

Grid Interaction: Opportunities and Challenges

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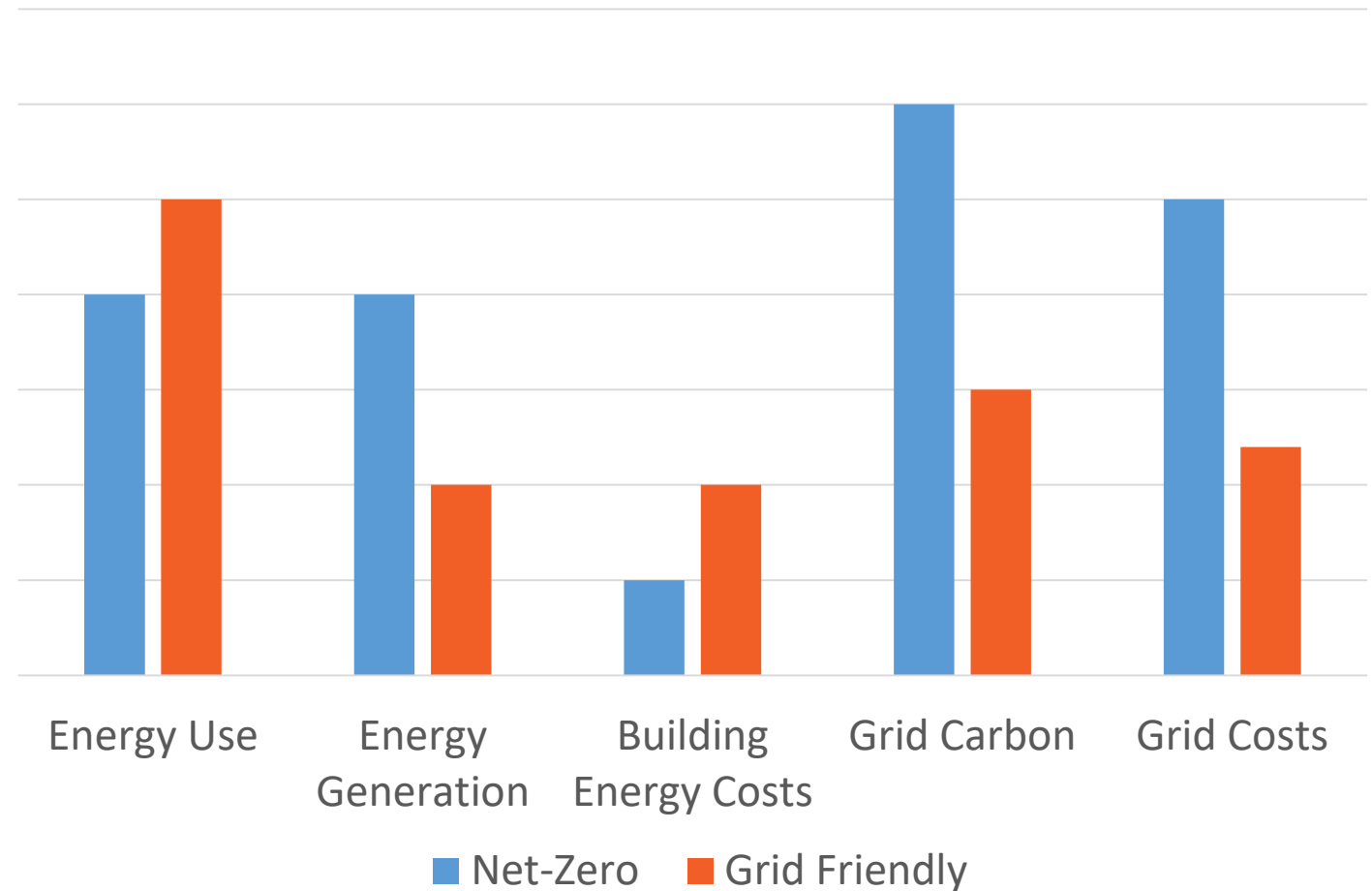
Minimizing bills \neq Minimizing system costs



A Tale of Two Buildings

Minimizing Utility Bills is not the Same as Minimizing System Costs

- Net-zero
 - PV may cause curtailment of other renewable sources
 - Large ramps may require spinning reserves
- Grid Friendly
 - Thermal storage consumes more energy overall
 - More level load profile minimizes spinning reserves



Where and When > How Much



More Thoughts

- Allocating costs via utility rates is complicated, any method will distort decisions
- We want to align incentives, so that a customer minimizing their costs also minimizes system costs
- Energy efficiency will need to be
 - Flexible
 - Geo targeted
 - Time targeted
- Need to make it simple for buildings to participate
 - Easy to design
 - Not require operator expertise
 - Common platform

Thank You

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