

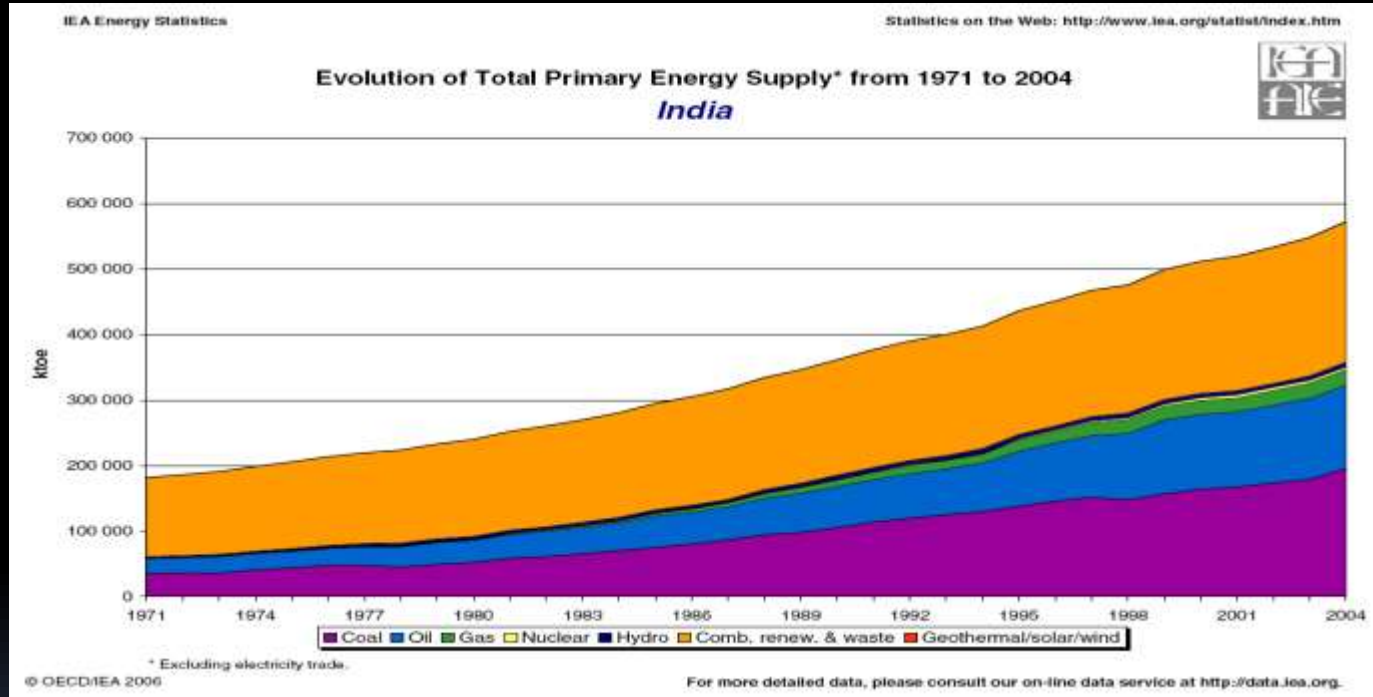
BEE ACTION PLAN



Saurabh Yadav
Bureau of Energy Efficiency

Background

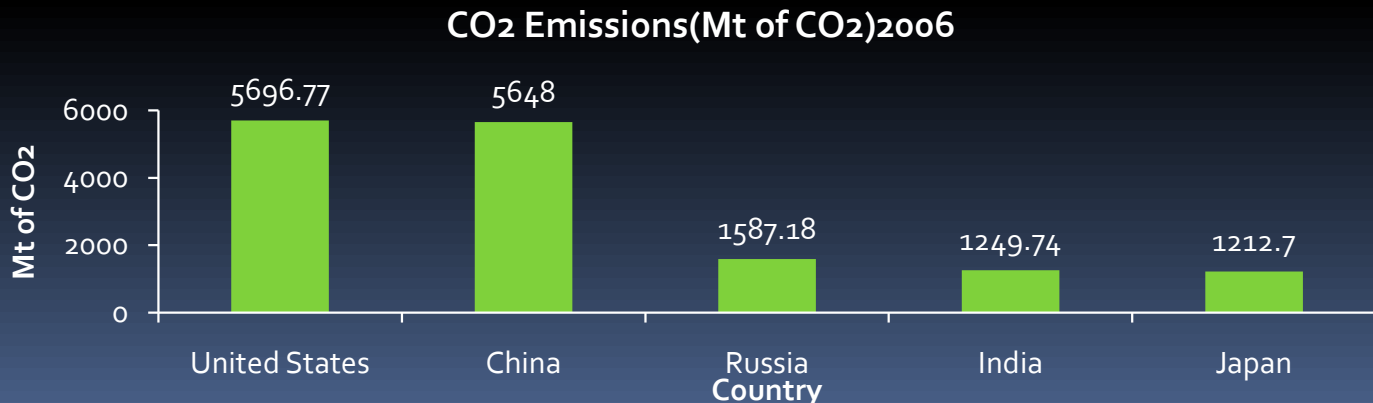
- Energy demand is increasing because of : accelerated industrialization, urbanization, and an emerging consumer society.



Total primary energy supply has increased from about 350 million toe in 1990 to about 580 Mtoe in 2004; an increase of about 2.2% per year

Background

- Power generation accounts for much of the increase in primary energy demand, the overall power generation in the country has increased from 264 Billion units during 1990-91 to 662.52 Billion Units during 2006-2007.
- The country is facing power shortages : Peak shortage = 15.2 % , Average shortage = 9 %
- Additional 100 000 MW required by 2012
- Coal remains the main source of power generation. Unfortunately limited coal reserves.
- Higher energy demand drives up imports of oil, gas and coal, and greenhouse gas emissions.
- India is the fourth largest greenhouse gas (GHG) emitter in the world with CO₂ emission being 1249.74 Mt for the year 2006.



Source: IEA Energy statistics

Importance of Energy Conservation

- Energy efficiency/ conservation measures can reduce peak and average demand.
- One unit saved avoids 2.5 to 3 times of fresh capacity addition.
- Investment in energy efficiency/ energy conservation is highly cost effective.
- Also avoids investment in fuel, mining, transportation etc.
- Keeping the above factors in view and also to provide a policy guidance, Government of India enacted the Energy Conservation Act, 2001



ENERGY CONSERVATION ACT 2001

- An Act to provide for efficient use of energy and its conservation and for matters connected therewith or incidental thereto
- Enacted in Oct 2001, became effective from 1st March 2002 onwards.
- It extends to the whole of India except the state of Jammu and Kashmir
- Under the provisions of the act, the Bureau of Energy Efficiency (BEE) came into force from March 2002 onwards

Bureau of Energy Efficiency

- The Bureau of Energy Efficiency (BEE) was established on 1st March 2002, under the Energy Conservation (EC) Act, 2001.
- BEE is responsible for spearheading the improvement of energy efficiency in the economy through various regulatory and promotional instruments.



Broad functions of BEE

- Develop and recommend to the central government the norms for processes and energy consumption standards.
- Develop and recommend to the central government minimum energy consumption standards and labelling design for equipment and appliances.
- Develop and recommend to the central government specific energy conservation building codes.
- Recommend the central government for notifying any user or class of users of energy as a designated consumer.
- Take necessary measures to create awareness and disseminate information for efficient use of energy and its conservation.





Designated Consumers (Section 14 of EC Act)

Background:


- Over 50% commercial energy consumption.
- Wide variation in energy performance.
- Lack of data about energy consumption in different industries – problem of benchmarking.
- Shortage of quality energy professionals



Provisions of EC Act

- The Schedule of Act provides list of energy intensive industries and other establishments to be notified as designated consumers (DC)
- Nine sectors have been notified as DC's

DC's are required to:

- 
- File annual energy returns
 - Appoint / designate energy manager
 - Get energy audits conducted by accredited energy auditors
 - Implement techno-economic viable recommendations
 - Comply with norms of energy consumption
 - Submit report on steps taken

Energy intensive industries notified as DC's

S.No.	Name of the Industry	Metric tonne of oil equivalent (MTOE) per year & above
1	Thermal Power Station	30,000
2	Fertilizer	30,000
3	Cement	30,000
4	Iron & Steel	30,000
5	Chlor Alkali	12,000
6	Aluminum	7,500
7	Textile	3000
8	Pulp & paper	30,000
9	Railways (Traction Sub Section) Indian Railways workshops	30,000

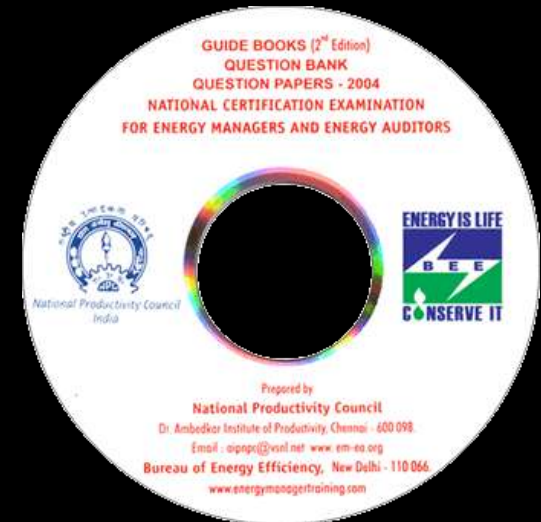
1 Metric Tonne of Oil Equivalent (MTOE) = 10^7 Kcal

Designated Consumers: Actions initiated by BEE

- **Certification of Energy Managers & Energy Auditors and their capacity building**
- **Accreditation of Energy Auditors**
- **Development of norms and standards of specific energy consumption**
- **Formation of Sectoral Task forces and sharing of best practices knowledge periodically**
- **Development of dedicated energy manager website (www.energymanagertraining.com)**
- **Association of International Experts**
- **National Energy Conservation Award**
- **Efiling of energy returns.**


Certification and Accreditation of Energy Managers and Energy Auditors

- Aims at capacity building of energy professionals for meeting the needs of energy sector.
- 5328 certified energy managers out of which 3344 are also certified energy auditors from the previous six certification examinations conducted.
- Examinations conducted twice a year.





Industrial Energy Norms

- Bandwidth of energy efficiencies in all sectors is large; old, low energy-efficiency units coexist with newer, state-of-the-art units
 - Draft Specific energy efficiency norms for Cement and Paper & Pulp sectors have been developed, which are now under discussion with the concerned sub sectors
 - Energy efficiency norms based on current relative efficiency of units within a sector;
 - Highly energy-efficient units have lower improvement targets
 - Units with lower energy efficiency have more stringent improvement targets
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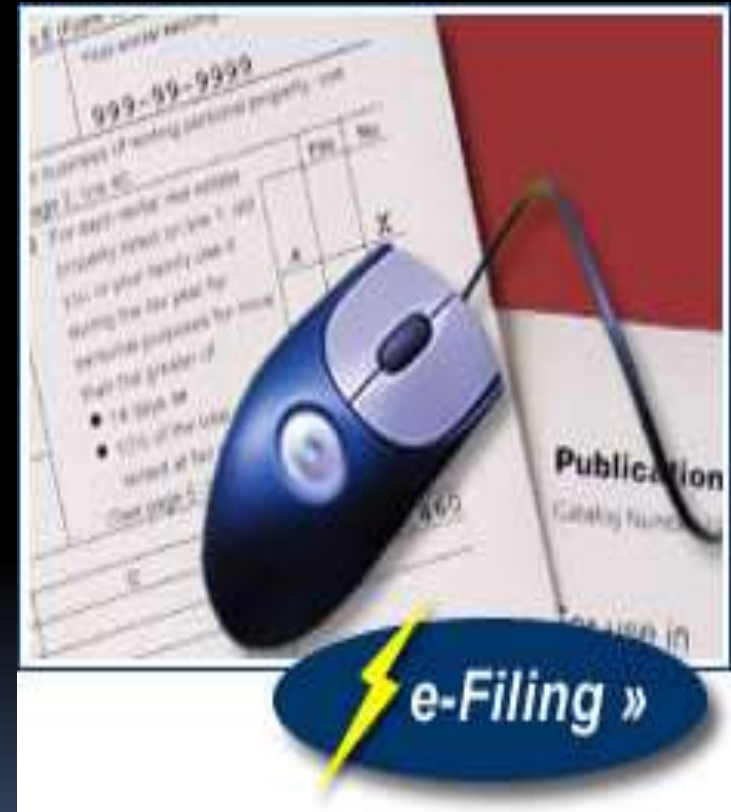
National Energy Conservation Award

- BEE coordinates the Energy Conservation Award Scheme of the Ministry of Power.
- Recognizes innovation and achievements in energy conservation by industry, buildings and zonal railways.
- Scheme has become very popular, participation level has increased from 123 in 1999 to 384 in 2007.



Efiling of Energy Returns

- **Web based e-filing of returns would facilitate uniformity and ease in filing of return.**
- **To measure, monitor and verify energy efficiency results in individual sectors as well as at macro level.**
- **Help Bureau to undertake the analysis of energy consumption by designated consumers and enable decision making with respect to energy efficiency and conservation. (Energy consumption norms)**
- **Manage applications for National Energy Conservation Awards.**






Standards & Labelling Program

Provisions of the EC Act:

Central Government to, in consultation with BEE,

- (a) Specify the norms for processes and energy consumption standards for any equipment ,appliances.**
 - (b) specify equipment or appliance for the purposes of this Act;**
 - (c) prohibit manufacture or sale or purchase or import of equipment or appliance specified under clause (b) unless such equipment or appliances conforms to energy consumption standards; within 2 years from the date of notification issued under clause (a);**
 - (d) display of the particulars on label, on equipment or on appliance specified under clause (b)**
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Standards & Labelling Program

- Standards and Labelling Programme announced by Ministry of Power, Govt of India on 18th May, 2006 initially on voluntary basis.
- Evolve minimum energy performance standards (MEPS) for notified equipment and appliances.
- Enable consumers to make informed choice.
- House-hold refrigerators, fluorescent tube lights, air conditioners, motors and distribution transformers have been included in the programme on voluntary basis; 80% of refrigerator production, 90% of tubelight production; and 80% of AC production is now covered by the programme.
- Labels for other appliances/equipment, such as pumps, LPG and kerosene stoves, vehicles, ceiling fans, geysers, and consumer electronics are under preparation.
- Target for BEE : avoided capacity addition of over 3000 MW during XI plan.

Products covered under S&L Program

Current List

1. Frost-free Refrigerators
2. Tubular Fluorescent Lamps (TFL)
3. Air-conditioners
4. Direct cool /Frost Free Refrigerators
5. Distribution Transformers
6. Motors
7. Pump sets
8. Ceiling fans
9. LPG Stoves
10. Colour TVs
11. Storage Water Geysers

Future Products under S&L Program

- Compact Fluorescent Lamps (CFLs)
- Transport Sector
 - Passenger Cars
 - 2 & 4 Wheelers
 - Heavy Commercial Vehicles.
- Office Equipments (Monitors, Fax, Copiers etc)
- Washing Machines
- Consumer Electronics
 - Set-Top Boxes, Microwaves etc
- Invertors
- Uninterrupted Power Supply (UPS)
- External Power Supplies (EPS)
- Battery Chargers (BCs)
- Compressors
- Industrial Fans & Blowers

Standards & Labelling Program



BEE Energy Efficiency Labeling- Details

Refrigerator & Air Conditioner

Refrigerator

Dimensions

Colors

Air Conditioner

Tubular Fluorescent Lamp



STAR RATING	BEE STAR RATING PLAN				
	★	★★	★★★	★★★★	★★★★★
Lumens per Watt at 0100 hrs of use	<61	>=61 & <67	>=67 & <86	>=86 & <92	>=92
Lumens per Watt at 2000 hrs of use	<52	>=52 & <57	>=57 & <77	>=77 & <83	>=83
Lumens per Watt at 3500 hrs of use	<49	>=49 & <54	>=54 & <73	>=73 & <78	>=78

Under test conditions when tested in accordance to IS 2418. Actual efficiency will vary as per site conditions.

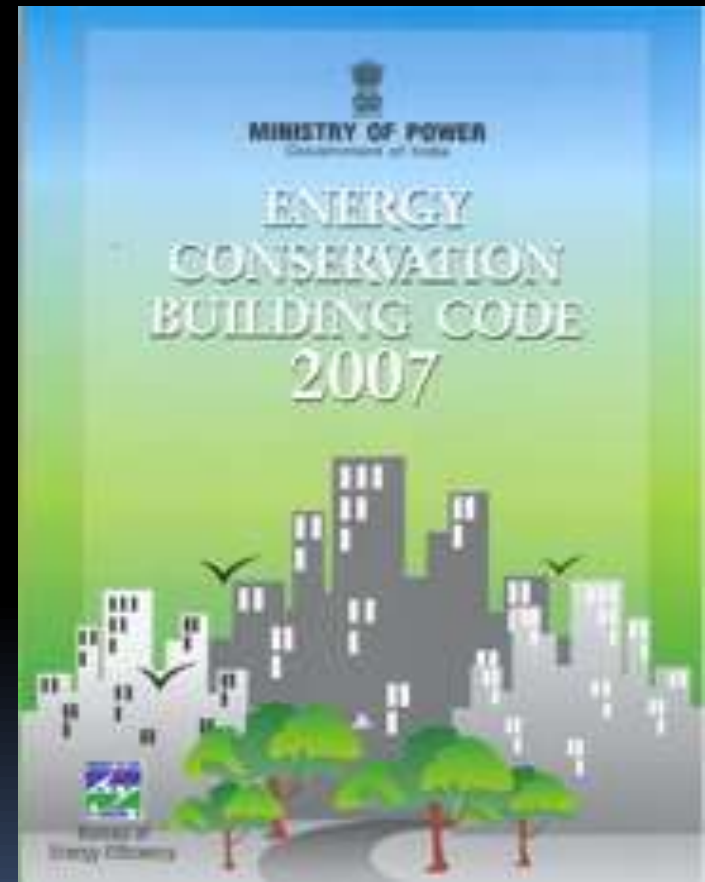


Energy Conservation Building Code

- **Provisions in the EC Act, 2001**
- **Powers and Functions of Bureau –**
 - **13 (d) take suitable steps to prescribe guidelines for energy conservation building codes under clause (p) of section 14**
- **Power of Central Government to Facilitate and Enforce Efficient Use of Energy and its Conservation –**
 - **14 (p) prescribe energy conservation building codes for efficient use of energy and its conservation in the buildings or building complexes**
 - **14 (q) amend the energy conservation building codes to suite the regional and local climatic conditions**
 - **14 (r) direct every owner or occupier of the building or building complex, being a designated consumer to comply with the provisions of energy conservation building codes for efficient use of energy and its conservation**

Energy Conservation Building Code

- ECBC was launched by Govt of India on 27th May 2007. The code is intended for new commercial buildings having a connected load of more than 500 kW.
- The code has initially been launched on voluntary basis.
- Energy saving potential of 23% to 46% in end uses such as lighting, cooling ventilation and refrigeration etc.
- The major components of the building which are being addressed through the code are:
 - Building Envelope (Walls, Roofs, Windows)
 - Lighting Systems
 - HVAC
 - Water Heating and Pumping System
 - Electrical Distribution system.
- Performance Contracting through ESCOs
- Expected reduction in XI plan 500 MW



Demand Side Management (DSM) to Reduce Risk

- **Bachat Lamp Yojana (*Lamp Savings Programme*)**
- **Energy efficiency upgrades in existing buildings**
- **Agriculture DSM & Municipal DSM**

Bachat Lamp Yojana



- Bachat Lamp Yojna a CDM based scheme was launched on 28th May, 2008.
- Scheme seeks to replace estimated 400 million incandescent bulbs by CFLs which could save estimated 6000 MW by 2012
- BEE is in the process of preparing a Programme of Activities (PoA) which is a voluntary coordinated effort to facilitate the scheme in the entire country and reduce transaction costs of individual projects
- 18 CFL manufacturers/ suppliers have agreed to participate- 14 states have taken up steps towards implemetation of scheme in their respective DISCOM regions.
- Monitoring Plan has been finalised
- 1 pilot project registered at UNFCCC on 26th Sept 2008. PDDs for Haryana , Andhra Pradesh, Maharashtra have been submitted to CDM Executive Board for registration.
- Leveraging of CDM revenues to remove the high first cost barrier to enable market transformation in favour of efficient lighting.

Enhancing Energy Efficiency of Existing Buildings


- Program for energy audit and retrofit in central government and state government buildings
 - 9 govt building in first phase; 17 more govt buildings taken up
 - ESCOs to carry out retrofits through performance contracting
 - Experience used to develop model agreements for ESCOs
 - Over 500 buildings now being targeted for upgrades through ESCOs
- ESCOs promoted through model contracts, accreditation, ratings, and financing.
 - (ESCOs) invest in the building retrofit, and are paid from the energy savings that accrue as a result of their intents.
 - BEE has empanelled 37 Energy Services Companies (ESCO) to facilitate implementation of energy efficiency projects.
 - In order to improve credibility of these empanelled ESCOs, their accreditation has also been undertaken through CRISIL and ICRA
- Private sector buildings beginning to invest in energy efficiency – directly and through ESCOs

Agriculture DSM

- DSM in Agriculture provides immense opportunity in
 - Reducing the overall power consumption
 - Improving efficiencies of ground water extraction
 - Reducing the subsidy burden of the states without sacrificing the service obligation to the sector
- Most of the pilot projects as well as other studies project potential of 45-50% by mere replacement of inefficient pumps
- **Overall electricity savings** (from 20 million pumps) is estimated at 62.1 billion units annually



Municipal DSM

- The energy costs constitute up to 60-70 percent of an Indian municipality's total cost of pumping water to its residents.
 - This financial constraint can be overcome through efficient water delivery systems.
 - This can translate into measurable energy savings due to reduced pumping requirements and improved performance.
- 

Small & Medium Enterprises

- To promote energy efficiency in SMEs during the XI plan
- Many energy-intensive SMEs clusters located in various states of the country have large potential for energy savings
- Initially 25 clusters in the country have been identified which have immense savings potential
- An estimated capacity addition of 500 MW can be avoided during the XI plan



National Awareness Campaign

- Creation of the public awareness, understanding of the significance of the energy conservation and promotion of energy conservation through voluntary action.
- The campaign is targeting the domestic, commercial, agricultural, industrial and educational sector.
- National Painting Competition on Energy Conservation for children studying in 4th and 5th standards.
- Essay writing competition for school children (6th to 8th standards) at the school and state level and Debate competition for school children (9th to 12th standards) at district and state level.

Painting Competition on Energy Conservation

- Participation by 4th and 5th standard school children
- Explore their creativity
- Awareness about conservation of energy
- Involvement of parents and teachers
- 24,385 schools and 5.25 lakhs of students participated in school level competition in 2007

Let your kid's creative spark save energy.

Come, take part in the School, State and National Level Painting Competition on Energy Conservation.

For 4th & 5th Standard Students

Your children are the future. Let them find ways to save their future. And to save energy. The Bureau of Energy Efficiency invites them to take part in the painting competition on themes based around energy conservation. And to express their creativity. So bring them along and energise their lives.

Level	PRIZES			
	First	Second	Third	Consolation
State / UT Level	Rs. 10,000/-	Rs. 8,000/-	Rs. 5,000/-	10 nos of Rs. 1,000/- each
National Level	Rs. 1,00,000/-	4 nos of Rs. 50,000/- each	8 nos of Rs. 25,000/- each	10 nos of Rs. 10,000/- each 10 nos of BEE Prizes of Rs. 10,000/- each

School Level Painting Competition

- School Principals to organize painting competition of 2 hours duration for 4th and 5th Standard students on any day upto 20th September, 2008. Children can use any size of paper, but preferably A4 size and select any one of the above mentioned themes for painting (Schools located in National Capital Region will have the choice to participate in the Delhi State Level Painting Competition).
- School Principals will select 2 best paintings and send them along with the information on number of students participated at School Level Competition to the Nodal Officer for the State / UT whose address is given below so as to reach him by 15th October, 2008 positively.
- The back of the two selected paintings should carry the following information:
 - Name of the Student
 - Class
 - School Name & Address
 - No. of Student (if any)
 - State/UT
 - Father's / Mother's Name
 - Roll No.
 - School Tel. No. (if any)
 - Email ID of Student (if any)
 - Sign of School Principal
- All participants will be issued certificate of participation.
- State Nodal Officer's address for Delhi & NCR:
 - Sh. Om Prakash, Sr. Manager (PR)
 - Power Finance Corporation Limited, "URJANDIHI", 1, Barakhamba Lane
 - New Delhi-110 001. Tel: (011) 23456370, (M) 9686549144
 - Fax: 011 23456373, 23456388
 - Email: omprakash@pic.delhi.nic.in
- For address of Nodal Officers for other States / UT's and for the names of the students selected for participation in the State Level Competition, please log on to www.bee-india.nic.in and www.energymanagertraining.com

Themes for School Level Painting Competition

1. Energy Efficiency at Home / School
2. Save Oil - Keep Future in Control
3. Bijli Bachao -Unnati Lazo

State Level Painting Competition

- Up to a maximum of 50 best paintings will be selected by a Committee of Experts / Jury and selected students will be called at a designated place in State / UT for a two hours on-the-spot Painting Competition to be held on 14th November, 2008.
- Each participating student will be paid Rs. 1000/- in cash and a participation certificate. Sleeper class rail fare / state roadways bus fare for participating student and two guardians will also be reimbursed on the day of competition.
- Prizes will be given away on the same day.

National Level Painting Competition

- 1st, 2nd and 3rd prize winners of the each State / UT will be invited to Delhi to participate in 'National Level Competition' to be held on 12th December, 2008.
- Boarding & Lodging, to & fro sleeper rail-fare / state roadways bus fare by the shortest route for each participant and two guardians will be reimbursed. In addition, each participating student will be paid a sum of Rs. 1000/- as incidental and given a participation certificate.
- National Level winners will be awarded cash prizes by the Chief Guest on the 'National Energy Conservation Day Function' to be held in Delhi on 14th December, 2008.

NOTE:

- The decision of the Jury / Expert Committee at all levels of the painting competition will be final.
- Two paintings selected at School Level and paintings at State/UT Level and National Level would be the sole property of BEE, which will have the right to use it for any purpose it consider appropriate.

Director (Energy Conservation)
MINISTRY OF POWER
 Room No. 223, Shram Shakti Bhawan
 Ball Blng., New Delhi - 110 001
 Tel.: 011-23719820

Secretary
BUREAU OF ENERGY EFFICIENCY (BEE)
 (Ministry of Power, Government of India)
 4th Floor, Seeshaan, H.A. Puram, New Delhi - 110 086
 Tel.: 311-2617969 (5-Lines), Fax No.: 011-2617028-52
 For any details and clarification, kindly visit our website: www.bee-india.nic.in

SAVE ENERGY FOR BENEFIT OF SELF & NATION

Size: 20 (9) x 28 (9) Delhi: English

Prize Winning Paintings of National Level Painting Competition 2007 on Energy Conservation





Thank you