऐसे विकास नहीं किया जाएगा। जिसके ग्रामीण विद्युतीकरण अपने ज्ञान का एक पूर्ववर्ती ज्ञान नहीं हो जाए। यह लिए भी किया जाना चाहिए कि उपभोक्ताओं के लिए विद्युतीकरण विद्युत अपूर्वत सुनिश्चित करने हेतु अपूर्वत प्रणाली का प्रबाधन और अनुसूचणा हो सके। प्रबाधन एवं अनुसूचणा तथा लागत वस्तुल की जिस्मेवारी का निर्माण स्पीडिटीया भाषा पंद्रहों, स्थानीय प्रजारकारियों, एनजीओ, प्रतिनिधियों आदि के साथ उपयुक्त व्यवस्था बनाकर किया जाएगा।

5.1.7 ग्रामीण विद्युतीकरण के विशाल कायाधि के लिए राज्य सरकारों की विभिन्न अनुशंसियाँ और केंद्र सरकार के खिलाफ उपयुक्त सहयोग और अनुसूचणा की भागीदारी अपेक्षित है सामान्यिक भागीदारी के उदेश्य को प्राप्त करने के लिए सिखा और जागरूकता कार्यक्रम आवश्यक होगें।

5.2 उत्पादन

5.2.1 भारत के विद्युत क्षेत्र प्रबाधन में अपूर्वत उत्पादन की स्थिति का पता चलता है। सन 2012 तक 1000 यूनिट से अधिक प्रति वार्षिक 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 आर्थिक सम्बन्ध की जरूरत होगी।

5.2.2 भारत सरकार ने देश में नई उत्पादन क्षमता के समुदाय हेतु अनुकूल वातावरण बनाने के लिए कई सुधारक, उपयोग किया है। विद्युत अभियान, 2003 में उत्पादन हेतु बहुत ही उच्च आंकों की योजना की गई है। इसके अनुसार, उत्पादन के लिए किसी भी प्रकार के लाइसेंस अर्थात जरूरत नहीं है। साथ ही आर्थिक उत्पादन के लिए सीट उसकी वैकल्पिक वोल्टेप्टी की भी जरूरत नहीं है। जल विद्युत उत्पादन के लिए पूर्वीगत वोल्टेप्टी की सीमा, जिसके लिए सीट उसकी वोल्टेप्टी लेनी पड़ती थी, को वर्तमान स्तर से अधिक किया जाएगा। वैकल्पिक उत्पादन को सभी तरह के निर्माण से भूमा अनिवार्य है।

5.2.3 सन 2012 के लिए उल्काएं और व्यवस्थापक की जरूरत को पूरा करने के लिए विद्युत भंडारण क्षमता व्यवस्था की जरूरत है। इसके संस्थापित क्षमता के सामान्य उपयोग 85% के अधिक होने के लिए राष्ट्रीय स्तर पर कम से कम 5% भंडारण आवश्यकता की जरूरत होगी।
ताकि प्रिंट सुखा सुनिश्चित हो रके तथा गुणवत्तापूर्वक और विश्वसनीय विद्युत की आपूर्ति संभव हो सके।

5.2.4 क्षमता अभिवृद्धि योजनाओं के क्रियान्वयन की प्रगति और भारी वृद्धि की निरंतर मॉनीटरिंग करने की आवश्यकता होगी और समय-समय आवश्यक समयों जिनके किये जायेंगे। नई विद्युत उत्पादन क्षमताओं का सुनान करने के लिए आधार और इच्छुक भार के बीच बढ़ते समस्याहत अन्तर को ध्यान में रखते हुए उपयुक्त प्रौद्योगिकी पर विचार किए जाने की आवश्यकता है।

जल विद्युत उत्पादन

5.2.5 जल विद्युत ऊर्जा का वक्त और अज्ञात चौक सामंत है। देश में व्यवहार हाईड्रो क्षमता के पूर्व विकास हेतु अवधिकरण जोर दिया जाएगा। 50,000 मेगावाट जल विद्युत उत्पादन की प्रक्रिया पहले ही आरम्भ की जा चुकी है और 39,000 मेगावाट क्षमता की परियोजनाओं के लिए तैयार करने के साथ इस पर जोर-शोर से कार्य की जा रही है।

5.2.6 इस जल विद्युत शक्ति के स्थान पर दोहर फिर किए जा रहे राज्यों में विशेषतः पूर्वोत्तर राज्यों, रिश्तियों, उत्तराखंड, हिमालय प्रदेश और जम्मू और कश्मीर में उत्तराखंड राज्यों में हमारी जल विद्युत शक्ति का प्रभावकारण भार स्थित है। जल शक्ति वाले राज्यों में इस शक्ति के शीर्ष विकास हेतु जोर-शोर दिये जाने की आवश्यकता है।

5.2.7 जल विद्युत परियोजनाओं के लिए अर्थात कार्यक्रम अधिक पूर्वी निवेश की जरूरत होती है, अतः जल विद्युत परियोजनाओं के लिए दीर्घकालिक मूल्य व्यवस्था की जरूरत होगी। कंपनियों सरकार जल विद्युत परियोजनाओं के लिए तीर्थ दान और अधिक निर्धारित उपलब्ध कराएगी।

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

5.2.9 कंपनियों सरकार नेशनल हाइड्रोलैब्रियरेशन (एनएचपीएसी) जैसी कंपनियों सार्वजनिक क्षेत्र उपभोक्ताओं की सेवाएं प्रदान करके राज्य सरकारों को उनकी विद्युत परियोजनाओं के तेजी से विकास हेतु सहायता प्रदान करें।

5.2.10 इस संबंध में पुनर्आरोप एवं पुनर्व्याप्तिका एयर एंड एयर संबंधी शक्ती नीति का प्रयुक्त क्रियान्वयन अनिवार्य होगा ताकि यह सुनिश्चित किया जा सके कि परियोजना प्रभावित परिवारों की खिलाड़ों को पूर्णत: दूर किया जा सके।

5.2.11 पर्यावरणीय कार्य योजना और आर एंड एयर स्थितियों के कार्यान्वयन की मॉनीटरिंग के लिए उपयुक्त कार्यविधि के लाभ पर्यावरण संरचना के लिए उपयुक्त उपयोग किये जायेंगे।
5.2.12 देश में व्यवस्था हाइड्रो क्षमता के पूर्ण विकास के लिए कोयला भारी विद्युत की मांग को पूरा करने की वृद्धि से ईधन का प्रमुख स्रोत बना रहेगा।

5.2.13 विशेषतः तटीय खेतों में आयातित कोयला आधारित ताप विद्युत स्टेशनों को उनकी आर्थिक व्यवहार्य्यता के आधार पर प्राथमिकता किया जाएगा। कम राखे वाले कोयले के उपयोग से उड़न राख नियंत्रण की समस्या कम करने में सहायता मिलेगी।

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

5.2.15 विद्युत उत्पादन के लिए ईधन के रूप में गैस का उपयोग किया जाना युक्तिसंगत कीमतों पर इसकी उपलब्धता पर निर्भर करता है। गैस टर्बाईन/कम्बाईन साइकिल गैस टर्बाईन (जीटी/सीटीजीटी) स्टेशनों में इस समय प्राकृतिक गैस का उपयोग किया जा रहा है, जो कुल क्षमता का लगभग 10% बंटता है। विद्युत क्षेत्र देश में उपलब्ध कुल गैस का 40% खपत करता है। नई विद्युत उत्पादन क्षमता रखने वाले गैस पर आधारित होने जो कीमत उपयुक्त होने पर विद्युत उत्पादन के प्रमुख स्रोत के रूप में समान आगे गए। देश के विभिन्न भागों को समायोजित करने वाले एक सामूहिक गैस खंड से इस प्रकार की क्षमताओं के विकास में सहायता मिलेगी।

5.2.16 आयातित एलएनजी आधारित विद्युत संयंत्र भी विद्युत के शक्तिता वाले स्रोत हैं और उनके विकास की गति उनकी वाणिज्यिक व्यवहार्य्यता पर निर्भर करती है। तत्काल ईधनों को प्रयुक्त रखने वाले विद्युत उत्पादन की लागत में कमी लाने के लिए प्राकृतिक गैस/एलएनजी को इस्तेमाल हेतु स्थानांतरित किया जाना चाहिए।

5.2.17 भर्ती उत्पादन के संबंध में कम लागत पर उत्पादन और विद्युत की आपूर्ति को ही उपलब्धता विकल्पों में से उपयुक्त ईधन चयन का आधार होना चाहिए। नये उत्पादन स्टेशनों का ईधन स्रोतों अर्थात् पिट्टहैंड स्थलों अथवा भार कंपनियों के निकट स्थापित होना किसानों को फायदा होगा।

5.2.18 विशेष रूप से आयातित ईधन के संबंध में वाणिज्यिक व्यवहार्य्यता और आपूर्ति सुधार के लिए उत्पादन कंपनियों में मध्यम एवं दीर्घकालिक ईधन आपूर्ति कराने की आवश्यकता है।

यूक्स्क्लीयर विद्युत

5.2.19 मूल भार मांग को पूरा करने के लिए यूक्स्क्लीयर विद्युत ऊर्जा का प्रभावित होगा। यूक्स्क्लीयर विद्युत संयंत्र कोयला खानों से सूची स्थानों पर स्थापित किये जा रहे हैं। समग्र लागत प्रोफाइल में यूक्स्क्लीयर विद्युत की शाखाओं को पर्याप्त बदलाव मामला आपेक्षित है। अन्य वालों के साथ-साथ विद्युत उत्पादन में निष्पादित और परिसंपत्ति टेस्टिंग मुख्य विवाद वाले बिंदु होंगे।
अपरांपरिक ऊर्जा सोत

5.2.20 अनतिरिक्त विद्युत उत्पादन क्षमता सुनिश्चित करने के लिए अपरांपरिक ऊर्जा सोतें मुख्यतः लघु, जल विद्युत, पन, एवं वॉकमोस संबंधी शक्यताओं के संदर्भ में भी जरूरत होगी। विद्युत अनुपात में अपरांपरिक ऊर्जा सोतों के कुल हिस्से में वृद्धि करने के उदेश्य से उपयुक्त प्रोत्साहक उपायों के जरिए निजी क्षेत्र प्रतिभागिता का बढावा देने का प्रयास किया जाएगा।

वनीकरण एवं आधुनिकीकरण (आर एंड एम)

5.2.21 विविध कुछ वर्षों के दौरान उपलब्धता में महत्वपूर्ण वृद्धि और धर्मनिष्ठ विद्युत सेंटरों के संरचना वार घटक में वृद्धि विद्युत क्षेत्र की प्रभाव उपलब्धि है। अधिक क्षमता स्तर प्राप्ति के लिए वनीकरण और आधुनिकीकरण जरूरतों को तेजी से आगे बढ़ाने की जरूरत है तथा उपलब्ध उत्पादन क्षमता को मूलभूत स्वीकार मानकों तक लाया जाना चाहिए। भारत सरकार इस प्रक्रियानुसार वित्तीय सहायता प्रदान कर रही है।

5.2.22 स्वीकार मानकों के अनुसार निष्पादन न करने वाली परियोजनाओं के लिए आर एंड एम आवश्यक लागत लोग विश्लेषण की सुपरिवेशकता योजनाओं के अनुसार किया जाना चाहिए। यदि आर एंड एम के माध्यम से किफायती आयार पर प्राप्त व्यवहार्य न हो, तो ऐसी रिथिम एवं ऐसे संरचना को बंद करने के अलावा कोई प्रतिक्रिया नहीं है।

5.2.23 खराब आर एंड एम रिकॉर्ड और निरंतर प्रवाहनालयक समस्याओं के मामले में व्यवसिद प्रतिबंधन पर विचार करने की जरूरत है ताकि स्वीकार स्तर तक इन विद्युत सेंटरों की क्षमता सुधार हो सके।

कॉटिंग विद्युत उत्पादन

5.2.24 न केवल उद्योग हेतु, विश्वसनीय, गुणवत्तापर और किफायती विद्युत सुनिश्चित किए जाने हेतु बल्कि उद्योग के शीर्ष शीर्षक व विकास के जरिए सेट्ज़र के अवसरों के सुना को सुगम बनाने की दृष्टि से भी कॉटिंग संस्थाओं की घोषणा के लिए विद्युत अधिनियम, 2003 में उद्ध विवादन बनाए गए हैं।

5.2.25 समूह में कॉटिंग विद्युत संस्थाओं को स्थापित करने से संबंधित प्रवादान के उद्देश्य ऐसे लघु और मजबूत संगठनों को किफायती लागत से इक्स्ट्राम आयार वाले संरचना की स्थापना करने में सक्षम बनाना है, जो इस धिरीति में नहीं है। वह नोट करने की आवश्यकता है कि देश के भर में लघु और मजबूत अधिकारियों का व्यवसाय करने से अधिकांश उच्चार अधिकार बढ़ेगे।

5.2.26 भारत के कई कॉटिंग और आरसेल विद्युत उपाध्यक्षों में अधिशीघ्र क्षमता है जिसकी आवश्यकता कुछ समय अवधियों के दौरान ग्रिड को निरस्त कर जा सकती है। इन संस्थाओं में पर्याप्त और
5.3 पारेशन

5.3.1 लाल के सम्बन्ध में उत्तुलित और समन्वित विधुत प्रणाली के विकास हेतु पारेशन प्रणाली में प्रयोग एवं समयबद्ध निर्देश, उसका व्यः और समद्वित संचालन की आवश्यकता होती है।

5.3.2 उपरादेश में व्यापक वृद्धि और विधुत बाजार के विकास को भी ध्यान में रखते हुए पारेशन क्षमता प्रयोगित वृद्धि करने की आवश्यकता है। नई उपरादेश कार्यालय की योजना बनाने समय संबंधी पारेशन क्षमता की आवश्यकता का साथ-साथ ओवकल किये जानें की आवश्यकता होगी, तत्कालिन विधुत उपरादेश क्षमता और पारेशन सुविधाओं के बीच विवादों से बचने के लिए नीति में निम्नलिखित पर जोर दिया गया है-
• दांवागत सूचना प्रवाह और प्रकटकरण प्रक्रियाएं सीटीयू और एसटीयू द्वारा यह सुनिश्चित करने के लिए विकसित की जानी चाहिए कि उत्पादन और परीक्षण परियोजनाओं और 
योजनाओं की स्थिति से सभी स्टेंडलों वर्तमान और स्वतंत्र सहभागिता हो सके । ये प्रक्रियाएं समूहों आयोजना 
प्रक्रियाओं का मान होना चाहिए ।

• सज्जा विद्युत आयोग जिसने अभी तक विद्युत अधिनियम, 2003 के अंतर्गत प्रिंट कोड 
अविस्मरित नहीं किया है, को यह सितम्बर, 2005 तक अविस्मरित कर लेना चाहिए ।

5.3.3 उन विद्युत उत्पादक कंपनियों के माध्यम से प्रतिपादित बदलाव के लिए पारेशान में खुली पहुंच प्रदान 
की गई है जो अब देश भर में विभिन्न वितरण लाइसेंसियों को खिची कर सकते हैं। इससे सस्ती 
विद्युत उपलब्ध हो जाएगी। अधिनियम प्रारंभ से ही पारेशान में अल्पविधि खुली पहुंच का शासनाधीन 
देता है। प्रतियोगी विद्युत उत्पादकों से प्रति केंद्र से विद्युत की खरीद करने के लिए वृद्धि 
उपयोगकर्ताओं को समकालीन अवधि संबंधित राज्य आयोगों द्वारा वितरण नेटवर्कों में खुली पहुंच 
प्रदान की जाती है तो जाओ भारत में प्रतियोगी होने से सस्ती व विश्वसनीय विद्युत आपूर्ति की उपलब्धता 
बढ़ेगी। इसके लिए नया विकसित संचार के साथ भारत प्रशासन सुविधाओं और वास्तविक संचार 
आधार पर अंकिता संरचना क्षमता की आवश्यकता है। हालांकि यह मामला वर्तमान में क्षेत्रीय भार 
प्रशासन अंतर्गत में है फिर भी व्यपारितिक राज्य आयोगों को यह सुविधा करना चाहिए कि जहां भी आवश्यक 
हो राज्य स्तर पर प्राइवेट की उन्नयन ओर अनुसार सुविधाएं प्रदान की जाए और जून, 2006 तक 
प्राप्त करेगी।

5.3.4 अधिनियम प्रवेश यूटालिटियों/पारेशान लाइसेंसियों के विद्युत व्यवसाय में सिस्टम विकसित 
करने पर प्रति नगर लगता है। उत्पादन कंपनियों के विद्युत क्रय समझौते(सीपीए) को अपनी समझौते के अधीन 
वितरण कंपनियों के साथ, सिस्टम रूप से निर्माण विकसित किए जाने की आवश्यकता होगी। जहां तक 
आवश्यक हो, ऐसा निर्धारण कि तत्कालीन से सिस्टम रूप से इस के जा सकते हैं कि वितरण कंपनियों के विभिन्न लोड 
प्रवाहित की जा सके। यथाविधि आयोग द्वारा निर्दीशित किए जाने वाले पारेशान प्रमाण 
भूमितान अथवा लाइसेंसियों को विद्युत आपूर्ति करने वाले प्रतियोगी यूटालिटियों ने सस्ती 
विद्युत पहुंच प्रदान की जायेगी। यथाविधि आयोग जून 2005 तक पारेशान प्रमाण 
स्थापित करेगा।

5.3.5 खुली पहुंच और विद्युत बाजार के विकास को सुगम बनाने के लिए और प्रिंट के सुरक्षित 
और विश्वसनीय संचालन के लिए भी पारेशान प्रणाली में प्रवेश मार्जिन सुनिश्चित किया जाना चाहिए। अंतरस्त्रीय 
कंपनियों और प्रद्युमनों के अनुसार अतिरिक्त नई और मार्जिन दोनों को पूरा करने के 
लिए पारेशान अवधि की आयोजना और निर्माण किया जाएगा। एक सूचना और शोध पारेशान 
प्रणाली से न केवल पारेशान अवधियों तथा विद्युत उत्पादन सुविधाओं का इंधन तमाम सुप्रीमोजन 
भी सुनिश्चित होगा और इसके विद्युत की विकसिती सुरक्षित देखना अनिवार्य करने सुमार स्व 
जाएगा। क्षेत्र में विद्युत के किफायती पारेशान के लिए सीईआरसी द्वारा एक राष्ट्रीय पारेशान देखभाल विभाग 
को किया जा सकता है। किया जा सकता है, जो किया जा सकता है, जो कारखानों को किया जा सकता है, जो 
आवश्यक होगा और आपूर्ति की मात्रा से संबंधित होगा। जहां तक सबक और अंतरस्त्रीय प्रणाली और पारेशान 
की प्रणाली में भी पारेशान की मात्रा विश्वसनीय कार्यकर्ता की निरंतर आवश्यकता बना रही हो कि आवश्यक 
हो, जहाँ तक सबक और अंतरस्त्रीय प्रणाली और पारेशान 
की प्रणाली में भी पारेशान की मात्रा 
की मात्रा यह सुनिश्चित किया जाना चाहिए कि विद्युत नेटवर्क की कमियों के 
प्रतिक्रियागत गैर-सुनिश्चित प्रारंभ अन्ततः प्रतिपूर्ति की आवश्यकता पैदा न हो।
5.3.6 विद्युत उत्पादन संसाधनों का पता लगाने के उपयुक्त विकल्प बूझने और विद्युत उत्पादन के इस्तेमाल समुप्योजन हेतु विद्युत में वापार को प्रोत्साहित करने तथा परिसंपत्तिक आपूर्ति लागू करने के लिए पारंपरिक युविलितिक काल्याणीय विविधता तैयार किया जाना अनिवार्य है जैसा कि विद्युत अधिनियम, 2003 में शासनादेश है।

5.3.7 अधिनियम की धारा 27 में प्रकाशित है कि कंपनी युविलितिक क्षेत्र के भारतीय ब्रांड कंपनी (आरएसएलडीसी) का प्रायोगिकता देने तक करेगा जब तक कि कंपनी सरकार इस प्रयोगिकता किसी सरकारी कंपनी या प्रतिष्ठित या निगम को अनिवार्य ढूंढती रहे हो। आरएसएलडीसी का प्रायोगिक करने वाली सीटीयू की प्रवृत्ति व्यवस्था की संयोजन कंपनी सरकार द्वारा विद्यमान प्रबंध व्यवस्था में उनके कार्यकल्प के अनुसार के अधिकार पर की जाएगी। कंपनी सरकार द्वारा दिसंबर, 2005 तक इस पहलू पर विवाद किया जाएगा।

5.3.8 धारा 2(55) के अनुसार कंपनी विद्युत समितियों का भारत सरकार द्वारा गठन 2 माह के भीतर उपरिन्द में ट्रेककोलर्डों के प्रतिलिपियों को समर्पित करते हुए किया जाएगा।

5.3.9 विद्युत अधिनियम, 2003 की धारा 26 के अनुसार राष्ट्रीय भारतीय प्रणाली कंपनी इसकी स्थापना और कार्य का तीन माह के भीतर अंतिमित किया जाएगा। आरएसएलडीसी और एनएलडीसी को पूर्ण जिम्मेदारी देंगी और अनुसंधान प्रारंभिक प्रणाली के व्यापक का ध्यान में रखे बगैर प्रिंट के सुगन्ध प्रचार होगा। बैनर के पूर्णलक्ष्य राज्य युविलितिक या निजी क्षेत्र के अंतर्गत हो।

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

5.4 वितरण

5.4.1 वितरण विद्युत वापार प्रस्तावना का अति महत्वपूर्ण हिस्सा है। विद्युत क्षेत्र में सुधार संबंधी वार्तक युविलित के गुण शामिल में है।

5.4.2 अधिनियम में उपभोक्ता हितों की खा करने के लिए वितरण नियम का अनुसार एक मजबूत वितानित संबंध है। वह खुली पहुंच और समान आपूर्ति क्षेत्र में वितरण नियमों की अवधारणा के अनुसार वितरण कार्यालय के लिए प्रतिपालन कार्यालय सुनिश्चित करता है।

5.4.3 अधिनियम लाभ प्राप्त करने के लिए वितरण युविलितिक की उपयुक्त शुल्क सरकार किया जाना अनिवार्य है। इन युविलितियों के लिए पर्याप्त अर्थव्यवस्था सहायता आवश्यक होगी। इस प्रकार की सहायता को नकद हानियों में कमी और वृद्धि पाना अनूठे लागू करते हुए वापार कार्यालय में ऐसा अनुपालित किया जाना चाहिए और पारंपरिक और जिम्मेदारी सुनिश्चित करने के लिए साथ-साथ तेल नियोजन करने को अनिवार्य वापारों से आगं करने के लिए उपयुक्त शासन व्यवस्था स्थापित करने से जोड़ा जाना चाहिए। वितरण वार्तक, वितान और वितान सुनिश्चित करने के लिए राज्य सरकार को राज्य विद्युत
वोरू की देवताओं की पुनर्स्वस्नान करना आवश्यक होगा ताकि यह सुनिश्चित हो सके कि उल्लिखित की कंपनी पर ध्यान की देवताओं का भार न पड़े। केंद्रीय सरकार विभिन्न संगठनों से अस्थायी वित्तपोषण की व्यवस्था करने में भी पूर्ण पवित्तरता की स्पष्ट सुरक्षा तैयार करने वाले संगठनों की सहायता करेगी तथा इसे किसी व्यवहारक पर लक्ष्य की प्राप्ति के लिए पूर्ण निर्धारित सुधार कार्यों और संरचना वास्तविक शासन व्यवस्था बनाए जाने से जोड़ा जाएगा।

5.4.4 वितरण में निजी उद्यमियों को अनुमानित करने के लिए वितरण व्यवस्था में श्रमिक पैसीटों के पूर्वनियंत्रित सुधारों के साथ पूर्णता लाभ व उपयुक्त अस्थायी मॉडल के संबंध में अनुमोदन व्यापारिक माहौल आवश्यक होगा। यूडिस्टिंक्टिव और उपभोक्ता के लिए जोखिम को कम करने, श्रमित में योगुर व प्रणाली अवस्थाओं में तकनीकी कुंजी की दृष्टि से बहु-रेसीप्ट टैक्सि़ (एसवाइटी) के माध्यम से नियंत्रण आत्मविश्वास विनियमन द्वारा गड़बड़ पूर्ण है। अर्थव्यवस्था और उन्मत तेज़ गुमानवात के माध्यम से इससे जोड़ा जाएगा। विश्व खेती की दीवार और पुरातन वस्तु सुधारकों के जाल संकेतकों तक टेस्ट मामलों को निरीक्षण करने उपभोक्ता टैक्सि़ का अनुमान और अर्थव्यवस्था गड़बड़।

वितरण में निजी तेज़ गुमानवात के लिए देखें वितरण हानियों में अपेक्षित कमी प्राप्त करने तथा उपभोक्ताओं के लिए सेवा गुमानवात सुधारने के लिए वितरण में निजी क्षेत्र गणना को प्रस्तावित किया जाएगा।

5.4.5 वियुक्त अधिनियम, 2003 प्रतिस्पर्धी विद्युत उद्याक कंपनियों और केंद्रीय वितरण मालिकाओं पर अतिरिक्त व्यापारिक लाइसेंसियंस को उपभोक्ताओं के लिए वितरण की विकृति करने में सक्षम बनाना है क्योंकि राज्य विद्युत वित्तवान के लिए वितरण में खुली फ्रीहाउस प्रदान कर दी जाए। ऐसे के अनुसार, यदि यूडिस्टिंक्टिव जून, 2005 तक विश्वास व निष्पादन के अधिसूचना करेगा, तब यह व्यवस्था व उपभोक्ता द्वारा देखे गए वार 42 के उपरांत के संबंध में वितरण विनियमन में खुली फ्रीहाउस मिल सकती। इस वार में निरीक्षण किया गया है कि उपभोक्ता किसी भी माहौल एक में गई अधिक्रित वितरण की अपेक्षा करने हुए 5 वर्षों से रहते खुली फ्रीहाउस की अनुमति दी जाएगी।

अधिनियम की दीवार 49 में प्रावधान है कि दिन उपभोक्ताओं को वार 42 के अंतर्गत खुली फ्रीहाउस प्रदान की गई है। वह पूरी तरह ऐसा करता है जो प्रक्रिया की शर्तों और नियमों, जैसे कि उनकी बीच सहायता हो, पर किसी भी व्यक्ति के राष्ट्रीय मामला नियम कर सकती हैं। वितरण में खुली फ्रीहाउस हेतु वित्तवाणी बनाने समय एसवाइटी रेसीप्ट वितरण और क्रॉस संशोधन प्राप्त किया है कि अधिनियम की वार 42 में अपेक्षित है कि निर्धारण करेगा।

5.4.6 राज्य विद्युत वित्तवाणी अधिनियम (एसवाइटी) द्वारा उन्नीस्तित करने के तकनीकी और मान्यताओं के अर्थ-अलग प्रदान करने के लिए एक समायोजन कार्यक्रम तैयार किया जाना चाहिए। प्रत्येक विनियमन बुनियाद में उन्नीस्तित करना और इसके प्रावधान की धोखाधड़ी, राज्य वि. वि. उपभोक्ता के अनुसार, मार्च, 2007 तक पूर्ण व्यवस्था हो जानी चाहिए। शासन व्यवस्था और निगम में उपयुक्त सुधारों के साथ हानियों में कमी करने का एक कार्यक्रम तैयार किया जाना चाहिए। इन हानियों को सन् 2012 तक अन्तर्विद्युत व्यवस्था को नीचे लाए जा सके।

5.4.7 वितरण में प्रतिस्पर्धा के संबंध में अधिनियम के संबंध में अधिनियम के मुद्दे प्रावधानों में एक प्रावधान प्रमाण आर्थिक क्षेत्र में अपने स्वतंत्र वितरण प्रभावितों के जिंकों वित्तवाणी सीमाओं की अवधारणा के रूप में शामिल है। राज्य सरकारों को स्वतंत्र यूडिस्टिंक्टिव की उपस्थिति करने समय वितरण का निर्देश निर्देश और
5.4.8 अधिनियम में निर्णयात्मक अवधि के बीतर एक रही मीटर के जलिये बिज्ञात की आयुति करने का शासनदेश है। प्रावधिकरण द्वारा 3 माह के बीतर उक्त अधिनियम की धारा 5.5 के अंतिप्रमाणे अपेक्षित विविधन बनाए जाने चाहिए।

5.4.9 अधिनियम के अंत्तर्गत दो वर्ष के बीतर सभी उपभोक्ताओं की गीटिंग किया जाना अपेक्षित है। एसईआसी वितरण लाइसेंसधारियों से उनका गीटिंग व्यवहार कर सकता है, उसे अनुमोदन प्रदान कर सकता है और उसे अपेक्षित कर सकता है। एसईआसी को यूनियल गीटिंग के उपयोग के लिए टीईबी नीटों को भी प्रोत्साहित किया जाना चाहिए। एसईआसी को खत्मी तूनी ग्लारी मीटर परीक्षण व्यवस्था भी करनी चाहिए।

5.4.10 लगभग और लाम को ध्यान में रखते हुए यूनिशियन द्वारा प्राथमिकता अधार अध्यात्मिक सूचना प्राप्तिक्षीण प्रणालियों प्रतिविद्या की गाई ताके नेटवर्क मजबूत तथा ग्राफिक मजबूत किया जाए जा सके जिससे ज्यादा प्रबंधन, गुणवत्ता गुण और, श्रीमानी और श्रीमानी शान्ति, ग्राफिक मजबूत और सभी मीटरक्लिक उपभोक्ताओं को राही-राही और शीघ्रता पूर्वक बिज्ञात किये जा सके और बसूली की जा सके। समयबाद तरीके से उपभोक्ता इंडिकेशन वेब में विधान पर विवेचन जोर प्रदान किया जाना चाहिए। उच्चतम बिज्ञात विवेचन और सूचना कार्यक्रम (एसईआसी) के अंतर्गत सूचना प्रोत्साहित प्रणालियों की सहायता पहले से ही प्रदान की जा रही है।

5.4.11 पर्याय एवं वितरण (टी एफडी) हानियों (सन्मेतनी एवं वाणिज्यिक) को कम करने चाहिए, नैन, वोल्टेज अनुपादन तथा वेव्हर उपभोक्ता रोप्य के लिए एलटी/एसटी अनुपाद ध्यान हेतु उच्च वोल्टेज वितरण प्रणाली को प्रोत्साहित किया जाना चाहिए।

5.4.12 वितरण प्रणालियों के कुल ध्यान कर्मकर्ता के लिए एसईआसी और आंकड़ा प्रबंधन प्रणालियों अनिवार्य पूर्ण आवश्यकताएं हैं। एसईआसी द्वारा वितरण लाइसेंसधारियों से एसईआसी और आंकड़ा प्रबंधन प्रणाली के वितरण ध्यान हेतु एक समयबाद कार्यक्रम प्रस्तावित किया जाना चाहिए तथा उनका अनुमोदन किया जाना चाहिए। वर्तमान तरीके से सच-स्टेशन ऑटोमेशन इफिनेंट के संख्यांक हेतु प्रसार किया जाना चाहिए।
5.4.13 अधिनियम में बिजली चोरी के विरुद्ध कतरे उपायों का प्रावधान किया गया है । राज्यों और वितरण यूनिट्स को इन प्रावधानों का प्रभावी क्रियान्वयन सुनिश्चित करना बाध्य है । राज्य सरकारें विशेष न्यायाधीशों की स्थापना कर सकते हैं, जैसी कि अधिनियम की धारा 153 में परिभाषित है ।

5.5 सेवा लागत व लक्षित समस्या 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 राहतार्थ स्तर की जरूरत है । रात्रि उपभोक्ताओं, जो गरीबी रेखा से नीचे हैं, और 30 गूढ़ित प्रतिमाह के विनिर्देश स्तर से कम उपभोग करते हैं को टेकिफ में विशेष राहतार्थ प्रदान की जा सकती है जो कि क्रॉस समस्या के भू रूप में होगी । उपभोक्ताओं के ऐसे विनिर्देश प्रमुख अति टेकिफ आदेश की उम्मीद (समय) लागत का कम-से-कम 50% होगी । पाँच वर्षों के बाद इस प्रावधान की पुनः समीक्षा की जाएगी ।

5.5.3 पिछले कई वर्षों से क्रॉस समस्याओं गर-पोषकीय स्तरों तक बढ़ी है । क्रॉस समस्याओं प्रागृह में अड़काओं और आतंकों की पहुँच ही है । उपभोक्ताओं को बिना कोई टेकिफ हानि पहुँचा है इस असंभव को ठीक करने की निर्देश आवश्यकता है उपभोक्ताओं की अन्य श्रेणियों के लिए वर्तमान क्रॉस समस्याओं को प्रगतिशील रूप से और धीरे-धीरे कम करने की आवश्यकता होगी ।

5.5.4 अधिनियम की धारा 65 की शरतों के अनुसार राज्य सरकार को इस सीमा तक समस्या देना बाधित जिससे आवश्यक वजत प्रावधान किया जा सके ताकि यूनिटित को विशेष समर्थन का समान न करना पड़े, जो उससे प्रावधान को प्रभावित कर सकता है । इस प्रकार को प्रावधान किया जाए जिसमें अत्यंत पारदर्शी और बमतापूर्ण तरीक़े से लक्षित किए गए लाभाधिकारियों तक समस्या की पहुँच को सुनिश्चित किया जा सके ।

5.6 प्रौद्योगिकी विकास और अनुसंधान तथा विकास (आर एनड पी)

5.6.1 कुशल और किफायती प्रौद्योगिकियों के उपयोग के साथ विद्युत उत्पादन, पारंपरिक व वितरण के सभी उपलब्ध संसाधनों के प्रभावी समुदायों का महत्व अहिक है । बृहत और संकीर्ण विद्युत प्रणालियों के प्रागृह एवं प्रावधान के लिए सम्पूर्ण विविध एंथ्रोमियों के मध्य समन्वय का आवश्यकता है । राज्य, क्षेत्रीय और राष्ट्रीय स्तर पर विद्युत प्रणाली का प्रभावी निष्ठार रूप से सुनिश्चित प्रौद्योगिकी के उपयोग से प्राप्त किया जा सकता है । आईटी के इस्तेमाल में वितरण संबंधी तकनीकी एवं वाणिज्यिक हक्याओं कम होने तथा उपभोक्ताओं के लिए उपयुक्त सेवाएं प्रदान करने की विशाल क्षमता विकसित है । एकीकृत संसाधन आयोजन और मांग पक्ष प्रबंधन के लिए नवीनतम विकसित प्रौद्योगिकियों को अपनाया जाना भी आवश्यक होगा ।
अपराधिक उपज ग्राहकों के संबंध में अनुसंधान, विकास, निर्देशन एवं वाणिज्यिककरण हेतु विशेष प्रयास किए जायेंगे। इस प्रकार की ग्राहकों को अति-प्रमाणी मानकों, विनियमों तथा नियमावली मानदंडों का अनुसरण करना होगा।

5.6.2 विद्युत उपचार वेतन मूल्य के क्रिकेट क्रिकेटकर्ताओं और आईसीसी जैसी बृहत महत्व की ग्राहकों के लिए विशेष निर्देश दी जाएगी। उदाहरण के लिए, यदि विकासकारी उपयोग उद्योगों के लिए ग्राहकों के लिए विशेष निर्देश दी जाएगी।

5.6.3 इस प्रकार न्यूनतम संभाविक हानियों के साथ लंबी दूरी तक उच्च वोल्टेज की विद्युत पाठित करने के लिए विषयी महत्त्वीकरण की आवश्यकता होगी। भेंट उम्मीदित एवं पारंपरिक प्रकारों के लिए सुविधा विनियम में दर्ज की गई है। विद्युत क्षेत्र में आगरा एन डी की मेहमान नियमावली की आवश्यकता होगी। विद्युत क्षेत्र में आगरा एन डी की नियमावली के लिए एक उपयुक्त विषय प्रकार या मेहमान की आवश्यकता होगी।

5.6.4 देश के विद्युत क्षेत्र में देश अनुसंधान एवं विकास आयोग गौरव है जिसे और आगे बढ़ाया जाएगा। अभिनव प्रायोगिक वाणिज्य क्षेत्रों में वास्तव परिणाम प्राप्त करने के लिए आगरा एन डी कार्यालय में तेजी से आगरा एन डी की स्थापना की जाएगी। विद्युत क्षेत्र में आगरा एन डी की नियमावली के लिए एक उपयुक्त विषय प्रकार या मेहमान की आवश्यकता होगी।

5.7 उपभोक्ताओं के हितों के लिए विद्युत प्रतिष्ठापन

5.7.1 बाजार के विकास में उन्नति करने के लिए नई उत्पादन क्षेत्रों के एक हिस्से की वैश्विकीय वाणिज्य दृष्टि से बहुत विशेष की जाए। जैसे जैसे विद्युत बाजार विकसित होते हैं इससे लंबों अधिक की विद्युत खरीद करार क्रेडिट, नियमकारक उत्पादन लागत के साथ परिवर्तनों का विषय प्रकार संबंध हो सकता है। आगरा वारंवार में नए उत्पादन स्टेशनों की स्थापना का विषय प्रकार विद्युत उत्पादन बाजार में प्रतिष्ठापक वातावरण बनाने में सहायक होगा।

विद्युत बाजार की गहनता में वृद्धि होगी और उत्पादक और लाइसेंसी/उपभोक्ताओं योजनाओं के लिए और अधिक विकल्प उपलब्ध होंगे और इससे दीर्घकाळ में टैरिफ में कमी आएगी。

इसके लिए नीति में सुधारण बालों को ध्यान सख्त जाएगी।

(क) अन्तरराष्ट्रीय व्यापार के लिए लाइसेंस जारी करना केन्द्रीय विद्युत विनियमाला कार्य है इससे सारे देश में व्यापार का अधिकार प्राप्त हो जाता है। राज्य विद्युत विनियमाला कार्यों की अंदर वाणिज्य दृष्टि से लाइसेंस जारी करने।
भारत का राजपथ: अभावांतर

(ख) राज्य रंग पर केंद्रीय विद्युत विनियमक आयोग द्वारा शुरू किए गए एवं टीयो व्यवस्था का संकारांक भर्ती पढ़ा है। राज्य विद्युत विनियमक आयोगों को राज्यीय रंग पर एवं टीयो व्यवस्था शुरू करने का परामर्श दिया गया है। इससे अधिकतर वालों लाइसेंसी तक इन्हें विद्युत स्थानांतरण के लिए विभवस्थी समाधान तंत्र भी सुमाग डे पाया है।

(ग) केंद्रीय विद्युत उत्पादक संस्थाओं को अनुमति प्रदान की जानी चाहिए क्योंकि वे लाइसेंसस्वारियों और उपयोगकर्ताओं को विद्युत की विक्री कर सके जब उन्हें अधिनियम की धारा 42 के अंतर्गत एसाईआरसी द्वारा खुली पहुंच की अनुमति प्राप्त हो जाए।

(घ) उपर्युक्त आयोग द्वारा विद्युत बाजार का विकास सभी विभागों के साथ परिपक्वता से किये जाने की आवश्यकता है।

(ङ) केंद्रीय आयोग और राज्य आयोगों को क्रमश: अधिनियम की धारा 17: और 181 के अंतर्गत अभिनियम बनाने का अधिकार प्राप्त है। इस विनियमों के प्रतिग्रहण को प्रेसाइक्यू प्राप्त करने और उपयोग संस्थान के संबंधित अधिनियम के विनियम प्रावधानों का लागू निर्देशित हो सकेगा। विनियमक आयोगों को विनियम विनियमों को लोगों ही अधिसूचित करने की सलाह प्रदान की जाती है।

(च) राज्य के भीतर और बाहर व्यापार संबंधी विनियम तथा विद्युत विनियम के लिए तिथि विनियमय के संबंध में कहना जाएगा।

5.8 निजी क्षेत्र भारीसारी सहित विद्युत क्षेत्र कार्यक्रमों को विद दिया करना

5.8.1 गृह विद्युतीकरण सहित सभी के लिए विद्युत "और तस्वीर आधिकारिक विकास के लक्ष्य को पूरा करने के लिए, यह अनुमति लगाया गया है कि उच्चायुक्त, पारंपरिक, संबंध-पारंपरिक, डिली और ग्रामीण विद्युतीकरण परियोजनाओं को विद्युत प्राप्त करने के लिए वर्ष 2002-03 के अंतर्गत 10,000 करोड़ रुपये के निवेश की आवश्यकता होगी। विद्युत बहुत ही महत्त्वपूर्ण क्षेत्र होने के कारण केंद्र सरकार और राज्य सरकारों द्वारों स्वतंत्र पर सार्वजनिक क्षेत्र निवेशों का बढाना होगा। क्षेत्र के अधिकतम विस्तार के मद्देनजर विनियम के प्रस्ताव निर्माता की निजी क्षेत्र से पाने की आवश्यकता भी होगी। यह अधिनियम विनियम घटनाओं में प्रतिक्रियास्वारियों को हल्के स्तर सार्वजनिक और निजी दोनों क्षेत्रों के लिए अनुमति शिखि उत्पन्न करता है। अधिनियम की धारा 63 विनियम घटनाओं में प्रतियोगी आधार पर आयोजित करने की आवश्यकता है जिससे निजी क्षेत्र निवेश और अधिकतम बढ़हेगा। सार्वजनिक सेवा दायित्वों जैसे ग्रामीण घटनाओं और छोटे पंगबर मूल्यों को विद्युत की पहुँच प्रदान किए जाने को सार्वजनिक विस्तारचार के संबंध में प्राथमिकता मिलेगी।

5.8.2 सार्वजनिक क्षेत्र की आत्मनिर्भर संसाधन विकसित करने में सरमात होना चाहिए जिससे कम-मेक एक समयबाद तकी देशी अभिनियमी परियोजनाओं को पूरा करने के लिए केंद्र और राज्यों में सरकार से उच्चत स्तर ज्योति सहायता के पश्चात भी विवेकों की दक्षता आवश्यकता को पूरा किया जा सके। इसके लिए यह जसली होगा कि निवेशों पर रिपोर्ट द्वारा माहैम से अधिक उत्तादन किया जाए और इसके साथ-साथ अधिकृतिपरिशोधन निविक्षिण प्रक्रिया किया जाए ताकि अन्य सेवा
5.8.3 अधिनियम की धारा 42 की उपयुक्तिः (2) के अंतर्गत खुली पहुंच के अंतर्गत वैकल्पिक आपूर्ति प्राप्त करने वाले उपभोक्ताओं पर संबंधित राज्य आयोगों द्वारा अधिवर्धन बुरूल किया जाना है। इसके लिए प्रकार के उपभोक्ताओं को नीचे का वातावरण दिखाकर है: धारा 42 (2) के अंतर्गत खुली पहुंच की अनुमति वाले इसे उपभोक्ताओं के लिए कार्य करे जहाँ वितरण करने का क्षेत्र धारा 42 (2) के अंतर्गत खुली पहुंच की अनुमति वाले इसे उपभोक्ताओं के लिए कार्य करे जहाँ वितरण करने का क्षेत्र धारा 42 (2) के अंतर्गत खुली पहुंच की अनुमति वाले इसे उपभोक्ताओं के लिए कार्य करे जहाँ वितरण करने का क्षेत्र धारा 42 (2) के अंतर्गत खुली पहुंच की अनुमति वाले इसे उपभोक्ताओं के लिए कार्य करे।

5.8.4 पूर्णी की कर्मी है। निजी विद्यु निवेश के लिए निवेश के लिए विद्यु निवेश की कर्मी हैं। अतः निवेश पर प्रतिक्रिया उस समय से प्रदान किए जाने की आवश्यकता है, जिससे क्षेत्र अन्य क्षेत्रों में निवेश अन्तर्गत करते हैं।

5.8.5 उपयोग के साथ खोले में संचालनों की धारा को सुधारने के लिए सामान्य प्रयास कब जाएँगे। प्रति वर्ष उस वृद्धि से प्रदान किए जाने की आवश्यकता है, जिससे क्षेत्र अन्य क्षेत्रों में संचालन के समक्ष, विद्यु निवेश के निर्धारण के लिए उचित विद्यु निवेश करते हैं।

5.8.6 उन नामों में उपभोक्ताओं को प्रतिफलधक के लाभ प्राप्त होने का शासक के लिए सभी प्रयास किए जाएँगे। प्रति वर्ष उस वृद्धि से प्रदान किए जाने की आवश्यकता है, जिससे क्षेत्र अन्य क्षेत्रों में संचालन के समक्ष, विद्यु निवेश के निर्धारण के लिए सभी प्रयास किए जाएँगे।

5.8.7 इसके लिए यह आवश्यक है कि सभी उत्तरकारण वितरण तथा वितरण लाइसेंस धारकों को अपनी प्रविधित साइडलिनेट निवेश निर्देश के लिए उचित बुरूल अधिकार रखते हैं। इसलिए केंद्र के विकास के लिए
प्रचालन कार्यों व व्यापार की वित्तीय व्यवस्थायांत्रिक अनिवार्य होनी। क्षेत्र की वित्तीय स्थिति पुनः बहाल करने के लिए अथवा प्रयास करने अपेक्षित होंगे। इस प्रयोजन से सरकारी डाको टैक्शी का \( \text{यौगिक मनोरंजन} \) सुनिश्चित करना आवश्यक होगा। इसमें मूल, अंतरीय व व्यस्ततमकलीन निविदा एवं विविध रूपों से भेदित निर्धारण किया जाना शामिल है।

5.8.8 विनियमनक आयोगों की स्वतंत्रता और नियंत्रण के माध्यम से उनकी कार्यप्रणाली की पररक्षिता के आधार पर विनियमनक निष्ठितता की आवश्यकता का समाधान करने के लिए भी उपयोग किया जाएगा।

5.8.9 क्षेत्र की बढ़ती निवेश आवश्यकताओं के महत्त्वपूर्ण उपलब्धि, पारंपरिक एवं वितरण में निजी भागीदारों की दृष्टि अधिक महत्त्वपूर्ण होगी। केंद्रीय सरकार तथा राज्य सरकारों को सरकारी और निजी भागीदारों के लिए कार्यक्षम तथा सक्षम मॉडल विकसित करने की जरूरत है। इसके सार्वजनिक क्षेत्र वित्तपोषण के साथ-साथ निजी विनियोग में भी वृद्धि की जा सकती है। विविध क्षेत्र में निजी भागीदारों ने प्रतिभागीता निर्धारित करने के लिए प्रतियोगिता संकरकरण के निम्न उद्योगों से निरंतर बातचीत करना तत्त्व स्थापित किए जाने की आवश्यकता है।

पारंपरिक एवं वितरण हानियों

5.8.10 यह स्पष्ट है कि जब तक कि दी डंडकों डी हानियों को पर्याप्त रूप से और दीपक से कम न किया जा रहा विविध क्षेत्र व्यावहारिक नहीं रहेगा। हाल ही के वर्षों में बढ़ी संख्या में राज्य 40% से अधिक हानियों दर्ज करते रहे हैं। किसी भी दृष्टि से ये अधिक है और इसमें समझौते क्षेत्र प्रणाली का निरंतर विघटन अत्यन्त अत्यधिक है। हानियों में वर्तमान स्तर के जारी रहने से न केवल विविध क्षेत्र प्रणाली को बुनियादी का सामना करना पड़ेगा। यद्यपि समग्र संयोग से भारी आर्थिक विस्फोट भी खतरे में फंस जाएगा।

राज्य सरकारों एक पंचवर्षीय योजना पौलियार करेंगी जिसमें इन हानियों में तेजी से कमी आने के लिए वार्षिक लाख निर्धारित किये जायेंगे। इन हानियों में कमी करने के लिए अन्य योजनाओं के प्रयासों के लिए सामाजिक भागीदारों, प्रधानी प्रतिष्ठित, लघुविधानों के लिए प्रत्यावर्तन, स्वामी एवं उपयोक्ताओं तथा ताफी विभिन्नरूपी हृदयकरण को शामिल किया जाना चाहिए। केंद्रीय सरकार को उन राज्यों को प्रत्यावर्तन आधारित सहयोग प्रदान करेगी जो कि राज्य कार्यक्रमों के अनुसार हानियां रोकने में सक्षम है।

5.9 ऊर्जां संरक्षण

5.9.1 ऊर्जा क्षमता और मांग पश्चिम उपनगरों द्वारा विविध की महत्त्वपूर्ण बदल की जा सकती है। समग्र रक्षनों को कम करने के लिए ऊर्जा संरक्षण और मांग की दिशा में प्रयास को उपयोग प्राथमिकता दी जा सकती है। ऊर्जा संरक्षण अधिनियम लागू किया गया है और ऊर्जा दाता नीति गठित किया गया है।

5.9.2 संस्थापकों के अनुसार, जहां मांग पश्चिम और ऊर्जा संरक्षण उपयोग संबंधी अनेक उपयोग किए जाते हैं, की संभावित संख्या काफी अधिक है। इसके लिए ऊर्जा दाता नीति (कैद) द्वारा कार्य आरंभ
5.9.3 उर्जा संस्थान अधिनियम के अंतर्गत विद्युत संचालन वाले उद्योग के लिए आवश्यक उर्जा लेखा परीक्षा को अवधारित बनाया गया है। उर्जा लेखा परीक्षाओं को अपनाने और उर्जा संस्थान उपयोग के लिए अन्य उद्योगों को भी प्रोत्साहित किया जाएगा। सभी सरकारी मदनों में उर्जा संस्थान के लिए अनेक उपयोग किए जाएंगे जिससे लगभग 30% उर्जा को बचाने की संभावना है। इस प्रयोजन में सौर, जल, ताप प्रणाली और सौर उर्जा निक्षेप आर्किटेक्ट्यर महत्वपूर्ण योगदान दे सकते हैं।

5.9.4 उर्जा संस्थान के क्षेत्र में आर्मी पहल स्वच्छ और स्व-विनियमन होगी जिसके साथ-साथ उपकरणों पर लेबल लगाने पर बल दिया जाएगा। जैसे-जैसे जागरूकता बढ़ती एक विनियमन पर एक रूप के लिए मानकों का गठन किया जाएगा।

5.9.5 कृषि के क्षेत्र में पौधेसेत लगाए जाएंगे और सौर उर्जा संस्थान प्रणाली को अवधा कार्यान्वयन में लगे जाएगा। औद्योगिक क्षेत्र में उर्जा संस्थान प्रणाली का उपयोग किया जाएगा और उर्जा संस्थान उपयोग के क्षेत्र को दर्शाने हेतु उर्जा लेखा परीक्षा का कार्य किया जाएगा। कृषि और औद्योगिक क्षेत्र में मोटर तथा झुग्गी शिस्तम अवधी खाते के अनुसार लगे हैं। औद्योगिक शिस्तन के अधिकारी और परीक्षाधीन नियोजकों व खेती उपयोगकर्ताओं में उर्जा लेखा प्रकाश प्रारणों किया अपनाई जाएगी।

5.9.6 कृषि शिस्तन का ज्युस को कम करने के लिए अवधित उर्जा संस्थान का क्रियान्वयन करती है। इस प्रयोजन में क्रियान्वयन उर्जा प्रथमतंत्र अपनाई जाएगी। व्यवस्थापन और व्यक्तिगत आपूर्ति के लिए रेक्टिफायर तथा टेक्टिफायर में उपयोग की गई। ताप प्रशंसन उपकरण के अनुसार होने चाहिए। विनियमन आयोगों द्वारा उर्जा व्यवस्था मानकों का अनुपालन सुनिश्चित किया जाना चाहिए।

5.9.7 उर्जा संस्थान उपयोग के प्रभावी क्रियान्वयन के लिए उर्जा लेखा कंपनियों की गीतिका को बढ़ाया जाएगा। ऐसी कंपनियों को प्रोत्साहित करने के उपयोग भी किए जाएंगे।

5.9.8 उर्जा संस्थान के बारे में जागरूकता लाने के लिए राष्ट्रीय अभियान बनाया गया है। जिसका कार्य उपयोगकर्ता की सामाजिक की जाएगी।

5.9.9 एक राष्ट्रीय कार्य योजना तैयार कर गई है। विशेष व्यावसाय कार्यों के संबंध में सभी प्रस्तावित उपयोगों पर प्रगति की समीक्षा की जाएगी।

5.10 पर्यावरण संबंधी मामले

5.10.1 राष्ट्रीय पर्यावरणीय प्रभाव संचालन तथा पर्यावरण कार्य योजना (ईएपी) क्रियान्वयन के माध्यम से उर्जा व्यवस्था अधिकारियों के अधीन पर्यावरणीय धिराआ को और ध्यान दिया जाएगा।
5.10.2 'तैप्र बैंक' और फारेस्ट बैंक की स्थापना समेत पर्यावरणीय स्वीकृतियों के बारे में प्रक्रिया को सरल बनाने के लिए प्रयास समन्वयन हेतु उपयोग किए जाएंगे।

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

5.10.4 केंद्रीय वाणिज्य की स्थापना को प्रोत्साहित किया जाएगा। पर्यावरणीय दिशानिर्देशों के अनुसार एक ऐसे उपयोग के लिए उपयुक्त कदम भी उठाए जाएंगे।

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

5.10.6 सभी उपयोगकर्ताओं के प्रवाह में निर्दिष्ट पर्यावरणीय मानदंडों एवं मानकों के पूरी तरह से अनुपलंक को सुनिश्चित किया जाए।

5.11 प्रशिक्षण एवं मानव संसाधन विकास

विद्युत अधिनियम 2003 द्वारा घोषित किए गए नए सुधार बंद के बारे में, यह विशेषतः महत्त्वपूर्ण होता है कि विद्युत उद्योग की भली प्रकार से प्रशिक्षित मानव संसाधन तक पहुंच हो, इसलिए प्रशिक्षण बंद के बारे में वृद्धि हेतु संगठित कार्यवाही की जाएगी ताकि उद्योग की आवश्यकता के अनुसार पर्यावरण रूप से प्रशिक्षित मानव संसाधन उपलब्ध कराया जा सके। विद्युत वितरण, विनियमन, व्यापार और विद्युत तरीकों द्वारा केंद्र में प्रशिक्षण बंद की स्थापना पर उद्योग द्वारा विशेष ध्यान दिए जाने की आवश्यकता है। इस प्रकार के प्रयास किए जाएंगे कि विद्युत आपूर्ति उद्योग के कार्यक्रमों, निजी और सरकारी, दोनों क्षेत्रों में एवं उपभोक्ताओं अनुकूलता के प्रति आग्रहक हो सकें।

5.12 सह-उपयोग और गैर-पारंपरिक ऊर्जा संसाधन

5.12.1 गैर-पारंपरिक ऊर्जा संसाधनों की पर्यावरण के बहुत अनुकूल होने के कारण ऊर्जा के ऐसे संसाधनों पर आधारित विद्युत के उपयोग को प्रोत्साहित करने की अवधि आवश्यकता है। इस उद्योग के लिए, गैर-पारंपरिक और नवीकरणीय ऊर्जा संसाधनों पर आधारित परियोजनाओं की प्रशिक्षण लागत को कम करने के लिए प्रयास किए जाने की आवश्यकता है। ऐसी परियोजनाओं में प्रतीयोगिता को प्रोत्साहित करने भी ऊर्जा लागत को कम करने जा सकता है। साथ ही साथ, यह संसाधनों की निर्देशित वृद्धि और आयोगिक विकास के लिए पर्यावरण प्रोत्साहनपूर्ण उपयोग भी करने होंगे।

5.12.2 विद्युत अधिनियम 2003 में यह प्रावधान है कि राज्य विद्युत विनियमक आयोग (एवलआयर) द्वारा सह-उपयोग और अपारंपरिक सोलर से विद्युत उपयोग को ग्रिड के साथ संबंधित हेतु उचित स्थापना जुड़वाने और किसी व्यक्ति को विद्युत के विक्रय और ऐसे संसाधनों से
विद्युत की खरीद के लिए वितरण लाइसेंसी के क्षेत्र में विद्युत के कुल उपयोग के प्रतिशत को विनिर्देशन द्वारा प्रोत्साहित किया जायेगा। अधिकारिक बोलों से विद्युत के क्रय हेतु ऐसा प्रतिशत शीर्षाप्तिक राज्य विद्युत विनियमक, आयोगों (एससीआरएसी) द्वारा निर्धारित किये जाने वाले टैगेट के लिए लागू होना चाहिए। अधिकारिक बोलों से विद्युत की हिस्सेदारी उत्पादक बढ़ाई जाएगी जैसा कि राज्य विद्युत विनियमक आयोगों द्वारा निर्धारित किया गया है। वितरण कंपनियों द्वारा इस प्रकार की खरीद प्रतिशतकृत बोली प्रक्रिया के माध्यम से की जाएगी। इस तथ्य को ध्यान में रखते हुए कि गैर-पारंपरिक प्रौद्योगिकियों को पूरा होने में, लगभग व पर्यावरणीय बोलों के संदर्भ में, कुछ समय लगेगा अतः आयोग इन प्रौद्योगिकियों को प्रोत्साहित करने में कीमतों में वर्तमान अंतर संख्या है।

5.12.3 वे उद्योग, जिनमें प्रौद्योगिक तात्पर्य (प्रोसेस हीट) और विद्युत दोनों की आवश्यकता है, विद्युत के सह-उपयोग के लिए अधिक उपयुक्त है। देश में, विस्तारशील चीनी उद्योग में सह उपयोग के लिए महत्वपूर्ण क्षेत्र विद्यमान है। राज्य विद्युत विनियमक आयोग (एससीआरएसी) ऐसे संगठनों से अधिशृंखला विद्युत के क्रय के लिए सह-उपयोग कर और वितरण लाइसेंसी के बीच व्यवसायों को प्रोत्साहित कर सकते हैं। उनमें क्रुद्धता व धिंदु उपयुक्तता के समय हिंदी में सह उपयोग विन्यासी को प्रोत्साहित करने की भी ज़रूरत है।

5.13 उपमोक्ता हितों और गुणवत्ता मानकों की सुरक्षा

5.13.1 उपयुक्त आयोग द्वारा विद्युत आपूर्ति की गुणवत्ता पर पूर्ण निर्धारित सूचियों/मानदंडों के आधार पर गृहवितरितों द्वारा निर्धारित किया जाना चाहिए। पैसामीट्रों में अन्य के साथ-साथ रूकवाट को श्रेणियों के अधिकांश और अधिक, वोल्टेज प्राथमिक, दुर्लभपर खरीद से दें दायर, दोपूरण मीटरों का प्रतिशत तथा नए कनेक्शनों की प्रशिक्षण सूची को समन्वित करना चाहिए। उपयुक्त विनियमक आयोग नियामक के अनुसार मानकों को विनिर्दिष्ट करें।

5.13.2 उपमोक्ताओं को विद्युत की आपूर्ति की विश्वसनीयता दृष्टि (आरआई) वितरण लाइसेंसी द्वारा दर्शायी जानी चाहिए। जिला नियुक्ताध्याय नगर तक सभी शहरों और नगरों के लिए आरआई की घोषणा के लिए दिशानिर्देश राज्य विद्युत विनियमक आयोगों द्वारा तैयार किए जाने चाहिए। आरआई के अंतर्गत विद्युत प्राथिक प्रयोग द्वारा संकलित और प्रकाशित किए जाने चाहिए।

5.13.3 यह परामर्श दिया गया है कि सभी राज्य आयोग लाइसेंसियों द्वारा शिकायत निर्धारित फोरम की स्थापना से संबंधित दिशानिर्देश तैयार कर, ओमब्लॉक मैनों को भी सूचित किया जाना चाहिए तथा ओमब्लॉक मैनों की पुनर्नियुक्त/पदनियुक्त करने से संबंधित विनियम भी छ: माह के भीतर तैयार कर लिए जाए।

5.13.4 केंद्र सरकार, राज्य सरकारों तथा विद्युत नियामक आयोगों को उपमोक्ता समूहों के श्रम संबंधित व नियामक आयोगों के समक्ष उनकी प्रभावी प्रतिबंधित को मानना चाहिए। इससे नियामक प्रक्रिया को प्रतिष्ठा प्राप्त होगी।
6.0 समन्वित विकास

6.1 विद्युत समर्थित विषय होने के नाते विद्युत क्षेत्र के विकास के लिए समन्वित दृष्टिकोण आवश्यक होगा। आगामी 5 वर्षों में सभी पशुवाहिक को विद्युत और सभी उपयोगकर्ताओं को गुणवत्तापूर्वक आर्थिक संभवता उद्देश्य की पूर्ति हेतु भी यह परस्मार्थक है। राज्य सरकारों की विशेषता उत्पादन क्षमता पैदा करने, राज्य सरकारी परवेशाण और वितरण में महत्त्वपूर्ण भूमिका है। केन्द्रीय सरकार इस उद्देश्य की प्राप्ति के लिए राज्य सरकारों को सहयोग देगी। यह नई क्षमता अभिवृद्धि में सहायक भूमिका और वाणिज्यिक संगठन 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 यदि अपेक्षित उत्पादन क्षमता उपयोग कर सकते हैं। विनियामक आयोगों को इस सुनिश्चित करने का उपयोगिता है कि विनियामक प्रक्रियाओं इस उद्देश्य की प्राप्ति को सुगम बना दें। उनकी विकासात्मक भूमिका है जिसकी पूर्ति के लिए कम औपचारिक और परम्परा विशेष प्रक्रिया की आवश्यकता होगी।

विद्युत अधिनियम 2003 परम्परागती प्रक्रिया को सरल बनाने के लिए "समन्वित फास्ट" और "समन्वित संगठित" जैसे तंत्रों की उपलब्धता करता है। अधिनियम विनियामक आयोगों से अपनी शक्तियों के प्रयोग में पारंपरिक को सुनिश्चित करने और उनके कार्य की नियोजन की अपेक्षा करता है। किंतु इसका यह अर्थ नहीं कि विनियामक आयोगों को औपचारिक व्यवस्था की दृष्टि का खंडन करना चाहिए। वास्तव में, मामलों के शीर्ष लिपटर के लिए स्टेकहोल्डर्स के साथ प्रयास वाले संबंधों की आवश्यकता होगी।

6.2 अधिनियम के अंतर्गत विनियामक आयोगों को व्यापक स्तर पर जीमेंट्स निभाने अपेक्षित है। यशोर्विध सरकारों को अपेक्षित विनियामक भूमिका वाले कार्यक्रमों को आरंभिक करने के लिए कदम उठाने अपेक्षित होंगे। भारत सरकार अपेक्षित विशेषज्ञता और इतिहास संगठन के संबंध में विनियामक क्षमता बढ़ाने हेतु प्रशिक्षण प्रदान करने के लिए संस्थागत क्षमता स्थापित करेगी। उपयुक्त सरकारों को विनियामक आयोगों को वित्तीय स्वास्थ्य देनी चाहिए। अधिनियम व्यवस्था करता है कि उपयुक्त सरकार अधिनियम की धारा 99 या धारा 103 के अंतर्गत जैसी भी स्थिति हो, विनियामक आयोग का निष्कर्ष निर्धारण करने के लिए विशेष निर्धारण 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 cannot 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 10th Plan period and 11th Plan and perspective Plan for the 10th, 11th & 12th 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 Targeted 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, Uttarakhand, 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 27th 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 prepaid 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 CERC 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.900,000 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 licensee. 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
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 12th February, 2005. The Working Group on Power for 12th 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 IPF, 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

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 12th 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 2,52,112ckt-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 10,150MW (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 continue 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
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, loosing 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 reason 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 upto2029-30 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. S:ate 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 subserv 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 streamline 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 tariff 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 (DDUGJJ) 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 upt to 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 upgrading 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 33 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 (NMEE) is one of the eight national missions under the National Action Plan on Climate Change (NAPCC). One of the flagship schemes under NMEE, 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 substations, Gas Insulated Sub-stations (GIS) should be adopted, particularly in urban areas, which require about 30% less land as compared to conventional substations. Wherever required, MW scale batteries should be installed at the substations 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 SO₂, NOₓ, 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 1st 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-Cood dated 23rd 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 an endeavor 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.