Important information

- Choose the topic most relevant to you from the topics listed above.
- Contact the supervisors of your chosen topics and arrange a short video call. Please send your CV, transcript of grades and a short mail explaining your interest in the topic.
- The supervisors will make the final decision regarding seminar enrollment.
- By Monday, 20 October 2025 at the latest, you will be informed whether, and if so, with which topic you can complete the project internship.

EVs, ACs, and Heatwaves: Can India's Grid Handle the Pressure?

Project Overview

India's electricity system is entering a new phase of stress due to the convergence of three critical drivers:

1. Electrification of transport**:** Rapid uptake of electric vehicles (EVs) is reshaping load patterns.
2. Climate-driven cooling demand: Rising air-conditioning use, amplified by higher ambient temperatures, is increasing peak loads.
3. Thermal derating of generation: Both renewable and conventional plants face output reductions during heat waves and increased ambient temperatures.

This project will investigate how these dynamics jointly influence demand, generation adequacy, and system reliability. The ultimate goal is to provide insights into resilience strategies for India's grid under climate and electrification pressures.

Research Objectives

- Develop a simplified national model of India's power system, aggregating into 5 regional grids (each represented as a single node).
- Simulate multiple scenarios of load growth, climate change, and heatwave events.
- Assess system reliability impacts and determine the degree of generation capacity oversizing required to maintain resilience.

Student Team Requirements

- Familiarity with optimization and modeling techniques
- Background knowledge of energy systems
- Strong motivation for independent research and problem-solving

Contact:

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