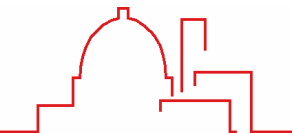


# Reducing Residential Energy Demand In Production Built New Homes

A Synopsis of SMUD's ZENH Proposal To The  
California Energy Commission

David Hatfield, Project Manager  
June 1, 2008



# SMUD's Residential EE History

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- 1994: Advantage Homes, Energy Efficient program called for Residential Builders
- Since 1999: Combining Energy Efficiency and PV in Residential New Construction in R & D
  - 130 homes constructed
  - provided needed data to develop mainstream program
  - transition began in 2006 from R&D to mainstream.

# SMUD's Residential EE History

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- More than 12 MW of PV installed over the last 2 decades
  - (prior to SB1)
- Since 1999: Combining Energy Efficiency and PV in Residential New Construction in R & D
  - 130 homes constructed
  - provided needed data to develop mainstream program
  - transition began in 2006 from R&D to mainstream.

# ZENH Project

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- Funded by \$2.5M from the California Energy Commission PEIR Program
  - Elaine Hebert, Commission Contract Manager
- Project Partner: San Diego Gas & Electric
  - Ahmed Abdullah, Project Manager
- Contract Start: Q3-08, Duration: 3 years
  - David Hatfield, SMUD Project Manager

# ZENH Concept

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- Balance of project team
  - Production builders (Sac'to & San Diego)
  - Building energy consultant(s)
  - EEM suppliers
  - HERS inspectors
- Min. performance: T24, Tier 2+ (>35%)
- Cost-Effectiveness
  - Basis: cash flow, net energy, net cost, et al.

# ZENH Deployment

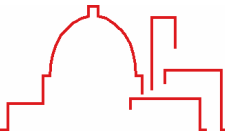
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- Two communities
  - Sacramento & San Diego, ~75 homes total
- Base design
  - incl. EEMs standard in all community homes
- Builder options
  - value added EEMs in selected homes
- Buyer options
  - add'l EEMs selected by home buyer

# ZENH Project Activities

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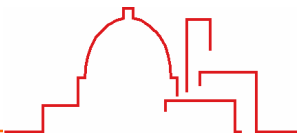
- Base design concept/validation
  - options selection
- Utility and regulatory new business models
- Initial build and HERS evaluation
  - feed back best practices and guidebook
- Build out, commissioning, buyer education
- M&E, T&D impact
- Reporting and technology transfer



# Options For Consideration

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- Thermal mass
- Super efficient HVAC
- Programmable/Controllable thermostats
- Energy storage
- TOU/CPP rate options
- Demand response
- Controls/Home energy management system
- PV (capacity exceeding the base design)
- Others...

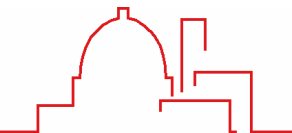




# ZENH Project R&D Goals

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- Evaluate perf. of base design EEMs
  - technology-related
  - behavior-related
- Test several “next step” technologies
- Survey homeowner comfort/satisfaction
- Analyze cost of EEMs
  - base design
  - builder/owner options



# Contact Information

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- David Hatfield
- SMUD
- (916)732-6976
- [dhatfie@smud.org](mailto:dhatfie@smud.org)

