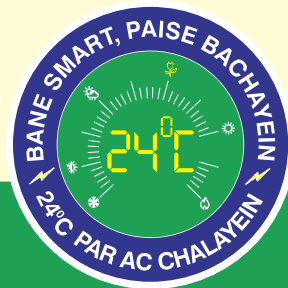
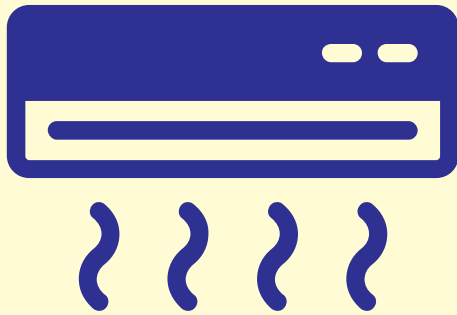




MONTHLY BUDGET PAR NAHI ZOR WHEN AC @ 24°C



- Every increase of 1°C in temperature setting saves 6% on your electricity bill
- Running AC at 24°C instead of 18°C saves 36% of electricity and power bill
- 24°C is more comfortable



BUREAU OF ENERGY EFFICIENCY (BEE)
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Issue 2 | Jan'19-Mar'19

BEE LINE

NEWSLETTER



**NATIONAL ENERGY
CONSERVATION
DAY**

**NATIONAL
PAINTING
COMPETITION**

**ENERGY
CONSERVATION
AWARDS**

SDA MEETINGS

**HIGH LEVEL
HAPPENINGS**



Government of India
MINISTRY OF POWER



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MESSAGE FROM DIRECTOR GENERAL, BEE

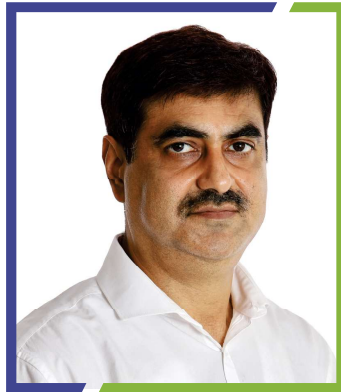
The first step towards increasing energy efficiency in the country is creating awareness about the various ways the Government encourages energy conservation across sectors through the Bureau of Energy Efficiency.

For energy-intensive industries, the Perform, Achieve & Trade (PAT) scheme monetises energy savings. For the construction industry, the Energy Conservation Building Code (ECBC) encourages energy conservation right from the planning stages. Our Standards & Labelling (S&L) programme takes energy efficiency into households through star-labelled appliances.

These and other BEE initiatives towards optimising energy consumption and reducing carbon emission for sustainable development are showcased in this newsletter. We hope they will encourage stakeholders to take the next step from awareness into implementation of energy efficiency initiatives.

Thank You,

Director General, BEE



SECRETARY'S LETTER

Welcome to another issue of the BEE newsletter - BEE line.

At BEE, it is our endeavour to reduce the energy intensity of the Indian economy through self-regulation and market principles. The newsletter is one effort in that direction. By informing stakeholders about our schemes and programmes through this medium, we hope to encourage energy efficiency and conservation across sectors.

Energy conservation is not a subject to be taken lightly. As India continues on its path of growth, energy consumption is estimated to increase manifold. Sustainable growth can only take place if we manage to reduce our energy consumption while continuing to grow the economy. BEE is proud to play a part in ensuring that India's energy intensity by GDP is lower than the global average, putting the country on the path to sustainable development.

But sustainable development can only be achieved by concerted efforts by all stakeholders. Let us work together to have a transformational impact on all our sectors - domestic, industrial, agricultural, commercial, financial and residential - through energy conservation. This newsletter captures some initiatives in that direction.

Let's make a BEE line towards sustainable growth.

Thank you,

Secretary

HIGH-LEVEL HAPPENINGS

Management Advisory Committee Meeting



17th Meeting of the Management Advisory Committee of Bureau of Energy Efficiency was held on 11th February at Shram Shakti Bhawan, New Delhi, under the chairmanship of Shri Ajay Kumar Bhalla, Secretary Ministry of Power.

Governing Council Meeting



8th Meeting of the Governing Council of the Bureau of Energy Efficiency was held under the chairmanship of Hon'ble Minister of Power (I/C) Shri Raj Kumar Singh at Shram Shakti Bhawan on 14th March.

Meeting of Working Group on Energy Efficiency (EEWG)



Under Indo-Japan Energy Dialogue, the meeting of Working Group on Energy Efficiency (EEWG) was held today at BEE involving delegates from METI, EECJ, NEDO, PCRA and TERI. The outcome of this meeting will strengthen the cooperation between India & Japan on Energy Efficiency, and both sides will cooperate on new technologies and areas for Energy Efficiency.

HIGHLIGHTS OF THE QUARTER (Jan'19-Mar'19)

Brainstorming Session on "Market Transformation for Uptake of Energy Efficient Bricks"



1st brainstorming session on "Market Transformation for Uptake of Energy Efficient Bricks" organised in association with GIZ. Distinguished subject matter experts, manufacturer association, Government stakeholders, rating experts, builders, financiers etc. contributed significantly to Bureau of Energy Efficiency's proposed strategy.

Shri Abhay Bakre, Director General, BEE graced this session and stated that most of the brick manufacturing units are family businesses and have not access to new emerging technologies. As the sector is market driven, reducing energy use in the processes is the best possible way to make MSMEs more competitive and sustainable in emerging economies like India.

Exhibition-Vibrant Gujarat, 2019



Bureau of Energy Efficiency participated in the Vibrant Gujarat 2019 under the umbrella of Ministry of Power and showcased various schemes and achievements.

Shri Abhay Bhakre Addresses Employees on New Year



In line with Bureau of Energy Efficiency's mission to move towards an Energy Efficient India, Shri Abhay Bhakre, DG BEE and Shri Pankaj Kumar, Secretary, BEE addressed the employees and motivated them to meet new goals in this year.

15th Meeting of SAMEEEKSHA Convened at Coimbatore



15th meeting of SAMEEEKSHA was convened at Coimbatore in the gracious presence of Shri Raj Pal, Economic Advisor, Ministry of Power, Shri Sudhir Garg, Joint Secretary, Ministry of MSME and Shri Abhay Bakre, Director General, BEE.

SAMEEEKSHA is a collaborative platform synergising the efforts of various organisations and institutions working towards improving energy efficiency of MSMEs in India. The forum pools the knowledge and bring out new methodologies for making the sector more energy efficient.

HIGHLIGHTS OF THE QUARTER (Jan'19-Mar'19)

Training Workshop for Capacity Building of Energy Service Companies (ESCOs)



A two-day training workshop for capacity building of Energy Service Companies (ESCOs) and Energy Auditors was organized in Bangalore. It was attended by 75 participants from various ESCOs, accredited energy auditor firms, certified energy auditors and other energy professionals. Training was imparted to participants on various aspects of energy efficiency financing, global best practices, emerging technologies, baseline estimation techniques and monitoring & verification protocols of Energy Efficiency projects.

Delegation from TGO in a Session to Understand PAT Scheme

An 11 member delegation from Thailand Greenhouse Gas Management Organisation (TGO), a public enterprise under Department of Energy, Government of Thailand, participated in a dedicated knowledge sharing session with BEE officials to understand the Perform, Achieve & Trade (PAT) Scheme. TGO is currently implementing Partnership for Market Readiness (PMR) Program under the support of the World Bank. Energy Performance Certificate (EPC), which is similar to the PAT program of India is being designed and implemented by TGO for their country.



Training cum Capacity Building Workshop for Various State Agencies



Bureau of Energy Efficiency is promoting Energy Efficiency by strengthening partnership with State agencies. A training cum capacity building workshop was organised wherein about 100 officials from various State agencies have participated.

Experts from International Energy Agency have shared knowledge and best practices in promoting energy efficiency in key sectors like Buildings, Industry, Appliances & Equipments and Municipal & Utility Services.

Energy Management Manuals Based on BEE's Guidelines were Prepared



Energy Management Manuals prepared by modal factories, based on the Energy Conservation Guidelines launched by Bureau of Energy Efficiency were deliberated on Dec 7, 2018. These Manuals were developed in closely association with the Energy Conservation Centre, Japan under India-Japan Energy Dialogue.

HIGHLIGHTS OF THE QUARTER (Jan'19-Mar'19)

Workshop in Association with Karnataka SDA and SIMA was Organised

A regional workshop in association with Karnataka SDA and Sponge Iron Manufacturers Association (SIMA) was organised for Iron & Steel Sector in Bellary, Karnataka, where more than 80 officials from various industries participated.

The workshop aimed to create awareness of new technologies such as Coal Gasification, Exhaust Heat Utilisation in Steel, New Advancements in Thermally Activated Cooling & Heating and Implementation/Benefits of Energy Management System, etc.



Training Workshop for the Financial Institutions

A training workshop for the Financial Institutions on Energy Efficiency Financing was organised on 7th-8th February 2019 along with UPNEDA and IBA.

Around 30 participants from Banks, NBFCs & Micro Financing Companies participated in the 2-day workshop in which they were trained about various Energy Efficiency programmes, financial and technical evaluation of projects, importance of energy efficiency, etc.



National Consultation Workshop on Enforcement Manual



National Consultation Workshop on Enforcement Manual was organised to Implement Activities under Energy Conservation Act, 2001 in New Delhi on 15th February 2019. This workshop aimed at discussing & highlighting the objective of enforcement manual under the EC Act.

HIGHLIGHTS OF THE QUARTER (Jan'19-Mar'19)

National Level Workshop for Indian Railway under PAT



A National level workshop for Indian Railway under Perform, Achieve, & Trade (PAT) scheme on 14th February, 2019 in New Delhi in which over 60 senior level officers from Zonal Railways and Production Units participated.

The aim of this workshop was to formulate the roadmap and action plan for Energy Efficiency and Conservation in Indian Railways.

Interactive Consultation with the Accredited Energy Auditors



An Interactive consultation was organised with the Accredited Energy Auditors (AEAs) and Shri Abhay Bakre, Director General, BEE on 21st February, 2019. Interaction was mainly focused on strengthening of AEAs cadre and their Capacity building, suggestions for amendments in EC Act.

Launch of the Energy Efficiency Label for Residential Buildings



Shri R. K. Singh, Hon'ble MoS (I/C) Power and Renewable Energy and officials of Bureau of Energy Efficiency launched the Energy Efficiency label for Residential Buildings. The programme aims at providing information to consumers on the energy efficient homes.

Training Workshop for Financial Institutions



Two day training workshop for Financial Institutions on Energy Efficiency financing has been successfully conducted in Mumbai on 26-27 February 2019. The workshop witnessed the participation of several banking officials from different banks/NBFCs. Also, a number of representatives from industries and rating agencies also marked their presence in the workshop.

Star Rating Programme for Microwave Ovens & Washing Machines



Star Rating Programme launched for Microwave Ovens & Washing Machines. It is expected to save over 3 Billion Units by the year 2030. National Energy Efficiency Strategy Plan 2031 – UNNATEE (UNlocking NATIONAL Energy Efficiency potential) was also launched.

HIGHLIGHTS OF THE QUARTER (Jan'19-Mar'19)

Energy Clinic on Best Operating Practices

Energy Clinic on Best Operating Practices in Cupola Furnaces for Foundries was organised at Coimbatore (Foundry Cluster) under GEF-UNIDO-BEE Project. Around 30 MSME entrepreneurs attended the same and learned energy efficient practices in foundries.



Regional Workshop to Edify new Designated Consumers of PAT Scheme



BEE in association with CREDA conducted a Regional workshop in Raipur, Chhattisgarh on 15th March 2019. The agenda of the workshop was to edify new Designated Consumers of PAT Scheme II, III, & IV about the software platforms PATNET & DCRM, and about their registration & forms filling procedures.

Contract Signed with PricewaterhouseCoopers Pvt. Ltd.

Bureau of Energy Efficiency and PricewaterhouseCoopers Pvt. Ltd. signed a contract on 26th March 2019 for implementation of several activities promoting Energy Efficiency under the "Capacity Building of DISCOMs" Program 2017-20. The objective of this program was Capacity Building of Distribution Companies (DISCOMs) on Load Management, Energy Conservation and Implementation of DSM activities in the North Zone.



ANNUAL SHOWCASE

MoUs for Implementation of ISO 50001:2011 Standards in Selected PAT Industries



MoUs were signed and workshop was conducted on Implementation of ISO 50001:2011 Standards. MoU with selected PAT industries including Paper and Pulp, Cement, Thermal plant, Chlor-Alkali and others have been signed during the workshop for the implementation of 50001:2011 standards.

Star Rating Programme for Microwave Ovens & Washing Machines



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ACHIEVERS AND AWARDS



<p>CATEGORY CEMENT</p> <p>PRIZE 1st</p> <p>AWARDEE Kapilas Cement Manufacturing Works (Unit of OCL India Ltd.), Cuttack, Odisha</p>	<p>CATEGORY CHLOR-ALKALI</p> <p>PRIZE 1st</p> <p>AWARDEE Shiram Alkali and Chemicals, Bharuch, Gujarat</p>
<p>CATEGORY DRUG & PHARMACEUTICAL</p> <p>PRIZE 1st</p> <p>AWARDEE Ipca Laboratories limited, Ratlam, Madhya Pradesh</p>	<p>CATEGORY FOOD PROCESSING</p> <p>PRIZE 1st</p> <p>AWARDEE Kaira District Co-operative Milk Producers' Union Ltd.</p>
<p>CATEGORY MINI BLAST FURNACES</p> <p>PRIZE Certificate of Merit</p> <p>AWARDEE (1) JSW Steel Coated Products Limited, Kalmeshwar, Nagpur, Maharashtra (2) Kirloskar Ferrous Industries Limited, Koppal, Karnataka</p>	<p>CATEGORY PULP & PAPER</p> <p>PRIZE 1st</p> <p>AWARDEE Century Pulp & Paper (A division of Century Textiles & Industries Limited), Nainital, Uttarakhand</p>
<p>CATEGORY PLASTIC</p> <p>PRIZE 1st</p> <p>AWARDEE Nikamal Ltd, Kharadpada, Silvassa</p>	<p>CATEGORY STEEL RE-ROLLING MILLS</p> <p>PRIZE 2nd</p> <p>AWARDEE Electrotherm (India) Ltd., Kutch, Gujarat</p>



ACHIEVERS AND AWARDS



<p>CATEGORY TYRES</p> <p>PRIZE 1st</p> <p>AWARDEE JK Tyre & Industries Ltd., Vikrant Tyre Plant, Mysuru, Karnataka</p>	<p>CATEGORY RAILWAY STATIONS</p> <p>PRIZE 1st</p> <p>AWARDEE Vidisha Railway Station, Bhopal Division, West Central Railway, Vidisha, Madhya Pradesh</p>
<p>CATEGORY AIRPORT</p> <p>PRIZE Certificate of Merit</p> <p>AWARDEE Lal Bahadur Shastri International Airport, Varanasi, Uttar Pradesh</p>	<p>CATEGORY HOSPITALS</p> <p>PRIZE 1st</p> <p>AWARDEE Divisional Railway Hospital, North Eastern Railway, Izatnagar, Bareilly, Uttar Pradesh</p>
<p>CATEGORY HOTELS</p> <p>PRIZE 1st</p> <p>AWARDEE Floatels India Pvt Ltd; (Poovar Island Resorts), Trivandrum, Kerala</p>	<p>CATEGORY ELECTRICITY DISTRIBUTION COMPANIES (DISCOMs)</p> <p>PRIZE 1st</p> <p>AWARDEE BSES Yamuna Power Ltd, Karkardooma, Delhi</p>
<p>CATEGORY STATE DESIGNATED AGENCIES</p> <p>PRIZE 1st</p> <p>AWARDEE Energy Management Centre, Kerala</p>	<p>CATEGORY STATE PWD, CPWD & PHED</p> <p>PRIZE 1st</p> <p>AWARDEE Passenger Reservation System complex building (PRS/SC), Secunderabad, Telangana</p>



UNDERSTANDINGS AND UNDERTAKINGS

MoU Between BEE & CPWD for Energy Efficiency in CPWD Managed Buildings



Bureau of Energy Efficiency (BEE) and Central Public Works Department (CPWD) signed an MoU for Energy Efficiency in CPWD managed buildings and to promote designs and construction of new buildings under Energy Conservation Building Code (ECBC).

In the first stage approx. 150 buildings will be taken under star rating scheme which will result in energy saving of over 260 million units in the first stage with operational savings of about ₹ 100 Crores.

MoU cum Workshop for Implementation of ISO 50001:2011 Standards in Selected PAT Industries



MoUs were signed and workshop was conducted on Implementation of ISO 50001:2011 Standards. MoU with selected PAT industries including Paper and Pulp, Cement, Thermal plant, Chlor-Alkali and others have been signed during the workshop for the implementation of 50001:2011 standards.

NEW PUBLICATIONS



ECO Niwas Samhita 2018 - an Energy Conservation Building Code for Residential Buildings was launched. Implementation of this Code is expected to save 125 Billion Units of electricity per year by 2030, which is equivalent to 100 million ton of CO₂ emission.



National Energy Efficiency Strategy Plan 2031 – UNNATEE (UNlocking NATIONAL Energy Efficiency potential) was launched.

NATION CELEBRATES NATIONAL ENERGY CONSERVATION DAY, 2018



Boosting India's energy conservation efforts, an Energy Conservation Building Code for Residential Buildings was launched on the occasion of National Energy Conservation Day 2018 in the presence of Chief Guest Smt. Sumitra Mahajan, Hon'ble Speaker, Lok Sabha and Shri R.K. Singh, Minister of State (IC) for Power and New & Renewable Energy. The Code is expected to assist large number of architects and builders who are involved in design and construction of new residential complexes in different parts of the country. Implementation of this Code will have potential for energy savings to the tune of 125 Billion Units of electricity per year by 2030, which is equivalent to about 100 million tonnes of CO₂ emission.



PAINTING THE FUTURE OF ENERGY CONSERVATION

After the success of School and State Level Painting Competitions on Energy Conservation, in which over 90 lakh students took part, the finalists of Group A (Class 4th-6th) and Group B (Class 7th-9th) have participated in the National Level Painting Competition 2018.



<p>Name Shauni Baidya</p> <p>School Holy Cross School</p> <p>State/UT Tripura</p> <p>Standard 6th</p> <p>Position 1</p>	<p>Name Hena Roy</p> <p>School Durjoy Nagar S.B. School</p> <p>State/UT Odisha</p> <p>Standard 5th</p> <p>Position 2</p>	<p>Name Vidisha Lenka</p> <p>School D.A.V. Public School</p> <p>State/UT Odisha</p> <p>Standard 5th</p> <p>Position 2</p>	<p>Name Amrita Panja</p> <p>School Tarasundari Balika Vidyabhavan</p> <p>State/UT West Bengal</p> <p>Standard 5th</p> <p>Position 2</p>
<p>Name Banasmita Kashyap</p> <p>School Rupavarnam Art School</p> <p>State/UT Assam</p> <p>Standard 6th</p> <p>Position 2</p>	<p>Name Aditi Jagtap</p> <p>School BAPS Swaminarayan Vidhya Mandir</p> <p>State/UT Dadra Nagar Havelli</p> <p>Standard 6th</p> <p>Position 3</p>	<p>Name Dhairya Vishabhai Kuka diya</p> <p>School Fatima Convent School</p> <p>State/UT Gujarat</p> <p>Standard 6th</p> <p>Position 3</p>	<p>Name Sai Jeetendra Bhagat</p> <p>School Our Lady of Grace High School</p> <p>State/UT Goa</p> <p>Standard 6th</p> <p>Position 3</p>



PAINTING THE FUTURE OF ENERGY CONSERVATION



<p>Name Adwath P.P.</p> <p>School Mambaram U.P. School</p> <p>State/UT Kerala</p> <p>Standard 6th</p> <p>Position 3</p>	<p>Name Ayan Raghav</p> <p>School Ryan International School</p> <p>State/UT Uttar Pradesh</p> <p>Standard 5th</p> <p>Position 3</p>	<p>Name Rama Sharma</p> <p>School Acharyakulam Patanjali Yoghpeeth</p> <p>State/UT Uttarakhand</p> <p>Standard 6th</p> <p>Position 3</p>
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<p>Name Bristi Ghosh</p> <p>School Kendriya Vidyalaya Cossipore</p> <p>State/UT West Bengal</p> <p>Standard 5th</p> <p>Position 3</p>	<p>Name Puppala Manikantha</p> <p>School ZilaParishad Primary School</p> <p>State/UT Telangana</p> <p>Standard 6th</p> <p>Position 3</p>
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A NEW BUILDING CODE FOR RESIDENTIAL BUILDINGS - ECO-NIWAS SAMHITA (BUILDING ENVELOPE)

The Government of India's Nationally Determined Contributions commit to reducing emission intensity of its GDP to 35% below the 2005 levels by 2030. To achieve this target, efficiency of energy use across all sectors, especially the building sector, must increase. India's building sector consumes over 30% of the total electricity consumed in the country annually and is second only to the industrial sector as the largest emitter of greenhouse gases.

"Housing for All" is a focus of the Government, and the built-up area of residential buildings is expected to grow rapidly. Almost 2-3 crore residential units are expected to be constructed under the "Housing for All" initiative by 2022. As residential building stock increases, along with an increase in electricity use for space conditioning, electricity use in residential buildings is rapidly increasing. 75% of the total electricity consumed in the building sector is used in residential buildings. An important aspect for residential buildings is thermal comfort to ensure health and well-being of the occupants. Data collected from a sample of urban middle-income apartments shows that electricity for providing thermal comfort contributes to 30-60% of the annual electricity consumption. NITI Aayog projections indicate that electricity consumption for the residential sector could increase 6-13 times by 2047.

A residential building energy conservation code is therefore important and BEE envisages a phased approach to implement it.

Starting from a simple and implementable code (which can be integrated with the existing building codes/bye-laws) focusing on the building envelope, a clear roadmap will be mapped out for future development.

The design of the building envelope has a direct impact on:

- Heat conduction through the roof, opaque wall and glazed windows
- Solar radiation gains through glazed windows
- Natural ventilation
- Day-lighting

The building envelope thus impacts both the thermal comfort, as well as on electricity used for space conditioning. The primary focus is on the building envelope, as energy efficiency in appliances is already being addressed through a successful appliance labelling programme by the BEE.

About the Code

Eco-Niwas Samhita (Building Envelope) 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 to ensure adequate natural ventilation and day lighting. The code is applicable to all residential use building projects built on plot area $\geq 500 \text{ m}^2$. The code has been developed with special consideration for its adoption by Urban Local Bodies (ULBs) into building bye-laws.

This strategy enables the majority of new urban housing stock to be brought into the net for capturing the opportunities and benefits of energy efficiency in residential buildings.

The Part I – Building Envelope Design, is the first component of the Eco-Niwas Samhita, Building Code for Residential Buildings, launched on December 14th, 2018. Its early and immediate introduction is to improve the construction and design of new residential building stock, as it is being built currently and in the near future, to significantly curtail the anticipated energy demand for comfort cooling in times to come. This critical investment in envelope construction and design made today will reap benefits of reduced GHG emissions for the lifetime of the buildings.

The code is designed in a simple-to-apply format, requiring only arithmetic tabulation based on the architectural design drawings of the residential buildings. This will be usable by architects as well as engineers and will not require any specialized skills or simulation software. This also enables the Code to be readily adopted in the building bye-laws and regulatory instruments such as environmental clearance for large projects.

In the subsequent years, new components will be added to the Energy Conservation Building Code for Residential Buildings, which will address other aspects such as Energy Efficiency in Electro-Mechanical Equipment for Building Operation, Renewable Energy Generation, Embodied Energy of Walling Materials and Structural Systems.



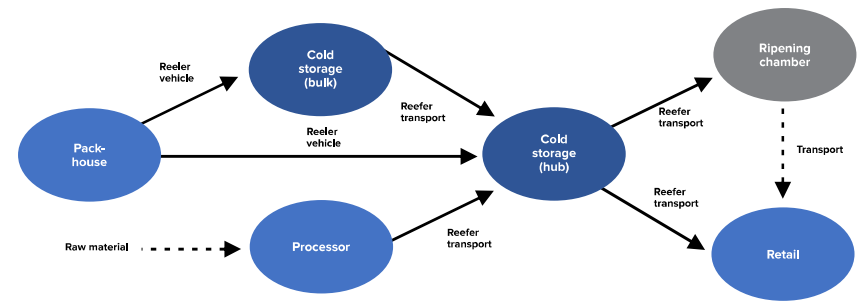
MAKING INDIA'S COLD CHAINS ENERGY EFFICIENT

In India, there is a lot of wastage of food as it moves through the agricultural value chain from producer to consumer (The Food & Agriculture Organisation estimates it to be as high as 40%). This can be avoided if India has an integrated cold chain network in place.

According to a 2015 cold chain infrastructure capacity assessment undertaken by the National Centre for Cold Chain Development (NCCD) of the Ministry of Agriculture and Farmers Welfare, there are significant gaps in India's agricultural cold chain infrastructure. Even though there has been significant cold storage warehouse capacity addition in the recent years, development has been relatively limited in the other segments, especially transportation and pack houses, which would typically provide sorting, grading, washing, packaging, pre-cooling, and staging services. In fact, the infrastructure requirement study estimates there is a need for over 70,000 pack-houses in India, compared to the 249 that were in place as of 2015. This means that 99% of the requisite pack-house infrastructure is yet to be created. The development of an integrated cold chain

is key for the sustainability of the agricultural value chain, reducing post-harvest losses and waste, and ensuring uninterrupted supply of food. As such, cold chain development is an important element of the Government's Mission for Integrated Development of Horticulture, as well as the higher-level goals of the Government's "Doubling Farmers Income" policy and the Sustainable Development Goals.

Given the expected increase in agricultural growth and the need for more cold chain infrastructure, India's cooling needs are expected to grow significantly over the next few decades, driven by space cooling, cold chain, refrigeration and transport air-conditioning. This is also going to lead to substantial additional energy needs. In view of the strategic significance of the cold chain sector, and the anticipated capacity additions in the coming years, BEE has commissioned a study with the support of World Bank to promote energy efficiency in the cold chain in general, and in pack houses in particular. An extensive and energy efficient integrated cold chain is the need of the hour.



KPMG ASSESSES IMPACT OF ENERGY EFFICIENCY MEASURES

For countries like India with high energy needs but limited energy production, energy efficiency provides considerable potential to promote low carbon transformation. In fact, India had realised this importance of energy optimisation way back in 2001, when it introduced the Energy Conservation Act. Since then, India has further directed its policies to focus specifically on energy efficiency, setting up the Bureau of Energy Efficiency (BEE) and then initiating the National Mission for Enhanced Energy Efficiency (NMEEE).

Rolling out several schemes to conserve energy is an important aspect of a national energy efficiency programme. Equally important is to assess their impact on ground to understand their actual effectiveness. An impact assessment of all the schemes related to energy efficiency is necessary, and in FY 2016-17, BEE conducted a third party assessment of annual energy savings of its own set of schemes for the last 10 years (2007-2017). But along with BEE, there are other organisations at the national level that are also supporting the cause of energy efficiency with their own set of schemes.

The Government has directed BEE to conduct a counterfactual study comparing the actual energy consumption in 2017-18 with the estimated energy consumption had the current energy efficiency measures were not been undertaken with respect to the related energy efficiency schemes.

In compliance with this direction, BEE hired the services of KPMG, an expert agency,

through competitive bidding to conduct the study. The overall objective of this study was to assess the impact of all the energy efficiency schemes/programmes in India in terms of total energy saved and reduction in the amount of CO₂ emissions in 2017-18. This assignment has taken energy efficiency estimation based on impact of the schemes/programmes since FY 2014-15.

The objective of this study is to assess the overall impact of all the energy efficiency schemes at national as well as state level for the FY 2017-18 and compare it with a situation where the same were not been implemented. This study focused on following schemes/programmes, viz. Perform, Achieve and Trade Scheme, Standards & Labelling Programme, UJALA Programme, ECBC – Commercial Buildings Programme, BEE Star-Rated Buildings, Building Energy Efficiency Programme, BEE – SME Programme, GEF – UNIDO – BEE Programme, GEF – World Bank Programme, Agriculture Demand Side Management Programme, and Municipal Demand Side Management Programme.

The net electrical energy consumption and total energy consumption of India in FY 2017-18 was 1204.70 Billion Units (BU) and 559 million tonnes of oil equivalent (MTOE) respectively. The estimated findings of the report reflect that the adoption of energy efficiency schemes/programmes has led to overall electricity savings to the tune of 86.1 BU in 2017-18, which is 7.14% of the net electricity consumption (1204.7 BU), equivalent to cost savings worth INR 41,799.40 crore and reduction in

69.08 million tonnes of CO₂ emissions. Similarly, the estimated findings of the report reflect that the adoption of energy efficiency schemes/ programmes have led to thermal energy savings of 9.41 million tonnes of oil equivalent which resulted in cost savings of INR 11828.38 crore and reduction in 39.20 million tonnes of CO₂ emission. Hence, total energy (electrical + thermal) saved is to the tune of 15.06 MTOE, which is 2.69% of the net total energy consumption (559 MTOE) and 16.62 MTOE, which is 1.97% of the net energy supply (843.8 MTOE). Overall, this study has estimated that various energy efficiency measures have translated into savings of approximately INR 53,627.78 crores and contributed in reducing 108.29 million tonnes of CO₂ emission.

KPMG Study Report Highlights

Energy Savings Achievements for the year 2017-18

- Electricity savings of 86.6 BU i.e. 7.14% of total electricity consumption of the country
- Electricity savings resulted in cost savings of INR 41,799.40 crore and reduction in 69.08 million tonnes of CO₂ emissions
- Thermal energy savings of 9.41 million tonnes of oil equivalent
- Thermal saving resulted in cost savings of INR 11828.38 crore and reduction in 39.20 million tonnes of CO₂ emission
- Total energy savings of 16.62 million tonnes of oil equivalent i.e. 1.97% of total primary energy supply of the country
- Total cost savings of approximately INR 53,627.78 crore
- Total reduction in CO₂ emission of around 108.28 million tonnes



PAT - AN OVERVIEW

The National Action Plan on Climate Change (NAPCC) was set up with the objective to promote and enable sustainable development for all citizens, by promoting a low carbon and high resilience development path. One of the missions under NAPCC is the National Mission on Enhanced Energy Efficiency (NMEEE). The objective of NMEEE is to promote innovative policy measures, regulatory regimes, financing mechanisms and business models which will create and sustain markets for energy efficiency in a transparent manner. The Perform Achieve and Trade (PAT) Scheme is one of the initiatives under NMEEE. PAT is a market based mechanism to enhance cost effectiveness of improvements in energy efficiency in large energy intensive industries. The designated consumers in these industries which go beyond achieving their targets are issued Energy Saving Certificates (ESCerts). Designated consumers that do not achieve their targets are entitled to purchase these energy saving certificates which are tradable. If the option of purchasing Energy Saving Certificates (ESCerts) for compliance is not taken by those who have not achieved their targets, they would be required to pay penalty as per the Energy Conservation Act.

PAT Cycle I (2012-2015)

The first cycle of the scheme was designed to reduce the Specific Energy Consumption (SEC), i.e. energy used per unit of production, of 478 industrial units in 8 sectors viz. Aluminium, Cement, Chlor-Alkali, Fertiliser, Iron & Steel, Paper & Pulp, Textiles and Thermal Power Plants. Energy saving targets were given to these Designated Consumers (DCs) based on their current levels of energy efficiency. Energy efficient units were given

lower targets compared to those units which were less energy efficient. The overall SEC reduction target in the eight sectors was 4.05% with an energy saving of 6.686 million tonne of oil equivalent. Against the target of 6.686 Million Tonne of Oil Equivalent (MTOE) under PAT cycle I, an energy saving of 8.67 MTOE has been achieved.

PAT Cycle II (2016-17 to 2018-19)

In the second cycle, the aim was to achieve an overall energy consumption reduction of 8.869 MTOE. Reduction targets were given to DCs under 11 notified sectors (eight existing sectors and three new notified sectors). PAT Cycle II commenced from 1st April, 2016. 621 DCs (448 existing and 89 new DCs from existing sectors viz. Railways, Electricity DISCOMs and Refineries) were notified.

The estimated emission reduction is 60 million tonnes of CO₂. The estimated investment by DCs is likely to exceed Rs.30,000 cr.

PAT Cycle III (2017-18 to 2019-20)

PAT cycle III was notified on 30th March, 2017. In its third cycle, the PAT scheme seeks to achieve an overall energy consumption reduction of 1.06 MTOE. SEC reduction targets have been assigned to 116 Designated Consumers from six sectors viz. Thermal Power Plants, Cement, Aluminium, Pulp & Paper, Iron & Steel and Textiles. The energy consumption of these DCs is 35.00 MTOE. Under PAT cycle II and III, a total of 737 DCs have been assigned to achieve the mandatory energy consumption reduction target of about 9.929 MTOE by FY 2020.

PAT Cycle IV

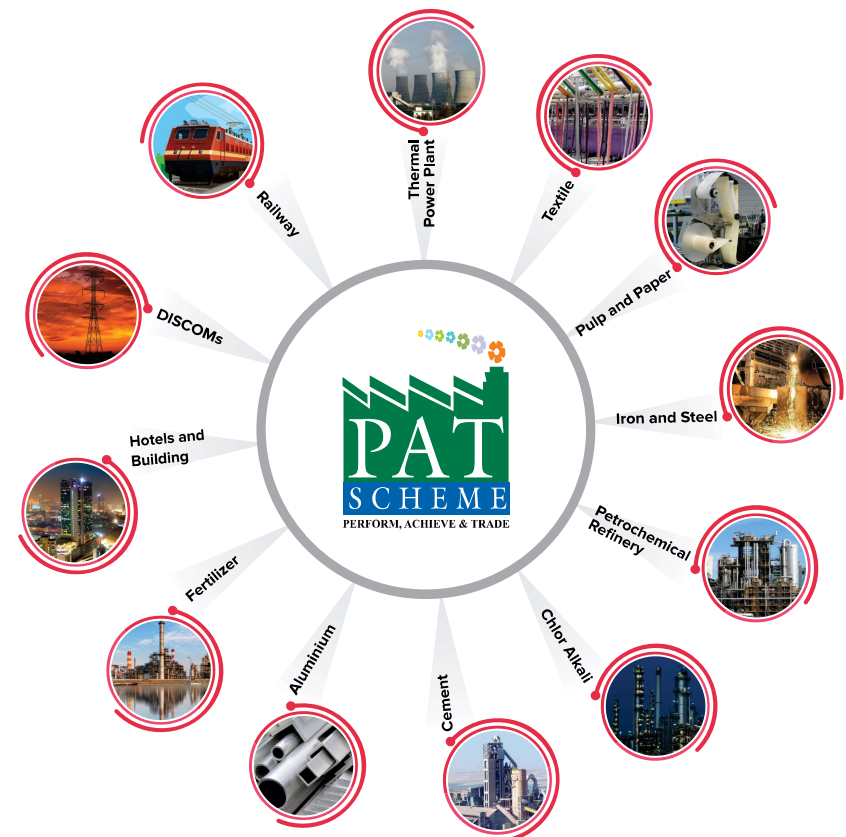
The PAT scheme is now being implemented on a rolling cycle basis. New DCs will be notified every year. Under PAT Cycle IV, the likely sectors to be included are commercial buildings of 24 hours usage (such as hotels) and petrochemicals

PAT Cycle V

PAT cycle V was launched on 31st March 2019 and it came into effect from 1st April 2019.

Under PAT cycle V, 110 DCs have been notified in total from existing sectors i.e. Aluminium, Cement, Chlor-Alkali, Commercial Buildings (Hotels), Iron & Steel, Pulp & Paper, Textiles and Thermal Power Plants, Railways, DISCOM, Petroleum Refinery, Fertilizer

The total energy consumption of these DCs is 15,244 MTOE. Through the implementation of PAT cycle V, total energy savings of 0.5130 MTOE is expected to be achieved.



ENERGY CLUBS - FOR STUDENTS, OF STUDENTS, BY STUDENTS

The phenomenal growth and development in the world in the last 200 years has come at a cost - the depletion of energy resources in the world. For a country like India which is dependent on energy imports, energy conservation becomes doubly important. And in the future, the importance of energy conservation is only going to increase, as resources deplete further.

The consequences of excess energy consumption will have to be borne by our future generations. It is therefore imperative to instil the habit of energy conservation in the younger generation. They have to become Energy Champions, spreading the message of energy conservation to their peers, elders and the next generation. The future of India's energy security will be in their hands. India has the highest population of youth in the world, and a small step with them today will make a big difference in the future.

Keeping this in mind, Bureau of Energy Efficiency has been encouraging a forum like Energy Clubs at schools for students in their campuses to educate them about ways and means in which energy can be conserved in daily life. Thus, energy champions are envisaged to become peer educators to

spread the messages of energy conservation. BEE envisages a movement for energy conservation across the country through this initiative.

BEE started supporting for this cause financially SDA's being given grant to establish such energy clubs in schools.

The Energy Clubs are for students of classes 5th to 10th. Activities in the clubs include development and preparation of mission pledge, posters, banners, home activity charts etc., energy model making, celebration of Urja Divas (Energy Conservation Day) on 14th December, and awards to students and teachers for outstanding effort.

Many schools have already started Eco Clubs and Energy Clubs to promote energy conservation and prevent environmental degradation.

As of now more than 2000 energy clubs are running in 198 districts of 15 states. BEE anticipates more and more new energy clubs will be established to enhance the coverage manifold.



ENERGY CLUB STATUS

S.No	State	District Covered	Number of Energy Clubs
1	Arunachal Pradesh	15	15
2	Assam	6	7
3	Bihar	13	13
4	Chhattisgarh	8	29
5	Gujarat	0	0
6	Kerala	14	327
7	Maharashtra	18	129
8	Meghalaya	8	12
9	Mizoram	1	67
10	Nagaland	11	55 + 22
11	Orissa	30	120
12	Punjab	22	260
13	Sikkim	4	16
14	Tripura*	8	950*
15	Uttar Pradesh	40	202
Total		198	2224

GREEN BUILDING TECHNOLOGY-SMARTER LIVING SOLUTIONS FOR THE FUTURE

The Bureau of Energy Efficiency (BEE) participated in the second edition of “CII - Real Estate & Building Technology Exhibition 2019” to highlight the importance of Energy Conservation Building Code for residential & commercial buildings. The theme for the exhibition was “Exploring innovations to create smarter living solutions for the future”.

BEE participated in a panel discussion on 'Enabling Sustainability and Incentivizing Green Building Technology'. During the discussion BEE shared their views on current norms, processes and achievements on Green Building, highlighting the fact that Green Building certifying agencies in India

are following ECBC as an energy efficiency standard.

Dignitaries and industry experts visiting the exhibition demonstrated various initiatives on energy efficiency, its progress and its contribution to country's energy security. In their view, rising energy demand was a potential opportunity for India to set itself on a course of planned growth in building energy use. BEE is on the right path, promoting design and construction of homes (including apartments and townships) that facilitate the benefits of energy efficiency, such as improved quality and healthy lifestyle, to the occupants.



TOP PERFORMERS

Congratulations Toppers!

The Bureau of Energy Efficiency congratulates the toppers of 19th National Certification Examination for Energy Managers and Energy Auditors – September 2018

ENERGY AUDITORS 'Top Ten'



Rank	1
Reg No	EA-31241
Candidate Name	PUSHKAR KOLHE
Marks	491/550
Organisation	TRANSPARENT ENERGY SYSTEMS PVT. LTD.



Rank	2
Reg No	EA-30344
Candidate Name	SUBODH KUMAR
Marks	488/550
Organisation	BRAHMAPUTRA CRACKER AND POLYMER LTD.



Rank	3
Reg No	EA-30933
Candidate Name	PRABHAT GUPTA
Marks	485/550
Organisation	NTPC LTD.



Rank	4
Reg No	EA-31606
Candidate Name	SHASHANK KUMAR
Marks	481/550
Organisation	DAMODAR VALLEY CORPORATION



Rank	5
Reg No	EA-31357
Candidate Name	VIVEK PATHAK
Marks	469/550
Organisation	NTPC LTD.



Rank 6
Reg No EA-30098
Candidate Name AKRITI AGRAWAL
Marks 463/550
Organisation HINDUSTAN PETROLEUM CORPORATION LTD.



Rank 7
Reg No EA-31732
Candidate Name SOUMIK ROY
Marks 462/550
Organisation DAMODAR VALLEY CORPORATION



Rank 8
Reg No EA-30444
Candidate Name SRAVAN KUMAR CH
Marks 460/550
Organisation NTPC



Rank 9
Reg No EA-29922
Candidate Name RAJARSHI SINHA
Marks 457/550
Organisation JINDAL STEEL AND POWER LIMITED



Rank 10
Reg No EA-29960
Candidate Name ASOK KUMAR - DAS
Marks 453/550
Organisation RELIANCE INDUSTRIES LTD.



Rank 10
Reg No EA-30190
Candidate Name KHUSHBU GOENKA
Marks 453/550
Organisation NTPC LTD.



Rank 10
Reg No EA-31164
Candidate Name NILESH KUMAR JAIN
Marks 453/550
Organisation GMR ENERGY LIMITED

TOP PERFORMERS

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ENERGY MANAGERS 'Top Ten'



Rank 1
Reg No EM-9688
Candidate Name SUBHANKAR LAHA
Marks 368/450
Organisation CESC LIMITED



Rank 2
Reg No EM-10069
Candidate Name AKSHAY ASHOK TALMAALE
Marks 354/450
Organisation SUNFLAG IRON & STEEL PVT. LTD.



Rank 3
Reg No EM-10012
Candidate Name ARKA PRAKASH MONDAL
Marks 333/450
Organisation SASAN POWER LIMITED



Rank 4
Reg No EM-9657
Candidate Name MARIMUTHU KALIYAPPAN
Marks 317/450
Organisation VENUS ENERGY AUDIT SYSTEM

	<p>Rank 5</p> <p>Reg No EM-9731</p> <p>Candidate Name BHYRI VENKATA KRISHNA</p> <p>Marks 309/450</p> <p>Organisation NAVA ENERGY ZAMBIA LIMITED</p>
	<p>Rank 6</p> <p>Reg No EM-9708</p> <p>Candidate Name RAJESH KUSHWAHA</p> <p>Marks 307/450</p> <p>Organisation R.K.M. POWERGEN PRIVATE LIMITED</p>
	<p>Rank 7</p> <p>Reg No EM-10619</p> <p>Candidate Name DANIEL PAVANAN</p> <p>Marks 300/450</p> <p>Organisation COLLIERS INTERNATIONAL INDIA PVT LTD</p>
	<p>Rank 8</p> <p>Reg No EM-10122</p> <p>Candidate Name RAVINDRA PIPLIWAL</p> <p>Marks 294/450</p> <p>Organisation DCM SHRIRAM LTD</p>
	<p>Rank 9</p> <p>Reg No EM-10119</p> <p>Candidate Name NADI YAGNYASENI</p> <p>Marks 292/450</p> <p>Organisation E.I.C.(ELECTRICITY) CUM P.C.E.I. (ENERGY DEPART.)</p>
	<p>Rank 10</p> <p>Reg No EM-10271</p> <p>Candidate Name PHANEENDHRA MATTA</p> <p>Marks 291/450</p> <p>Organisation ITC LIMITED PSPD UNIT KOVAI</p>

HOW TO SAVE ENERGY AT YOUR HOME AND OFFICE

The use of energy efficient electrical devices can help you save more on the monthly electricity bill.

Switch to LEDs as they are energy efficient and it helps you save up to 90% on your electricity bill.

Insulation reduces the alteration of heat through the surface of your home's wall, roof and duct. So, insulate your home properly to conserve more energy.

Upgrade and regularly maintain the HVAC system as it can help maintain internal air quality, humidity & temperature of your office.

Set your ACs thermostat setting according to the outside temperature.

