

Promotion of Energy Efficiency & DSM by Maharashtra Electricity Regulatory Commission

Maharashtra Electricity Regulatory Commission (MERC)
With assistance from
International Institute for Energy Conservation (IIEC)

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IIEC



MERC

Outline of Presentation

- Power Situation in India
 - Power Situation in Maharashtra
 - History and Role of MERC
 - Potential for EE and DSM in the state of Maharashtra
 - DSM Programs Initiated by MERC
 - DSM Resource Acquisition Program
 - Financing of DSM/EE in Maharashtra
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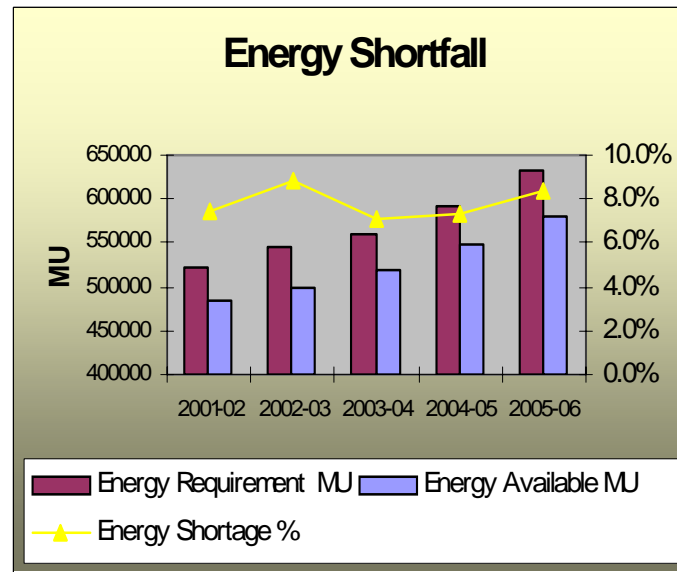
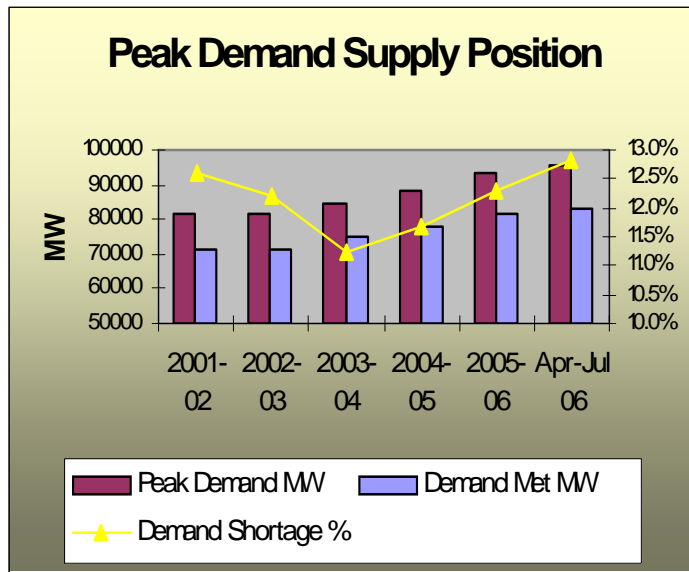
Power Situation in India

In Spite of Large Capacity Addition, Energy Shortage (8%) and Peak Shortage (12%)

- Growth of Generation Capacity in Country

Year	1947	Current	2012
Installed Capacity (MW)	1350	1,27,600	2,00,000

- Demand Supply Position



- Energy shortage ~ 8%
- Peak shortage ~ 12.2 %



Power Situation in India

Ambitious plans to meet demand, requires large capacity addition (1,10,000 MW) and investments (US \$235 billion)

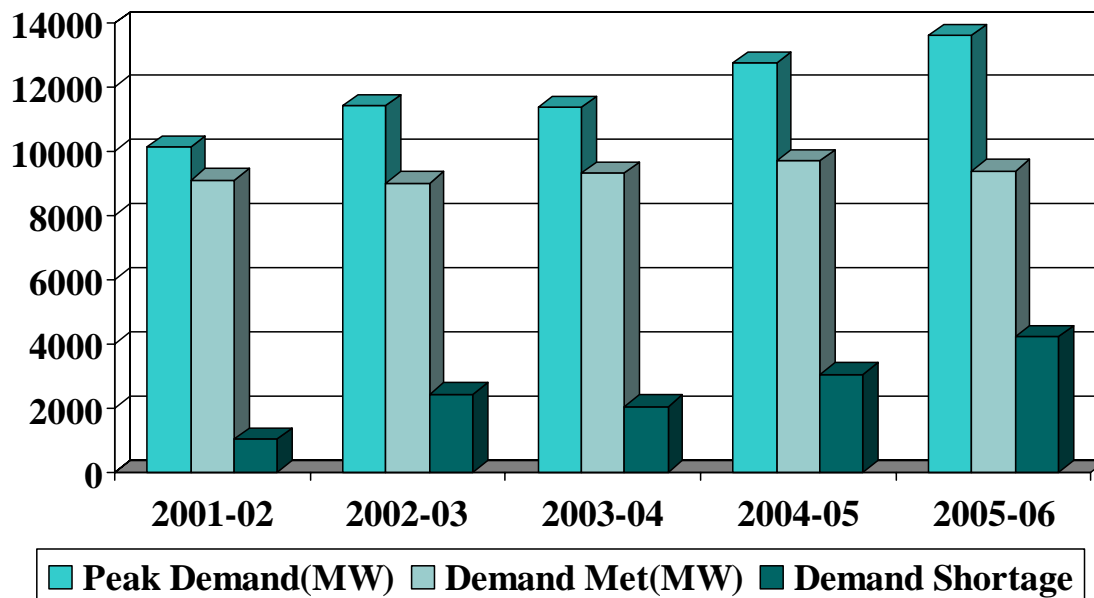
- Sector Objectives
 - Access to Electricity for all by 2012 (Around 50% of households do not have access to electricity today)
 - Increase in per capita consumption to 1000 units by 2012 (at present ~ 610 units)
 - Minimum lifeline consumption 1 unit/household/day by 2012
 - Demand to be fully met by 2012 (as against current peak shortages of around 12.8%)
- Planned Capacity Addition
 - 41000 MW and 59000 MW during X and XI Plan
 - In addition, 3100 MW and 6900 MW capacity addition by renewables during X and XI Plan
- Total funds requirement for X & XI Plan ~ USD 235 billion



Power Situation in Maharashtra

Better than other states of India but still suffers a peak shortage of 40%

- Largest power system in the country
- Achieved 100% rural electrification
- 78% of households have access to electricity



- Between 2001-06:
 - Capacity addition – 0.071%
 - Rise in peak demand - 7.5% per annum compounded
 - Rise in energy consumption- 4.7% per annum compounded
- Peak shortage 40%
- Energy Shortage 30%



Power Situation in Maharashtra

With this scenario, the shortages are expected to last for at least 3-5 years

- Capacity Additions
 - In pipeline = 750 MW
 - Planned by State's generating companies = 7540 MW (by MAHAGENCO) + 350 MW by Tata Power Company
 - RPPL (erstwhile Dabhol) = 2144MW
 - State's share in Central Sector = 3800 MW
 - MOUs with private sector = 12500 MW
- Except 750 MW, balance of capacity will take 2-8 years to come on stream
- Limited scope for getting power from sources outside the State (Network congestion, limited surplus generation)
- Energy efficiency and Demand Side Management (DSM) emerges as an immediate power shortage mitigation alternative



History of MERC

- 2-Jul-98 Electricity Regulatory Commission's (ERC) Act, 1998 passed by Parliament
- 5-Aug-99 Maharashtra Electricity Regulatory Commission (MERC) established, with powers under Section 22(1) (a), (b), (c), (d) and (e) of ERC Act for determining tariffs, power purchase and to promote competition, efficiency and economy in the activities of electricity industry
- 4-Jan-00 First appointment of consumer representatives under Section 26 of ERC Act
- 20-Oct-00 Formation of State Advisory Committee
- 24-Apr-02 MERC vested with powers for enforcement and execution of orders and decrees under Sections 20 & 21 of Civil Procedure Code
- 10-Jun-03 Electricity Act, 2003, passed by Parliament, giving additional powers to ERCs
- 2004 - 06 MERC notified several Regulations under Electricity Act, 2003 by adopting a novel consultative process involving the utilities and consumer representatives



Role of MERC

- After enactment of EA 2003, MERC's powers have been broadened, and several Regulations like Standards of Performance, Supply Code, etc., have been notified
- The Regulations were evolved through a consultative process involving representatives of Utilities, Consumer Representatives, and MERC
- MERC has formulated a Compliance Monitoring Mechanism, to ensure compliance with directives, Orders and Regulations
- Several Orders under EA 03 have been issued :
 - Tariff Order for MSEB, REL, TPC, MSEDCL, BEST etc.
 - Other Orders determining tariff for purchase from renewables
 - Renewable Purchase Specification (RPS)
 - Load Shedding Protocol
 - Transmission Pricing Framework & transmission tariff, etc.



Energy Efficiency Potential is Huge

National

- ADB Study:
 - 54.5 Billion units
 - 9240 MW [Existing Capacity : 127,600 MW]
- CII study puts the financial value of conservation potential at US \$ 2.7 billion per year
- Planning Commission: Integrated Energy Policy: 15 % of consumption of electricity

State

- Maharashtra State: 2000-2300 MW
- Mumbai City: 225-250 MW



Promotion of EE by MERC

- Steps and actions initiated by a Regulatory Organization like MERC provide a Very Good Learning Experience about How Potential can be converted into Actual Adoption in an accelerated and widespread manner
 - Create Awareness, and demand for EC
 - Convert Awareness into intent or inclination for EC
 - Convert intent/inclination into actual adoption of EC
- Considering large benefits and prevalent shortage situation in the State, MERC, under Section 23 of EA, has directed undertaking of several initiatives to promote adoption of EC through utility demand side management (DSM) programmes



Promotion of EE by MERC

- Two Part Tariff Order of May 2000: Introduced a regime for recovery of full fixed costs of MSEB
- Time of Day (TOD) Tariff
 - Rebates for “off-peak” and higher tariffs for “peak” period consumption for HT industrial and LT-General Motive
 - Differential between “peak” and “Off-peak” tariffs – 1.78 cents to 4.34 cents per unit
- Power Factor (Tariff orders for MSEB/MSEDCL, TPC, REL/BSES)
 - Incentive for PF > 0.95, Penalty for PF < 0.9
- RkVAh charges: BEST
 - For non-domestic consumers > 3000 units per month
- Innovative Incentives
 - Oct 2006 – To foster energy efficiency and reduce load shedding, reduction in Additional Supply Charge allowed for reduction in costly peak consumption
 - Distributed Generation – preferential treatment for wind, biomass, and untapped captive liquid fuel capacity, especially for peak power and to relieve congested transmission corridors



Promotion of EE by MERC

- Energy Conservation Fund: MSEB/MSEDCL
 - January 2002 – a 'cess' introduced (2% of electricity charges billed for agriculture, public water works and street lights) for funding energy conservation activities in these three sectors
- Load Management
 - Load management charge & Load management incentives for residential and commercial >500 units/per month and all industrial users (May 2005: BEST, TPC and REL)
 - HT non-continuous to restrict to 80% & HT continuous to restrict to 90% (January 2006: MSEB/MSEDCL)
 - Reduce consumption by 20% or face temporary disconnection (March 2006: REL, TPC and BEST)
 - Load management charge (LMC) & Load management incentives for residential and commercial >300 units/per month and all industrial (October 2006: REL & TPC)



DSM Programmes Initiated by MERC

- Funds for EC and DSM programmes / projects
 - MERC has authorised, through its various Orders, the use of LMC for funding EC/DSM projects/activities (About US \$ 15.3 million available)
 - MERC has ruled, through its various Orders, that expenses incurred for EC/DSM projects/activities will be allowed as “pass through” in ARR
- EC through DSM programmes
 - Directed MSEB to come up with concrete schemes to implement DSM in the State using the ‘cess’ (January 2002: MSEB/MSEDCL)
 - Directed MSEB to prepare a detailed DSM plan submit it to MERC in 3 months time (March 2004: MSEB/MSEDCL)
 - Directed MSEB to submit detailed first phase plan of EC within one month (March 2005)
 - Commission directive to BEST, REL and TPC to undertake DSM programmes (May 2005)



DSM Programmes Initiated by MERC

On – going DSM projects/ pilot projects

- Nashik CFL pilot project where more than 350000 CFL bulbs have been purchased by residential consumers under the pilot project, resulting in load reduction of about 7-9 MW
- Nashik Agricultural Pumps capacitor project
- MEDA water pumps and street lighting project in rural areas
- REL CFL pilot project where more than 550000 CFL bulbs have been purchased by residential consumers under the pilot project, resulting in load reduction of about 14-16 MW



DSM Programmes Initiated by MERC

Demand Side Management Projects in Pipeline

- MSEDCL pilot project for penetration of 10 million electronic ballasts in Nashik division for getting 50MW load relief
- MSEDCL State wide CFL project for penetration of 30 million CFL lamps for getting 900 MW load relief
- BEST & REL Pilot Projects for promotion of electronic ballasts and promotion of EC in high-rise building water pumping systems
- TPC project for capturing EC potential in six units (very large commercial buildings, industrial units, hotels)
- Feeder / Distribution transformer based DSM projects on 10 feeders in the State through DSM bidding mechanism



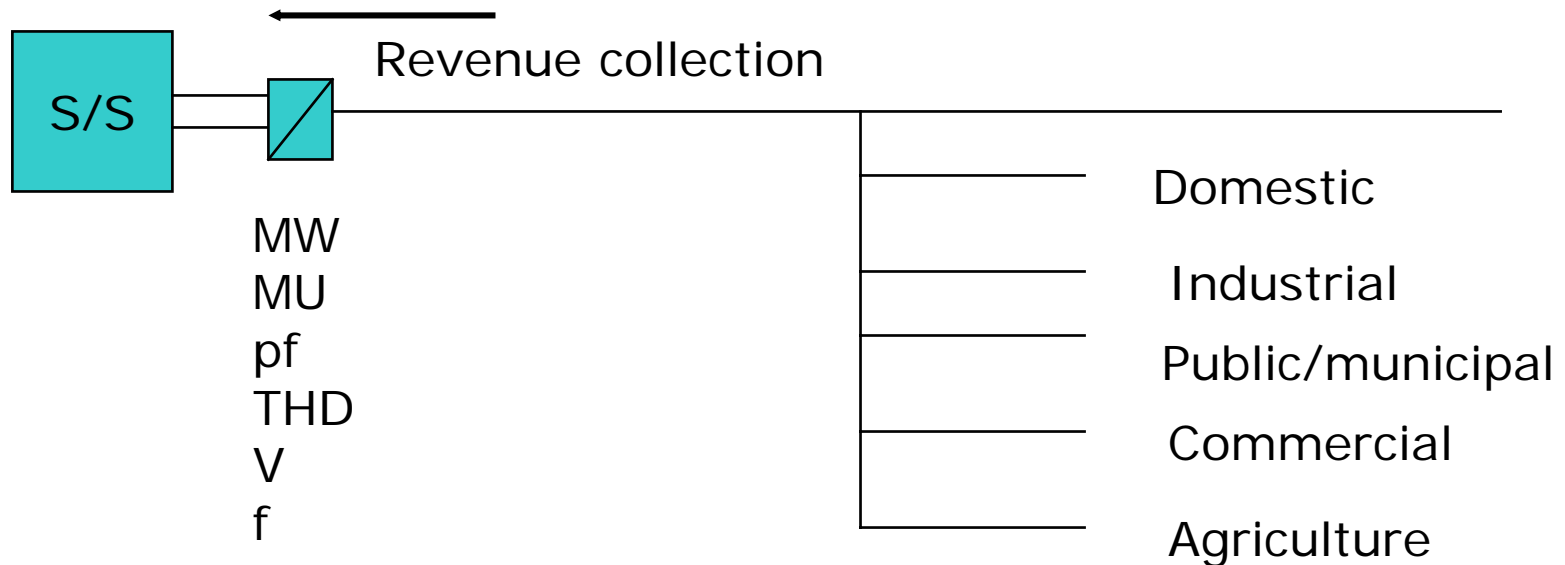
DSM Resource Acquisition

DSM Resource Acquisition is a utility mechanism to:

- reduce energy consumption and peak load, and improve utility system efficiency
- through implementation of DSM/EE programs by customers, ESCOs, NGOs, equipment manufacturers & suppliers, or other private sector organizations
- with payments made to them by the utility for the resulting energy and load reductions.



IIEC – under MERC contract included a unique feeder-based implementation process that includes consumer indexing

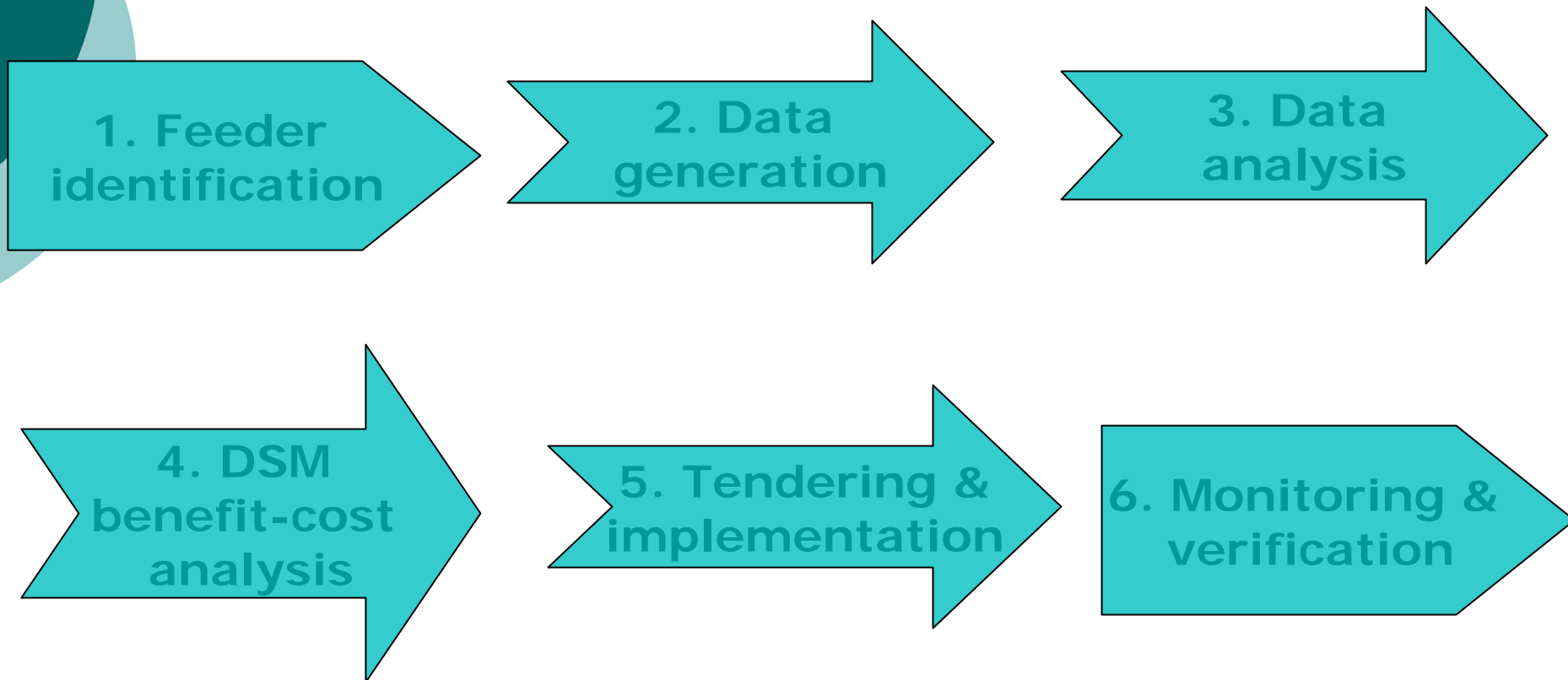


Focused consumer surveys/load-research (design/M&V stage)

# of appliances/eqpt	Old KW	New KW



IIEC – MERC process ranges from feeder selection to feeder-specific M&V



Stakeholder benefit-cost (consumers, utility and bidders) shows a position of equality to society

Consumers - benefits

- Reduced electricity bills
- New appliance/equipment stock
- Multiple technologies

Consumer - costs

- Monthly installments
- Bidder payments

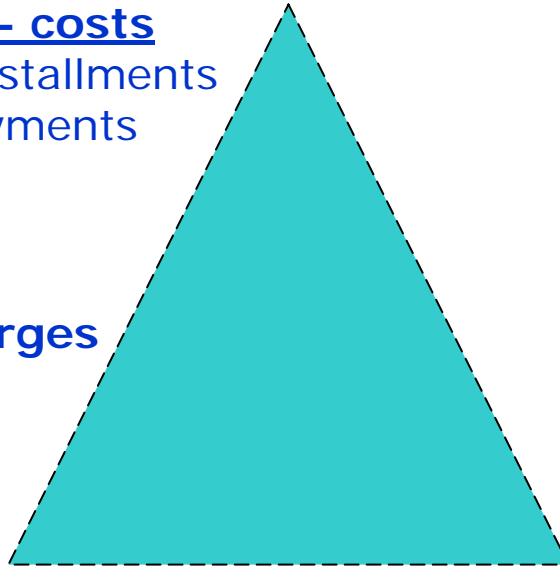
Utility - benefits

– Reduced demand-charges to generators

- Capacity offset
- Reduced outages
- Higher revenues

Utility - costs

- Bidders payment
- Upfront costs



Bidder - benefits

- Increased market share
- Assured payment with utility pass-through

Bidder - costs

- Implementation costs
- O&M cost

Thank you

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