

## GreenPeaks: Employing renewables to cut load in electric grids

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In this project we will investigate how renewable energy integration in electric grids can cut electricity demand---especially peak demands---on the grids. We will devise GreenPeaks, an online algorithm for integrating renewable energy sources (such as solar panels) with energy storage devices at homes to cut their electricity bills, cut their power draw (especially peak draw) from the grid, and make their electricity consumption profile grid friendly.

Cutting individual home peaks at scale will cut the aggregate grid-wide peak demand. As the peak demand dictates the generation costs and carbon emissions associated with electricity generation, GreenPeaks will make electricity cheaper (hence more affordable) while achieving the goals of environmental justice. We plan to evaluate the efficacy of GreenPeaks using real power consumption traces from several homes, and existing electricity pricing plans.