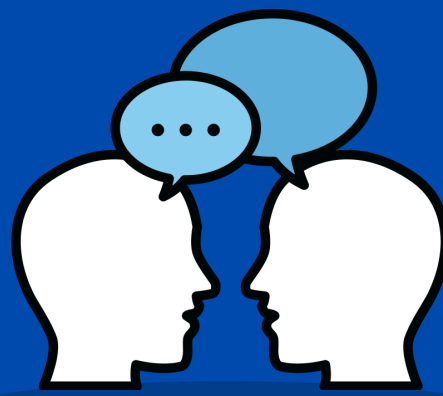


## Walk2Watt



### Objective

The objective is to design a hybrid energy harvesting system integrating piezoelectric sensors and wind turbines to power streetlights by capturing mechanical stress and traffic-induced wind. The system aims to reduce reliance on conventional electricity and explores potential extensions for urban cooling and sustainable infrastructure solutions.



### Empathize

Through research and study of urban energy challenges, we observed the high electricity demand for streetlights and the growing need for sustainable solutions. We identified that kinetic energy from foot and vehicle traffic is often wasted. This understanding led us to explore using piezoelectric sensors and small wind turbines to capture and store energy efficiently.



### Define

To Design a hybrid system combining piezoelectric sensors and wind turbines to harvest energy from vehicular stress and traffic-induced wind for street lighting, reducing dependence on conventional power and enabling future applications in sustainable urban infrastructure.



### Ideate

we identified opportunities to harness kinetic and wind energy in urban environments. We conceptualized a system integrating piezoelectric sensors beneath road surfaces and micro wind turbines, paired with capacitors for energy storage, to sustainably power streetlights with minimal maintenance.



### Prototype

The prototype demonstrates a working hybrid energy system that captures:

- Mechanical stress (from vehicles over speed breakers) using piezoelectric sensors
- Wind energy (from passing vehicles) using a turbine + DC motor setup.



### Test

The testing phase will evaluate the system's energy output under varying traffic and wind conditions, assessing the efficiency of piezoelectric sensors and wind turbines.

