National DSM Road Map Presentation

By

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Energy Conservation & Efficiency Action Plan

Energy Conservation potential assessed as at present	·	20000 MW
Potential harnessed :		
- During Xth Plan period	·	877 * MW
- Target for XIth Plan period	·	10000 MW

** Only as indicated by participating units in the National Energy Conservation award scheme, for the previous five years.*

Strategy / Line of Action

- Energy Efficiency and Demand Side Management relevant for
  - Avoiding fresh generating capacity
  - Flatten the load curve
  - Savings of energy and cost

Measures initiated :

- CFL programmes in States
- Standards and Labeling program.
- Energy Efficiency programmes in existing buildings
- Energy Conservation Building Codes (ECBC)
- Capacity building of SDAs
- Demand Side Management in Agriculture, Municipality, SMEs
- Designated Consumers and implementation of EC Act

Issues to be addressed

- Barriers for EE & DSM to be removed.
- The State Regulatory Commissions and Utilities to be encouraged to implement the Conservation initiatives
- Engagement of Stakeholders

Industrial and Commercial users

- Regulatory interventions to promote conservation.
- Incentives to industry to adopt conservation/ efficiency measures

States

- Encourage implementation of DSM programmes in Agriculture/ Municipalities

Domestic consumers

- Ensuring availability at low cost and promoting use of low cost CFLs.
- Awareness

Need for Government Interventions

- Losses occur at all stages of the chain
- Reducing losses at the end-of-chain has cascading upstream benefits
- Fuel and technology choices are limited by availability, access, and existing infrastructure
- Consumers do not have information about energy use of appliances, and are unable to include energy costs in their buying decisions
- For new technologies, promised benefits are uncertain – both users and financial institutions are apprehensive in investing in them
- Skewed cost-benefits of EE technologies- especially in commercial building sector
- Information asymmetry

Barriers to the Efficient Use of Energy

- Energy conservation, and the choice of energy-efficient technologies, are win-win options
  - Many win-win choices are not easily adopted
- Market barriers constrain adoption of win-win options
  - Comparative energy use information is unavailable
  - First cost is higher than those of energy-inefficient options
  - Costs and benefits accrue to different people
  - Uncertainty of operating costs, performance and reliability, especially of new technologies and practices, deters investments by users and financiers

Legal and Policy Interventions to Promote Energy Efficiency

- **Energy Conservation Act, 2001, addresses some market failures by enabling:**
  - Setting of minimum energy standards for, and affixing energy-consumption labels on appliances and equipment
  - Promulgation of Energy Conservation Building Codes
  - Energy use monitoring, verification and reporting by large energy users, and the establishment of energy consumption norms for these consumers
- **BEE also promotes**:
  - Demand-side management by distribution companies
  - Enhancing energy conservation in exiting buildings, especially through Energy Service Companies (ESCOs)
  - Outreach and awareness programmes

Demand Side Interventions- Potential and Opportunities

Sectoral Intervention	Potential Energy Savings	Likely Investments by Private Sector
Agriculture+	60 b KWh	Rs. 15,000 crores
Municipalities*	3.7 b KWh	Rs. 1,600 crores
Buildings*	3.52 b KWh	Rs. 1,200 crores
Industry*	98 b KWh	Rs. 24,000 crores
Lighting+	70 b KWh	Rs. 4,000 crores

+ Source: BEE, Ministry of Power, Government of India

* ADB (2004)

Objectives of National DSM Road Map

- Sector specific approach- barriers need to be addressed separately in each sector- eg. Use of CDM to reduce cost of CFL under BLY, creation of DPRs and provision of financing for agriculture/ municipal and buildings, capacity building for use of ECBC for commercial sector.
- Adopting sectoral approach by facilitating creation of markets for energy efficiency
- Emphasis on conducive environment, handholding of early movers
- Define roles and responsibilities of stakeholders
- Risk mitigation to overcome market failures
- Road map for integrating DSM in network planning

Market Transformation Based DSM

- Lighting DSM
  - Reducing cost of efficient light
  - Awareness/ facilitation
- Standards and Labeling
  - Mandating standards
  - Awareness/ outreach
- Commercial Buildings
  - New codes for commercial buildings
  - Development of ESCO market for existing buildings

Lighting DSM

- ✓To increase penetration of efficient lighting
- ✓ Reducing price of efficient light- high first cost of CFL a barrier
- ✓Leveraging CDM revenues, bulk procurement, regulated installments, etc
- ✓BLY- BEE has prepared a Programme of Activities (PoA) as a voluntary coordinated effort to facilitate the scheme in the entire country and reduce transaction costs
- ✓Monitoring cost to be borne by BEE
- ✓Area specific projects in Haryana and Andhra Pradesh at advanced stage

Standards & Labeling Programme

- To create appropriate legal and regulatory environment for energy efficient end use products
- To provide the consumer an informed choice about energy saving by using efficient devices
- To gear up Indian industry to compete in markets that have made/ are making such standards mandatory eg. US or EU
- To stimulate market transformation in favour of energy efficient equipments and appliances- both from supply and demand side
- To **reduce overall energy consumption by use of such equipments/ appliances- 18 BU by 2012 (~3000 MW)**
- To provide assistance/ support to Small & Medium Manufacturers

The National Energy Labeling Programme launched by Hon'ble Union Minister of Power on 18th May, 2006.

Energy Conservation Building Code (ECBC)

- Covers new commercial buildings

- Building components included
  - Building Envelope (Walls, Roofs, Windows)
  - Lighting (Indoor and Outdoor)
  - Heating Ventilation and Air Conditioning (HVAC) System
  - Solar Water Heating and Pumping
  - Electrical Systems (Power Factor, Transformers)
  - **Potential to save 1.7 billion units annually on mandatory application**
  - **Expected reduction in XI plan 500 MW**
- **EE in existing buildings by ESCO route**

ECBC launched by MOP on 27.5.2007 for five climatic zones

Utility Driven DSM

Tariff Reforms

To provide incentive for demand side management by way of appropriate tariff structures.

- Time of Day tariffs
- Two Part Tariffs
- Power Factor incentive and penalty/Reactive Power Charges
- Penal Charges for overdrawal
- Cost reflective tariffs

Utility Driven DSM..

Load Management Directives

To the licensees to ensure efficient supply and regulate consumption by the consumers.

- to restrict consumption by the continuous process industries
- load management levies/disincentives on defaulters
- to prescribe Load Management Rebate for consumers

Utility Driven DSM…

Regulatory Directives

To the licensees/ consumers to ensure efficient supply and regulate consumption by the consumers.

Public awareness campaigns

To enhance information/ awareness amongst consumers

Funding options for DSM

Integration of DSM investment in ARR

Agricultural & Municipal DSM

- Over 35% of electricity consumed by Agriculture and Municipal sector
- High inefficiencies in pumping system- targeted through a subsidy reduction approach
- Business model linked to subsidy reduction being evolved
- Shelf of bankable DPRs to be prepared- 10 in each states (total 350) to stimulate the market
- Baseline development, conducive regulatory regime and payment security mechanism being worked out.
- Awareness and outreach to local and municipal bodies
- Manual for Mu DSM being developed with standard contract documents to enable easier implementation
- Risk mitigation measures for encouraging PPP being evolved CDM benefits for the scheme being put in.

DSM Resource Acquisition

- Capacity building of Utilities
- Involvement of private enterprise by competitive bidding of isolated projects
- Development of ESCO market
- Aggregation of bankable projects
- Information dissemination
- Financing of DSM projects

Role of BEE

- Identification of sectors and end-uses suitable for DSM and help create appropriate programme design for ease of implementation.
- Identification of DSM measures or technologies within the identified end-use.
- Development of appropriate policy/ programme, financial, commercial and regulatory framework for implementation of identified DSM measures.
- Coordination with various agencies of Central and State Governments for implementation of DSM measures.
- Identification of capacity building requirements for implementation of such DSM programmes within stakeholders as well as implementing partners and will make appropriate arrangements for their development and implementation.
- Arrange suitable training programmes for stakeholders for design and implementation of DSM programmes for high replicability.
- Create awareness among various stakeholders about energy conservation and need for DSM programmes.
- Provide necessary support to ERCs/ Utilities.

Role of Utilities

- Consumer Awareness: Provision of information about DSM Resource Acquisition programmes for targeted consumers.
- Getting regulatory approvals: Cost-benefit analysis and present the same to the concerned State Electricity Regulatory Commissions for approvals.
- Undertaking Load Research Programmes: Load research programmes to ascertain the pattern of consumption for consumers in the supply area of the utility is necessary.
- Development of DSM Schemes in consonance with BEE/ SDAs: While BEE/ SDAs will be developing various schemes, its implementation is likely to vary among various Distribution Licensees. The schemes may be suitably modified by the Distribution Companies for implementation in their area based on the guidelines, which may be issued by BEE/ SDAs.
- Development of necessary infrastructure for implementation: Develop necessary infrastructure for implementation, monitoring and verification of the DSM programmes.
- Institutional arrangement: Dedicated DSM Cells with the assistance of their SDA for various activities associated with DSM.

Role of ERCs

- Develop a mechanism to enable utilities to recover the costs incurred in performing DSM related activities. SERC may also approve the expenses in accordance with the mechanism set up for this purpose.
- Develop guidelines for evaluating DSM options and integrating DSM options with supply side options.
- Regulatory intervention to ensure that all utilities under its jurisdiction follow a consistent set of methods and procedures for DSM plan design, preparation, period, load research, consumer surveys, cost-benefit assessment, technology assessments, etc.
- Evolve suitable monitoring and verification protocols for DSM programmes.
- Develop suitable incentive mechanism, which will enable sharing of benefits between the consumers and the licensee.

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