# Removing Barriers for Large Scale Penetration of CFLs

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## Very large and cost effective potential of CFLs

If all the existing and to be connected residential consumers, a total of ~ 200 Million, replace 1 Bulb with CFL (60 W à 15 W) then:

- Need for peaking capacity would reduce by 10,000 MW
- Need for investment in the sector would reduce by Rs 60,000 Cr !

## What are the major barriers to achieve this?

- Lack of awareness à Create Awareness
- High initial Cost à Leasing Programs
- Quality assurance to consumers
- Lack of availability of CFLs in rural areas
  = function (demand for CFLs)
- Overall Economics

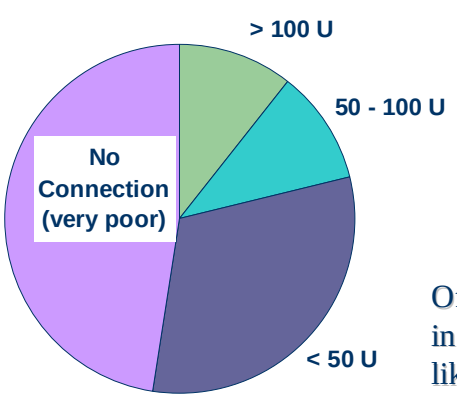


## CFL sales have grown but…

- The present growth in CFL sales is driven by a small share of consumers
- Due to high power tariff, rich households & commercial consumers in urban / semi-urban areas have started adopting CFLs
- But this does not assure that all consumers would adopt CFL use

## Household distribution by consumption / month

*Numbers are indicative*




Of the 200 million houses in India only 25-30% are likely to pay electricity bill > Rs 100 /month!



## Household consumes with small usage (with low tariff)

*Numbers are indicative*

**Residential consumers (usage < 50 U/month)**

- Rajasthan ~ 60%
- A.P. ~ 60%
- MSEB ~ 50%
- Gujarat ~ 40%
- M.P. > 80%

**Metros (households, usage < 100 U/month)**

- Delhi ~ 40%
- Mumbai Suburbs ~ 47%

*Ref: SERC Tariff orders / Utility ARR/*

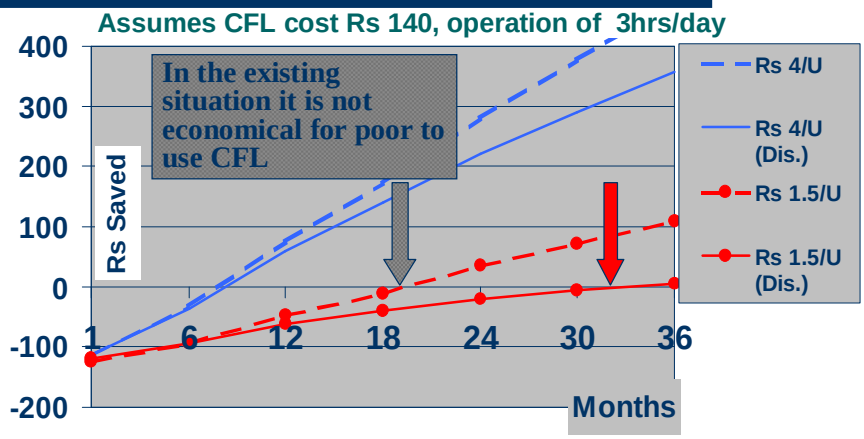
## Characteristics of consumers

Low Consumption = Low tariff = Poor consumers
= Have high discount rate (first cost sensitive)

| Consumption (U/month) | Tariff (Rs/Unit) | ~ Discount Rate (% p.a) |
|---|---|---|
| High | 4 | Low (assumed ~ 15%) |
| Medium | 3 | Medium (assumed ~ 30%) |
| Low (< 50U/month) / Unconnected | 1.5 – 1.75 | High (assumed ~ 50%) |



## Net saving – a function of tariff & discount rate



## But poor not using CFLs will cost dear (to the utilities & government)

If the ~140 million poor houses (considering full electrification in next 5 years) use 2 bulb instead of 2 CFLs then they:

1. Contribute to peak load of 14,700 MW v/s 3,700 MW with CFLs! (*70% peak coincidence*) – **Saving of ~ 11,000 MW**
2. Would use 13,700 MU/yr more for the bulbs !
3. Annual subsidy to these consumers will increase by **Rs 2,400 Cr/yr, -** assuming tariff = 50% of average cost of supply, Rs 3.5/U (*as per draft National Tariff Policy*)

Annual cost for 2 x 140 Mn CFLs *(with 4 Yr life)* ≅ **Rs 1,300 Cr / yr**

23 Mn of these houses will be electrified by Rajiv Gandhi Yojna



## Quality and Life assurance

Consumers need quality assurance. A good mechanism is to promote special logo indicating quality assurance by utility / government. This could be used

- In the advertisement campaigns by utilities
- On the lamps with approved quality

Quality Improvement would help - - if cost remains affordable

- PF from 50% to 90%
- Life from 6,000 Hrs to > 10,000 Hrs

## Implications …

- Reduced cost of CFL would increase penetration (and CFL market)
- The majority of population will never opt for CFL, even with leasing program (unless their cost is subsidized) à This is unaffordable
- Quality assurance is important



## What is needed to overcome barriers & harness full benefits of CFL

- CFL should be integral part of Rural electrification. Rajiv Gandhi scheme **should :**
  - Offer connection only with CFL &
  - Ensure that CFL use continues (give separate choke & CFL holder)
- Utilities should subsidize CFLs for poor households!
  - This is essential for good penetration of CFLs
  - Can improve quality & reduce cost of CFLs
  - ERCs would allow these costs in ARR

## What is needed to overcome barriers & reach full benefits of CFL

- Regulators should create a special category for subsidized consumers – where limited power (say 50 W) connection is offered at special monthly tariff. *This will induce use of CFLs, not compromise utility interest & also reduce consumer bills!*
- MoP should set up a Task Force to ensure synchronized actions and pooling of knowledge



## THANK YOU

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