

Driving Residential Energy Efficiency in Urban India

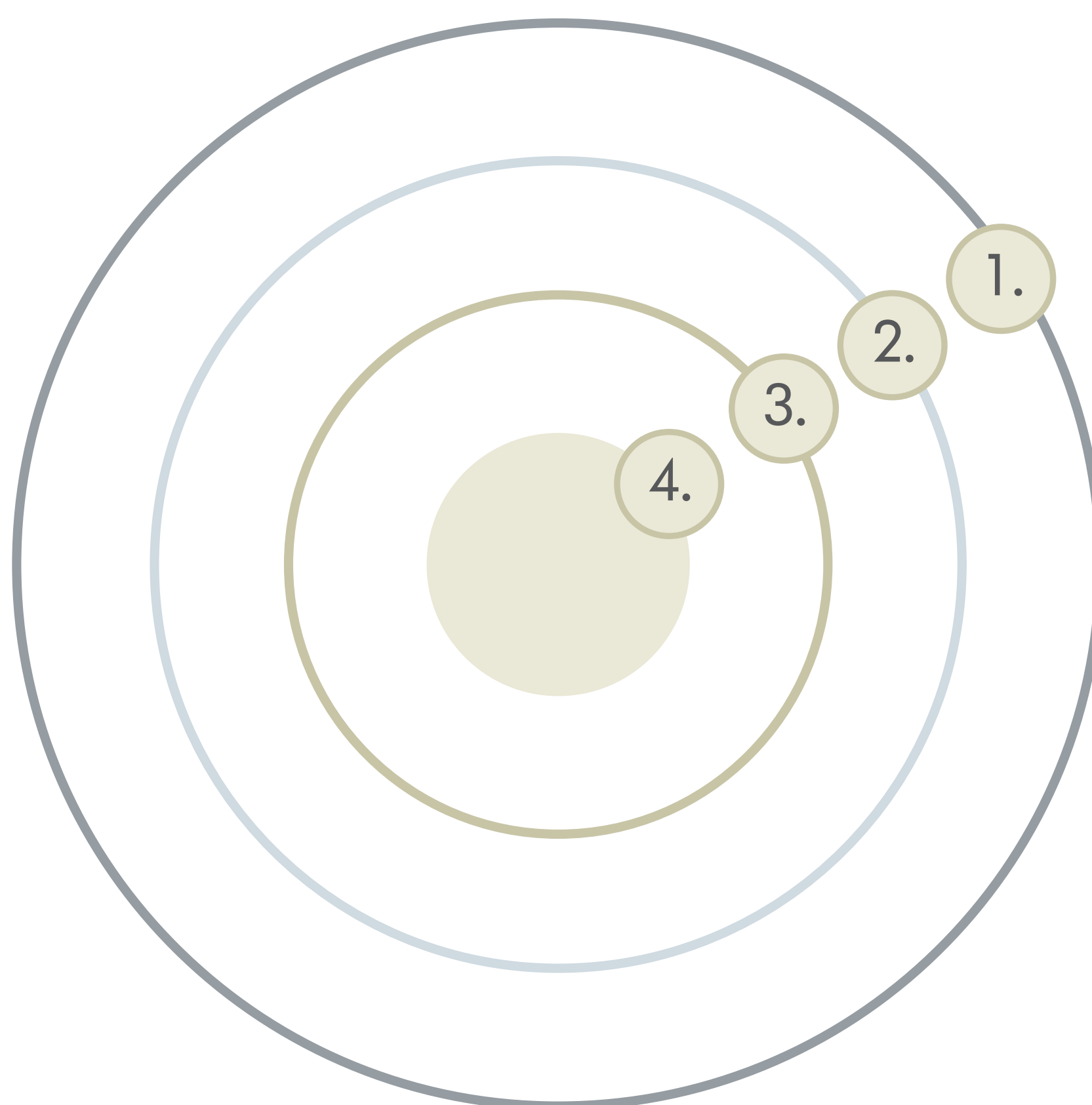
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India's urban residential electricity consumption is rapidly increasing, making it more crucial than ever to prioritize energy efficiency in residential buildings. Over the next decade, home ownership is projected to grow by more than 100 million, driven by rising incomes and improved lifestyles. As a result, per capita energy use is expected to rise, significantly influencing energy use patterns. An energy conscious behaviour and developing a market for energy efficient solutions in this new India is critical to ensuring energy security – a vital pre-requisite for sustained economic growth. We are at a pivotal moment where the choices made today will shape India's energy future for generations.



UrjaAnk is our initiative aimed at analysing and optimizing energy usage in urban homes across India, beginning with Palava City. We aim to establish a benchmark for typical energy consumption by comparing household usage to industry standards and analysing it by load type. This will help designers, homeowners, developers, and policymakers determine key improvement areas and reduce energy use and costs in residential units. This initiative aligns with the Lifestyle for Environment campaign, combining initiatives such as green space guidelines, energy-efficient building codes, and catalysing the market of star-rated appliances. This approach boosts sustainability, resident wellbeing and property market value.

Our approach to reducing residential energy use can be visualized as four concentric circles:



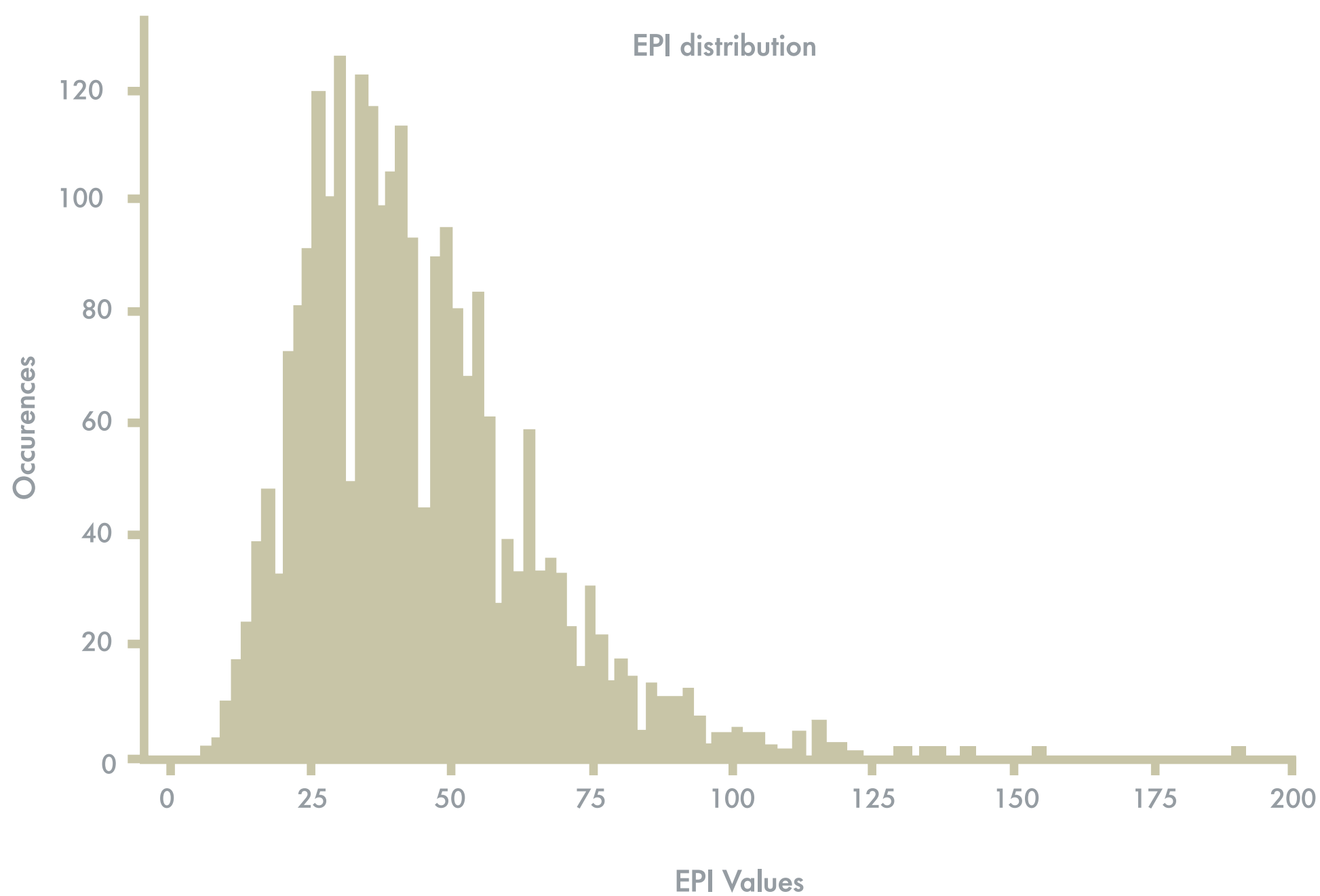
- 1. Microclimate and Urban Heat:**
Bring down the impacts of urban heat through nature-based solutions, and reflective surfaces.
- 2. Efficient Building Envelopes:**
Thoughtful massing, orientation and shading of buildings and use of efficient building materials.
- 3. Appliances:**
Developing a market for super-efficient appliances
- 4. User Behaviour:**
Create awareness to drive down the energy use and increase market demand for energy efficiency

Figure 1: Residential energy use can be driven down by popularizing the energy use intensity and utilizing the key levers above

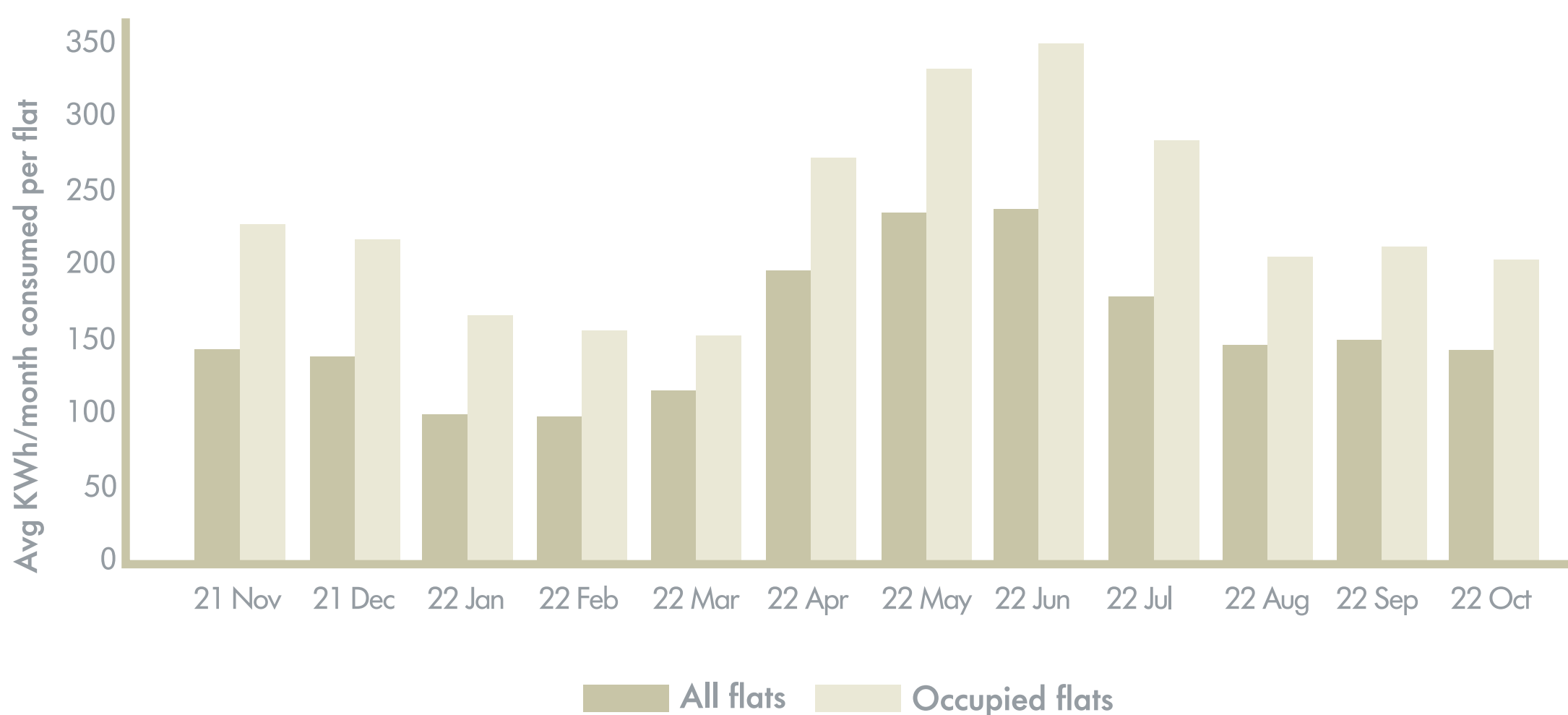
Palava City: a living model of sustainable urbanisation

Palava, our flagship integrated city-development near Mumbai, exemplifies our methodology in action. An energy baselining and benchmarking study of around 10,000 households in Palava City indicated a median energy performance index (EPI) of 41 kWh/m²/year, which is 35% lower than the industry standard for warm and humid regions. This is due to the extensive green and blue infrastructure, which made the area 2°C cooler after development. Furthermore, the layout of city blocks facilitates natural ventilation and daylight. Notably, every new apartment in Palava since 2020 is equipped with BEE 5-star rated air conditioners, a stark contrast to the mere 10% air-conditioning access across the rest of the nation.

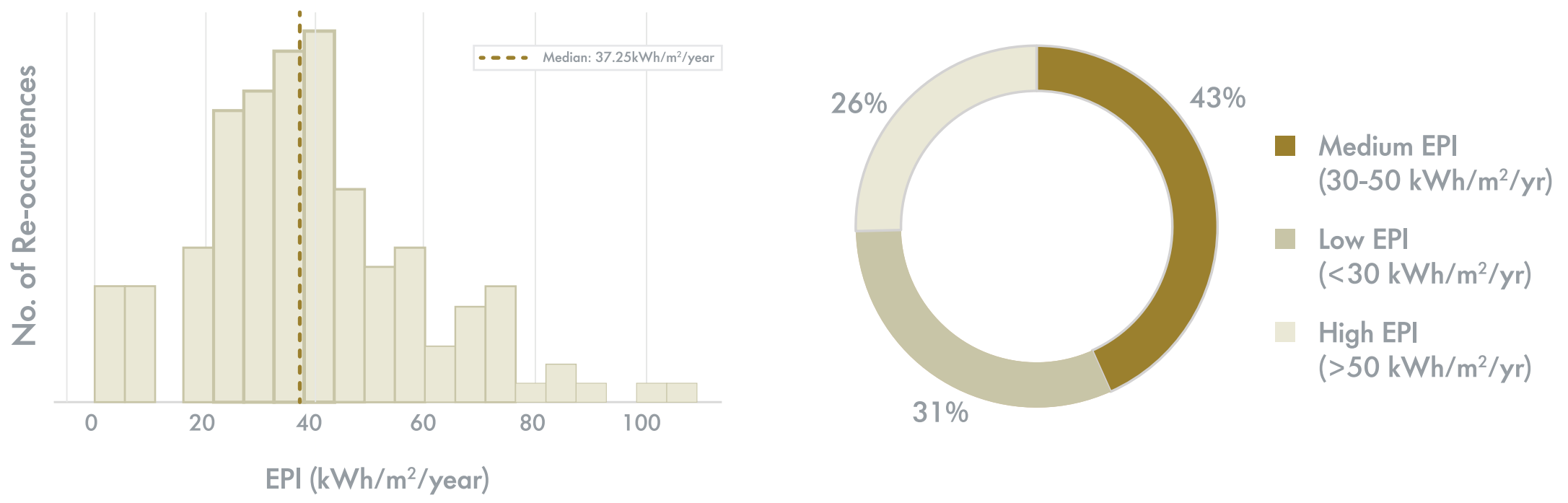
Data from 9568 operational flats at Palava



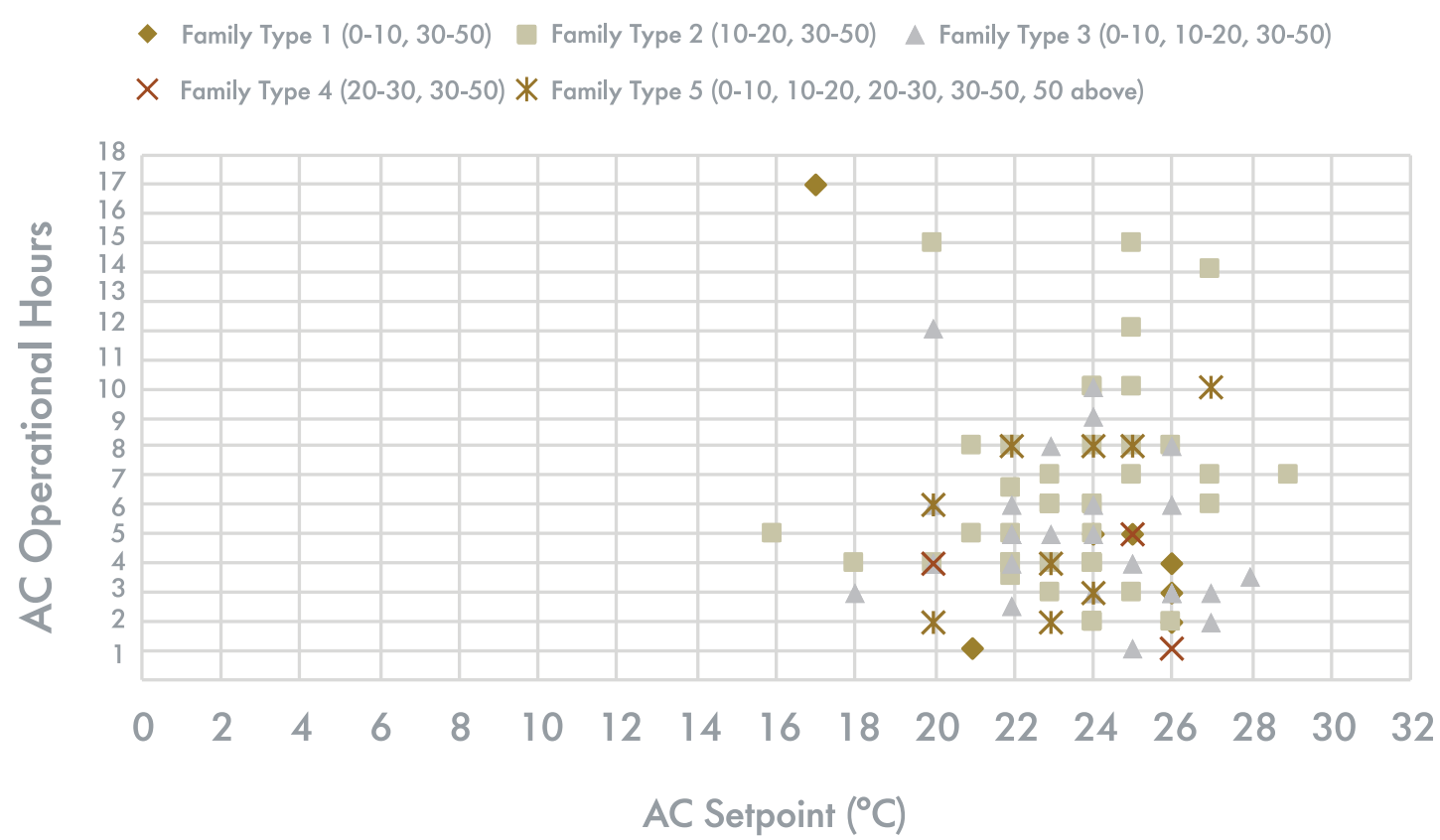
All flats average energy consumption per month



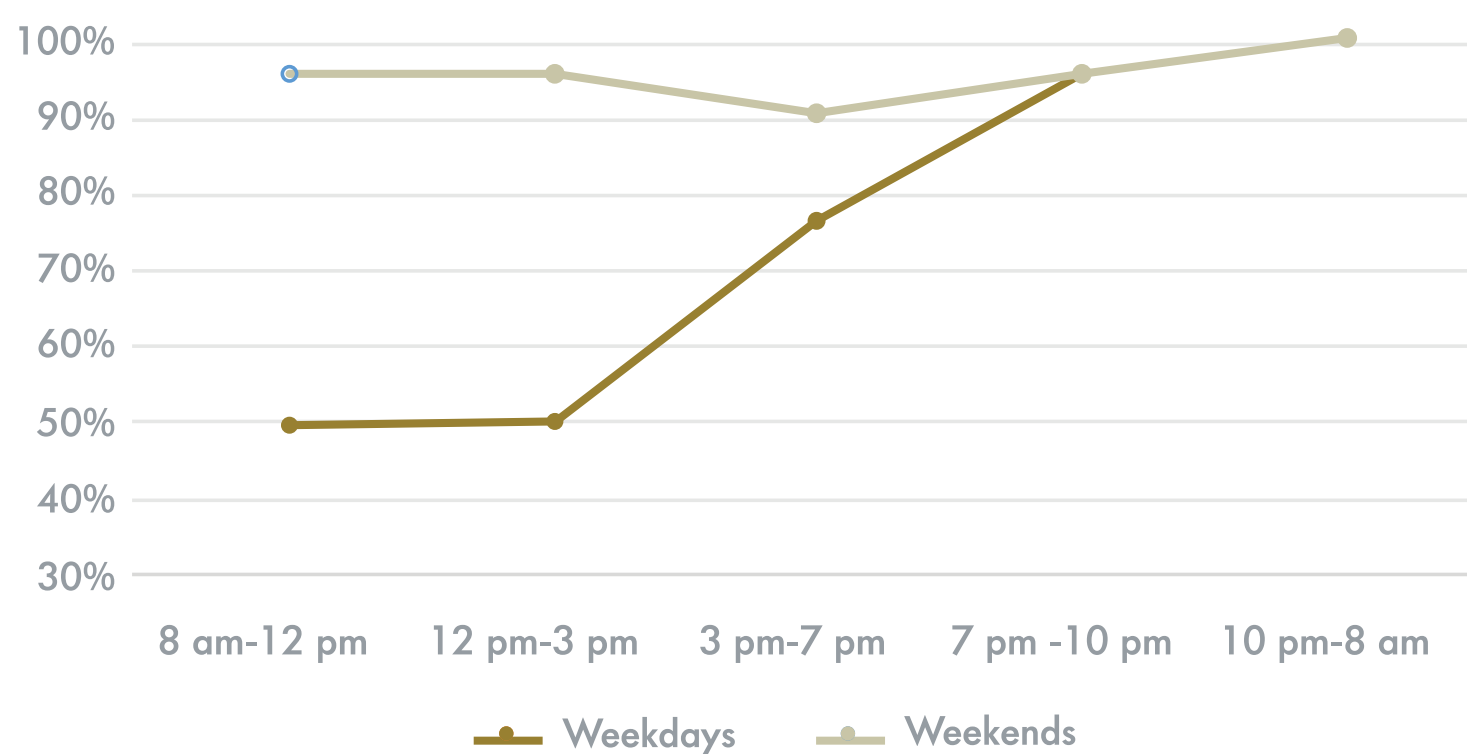
Insights from survey conducted for 2Bhk units at Palava



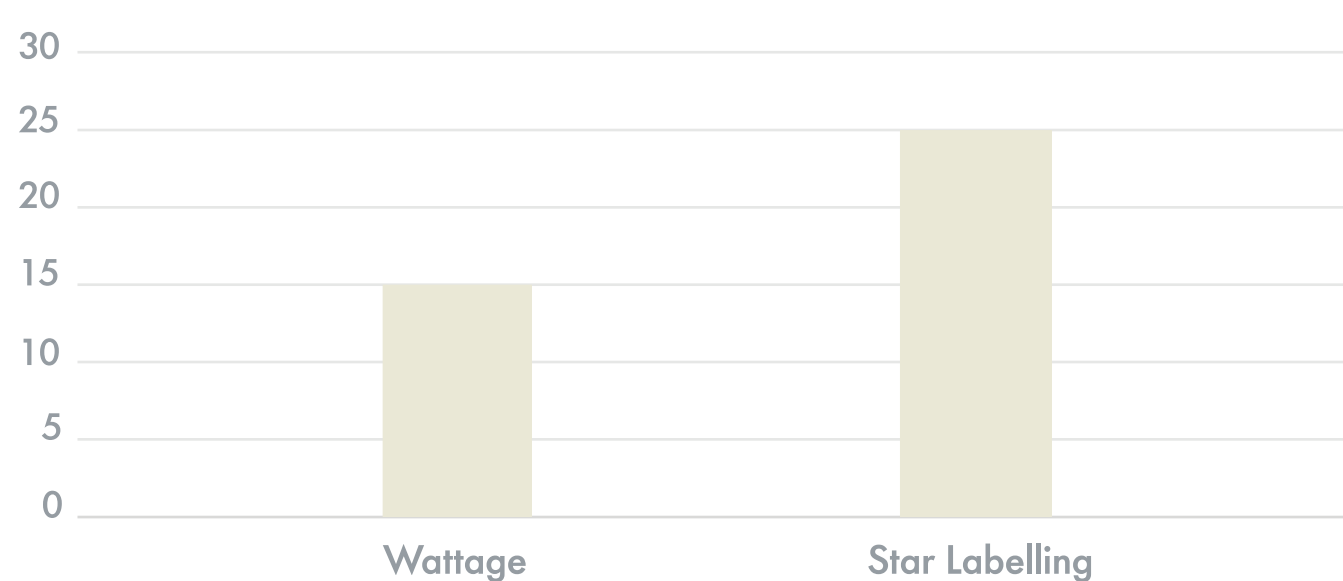
31% of the 2BHK units have low EPI, 43% have medium and 26% have high EPI



75% Population in Palava runs their ACs between 21°C - 27°C, with an average set point of 23°C



Residential Units are Occupied 50% during the weekdays and 100% during the weekends



There is a significant gap in residents' awareness of appliance wattage and star ratings, Residents also misunderstand the link between wattage and star rating creating a need of awareness.



Partner with us to drive the change

Through UrjaAnk, we aim to shape the future of urban energy landscapes and set benchmarks for emerging cities. The Net Zero Urban Accelerator platform, set up in collaboration with RMI India Foundation, brings together stakeholders interested in driving change, enabling them to engage in direct dialogue and gain valuable insights from Palava.

We focus on understanding household energy consumption patterns and behaviours, factors influencing appliance purchases, and potential demand-side city-scale energy management. Moreover, we assess the thermal performance of building envelope components, focusing on the features that improve natural cooling through architectural design. Finally, by advocating energy performance metrics in utility bills, we aim to directly engage with residents and foster a multiplier effect that encourages energy-efficient practices. These insights are crucial as we evolve our approach to scale these solutions and contribute significantly in India's journey to net-zero emissions. By setting new standards for energy management in residential developments, we can ensure a sustainable and prosperous future for all.