**Seventh Residential Electricity Consumption Roundtable**

**on Modeling Residential Electricity Demand**

**Venue:** Board Room, Foundation for Innovation Technology and Transfer, IIT Delhi.

**Date and Time**: 9th January 2025, 10:00 AM

Residential electricity consumption has been growing at over 7% in the past decade. For the electricity grid, predicting when this demand will occur and how it influences the peak load is becoming important. Majority of this demand is driven by usage of appliances for space cooling, water heating and refrigeration. However, detailed information on the number and usage of appliances, especially heavy loads like air conditioners, water heaters, electric vehicles and induction cookstoves in the Indian context is rather fragmented. Limited availability of data even at utility end makes demand estimation challenging. Insufficient understanding of residential demand makes it difficult to devise demand side policies and programs such as energy efficiency and demand response programs. In addition, given the adoption of resource adequacy regulations and increasing intermittent RE power in the grid estimating electricity demand in general and residential electricity demand in particular becomes crucial. This will enable optimization of electricity supply and improve network planning.

Many organizations, including Prayas have been working towards estimating residential energy demand using different models. An open discussion on the assumptions, methodology, challenges and estimates arrived at using these models can help in cross-learning across modelling groups and enrich future modelling efforts. At this year’s roundtable on residential electricity consumption, we invite you to discuss and deliberate these aspects. 5 models from TERI, CSTEP, NITI Aayog, AEEE and Prayas(Energy Group) will be presented, followed by a moderated discussion. Like the previous roundtables, it would be a closed-door, Chatham house discussion with limited number of participants. Through the discussion we hope to touch upon some topics as suggested below.

1. Estimates of the rate of growth in residential energy consumption over the next decade and the data/approach used to arrive at the same, including the most important drivers (e.g., appliance penetration, weather patterns, building shells, urbanization etc.).
2. Assumptions with respect to penetration of energy efficient appliances especially air conditioning, water heating and refrigeration, and the role that they can play in managing demand.
3. Methods to model appliance usage behavioral patterns, proportion of demand impacted by the same.
4. Assumptions/estimations regarding current residential load shapes and insights on how these load shapes are likely change in the future.

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