Evaluating the Impacts of Mandatory Policies and Labeling program for Appliances in India

PVN Kishore Kumar [1], Sameer Pandita[2], Archana Walia[1],

[2]Bureau of Energy Efficiency India, [1]CLASP India,

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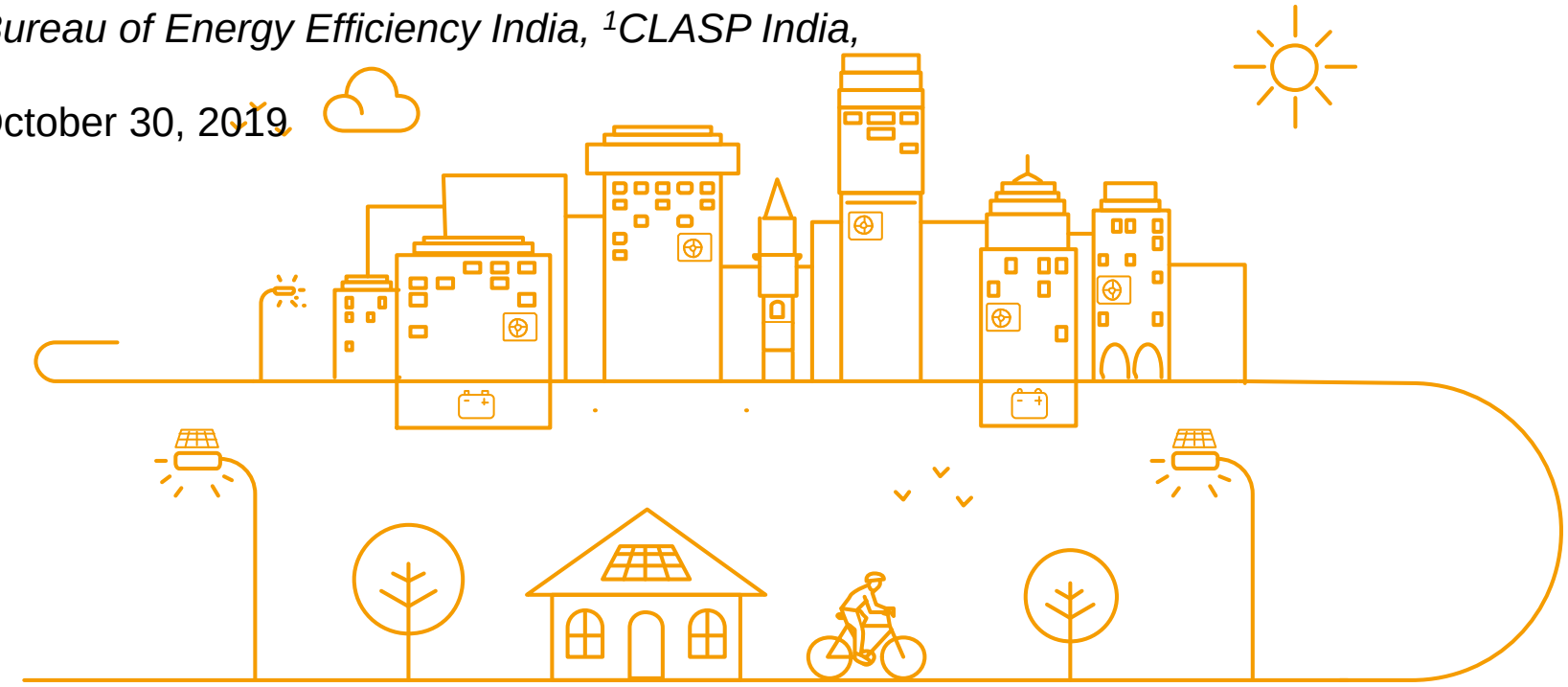
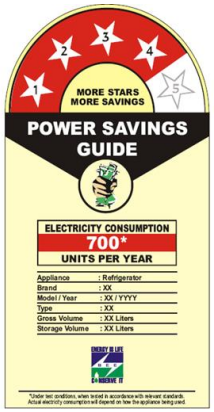


Labeling Program in India

2001-2002

Energy Conservation Act and establishment of Bureau of Energy Efficiency



2006

Voluntary Labeling program launched for refrigerators and ACs

2009

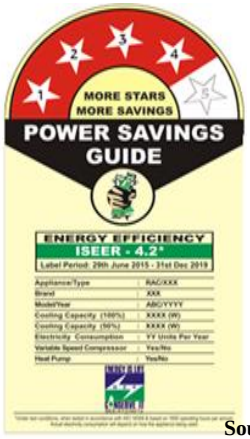
Mandatory Labeling for four products

2011

Endorsement Label Launched

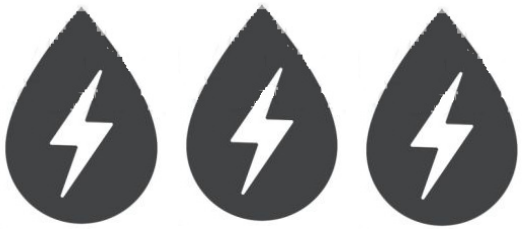
2019

23 appliances under labeling, of which 10 under mandatory phase



Source: Bureau of Energy Efficiency

Key Achievements of S&L Program



Electricity saved

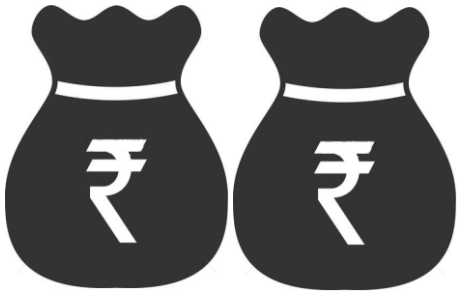
till 2017-18

245 TWh

Co2 emission

reduction of

201 million tonne



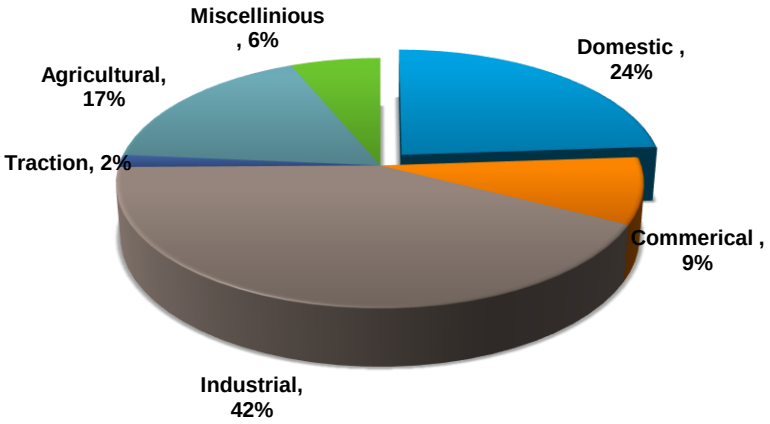
equivalent cost saving of

USD $18.3 Billion

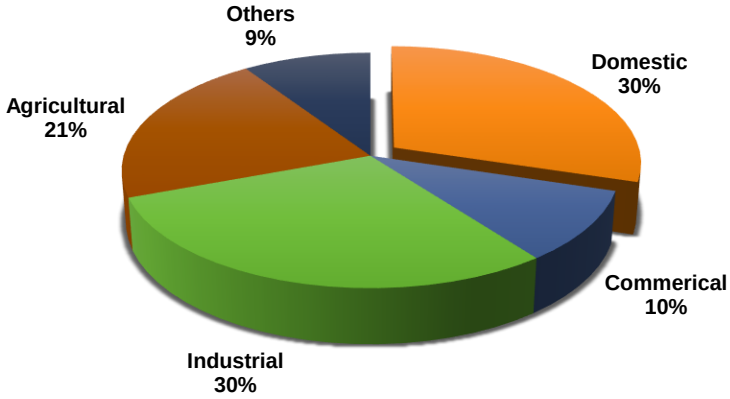
Source: Bureau of Energy Efficiency

India's Projected Electricity Requirement in 2022*(Sector wise)

Utilization Pattern of 1167 BU in 2016



Utilization Pattern of Projected1566 BU in 2022



- India's projected electricity requirement in **2022** is **1566 Billion Units.**
- It is estimated that in 2022, share of Domestic sector will escalate from **24% to 30%** compared to the 2016 level.

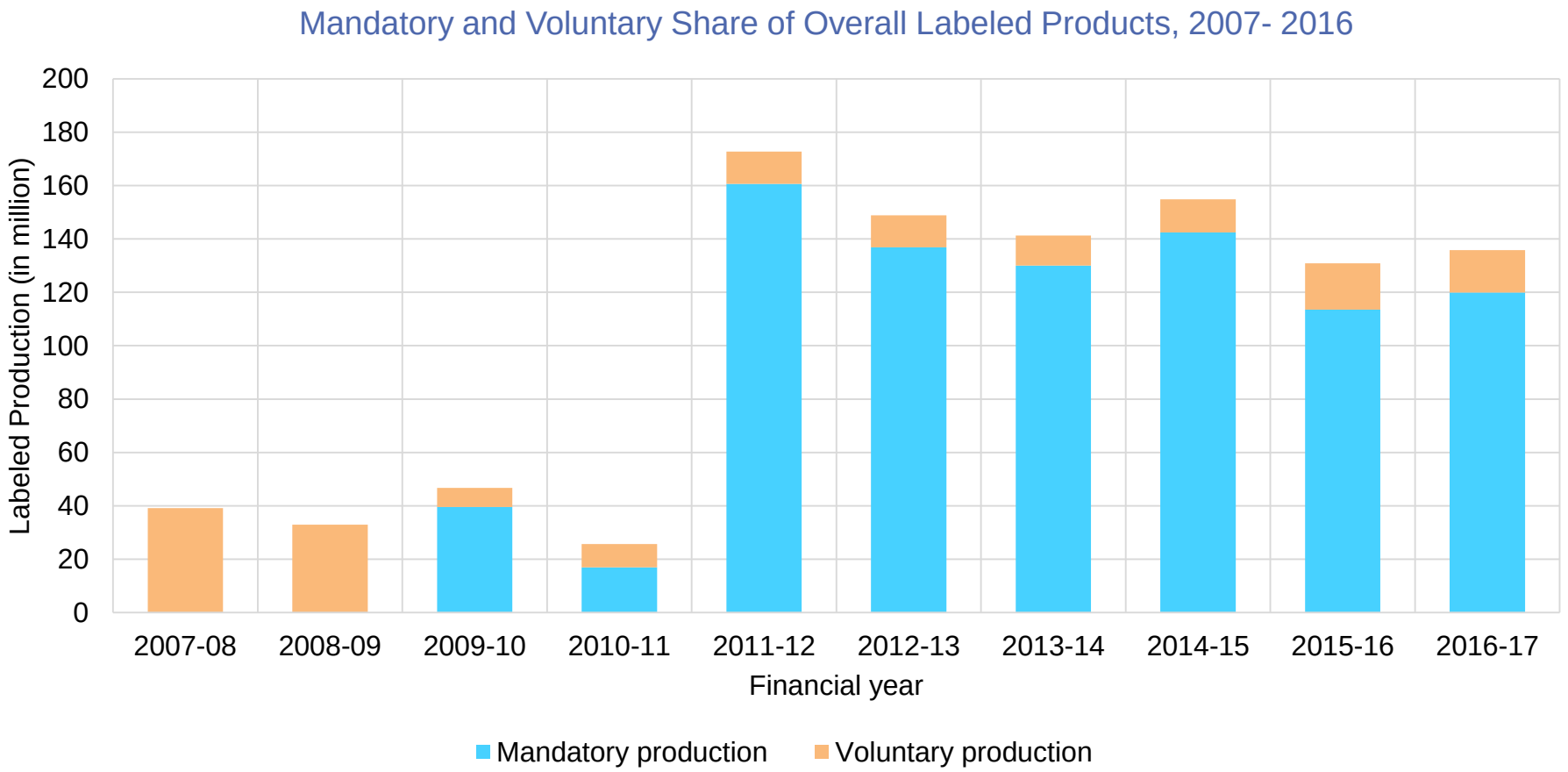
* Source: Central **Electricity Authority (CEA) Report on India Electricity Growth 2017**

Status of Labeling program

S.no	Appliances/ Products	Year Standards First developed	Nature of Labeling program
1	**Frost Free Refrigerator (FFR)**	**2006**	**Made Mandatory in 2009**
2	**Tubular Florescent Lamp (TFL)**	**2006**	**Made Mandatory in 2009**
3	**Room Air Conditioners-RAC (Split, window)**	**2007**	**Made Mandatory in 2009**
4	**Direct Cool Refrigerator (DCR)**	**2007**	**Made Mandatory in 2016**
5	Pump Sets	2008	Voluntary
6	**Distribution Transformer**	**2009**	**Made Mandatory in 2009**
7	**Color Television (CTV)**	**2009**	**Made Mandatory in 2016**
8	**Electric Geysers**	**2009**	**Made Mandatory in 2016**
9	Ceiling Fans (CF)	2009	Voluntary(to become Mandatory in 2020)
10	Induction Motors	2010	Voluntary
11	**RAC (Cassette, Floor Standing)**	**2011**	**Made Mandatory in 2015**
12	Washing Machine	2011	Voluntary
13	Computer (Notebook/Laptops)	2011	Voluntary
14	Solid State Inverter	2013	Voluntary
15	Ballast (Electronic/Magnetic)	2013	Voluntary
16	Office Equipment's	2014	Voluntary
17	Domestic Gas Stoves	2014	Voluntary
18	Diesel Generator Sets	2014	Voluntary
19	**Room Air Conditioners –RAC (variable speed)**	**2015**	**Made Mandatory in 2018**
20	Diesel Engine Mono-set Pumps	2015	Voluntary
21	**LED Lamps**	**2016**	**Made Mandatory in 2018**
22	Chillers	2018	Voluntary
23	Microwave Oven	2019	Voluntary

Source: Bureau of Energy Efficiency

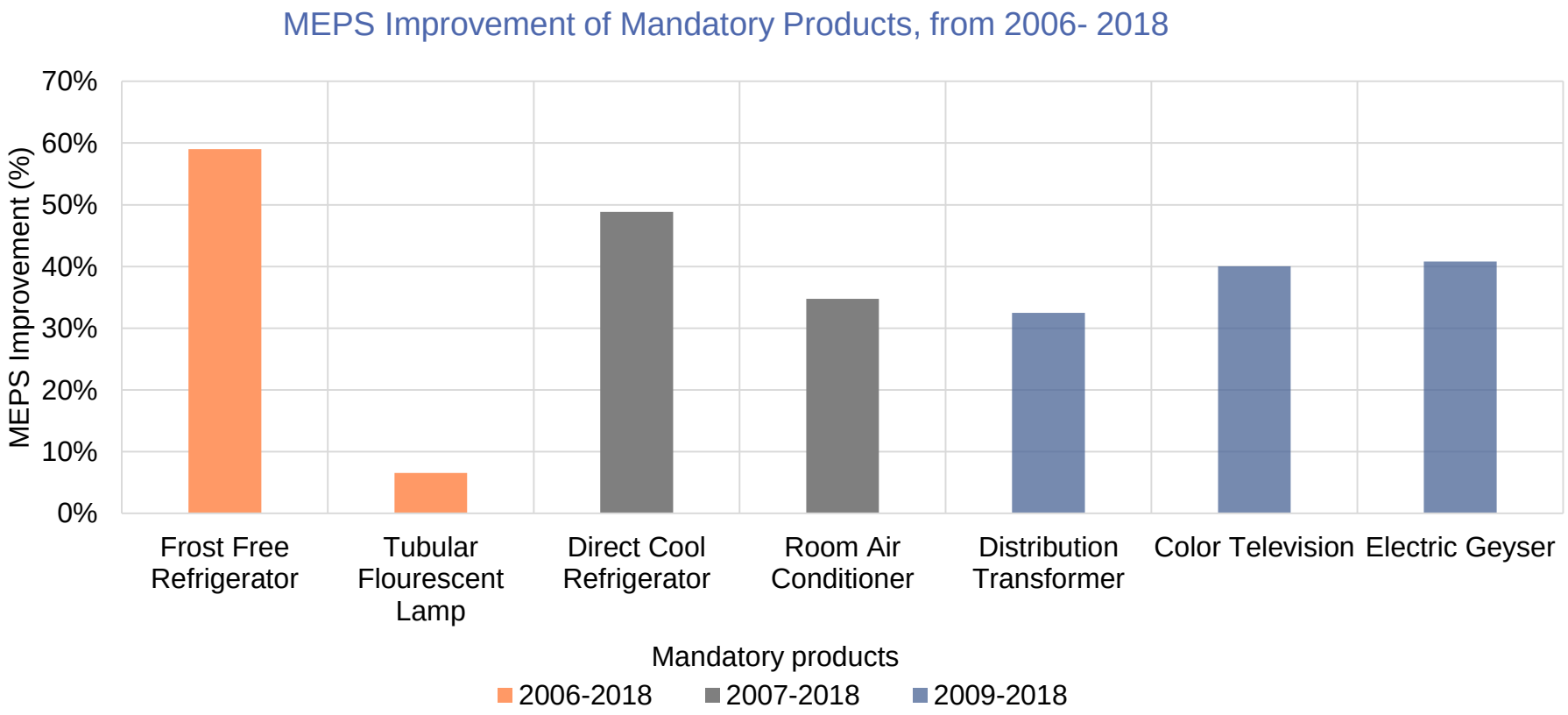
Market Share of Labeled Products



- Since the introduction of the mandatory program, the average share of the products registered under the mandatory phase **is 87%** while the voluntary segment is limited to **13% from 2011- 2016**

Source: Bureau of Energy Efficiency

MEPS Improvement of Mandatory Products

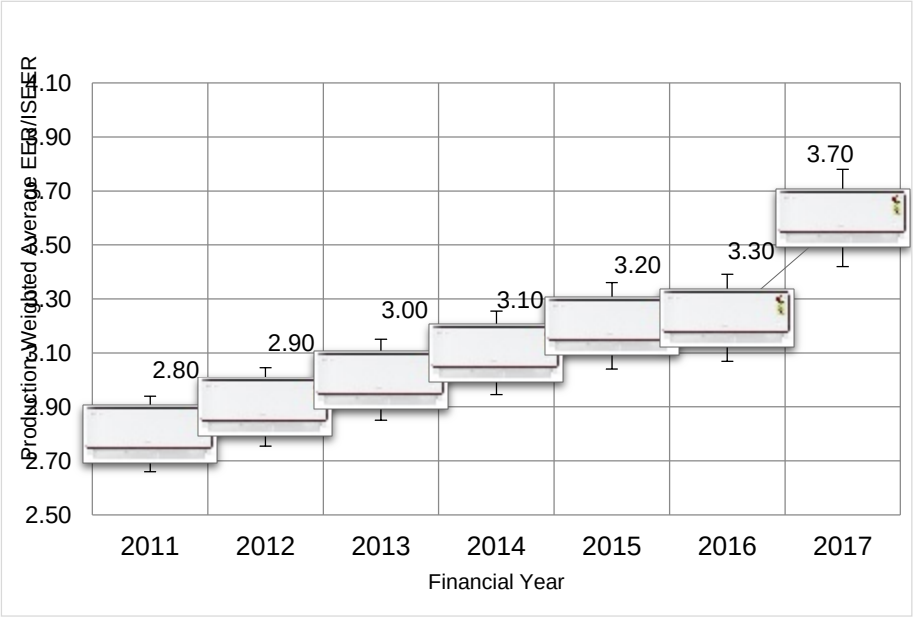


- MEPS of frost-free refrigerators were improved by almost 60%, followed by direct cool refrigerators by 49%, televisions and electric geysers by 40% each, RAC by 35% and transformers by 33%.
- The lowest MEPS improvement is seen in the case of TFLs, which increased by only 7%.

Source: Bureau of Energy Efficiency

Market Transformation Towards More Efficient appliances from mandatory policies

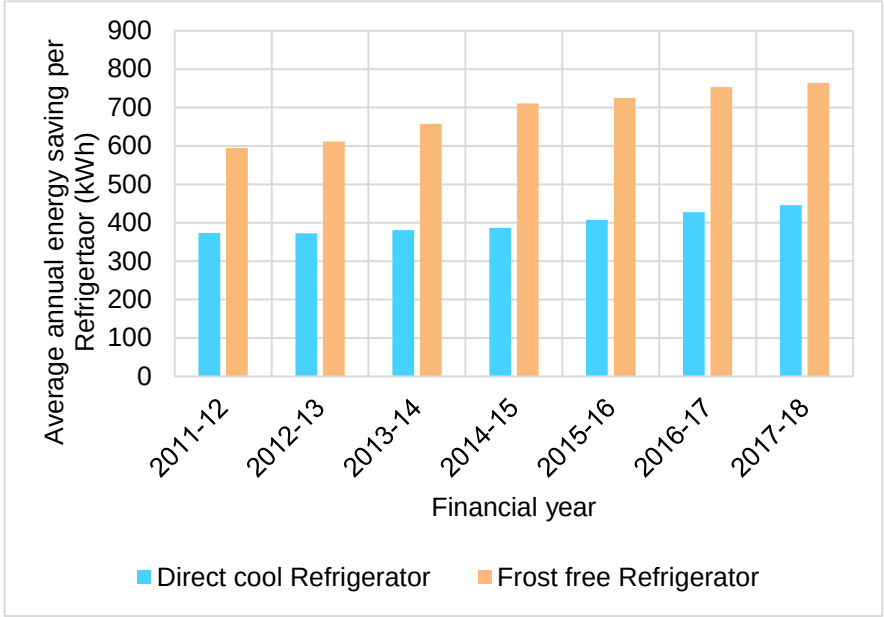
Room Air Conditioner labeling program



Production-Weighted Average EER/ISEER of RACs, 2011-2017

- The production-weighted average EER/ISEER of RACs has increased from 2.8 in 2011-12 to 3.70 in 2017-18.
- Which represents a 32% increase in efficiency due to tightening of standards and further introduction of a labeling program for variable speed RACs in 2015

Refrigerator labeling program



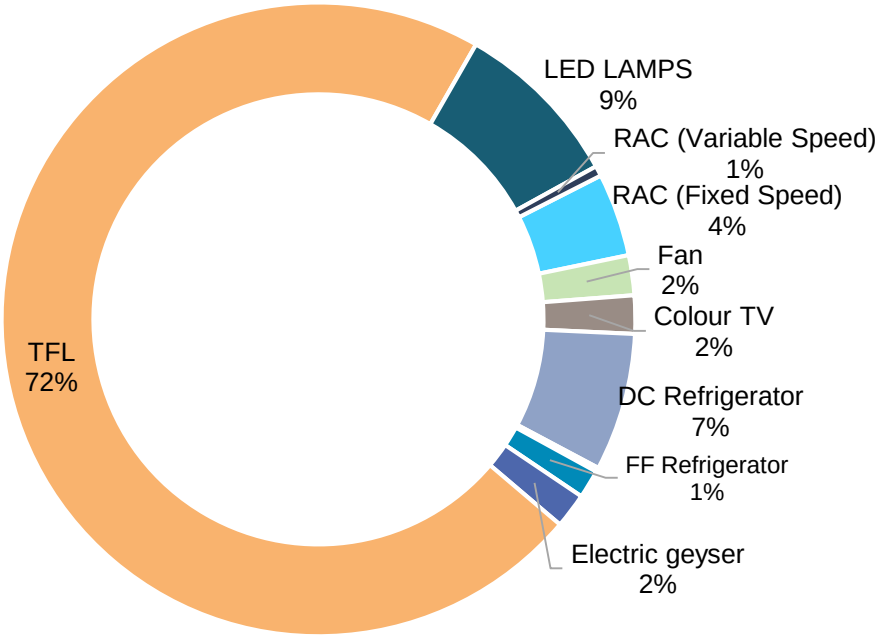
Average Annual Energy Saving in Refrigerators, 2011-2017

- The average annual energy saving by each refrigerator (frost free) has increased from 595 kWh in 2011-12 to 764 kWh in 2017-18.
- In case of direct cool type, similar progressive trend is observed with 373 kWh in 2011 -12 to 445 kWh in 2017-18.
- These represents a 28% increase in market average energy saving in frost free and 19% in direct cool type since 2011.

Source: Bureau of Energy Efficiency

Products Share in Labeling Program

Products Share in Labeling Program, 2016

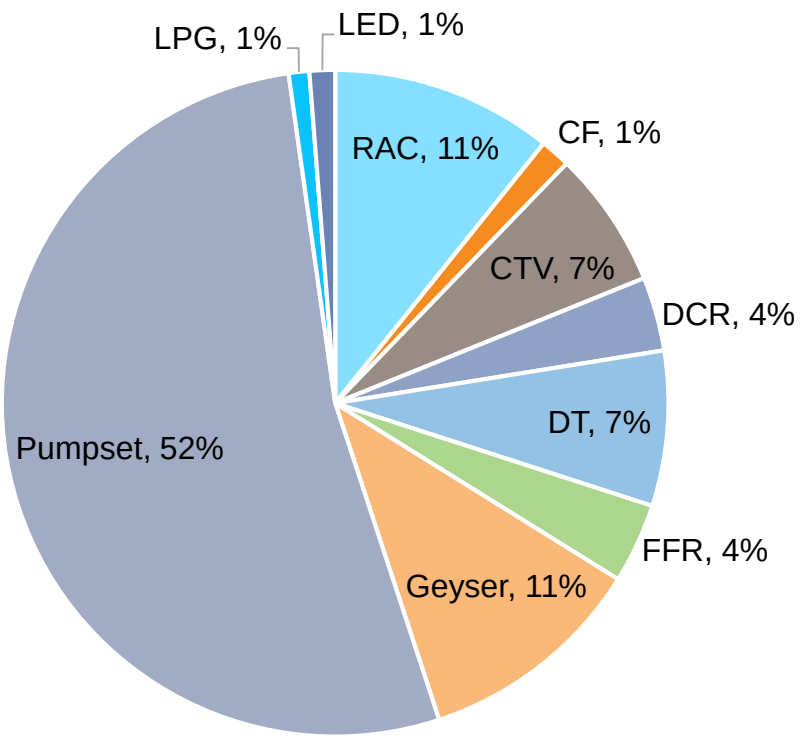


- In 2016-17, the overall production registered under the labeling program was close to 136 million for 21 product categories, in which 88% of registrations were recorded for mandatory segments for eight products.
- In comparison, only 12% of voluntary products were registered for LED lamps and ceiling fans together

Source: Bureau of Energy Efficiency

Models Registration for Labeling Program

Segmentation of Models Registered for Labeling Program, 2016

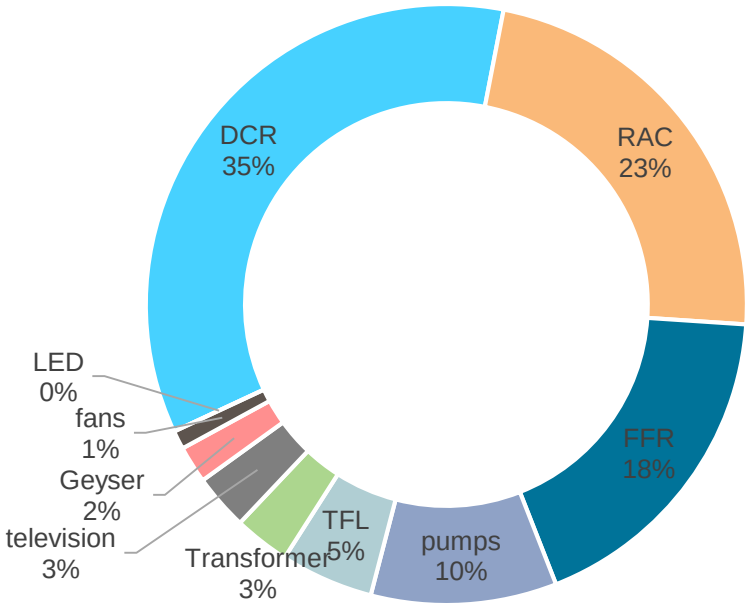


- While in 2016-17, the overall models registered for 21 product categories increased to 14,209, of which 44% accounted for mandatory segment (that is room air conditioner, refrigerators, geyser, transformer, television)
- 56% for voluntary products (for Pumpset, LED lamps, ceiling fans and domestic LPG stove etc), as seen in Figure.

Source: Bureau of Energy Efficiency

Impact of Labeling Program

Percentage of Products Energy Saved Since Inception of Program



- Since the inception of S&L program, 197 TWh of electricity has been saved by 2016-17, with the equivalent carbon emission reduction of 162 Million tons CO2.
- The majority share of 89% of energy savings accrued is from products under the mandatory labeling, whereas in share of 11 % is constituted by energy savings from products under the voluntary

Source: Bureau of Energy Efficiency

Conclusion

- The S&L program in India has come to be considered as BEE's 'flagship' program
- Program been instrumental in transforming the market towards efficient appliances.
- Based on analysis and data, the voluntary phase prepares the market for transitioning to the mandatory phase.
- While the efficiency improvements in some appliances such as refrigerators, TV, water heater, AC and transformer has been very aggressive.
- There is a huge potential for efficiency improvements in agricultural pumps and ceiling fans.
- The products in the voluntary phase such as pumps, motor, domestic LPG stove, etc should be transitioned to the mandatory labeling program in order to realize the huge potential of energy saving.
- Considering the growth trajectory, it is vital to continue increase the energy efficiency performance of the appliances and equipment as well as coverage of the labeling program.

Source: Bureau of Energy Efficiency

Thank you

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