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Building **Decarbonization in** Residential Construction





Stakeholders

- Utility Companies
- Municipalities
- Builders
- Consumers





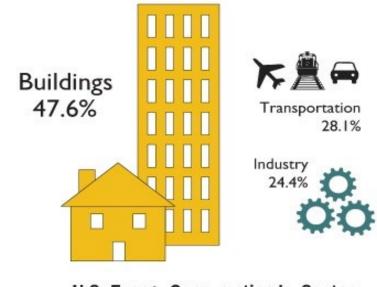
Opportunity

- Utility Companies: Peak load reduction, distribution efficiency
- Municipalities: IAQ, efficient utilities, total cost of home operation
- Builders: Lower infrastructure cost, IAQ, smart homes
- Consumers: Simplified energy, renewable generation, total cost



Energy Efficiency is Essential

Heating, Cooling & Lighting Of Existing Buildings Consumes Nearly 50% Of U.S. Energy Output



U.S. Energy Consumption by Sector

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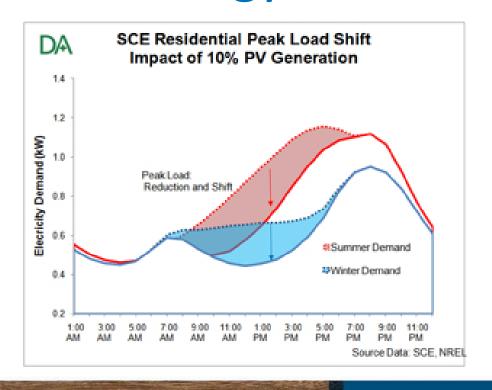
Threats

- Utility Companies: Accurate TOU rate structures, additional loads
- Municipalities: Existing infrastructure investment, change management
- Builders: service size / cost available benefits (TOU, load management)
- Consumers: Gas cooking, gas furnace, current capacity, current total cost





Renewable Energy: Duck Curve





Closing the Gap

- Utility Companies: TOUs / load management / enabling technology
- Municipalities: thoughtful transition / Transactional sophistication
- Builders: Simplification / enabling technology / transactional sophistication
- Consumers: Inspiring better choice / quality of life





Current
Dissatisfaction



Future



Cost



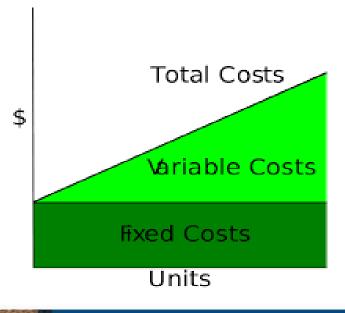
Fear





Improving Choices

- Demonstrating lower total cost
 - HERS Scores
 - Appraisals
 - Mortgages
- Leverage lower cost TOU rates

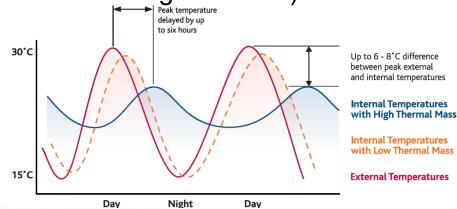






Moving the Energy Demand

- A. Smart ventilation (off peak)
- B. Isolated Thermal mass / phase change
- C. Thermal storage (heatpump HVAC precool off peak)
- D. Low solar heat gain (reflective / vented cladding materials)
- E. Smart appliances
- F. Large hot water storagew/ heat pump
- G. West facing solar



Sierra Crest



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Thank you!

CR Herro

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