

Accelerating Commercial Building Electrification through a Science-Based Decision-Making Toolkit

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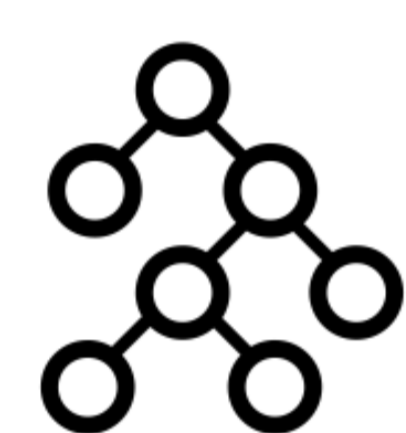
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Abstract

Decarbonizing buildings by electrifying all equipment, appliances, and infrastructure is critical for governments and industry stakeholders worldwide to reach their **net-zero emission targets**. While innovative and cost-effective electrification equipment already exist, **the adoption of such technologies is hampered** by behavioral barriers and market failures. In this project, we propose the development of a **comprehensive analytical framework of building electrification economics** to design decision-making tools and behavioral intervention strategies for industrial stakeholders and policymakers to **accelerate commercial building electrification**.

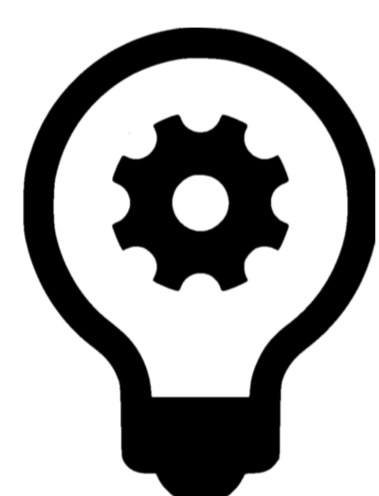
Objectives



- **Design a streamlined and targeted decision-making toolkit** for stakeholders to estimate the costs and benefits of electrification



- **Provide essential parameters and information** for policymakers to evaluate the required size of subsidy and regulatory programs to encourage electrification adoption



- **Develop practical recommendations** for strategies that governments and practitioners can adopt to mitigate the primary market failures and increase the adoption of electrification in buildings

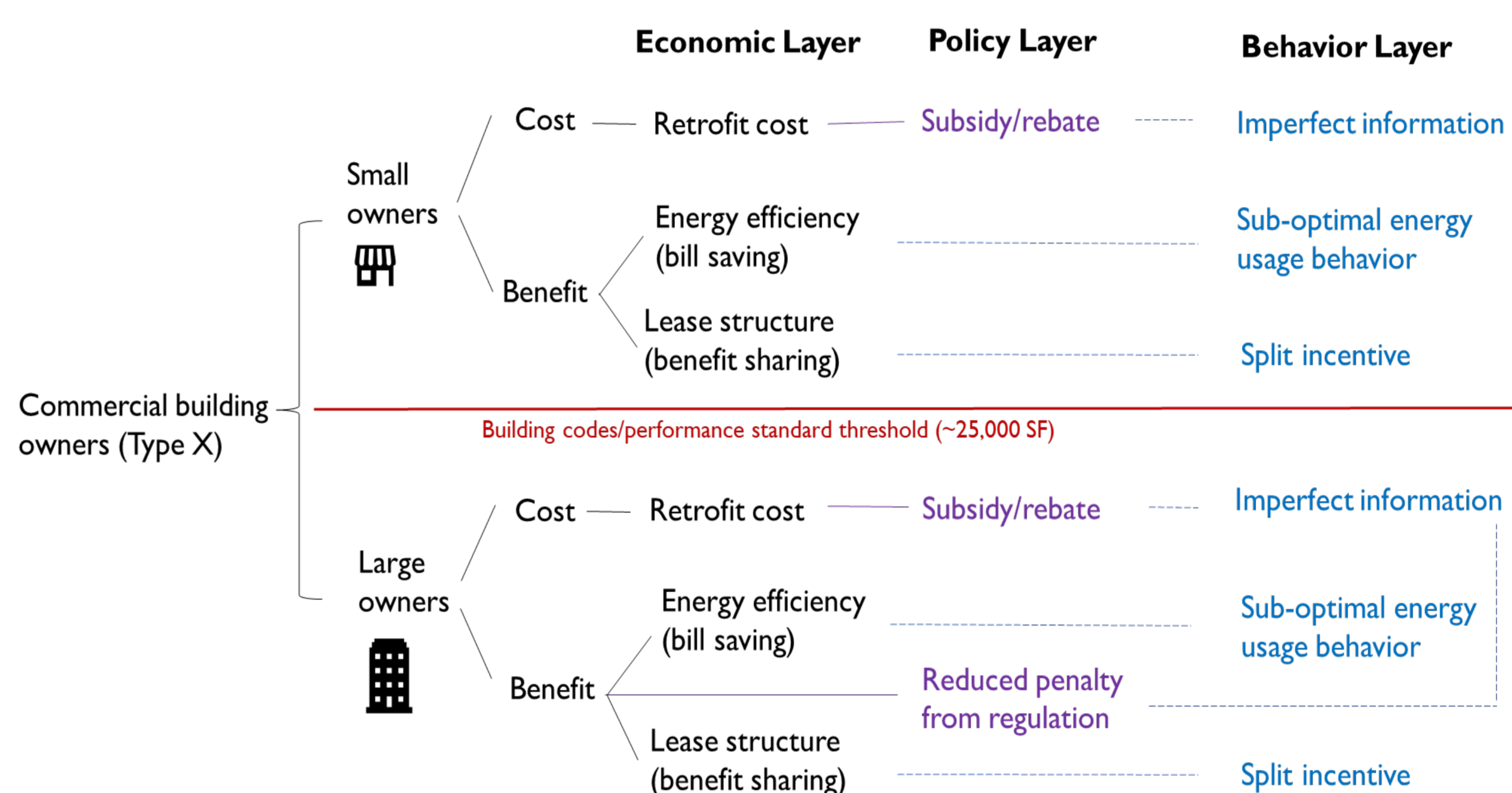
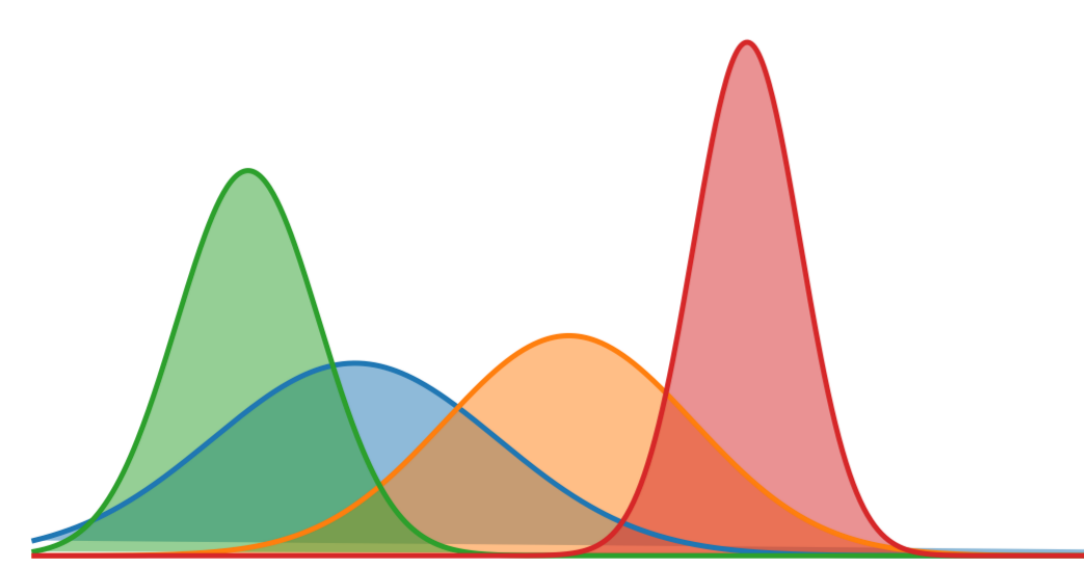


Figure 1. Illustration of example decision-making framework for policymakers to evaluate regulatory options

Methods

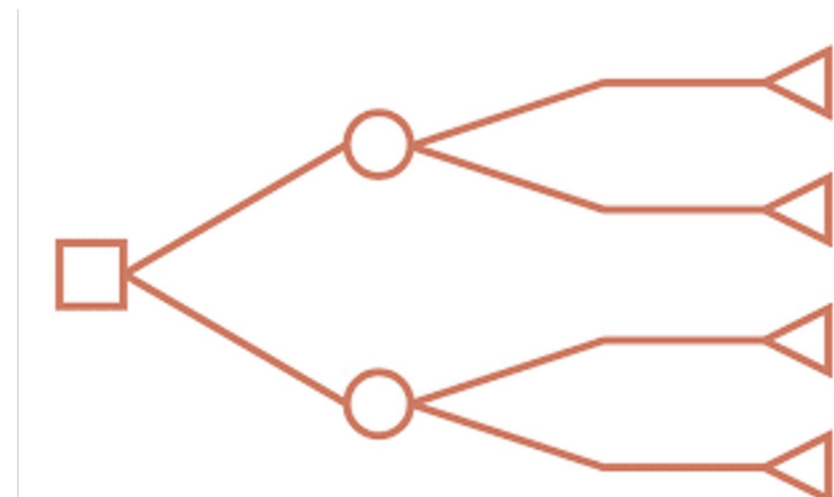
1 Construct analytical tools to estimate costs and benefits of electrification

In collaboration with energy service providers in Boston and Lisbon, we will develop analytical tools to estimate the full distribution of costs. We will also conduct surveys to identify misperceptions / biases on costs and benefits.



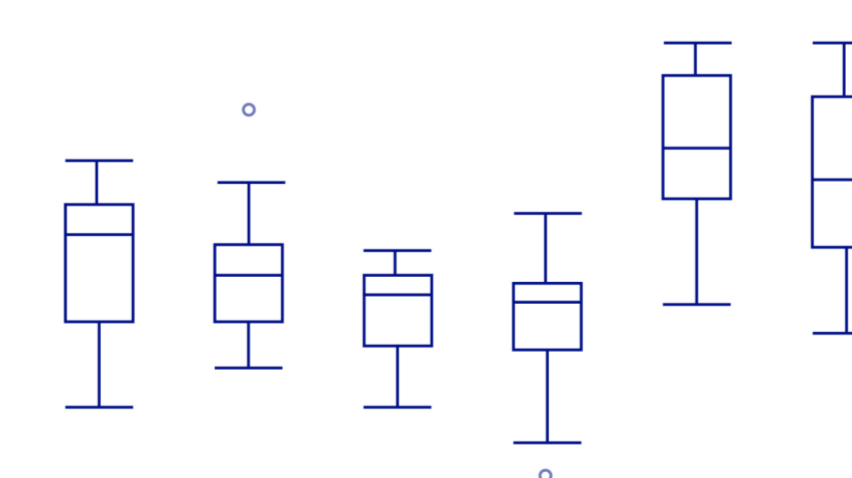
2 Develop and demonstrate the decision-making framework for Lisbon using data in Boston.

Incorporating the cost and benefit estimates from Step 1, we will construct a decision-making framework (as shown in Figure 1) that various stakeholders can use to support the development of regulations or investments in electrification.



3 Design behavioral interventions

We will test the effectiveness of our framework with different stakeholders in the real estate industry to examine the impact on adoption of electrification measures by the industry.



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