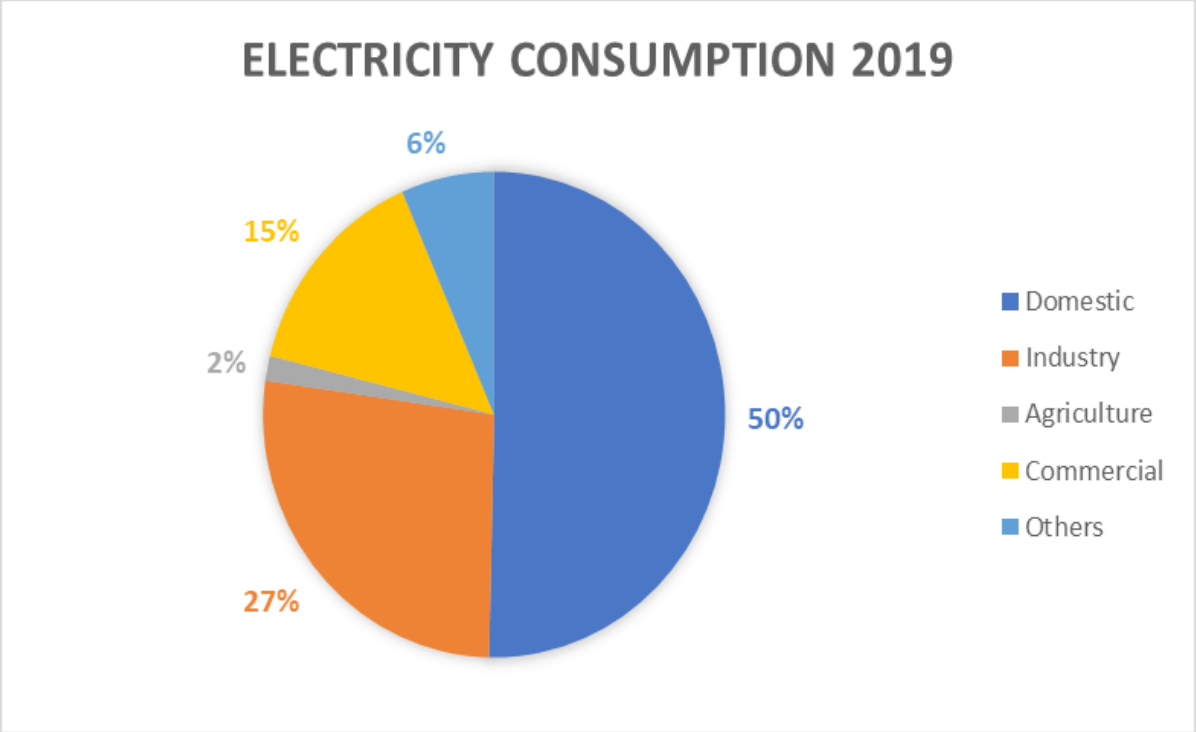
RESIDENTIAL BUILDING ENERGY INDEXING (RBEI) PROGRAM

1. ABOUT ENERGY MANAGEMENT CENTRE- KERALA

Kerala Government is the first State Government in India to establish an Energy Management Centre (EMC) at State level, aiming primarily to remould and instrumentalise energy sector as a catalyst in promoting a development process which is econo-ecologically sustainable.

With a view to making energy sector achieve such a lead and catalytic role, EMC has evolved a novel and comprehensive energy management approach and institutional philosophy encompassing management of energy technology systems -both conventional and non-conventional, energy conservation in all sectors of the economy, energy resource management, rural and urban energy systems, energy education and training, energy generation and conservation-based employment and poverty alleviation programmes.

2. KERALA ENERGY SCENARIO



The residential sector is the biggest consumer of commercial energy and it consumes about 50% of the overall consumption in the state. This is followed by industrial sector (27%), Commercial sector (14.6%) Agricultural (1.65%) and other sectors comprising about (6.5%). Since, there is a higher potential for energy savings in the residential sector, commercial sector and the industrial sector, more attention has to be given to these sectors to reduce the energy consumption. The energy consumption rate is high in buildings both in residential as well as in large buildings compared to other sectors.

3. INITIATIVE BY EMC

Bureau of Energy Efficiency has announced the Residential Building Energy Labeling Program. EMC is in the process of creating an awareness on the Star rating program in the state

to showcase the benefits and importance of star rating program in buildings. Prior to the implementation of Star rating programme in Kerala, EMC has decided to conduct the Residential Building Energy Indexing (RBEI) of 100 residential buildings in Kerala.

3.1 Scheme

The Residential Building Energy Indexing (RBEI) program of residential buildings will be conducted with the support of Building Energy Efficiency Experts (BEEE).

Identifying the residential project (Single dwelling and multiple dwelling) with relevant information required to conduct an energy simulation such as building envelope characteristics, lighting and air conditioning required and standard appliances used on daily basis.

This methodology uses energy simulation software and compare standard model/base model and a proposed model/existing model. Base model act as a benchmark for energy consumption with characteristic of conventional building material, equipment and standard values specified in relevant codes including ECBC, ENS etc. Same way a proposed case model with all energy saving methodology which can be implemented/which are implemented in a cost effective way for the user need to be developed.

Comparison of base model (Bench mark model) and proposed model will provide the percentage reduction in EPI. Thus energy efficiency labeling can be awarded on the basis of percentage of reduction from the Benchmark case.

Energy efficiency labeling	EPI REDUCTION
1-star	0-19% EPI Reduction
2-star	20-29% EPI Reduction
3-star	30-39% EPI Reduction
4-star	40-49% EPI Reduction
5-star	50% or greater EPI Reduction

3.2 Remuneration

The remuneration to the Building Energy Efficiency Experts for conducting study has been fixed by EMC and as follows.

Remuneration	
For dwelling unit with built up area upto 100 sq. meter	For dwelling unit with built up area more than 100 sq. meter
Rs.2500	Rs.5 per sq. meter for area above 100 sq. meter

3.3 Guidelines for the BEEEs

1. BEEEs has to register in the form (https://forms.gle/MN97JUcGep5DGd5DA) prior to the initiation of study in each residential building. This registration form collects the details of

building owner, location of the building, built up area etc.

2. BEEEs can conduct study of building on first come first serve basis, up to a maximum of 10 numbers

3. The study needs to be conducted as per the methodology (Attached as annexure) provided by EMC Kerala.

4. The residential buildings selected for study by each BEEE shall be having the built up area in the order as follows.

Building	**Built up area**
Building 1	Built up area $\leq$ 150 m^2
Building 2	150 m^2< Built up area $\leq$ 300 m^2
Building 3	Built up area > 300 m^2

4. EXPECTED OUTCOME

Residential Building Energy Indexing (RBEI) program in Kerala will provide opportunity for the building owners to understand the potential for energy conservation in their residential building along with concrete suggestion to improve it along with the opportunities to improve the occupant comfort levels in the building. This would help to reduce the overall energy consumption in the buildings and reduce the huge electricity bills. This will also help in conserving our energy resources and it's usage in a sustainable way.

5. ANNEXURES

1. Procedure for Building Energy Simulation
2. Sample input data for energy simulation