

## **ENERGY CONSERVATION**

The primary energy demand in India has grown from about 450 million tons of oil equivalent (toe) in 2000 to about 840 million toe in 2017. This is expected to increase to somewhere between 1250 (estimated by International Energy Agency) and 1500 (estimated in the Integrated Energy Policy Report) million toe by 2030. This increase is driven by a number of factors, the most important of which are increasing incomes and economic growth which lead to greater demand for energy services such as lighting, cooking, space cooling, mobility, industrial production, office automation etc. This growth is also reflective of the current low level of energy supply in India. There is a large latent demand for energy services that needs to be fulfilled in order for people to have reasonable incomes and a decent quality of life.

Government of India has undertaken a two pronged approach to cater to the energy demand of its citizens while ensuring minimum growth in CO<sub>2</sub> emissions, so that the global emissions do not lead to irreversible damage to the ecosystem. In the generation side, the Government is promoting greater use of renewable in the energy mix mainly through solar and wind and at the same time shifting towards supercritical technologies for coal based power plants. Efforts are also being made to efficiently use energy in the demand side through various innovative policy measures under the overall ambit of Energy Conservation Act 2001 (EC Act). Also, as per India's Intended Nationally Determined Contribution (INDC) it is aimed to reduce the emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level.

EC Act was enacted in 2001 with the goal of reducing energy intensity of Indian economy. Bureau of Energy Efficiency (BEE) was set up as a statutory body on 1<sup>st</sup> March 2002 at the central level to facilitate the implementation of the EC Act. The Act provides regulatory mandate for: standards & labeling of equipment and appliances; energy conservation building codes for commercial buildings; and energy consumption norms for energy intensive industries.

### **PROMOTING ENERGY EFFICIENCY IN BUILDINGS**

Energy Conservation Building Code (ECBC) 2017 was launched on June 19, 2017 by Hon'ble Minister of State (IC) for Coal, Mines, NRE& Power. The scope of ECBC 2017 includes norms and standards for building design, including the envelope, lighting, heating, air-conditioning, and electrical systems. It sets minimum energy standards for new commercial buildings having a connected load of 100 kW & above or contract demand of 120 kVA & above. The ECBC 2017 will set the minimum efficiency standard for buildings aiming at near zero energy buildings in the future. While the ECBC has been developed by BEE, its enforcement lies with the State Governments with 12 States and 1 UT having already notified ECBC 2007. In order to address energy efficiency in Residential Sector, Eco NiwasSamhita 2018 (Part 1: Building Envelope) is developed and launched on December 14, 2018 which is an Energy Conservation Building Code for Residential Sector. It sets minimum building envelope performance standards to limit heat gains (for cooling dominated climates) and to limit heat loss (for heating dominated climate) as well as for ensuring adequate natural ventilation and day lighting.

Energy efficiency in existing buildings is also a key thrust area of the Government of India, and the voluntary scheme for star rating of commercial buildings was developed with an aim to create a market pull for energy efficient buildings. Currently the scheme is applicable to 4 categories of buildings i.e. Day use Office buildings, Shopping Malls, BPOs and Hospitals.

### **Achievements**

- The Energy Conservation Building Code has so far been mandated in the following twelve States and one Union Territory: Assam, Rajasthan, Odisha, Punjab, Andhra Pradesh, Telangana, Karnataka, Kerala, Uttarakhand, Haryana, West Bengal & Uttar Pradesh and UT of Puducherry.
- 17 ECBC Cells have been set up covering 24 States/UTs under the institutional framework for capacity building on ECBC implementation in States/UTs, creation of seven more ECBC cells is under process.
- Under the ECBC Master training programme a total of 122 ECBC Master Trainers have been certified so far.
- A Memorandum of Understanding (MoU) is signed between Bureau of Energy Efficiency (BEE) and Central Public Works Department (CPWD) for “Energy Efficiency in CPWD managed Buildings”.
- Eco-NiwasSamhita 2018 (Part 1: Building Envelope) is developed and launched by Hon’ble Lok Sabha Speaker and Hon’ble Minister of Power on National Energy Conservation Day (14th December, 2018). It is an Energy Conservation Building Code for Residential Sector.
- A total of 214 Commercial buildings have been star rated under different categories of buildings as on date.
- For monitoring of energy consumption pattern of all new and existing buildings, EMIS (Energy Management Information System) portal is developed.

### **STANDARDS AND LABELING SCHEME**

Standards and Labelling (S&L) scheme is a flagship initiative of Ministry of Power that was launched with the key objective of providing consumers an informed choice regarding the energy savings and thereby the cost-saving potential of various energy consuming appliances. S&L scheme covers the star labelling program for 22 appliances, out of which 10 appliances are under mandatory regime and remaining 12 appliances are under voluntary regime.

### **Achievements:**

- Revision of energy consumption standards for Tubular Fluorescent lamps, Direct Cool Refrigerators, Frost Free Refrigerators, Storage type electric water heaters has been done during the year 2018 with a view to bring more efficient appliances in the market.
- The star labelling program for Inverter Air Conditioners and LED Lamps has been made mandatory w.e.f. January, 2018. The energy consumption standards for Inverter Air Conditioners have been notified in the Gazette of India vide S.O. 2528 (E) dated 8<sup>th</sup> August, 2017. The energy consumption standards for LED lamps have been notified in the Gazette of India vide S.O. 4097(E) dated 27<sup>th</sup> December, 2017.

- Organization of retailer training programme called “National Retailer Training Programme on Standards and Labelling (NRTP)”, under which total 18 workshops have been conducted over a period of time in various cities. Approximately 2200 retailers were educated regarding the various facets of standards and labelling scheme. 2<sup>nd</sup> phase of retailer training program initiated in the year 2018. In phase 2 of Retailer Training Programme, till December, 2018, total 24 workshops have been organized.
- Voluntary star labelling program for commercial (water and air cooled) chillers has been launched on 14<sup>th</sup> September, 2018.
- LED testing facility set up was inaugurated at CPRI Bangalore by Secretary Power on 27<sup>th</sup> November, 2018.

## **CAPACITY BUILDING OF DISCOMS**

Demand Side Management (DSM) measures in the Energy Sector is a cost-effective tool. As a customer strategy, DSM programs encourage the installation of end-use technologies that consume less energy, thereby reducing and/or shifting the customers’ overall electric bill. DSM programs can help utilities to reduce their peak power purchases on the wholesale market, thereby lowering their overall cost of operations.

The capacity building and other support is essential for the DISCOMs to implement DSM in their respective areas. In this context, Bureau of Energy Efficiency has launched a programme for capacity building of DISCOMs. This will help in capacity building of DISCOM officials and development of various mechanisms to promote DSM in their respective areas.

### **Achievements:**

The objective of the programme is to carry out load management activities, development of DSM action plans and implementation of DSM action in their respective areas. Following have been the major achievements so far under this programme.

#### **First Phase**

- 34 DISCOMs were selected for participating as beneficiary DISCOMs under this programme and Memorandum of Understanding (MoU) was signed with them.
- DSM Cell has been established by these DISCOMs.
- DSM regulation has been notified in 22 States for 34 DISCOMs.
- Manpower support was provided to each DISCOM for facilitation of DSM related activities. This provision will be continued for the period 2017-20.
- Load survey is completed for all 34 DISCOMs and their DSM action plans have been prepared.
- National Power Training Institute was engaged by BEE to conduct training programmes for the officials of DISCOMs to create Master Trainers on DSM and Energy Efficiency. Under this programme, 504 officials of senior/middle-level management of these DISCOMs were trained as Master Trainers under Training of Trainers activity.
- About 5000 circle level officials of DISCOMs have been trained on DSM and Energy Efficiency.

## **Second Phase**

- 28 DISCOMs have been identified on PAN India level as beneficiary DISCOMs under this programme.
- Memorandum of Understanding (MoU) has been signed amongst BEE, the selected 28 DISCOMs and respective SDAs for smooth and effective implementation of necessary activities.
- About 1000 senior officials of these DISCOMs would be trained as Master Trainers on DSM & Energy Efficiency and capacity building programme for about 4000 circle level officials would be undertaken.

## **AGRICULTURE DEMAND SIDE MANAGEMENT**

Agriculture sector is one of the most important sector of Indian economy. Agriculture plays a significant role in the overall socio-economic development of India. This sector accounts for approximately 80% of India's total water consumption. Pumps being the most vital element of the irrigation process and presently there are about 20 million pump sets energized in India.

Upgradation of existing pumping systems presents an immediate need and an unprecedented opportunity. The sector is dominated by highly in-efficient pump sets having average efficiency range of 25%-30% while efficiency level of star rated energy efficient pump sets (EEPS) is 40%-45%. Therefore, there is a need to tap the huge energy savings potential promised in agriculture pumping sector.

### **Achievements:**

- An MoU was signed between Indian Council of Agricultural Research (ICAR) and Bureau of Energy Efficiency (BEE), Ministry of Power, to create awareness for energy efficient pumpsets and operational practices so as to adopt energy and resource efficient approaches with aim to create awareness on energy efficiency and conservation in agricultural practices, particularly in using agriculture pumpsets, tractors and other machines and to improve fuel and water resource use efficiency thereby reducing the cost of cultivation so as to increase farmer's income in harmony with strategies of "Per drop more crop" and "Doubling Farmers' income".
- As per MoU signed between BEE and Indian Council of Agriculture Research (ICAR), various KVKs has been identified in states like Chhattisgarh, Gujarat, Nagaland, Sikkim and Uttarakhand to carryout the training and awareness programs.
- States of Haryana, Punjab, Karnataka, Kerala issued state wide notification for using EEPS. Chhattisgarh & Rajasthan are providing free power/incentive to consumers using EEPS.
- Pilot project for deployment of 2500 BEE star labelled irrigation pumps in the distribution circle has been implemented by Eastern Power Distribution Company of AP Ltd., Andhra Pradesh. Similarly, a DISCOM in Karnataka, namely, Chamundeshwari Electricity Supply Corporation Ltd. has replaced 1337 no. of old inefficient agriculture pumps sets with BEE star labelled ones.
- BEE provided support to carry out M&V of the pilot Ag DSM project which was implemented at Solapur, Maharashtra. Currently, a total number of 2209 inefficient

pumpsets were replaced with star rated pumpsets under the pilot project being implemented in Solapur.

- Mizoram has carried out the feasibility for demo project for implementation in Rural Drinking Water Pumping Systems.

## **MUNICIPAL DEMAND SIDE MANAGEMENT**

The energy consumption of the municipalities is characterized by frequent changes and rising peaks in power load curves in the morning hours due to water pumping and evening hours for street lighting. The inefficient use of electricity due to limited diffusion of energy efficient technologies and Demand Side Management (DSM) initiatives, have considerably increased the energy spent by the municipalities. The need for affordable electricity and the energy and peak shortages make the Municipal Demand Side Management (MuDSM) programme important for India, as it can improve the overall energy efficiency of the ULBs which could lead to substantial savings in the electricity consumption, thereby resulting in cost reduction/savings for the ULBs.

## **SMALL AND MEDIUM ENTERPRISES (SMES)**

The MSME (micro, small and medium enterprises) sector, is a heterogeneous sector in terms of the products manufactured, sizes, manufacturing processes, output and technology used in manufacturing. MSMEs engaged in manufacturing, account for about 33% of India's manufacturing output and around 28% contribution in the GDP as whole.

MSMEs typically are characterized with a high degree of heterogeneity within the manufacturing processes across various geographic locations even for similar product offerings. When compared with large enterprises they have smaller scale of operations, smaller capital base and do not have access to cheaper finance and technology solutions. Hence, they prefer low-cost sub-standard solutions leading to inefficient production. The enterprises engaged in energy intensive operations incur disproportionately higher costs. Vulnerability of MSMEs to increasing energy prices is higher as they pay more per unit of energy as compared to large industries.

The MSMEs in India are around Sixty-Three million – and majority of them have not implemented any energy efficiency (or) technology upgradation measures and continue to depend on obsolete, low efficiency technologies that result in wasteful energy consumption, thereby reducing profitability and competitiveness of MSME sector in India.

## **BEE's Programme to Improve Energy Efficiency of MSME Sector –**

With the collective efforts towards improving the energy performance, the current state of awareness, perception and responsiveness towards energy efficiency programmes of MSME segment in India, Energy Efficiency interventions in SME sector are yet to become the mainstream across the country.

Although the energy saving potential is immense in this sector which BEE intends to unlock, there are challenges faced by Indian MSME entrepreneurs such as risk averseness, cumbersome documentation and lack of awareness/motivation.

Bureau of Energy Efficiency has also implemented EE technologies in many energy intensive clusters of India with the support from Global Environment Facility (GEF) through UNIDO and World Bank.

### Major Achievements –

1. Developed Case Studies for Pali (Textile) Cluster, Varanasi (Brick) Cluster and Indore (Food) Cluster. These case studies were circulated to SME entrepreneurs of the respective clusters for replication of successful interventions.
2. Conducted Seven (7) dissemination workshop in Pali (Textile) Cluster and Indore (Food) Cluster to increase awareness and outreach among the SME entrepreneurs of these clusters.
3. Four (4) AV case studies were prepared on implemented EE technologies. These audio video tutorials are developed to educate, showcase the actual savings realised (monetary benefits) and motivate SME entrepreneurs to adopt EE technologies.
4. Established EMC in 3 clusters Morbi, Sikkim & Kerala with portable energy audit instruments worth of 30 lakhs, thereby established 12 Energy Management Centres Pan India.
5. National Stakeholder Consultation Workshop was organised at Indore to achieve transformational results and scaling up the project activities.
6. More than forty (40) dissemination workshops were organised through State Designated Agencies (SDAs) to disseminate the knowledge and experience gained, savings achieved, energy efficient technologies.
7. 14<sup>th</sup> and 15<sup>th</sup> meeting of SAMEEEKSHA was organised at Kolkata and Coimbatore



8. Fifty (50) energy efficient technologies pursuant to energy intensive clusters were shortlisted to prepare the multimedia tutorials.
9. More than Two Hundred (200) SME entrepreneurs were trained on “Best Operating Practices” that should be adopted to achieve maximum energy efficiency under GEF – UNIDO – BEE Programme.
10. To ensure the replication of the demonstration projects in the cluster, cluster level entities were strengthened by means of empanelment of local service providers,

dissemination workshops, capacity building of unit owners etc. and more than Eight Hundred (800) Local Service Providers were trained at Clusters.

11. B2B exhibition was organised at Chandigarh cluster followed by an implementation support and awareness workshop under GEF – World Bank – BEE Programme.
12. Demonstration Project on the technology “Conversion of existing Bull Trenched Kilns (BTKs) to Zig Zag Kilns” were implemented at Bhatinda and Abohar.
13. Under GEF – UNIDO – BEE Programme more than 120 small scale energy saving projects with 40 energy efficient technologies implemented.
14. Twenty-four (24) pilot projects worth an investment 891 Lakhs Indian Rupees has been implemented. This in turn has saved 1450 TOE energy with avoided 3947 tons of CO<sub>2</sub> emissions.

## **STRENGTHENING OF STATE DESIGNATED AGENCIES TO PROMOTE EFFICIENT USE OF ENERGY AND ITS CONSERVATION**

In exercise of the powers conferred by section 15(d) of EC Act 2001, all 36 State Governments / UT Administrations have designated an agency as State Designated Agency (SDA) to coordinate, regulate and enforce the provisions of this Act within the State, either by assigning additional responsibilities to one of the existing departments of the State Government or by establishing a dedicated Stand-Alone SDA for energy efficiency.

### **Achievements:**

The SDAs have carried out capacity building activities like workshops and training programmes involving the Energy Managers, Energy Auditors and Designated Consumers appraising about their roles as per the mandate of the EC Act 2001. Media and awareness campaign has been undertaken by the SDAs in their respective states. The major focus areas include promotion through electronic and print media, awareness campaign in schools and colleges through brochures and banners etc. Most of the SDAs celebrate Energy Conservation Day with due recognition given to those who have taken lead in promoting the cause of energy efficiency in the state. In addition to this, some of the major successful accomplishments of the scheme are as follows:

- About 40 demonstration projects in the areas of street lighting, water pumping and waste heat recovery have been successfully completed by SDAs.
- 40 nos. of villages have been taken up by the SDAs under “Model Energy Efficient Village Campaign” for converting them into model energy efficient villages by replacing existing inefficient electrical appliances with BEE star rated appliances including household bulbs, street lights, fans, water pumps, etc.
- Replacement of existing conventional appliances with energy efficient appliances in about 2500 nos. of Govt. schools by SDAs is underway. This endeavor has been completed in about 350 nos. of schools.
- Almost 200 nos. of employees are engaged by the SDAs, who are exclusively involved in facilitating and enforcing efficient use of energy and its conservation at the State level.

- SDAs have conducted many workshops/seminars and capacity building programmes to disseminate information and address practical issues faced by various stakeholders. Target audience of these workshops include accredited/certified energy auditors, energy managers, Designated Consumers, building professionals, architects, Financial Institutions, ESCOs, etc. About 300 nos. of such workshops cum training programmes have been organized by the SDAs.
- All the SDAs have established dedicated website highlighting energy efficiency measures undertaken in the state. The websites are linked with Bureau of Energy Efficiency and other SDAs to facilitate information exchange.

### **CONTRIBUTION TO STATE ENERGY CONSERVATION FUND (SECF)**

Section 16(1) of the Energy Conservation Act 2001 requires State Governments to constitute a fund called SECF for the purpose of promotion of efficient use of energy and its conservation within the state. In this context, a scheme called “Contribution to State Energy Conservation Fund (SECF)” to be governed by BEE was approved by the Ministry of Power.

The SECF can facilitate to overcome the major barriers for implementation of energy efficiency projects. It is intended to be used as an instrument to facilitate implementation of energy efficiency projects through market transformation.

The contribution under SECF is made to those State Governments / UT Administrations who have created their SECF and finalized the rules and regulations to operationalize the same. The scheme is for contribution to all the State/UTs with a maximum ceiling of Rs. 4.00 Crore for any State/UT provided in two installments of Rs. 2.00 Crore each. The second installment of Rs. 2.00 Crore under contribution to SECF is released only after the states have provided a matching contribution to the first installment of Rs. 2.00 Crore provided by BEE. It may be mentioned here that the matching contribution by the State Government for North Eastern States and the UT Administrations is relaxed to Rs. 25.0 lakhs instead of Rs 2.0 Crore.

#### **Achievements:**

SECF has been constituted in 30 states, out of which, 25 states have provided matching contribution.

### **NATIONAL ENERGY CONSERVATION AWARD AND PAINTING COMPETITION**

The National Energy Conservation Awards are presented to industry and other establishments every year by the Ministry of Power with the objective of promoting energy conservation among all sectors of economy. These awards recognize and encourage endeavors of industrial units, institutions and establishments in reducing energy consumption by felicitating them with Energy Conservation Awards on the occasion of National Energy Conservation Day, celebrated on 14<sup>th</sup> December every year.

The awards were given for the first time on December 14, 1991, which was declared as the ‘National Energy Conservation Day’. Since then, National Energy Conservation Awards (NECA) has

been attracting the attention of all the stakeholders and has witnessed increasing participation level year after year. These awards are presented on EC day by eminent dignitaries and highest functionaries such as Hon'ble President, Hon'ble Prime Minister and Hon'ble Union Minister of Power.

### **Achievements:**

- Hon'ble Speaker of Lok Sabha was the Chief Guest for the NECA – 2018 and awards were presented to the awardees by the Hon'ble Speaker and Hon'ble Minister of State (IC) for Power & NRE.
- From 2017 onwards, applications are invited for NECA on rolling cycle of three years, which implies that few sectors are allowed to participate every year and every sector will get a chance to apply for the NECA within a block of three years.
- 333 industrial units, establishments, and organizations participated in NECA-2018. 2384 nos. of applications were received for "Most Energy Efficient Appliance of the Year"
- 13 units were awarded First Prize, 13 units Second Prize, 26 units Certificate of Merit and 5 Awards for the Most Energy Efficient Appliance of the Year. The awards are recognition of their demonstrated commitment to energy conservation and efficiency.
- The participating units of 2018 Awards have collectively invested Rs. 1327 Crores in energy conservation measures, and achieved a monetary savings of Rs. 2069 Crores, having an average payback period of 8 Months.
- The participating units have saved electrical energy of 3917 Million kWh of electrical energy, which is equivalent to the energy generated from a 739 MW at a PLF of 60.5 %. In other words, these participating units have avoided the installation of power generating capacity equivalent to 739 MW in 2017-18, which would otherwise have been required to meet the power demand of these units.



***An Awardee receiving award from Hon'ble Lok Sabha Speaker***

## **Painting Competition on Energy Conservation for School Children**

Ministry of Power is organizing National Painting Competition since 2005 under the National Awareness Campaign to promote energy conservation in the country for students of 4th, 5th and 6th standards. Painting competition for students at the School, State and at National level has been included as one of the activities of the campaign, which would not only make aware the children about the need of conserving energy but at the same time would educate and involve their parents as well in the above cause. The identified activity is one of the measures, which can help in creating awareness in the domestic sector. In order to strengthen and for added cognizance, higher classes of 7th, 8th and 9th standards have been included from 2013 in addition to existing classes of 4th, 5th and 6th Standards.

The painting competition is held in three stages, namely, School, State and National Level under two categories. Students of 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> standard are under **Category 'A'** and 7<sup>th</sup>, 8<sup>th</sup> & 9<sup>th</sup> standard students are under **Category 'B'**.

### **Achievements:**

This year across the country 90,78,735 students from 4th to 9th standard participated in the Painting Competition. This competition is organized all over the country in association with 12 CPSUs under Ministry of Power. The paintings drawn by children reflect their interest in the energy conservation activities and their concern about energy crises and climate change, and have effectively conveyed inspiring ideas through their impressing paintings. This year 108 children, all winners of the State Level Painting Competition, reached the National Level Painting Competition. Paintings of winning children were displayed in the exhibition gallery during the award function at VigyanBhawan.



***Winners of the National Painting Competition  
with Hon'ble Lok Sabha Speaker***



***A child explaining about his painting to the  
Hon'ble Lok Sabha Speaker***

## **NATIONAL MISSION FOR ENHANCED ENERGY EFFICIENCY (NMEEE)**

The National Mission for Enhanced Energy Efficiency (NMEEE) is one of the eight missions under the National Action Plan on Climate Change (NAPCC). NMEEE aims to strengthen the

market for energy efficiency by creating conducive regulatory and policy regime and has envisaged fostering innovative and sustainable business models to the energy efficiency sector.

The NMEEE spelt out four initiatives to enhance energy efficiency in energy intensive industries which are as follows:

- (i) **Perform Achieve and Trade Scheme (PAT)**, a regulatory instrument to reduce specific energy consumption in energy intensive industries, with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded.
- (ii) **Market Transformation for Energy Efficiency (MTEE)**, for accelerating the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable.
- (iii) **Energy Efficiency Financing Platform (EEFP)**, for creation of mechanisms that would help finance demand side management programmes in all sectors by capturing future energy savings.
- (iv) **Framework for Energy Efficient Economic Development (FEEED)**, for development of fiscal instruments to promote energy efficiency.

The Mission seeks to upscale the efforts to unlock the market for energy efficiency which is estimated to be around Rs. 74,000 crore and help achieve total avoided capacity addition of 19,598 MW, fuel savings of around 23 million tonnes per year and green- house gas emissions reductions of 98.55 million tonnes per year at its full implementation stage.

#### **Achievements:**

##### **(i) Perform Achieve and Trade Scheme (PAT):**

- Perform, Achieve and Trade (PAT) scheme is one of the flagship programs under NMEEE aiming at energy savings in large energy intensive industries. The energy saved by the large industries is converted into tradable emoluments called Energy Saving Certificates (ESCerts) and are traded at the Power Exchanges. The Central Electricity Regulatory Commission (CERC) is the market regulator for trading of ESCerts with The National Load Dispatch Centre (POSOCO) being the registry and the trading of ESCerts is done through the Power Exchanges.
- In the first cycle of PAT (2012-2015), 478 industrial units in 8 sectors (Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper& Pulp, Thermal Power, Textile) were mandated to reduce their specific energy consumption (SEC) i.e. energy used per unit of production. The achievement in PAT cycle -I with respect to 427 DCs comes out to be 8.67 Mtoe which is 30% over-achievement against the assigned target of 6.686 Mtoe for 478 DCs of PAT Cycle I.
- PAT Cycle II had commenced from 1st April, 2016 under which 621 DCs (448 existing, 89 additional DCs from existing sectors and 84 DCs from new sectors viz. Railways,

Electricity DISCOMs and Refineries) from the 8 existing and 3 new sectors (Railways, Electricity DISCOMs and Refineries) were notified with overall reduction targets of 8.869 mtoe.

- Subsequently, upon recommendation of various committees, PAT scheme is now being implemented on a rolling cycle basis i.e. inclusion of new sectors and new DCs every year. Hence, PAT cycle-III was notified with effect from April, 2017 with projected energy savings of 1.06 mtoe.
- PAT cycle –IV was notified with effect from 1<sup>st</sup> April 2018 in which 109 DCs from the existing sectors and two new sector namely Petrochemicals and Commercial Buildings (Hotels) have been notified with a total energy saving target of 0.6998 mtoe. Presently, in total 846 designated consumers under PAT cycle –II, III and IV are undergoing implementation of energy efficiency measures to achieve the assigned targets. It is envisaged that a total savings of about 19 million tonnes of oil equivalent would be achieved after implementation of PAT scheme by 2020.
- Energy Saving Certificates (ESCerts): Trading of Energy Saving Certificates (ESCerts) at the Power Exchanges commenced on 26th September 2017. A total of seventeen sessions of trading of ESCerts earned in lieu of excess energy saved took place at the Power Exchanges resulting into a total traded volume of about 12.98 lakh ESCerts and a business of about INR 100 crores.

**(ii) Market Transformation for Energy Efficiency (MTEE)**

This initiative under the National Mission for Enhanced Energy Efficiency (NMEEE) aims to accelerate the shift to energy efficient appliances in designated sectors through innovative measures to make the products more affordable.

**(iii) Framework for Energy Efficient Economic Development (FEEED)**

Framework for Energy Efficient Economic Development (FEEED), seeks to develop fiscal instruments to promote energy efficiency including innovative fiscal instruments and policy measures like the Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE) and Venture Capital Fund for Energy Efficiency (VCFEE).

➤ **Partial Risk Guarantee Fund for Energy Efficiency (PRGFEE)**

PRGFEE is a risk sharing mechanism to provide financial institutions (banks and NBFCs) a partial coverage of risk involved in extending loans for energy efficiency projects. The guarantee will not exceed Rs. 10 crore per project or 50% of loan amount, whichever is less. Government of India has approved funds of Rs. 312 crore for PRGFEE. Sectors to be covered under PRGFEE are Government buildings, Private buildings having commercial or multi-storey residential accommodations, Municipalities, SMEs and Industry.

**Achievements:**

- BEE has appointed a consortium of RECPDCL-REC-EESL as Implementing Agency (IA) for operationalization of PRGFEE.

- Andhra Bank, YES Bank, IDFC Bank and Tata Cleantech Capital Ltd. have been empanelled as Participating Financial Institutions.
- BEE and Implementing Agency are in the process of creating pipeline of few projects to be covered under this guarantee mechanism.
- PRGFEE Rules have been notified.
- Operations Manual for the PRGFEE has already been published.

➤ **Venture Capital Fund for Energy Efficiency (VCFEE)**

Venture Capital Fund for Energy Efficiency (VCFEE) is a fund to provide equity capital for energy efficiency projects. Any single investment by the fund shall not exceed Rs. 2 crore. The Fund will provide last mile equity support to specific energy efficiency projects, limited to a maximum of 15% of total equity required, through Special Purpose Vehicles or Rs. 2 crore, whichever is less. Sectors covered under VCFEE are government buildings, Private buildings and Municipalities. The support under VCFEE has been provided to only government buildings, private buildings (commercial or multi-storey residential buildings) and municipalities.

**Achievements:**

- The Trust of VCFEE has been constituted under provisions of Indian Trust Act 1882, the trust deed was registered with jurisdictional sub-registrar Government of Delhi.
- Board of Trustees for VCFEE has been constituted.
- Fund Manager for operationalization of VCFEE has been identified.
- VCFEE Rules have been notified.

**(iv) Energy Efficiency Financing Platform (EEFP)**

EEFP is one of the important initiatives under NMEEE with the objective to provide a platform to interact with financial institutions and project developers for implementation of Energy Efficiency projects. Under this programme, MoUs have been signed with financial institutions to work together for development of energy efficiency market and for identification of issues related to this market development. MoUs are already being signed by BEE with M/s. PTC India Ltd, M/s. SIDBI, Tata Capital and IFCI Ltd. to promote financing for Energy Efficiency projects.

For capacity building of FIs, BEE has signed MoU with Indian Banks' Association for training programme on Energy Efficiency financing for Scheduled Commercial Banks. With an objective "to build greater knowledge and confidence through training programme within the financial sector on EE financing", in Phase 1 BEE has successfully completed 4 training of trainers (ToT) workshops. Presently, BEE has launched the Phase 2 of these training workshops to create awareness amongst the loan officers / risk managers / credit managers towards technical/financial appraisal of EE projects. Approx.567 banking/NBFC officials have been trained on EE financing under this programme.

**Following are the publications:**

- Training Manual for Energy Efficiency Financing in India.
- Success stories for Energy Efficiency Projects Financed in India.

- Market Assessment for Partial Risk Guarantee Fund for Energy Efficiency and Venture Capital Fund for Energy Efficiency.
- Guidelines for Financing Energy Efficiency Projects in India.