

National/Regional Assessments of Demand Response Potential in Small Commercial Buildings

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Objective:

- Evaluate potential for demand reduction and economic impact for various demand reduction control strategies in small commercial buildings

Background/Motivation

- Small commercial buildings with equipment (e.g., rooftop units) represent ~60% of installed cooling capacity for commercial sector
- Availability of web-enabled thermostats and smart lighting and shades enabling deployment of low-cost controls for this application

Expected Results / Impact:

- Understand impact of different factors (location, building type, ..) on the performance of demand response control strategies
- Provide guidance to policy makers and building managers regarding the most significant and economically feasible demand response strategies
- Could be used to identify better utility rate incentives to achieve demand reductions

Approach:

- Modify existing tool with utility rates across U.S.
- Update prototypical building descriptions to better reflect current stock of buildings
- Perform simulations across various climates and building types
- Evaluate demand reduction & economic impacts for different demand reduction control strategies

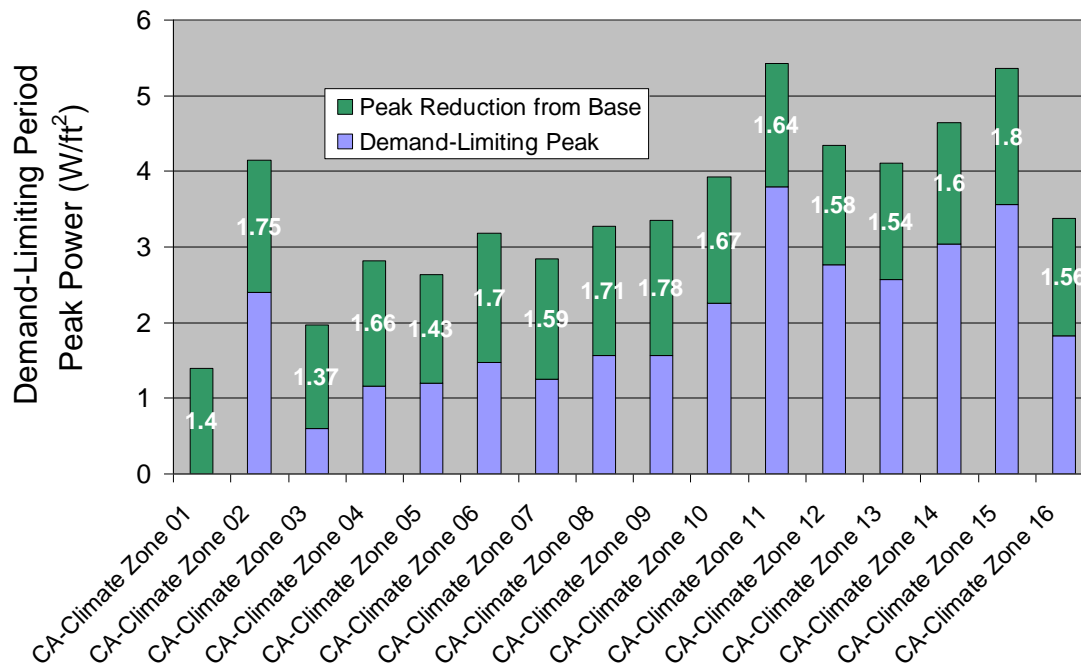
Schedule:

Months:	1-4	5-8	9-12
Add utility rates across U.S. to existing tool			
Add prototypical buildings representative of U.S. stock			
Perform simulations across various locations and buildings			
Demand reduction & economic impacts for different demand reduction control strategies			

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Sample Peak Demand Reduction through Setpoint Adjustments in California

Retail Store



- Purdue previously developed simulation tools and prototypical buildings and utility rate structures for assessing the benefits of various demand response control strategies in California for small commercial buildings
- Models can be extended to perform nationwide assessment