

# Some Issues and Challenges in Doing DSM in India

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Grids*, Mumbai, March 26, 2008

# Prayas Experience in DSM

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- ❑ Independent NGO of professionals doing research based advocacy in public interest
- ❑ Involved in DSM since early 1990s and did an IRP for Maharashtra in 1994
- ❑ Report on need for regulatory action and utility driven DSM programs in 2005
- ❑ Review of Nashik Pilot CFL Program by MSEDCL
- ❑ Collaborative effort to promote DSM in Maharashtra between Lawrence Berkeley National Lab (LBNL), MERC, Maharashtra Utilities.

# Overview

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- Highlights of Review of Nashik pilot CFL program
  - What the pilot program was about
  - What we did in our review
  - What we found in our review
- Lessons for future DSM programs in India

# Highlights of Review of Nashik Pilot CFL Project

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# Description of Program

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- ❑ Only residential and commercial consumers having no arrears eligible
  - ❑ Two choices – (1) direct purchase or (2) installments
  - ❑ Limit of 5 CFLs per consumer
  - ❑ Several delivery mechanisms
    - At 'Bill Collection Centers'
    - Door to door sales by '*Bachat Gut*' women
    - Retailers' shops
    - MSEDCL meetings to publicize CFL program
  - ❑ Large promotion also by the suppliers
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# Overview of Prayas's Review Process

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## □ Components of Review

- Impact Evaluation
- Failures and Replacement of CFLs
- Tracking and Monitoring System
- Price Comparison
- Process Evaluation

## □ Process

- Survey - ~ 200 urban & 50 rural participants
- In-depth interviews with participants, non-participants, MSEDCL staff, retailers, manufacturers, *Bachat Gut* women

## Cost Effectiveness of Appropriately Used CFLs

<b>Consumer Perspective</b>	<b>Urban</b>	<b>Rural</b>
Energy Savings per CFL (kWh/month)	4.5	5.9
Applicable Tariff (Rs/kWh)	2.50	2.50
Consumer Savings (Rs./month)	11	15
Pay Back Period (months)	10-11	7-9

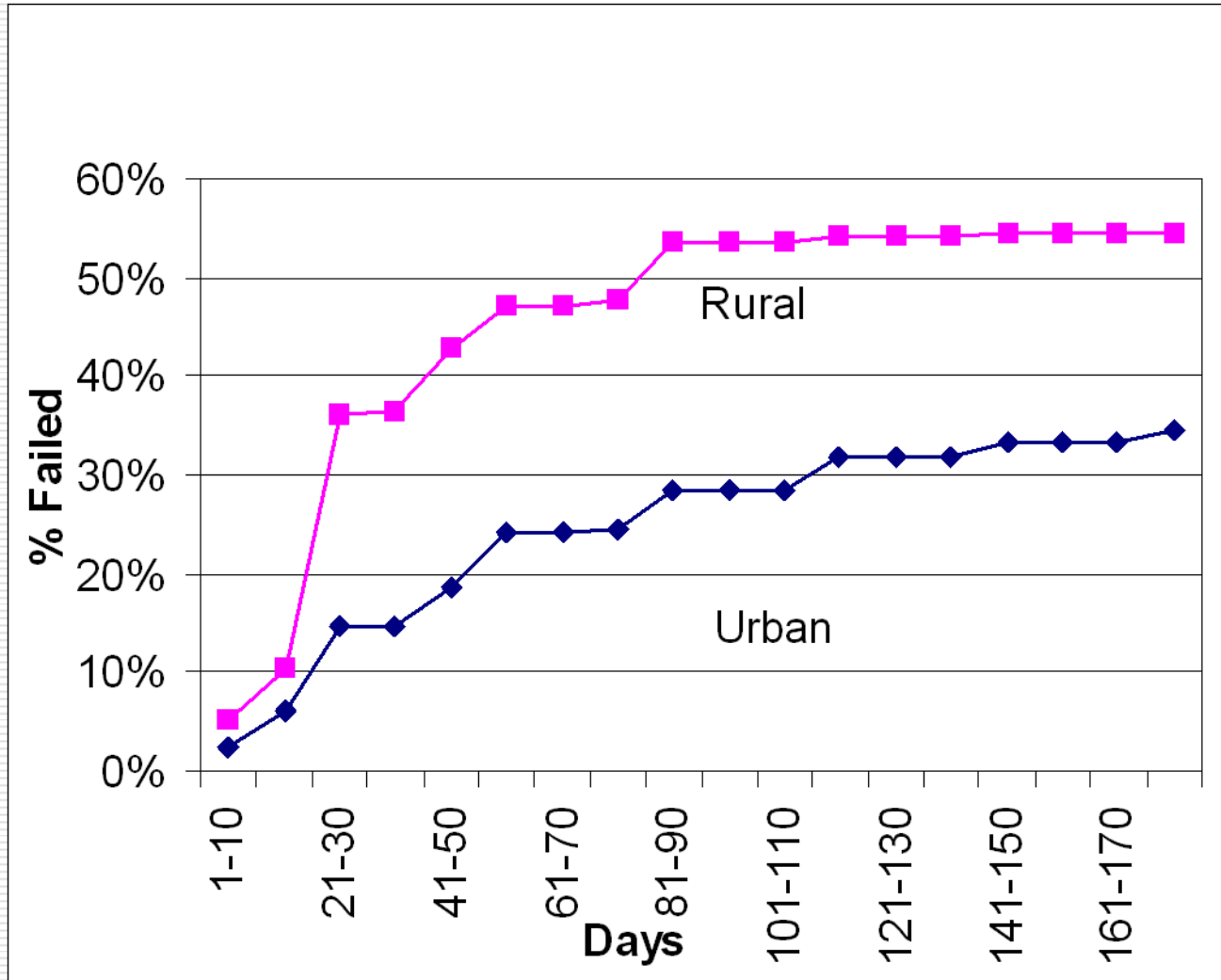
<b>Utility Perspective</b>	<b>Urban</b>	<b>Rural</b>
Energy Savings per CFL (kWh/month)	4.5	5.9
Energy Savings per CFL including 10% losses (kWh/month)	5.0	6.6
Applicable Tariff (Rs/kWh)	4.50	4.50
Utility Savings (Rs./month)	10	13

## Variety of Uses of CFLs by Sample Consumers

	Replaced Tube	Replaced "Zero Watt" Bulb	Used in Bathroom	Not Used Yet	Replaced Incand. Bulb in Other Location
Urban	59%	4%	9%	4%	24%
Rural	52%	2%	2%	3%	41%



# Percentage of Failed CFLs by Days of Usage



### Six Month Failure Rates of CFLs Used by Survey Respondents

	<b>Consumers Who Experienced At Least One Failure of CFLs</b>	<b>Failure Rate of Initial Set of CFLs Purchased</b>	<b>Failure Rate Including Replacements</b>
Urban	69%	41%	35%
Rural	96%	74%	55%

# Problems with Replacement of Failed CFLs

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- 14% of urban consumers and 29% of rural consumers who tried to get replacements faced problems
- Replacement in rural areas particularly difficult
  - long distance and expenses (up to Rs. 50 per trip)
- Distributors did make significant efforts to replace failed CFLs but high failure rate compounded the problem

# Lessons for Future DSM Programs

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# Utilities Can Play a Key Role

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- Facilitate penetration of efficient technologies:
  - Increasing awareness
  - Reducing high cost through bulk purchases and installment schemes
- Enhance programs through innovative delivery mechanisms such as *Bachat Gut* women in Nashik

# Consumers Keen to Participate

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- Penetration of CFLs through Nashik program impressive
- Almost all purchases occurred in poor neighborhoods
  - Poor eager to participate provided program affordable through innovative financial schemes - installation plans
  - Poor adopt new technologies if aware of benefits

# Evaluation, Monitoring & Validation (EM&V) extremely important

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- ❑ EM&V - important information for decision makers regarding actual savings
- ❑ Feedback to improve on-going and future programs
- ❑ Data requirements for evaluation should be incorporated into design of program
- ❑ Baseline data should be collected - accurate estimation of program impacts
- ❑ EM&V should be done preferably by independent agency

# Process Evaluation Crucial Component of EM&V in Indian Context

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- ❑ Process evaluation assesses program design, procedures, systems to see if can be improved.
- ❑ Many utilities do not have effective MIS and process evaluation will identify areas for improvement
- ❑ Quality of equipment often issue in Indian context
- ❑ A good on-going process evaluation would have identified problems with quality of CFLs and replacement early in the Nashik pilot.



# Capacity Building Would be Useful

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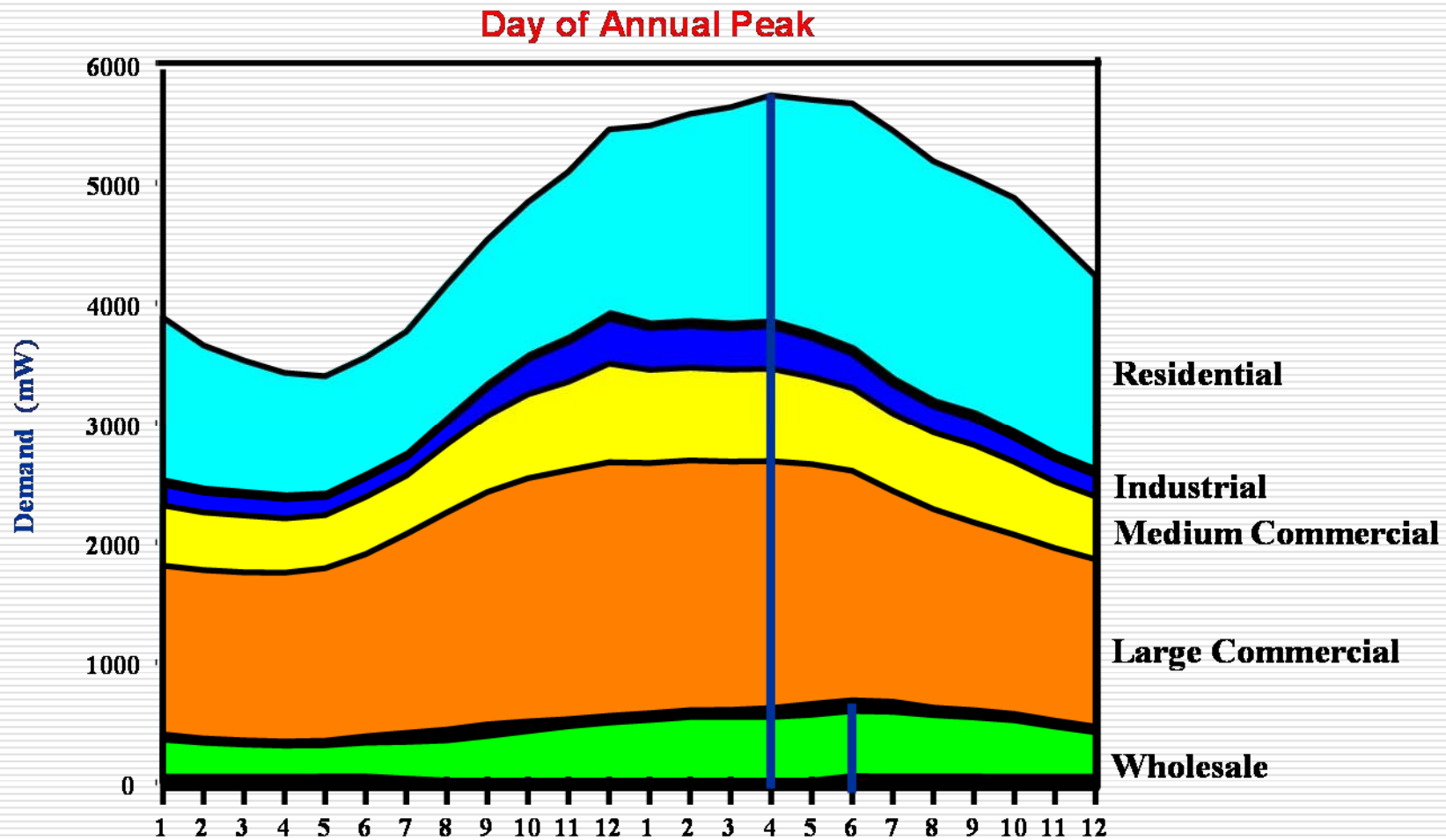
- ❑ DSM new area in India; lack of understanding and expertise.
- ❑ Proper program design, on-going oversight and EM&V essential for success
- ❑ BEE should institute technical assistance and training programs including EM&V for utilities' and regulatory staff

# Load Research Necessary for Large Scale DSM Programs

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- Very little knowledge about components of peak demand.
- Load research helps answer questions such as:
  - How much do domestic consumers contribute to system peak?
  - How many incandescent bulbs are used by households and small commercial consumers
  - What is fastest growing end-use?
  - How much does commercial air-conditioning contribute to system peak?

# Example of Load Research



Source: Presentation by Grayson Heffner, DSM Workshop, Mumbai, March 10-14, 2008

# Summing Up

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- ❑ Utilities can play an important role in increasing awareness and lowering high initial cost barrier
- ❑ Consumers are keen to participate. Communication and innovative financial schemes very helpful
- ❑ EM&V critical for success. On-going process evaluation particularly relevant in India to allow mid-course correction. Also addresses concerns about quality of equipment and information systems.
- ❑ Capacity building in program design and EM&V necessary. BEE could play role in training programs
- ❑ Load research required to effectively target DSM programs and estimate potential savings.

Thank you for your attention!

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