

Roadmap For Solar Thermal In India

Mandatory Compliance & Utility Rebate
Bengaluru – A Case Study



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IN A NUT SHELL.....



- Bengaluru has the maximum density of Solar Water Heaters(SWHs) installed in the Country
- Over 1.50 Million Domestic SWHs installed/working in the City.
- In 1997, Karnataka became the first State to introduce the Electricity Tariff Rebate (Presently Rs. 50/- per month/installation)
- In late 2008, The Mandatory Rule for New Constructions was introduced and is being effectively implemented

Domestic SWHs installed during Mandatory Regime



Financial Year	Number of SWHs installed (Source – BESCOM)
2008 - 2009	6,187
2009 - 2010	47,218
2010 – 2011	52,491
2011 – 2012	72,084
2012 – 2013	95,819
2013 – 2014	72,945
2014 - 2015	72,749
Total	4,19,493



Experience of The Mandatory Rule

- Implementation Hic-ups in the first year.
- Protests by (not the 'Victims' Households) Electrical Contractors, etc., which fizzled out
- Stringent Action taken on some BESCO officials for deviating from the rule-An effective deterrent
- Strict Implementation followed – Power Connection to newly constructed houses-only on proof of SWH installation
- VIGILANT BESCO: Under sized SWHs reduced



Reasons for the Success...

- High level of Awareness among Public about benefits of SWHs – No dissent from the end-users
- Builders/Civil Contractors fully aware of the provisions required for Installing SWHs – Height of overhead supply tank, dedicated hot water pipelines, etc.,
- Very active marketing, sales and service network – effective outreach – access and availability

Some Conservative Estimates...



Domestic (AEHs – LT2a category) SWHs installed during Mandatory Regime	4,19,493 nos.
Average Capacity – 150 LPD (200 LPD is most popular – about 70% of installed Systems)	62,923,950 LPD
Area Installed @ 3 sq. mtrs per SWH	1,258,479 Sq. Mtrs
Energy Saved on Demand Side Per Year (1,500 KWh per year SWH)	629.24 million KWh
At 20% T&D losses, Saved Power Generation per year	755.09 million KWh
SPV Power Generation equivalent (1MWp SPV Power Plant generates 1.4 million KWh per year)	450 MWp

Some Eco-Nomic Facts...



Domestic (AEHs – LT2a category) SWHs installed during Mandatory Regime

4,19,493 nos.

Conservative Carbon Emission Reduction considering Present Grid Coefficient (0.50 TCO_{2e} per Sq. Mtr. Per year)

629,240 TCO_{2e}/year

Cumulative Carbon Emission Reductions up to 2014-2015

3.11 Million TCO_{2e}

To absorb 3.11TCO_{2e} we require 5,76,000 fully grown Trees for 20 Years (Life of SWH) – **Afforestation Area**

525 Hectares (1297 Acres)

For Generating 450 MWp of SPV Power, Area required

910 Hectares (2250 Acres)

Cost For Setting Up 450MW of SPV Power Plants

INR 450 Million

Approximate End User Cost (@ Rs.15,000/100 LPD)

INR 140 Million

Demand Side Saving (SWH) : Supply Side Generation(SPV)

1 : 3.21



The BESCOM Tariff Rebate

- BESCOM presently gives a tariff rebate of 50 paisa/Unit subject to a maximum of 100 units (Rs. 50/month Max.) per installation for households under LT2a Category (All Electric Homes - AEH).
- Over 60 Lakh AEH households exist under BESCOM
- About 12.80 Lakh are availing the BESCOM SWH Rebate at present and is growing by about 70,000 every year.
- SWH has a penetration of over 21% compared to potential (60 Lakhs)
- BESCOM Rebate of Rs. 50 per month has had a symbolic effect on potential Users – a psychological advantage over the Baseline
- BESCOM is aware of the benefits of SWH to shave the Peak load curve and are prepared to do more to promote [SWHs](#)





Barriers for Scaling Up III>>>

- Existing Households do not have sufficient motivation to change over to SWH after removal of MNRE Subsidy. Rs. 50 per month is the only incentive at present (only symbolic & insufficient)
- No credible financing mechanism to reduce the burden of initial investment
- Existing Financials of the Manufacturers and Distributors pathetic (about 30% lower sales than last year)



THE WAY FORWARD.....

- Bengaluru has all factors positive to rapidly scale up the Market Share of SWH from the present 21%
- Bengaluru can be taken as a Case Study to implement innovative mechanisms to propagate SWH usage
- A target of installing at least 50% of present potential in a short period of 2-3 years can be set and achieved

THE WAY FORWARD.....



- **The power tariff Rebate to be increased to make it attractive for existing houses to switch over to SWH**
- **Rebate to be proportional to the Capacity of SWH installed**
- **BESCOM to penalize non-users by way of increased tariffs after giving sufficient notice period**
- **Easy finance to house owners to buy SWHs**



Other Possible Solutions...

- **Reintroduce Subsidy (at least 15%, if not more)**
- **Make BESCO a Channel Partner (manufacturers not to be involved)**
- **Transfer advance Subsidy amount to a 'No Lien' account of BESCO**
- **BESCO to advance Subsidy to Consumers along with the present rebate over a period of say, an year on a monthly basis(carrot & stick would work)**
- **MNRE to Support & Incentivize rated manufacturers to achieve targets**
- **MNRE to undertake a publicity blitz to catalyze scale-up efforts**



Thank You



T. Ananth

