ENERGY EFFICIENCY FIRST

Residential Solar Homeowners in California

February 16, 2015

Ria Langheim, Research Analyst

Center for Sustainable Energy™


Our Mission:
Accelerate the transition to a sustainable world powered by clean energy
Center for Sustainable Energy™

What We Do

Information Resource & Expert Implementation Partner

Energy Programs

Technical Assistance

Training & Education

Center for Sustainable Energy™

Areas of Expertise

Building Performance

Clean Transportation

Distributed Generation

Energy Efficiency

Energy Storage

Renewable Energy

Background

CA's Long Term Energy Efficiency Strategic Plan

Reduce energy consumption in residential buildings **40% by 2020**

CA's Energy "Loading Order"

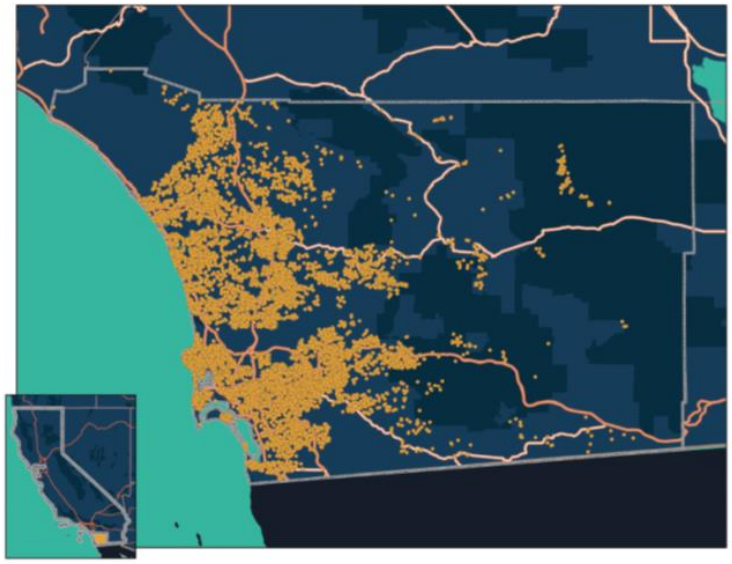
Required energy audit in the California Solar Initiative Program

Research Into EE and PV

Better understand the connection between the joint adoption of **residential PV and EE**

Center for Sustainable Energy™

Survey Methodology

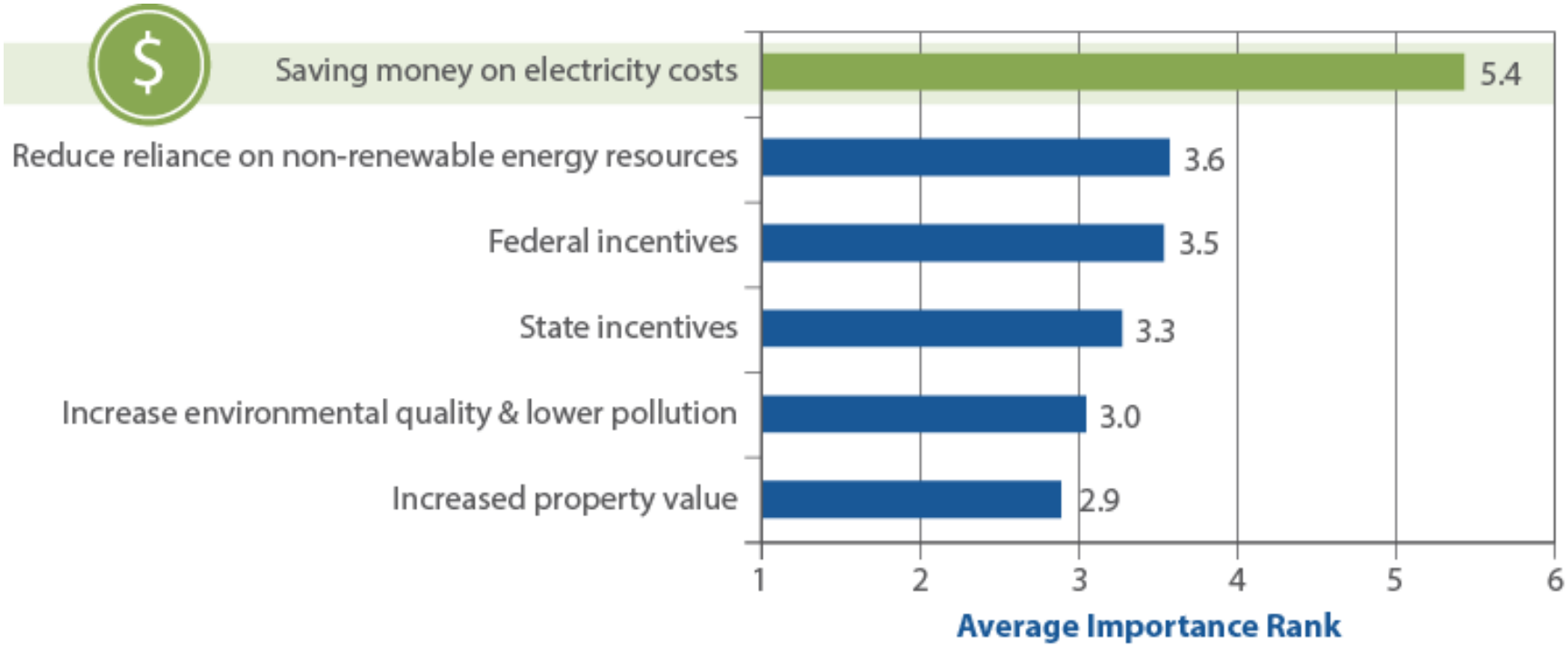


Residential PV Installations in San Diego County

- Administered survey via email in July 2012 to CSI solar home owners in San Diego County
- 2,354 CSI participants completed survey (response rate ~30%)
- Survey responses were combined with information on PV system size and location of installation

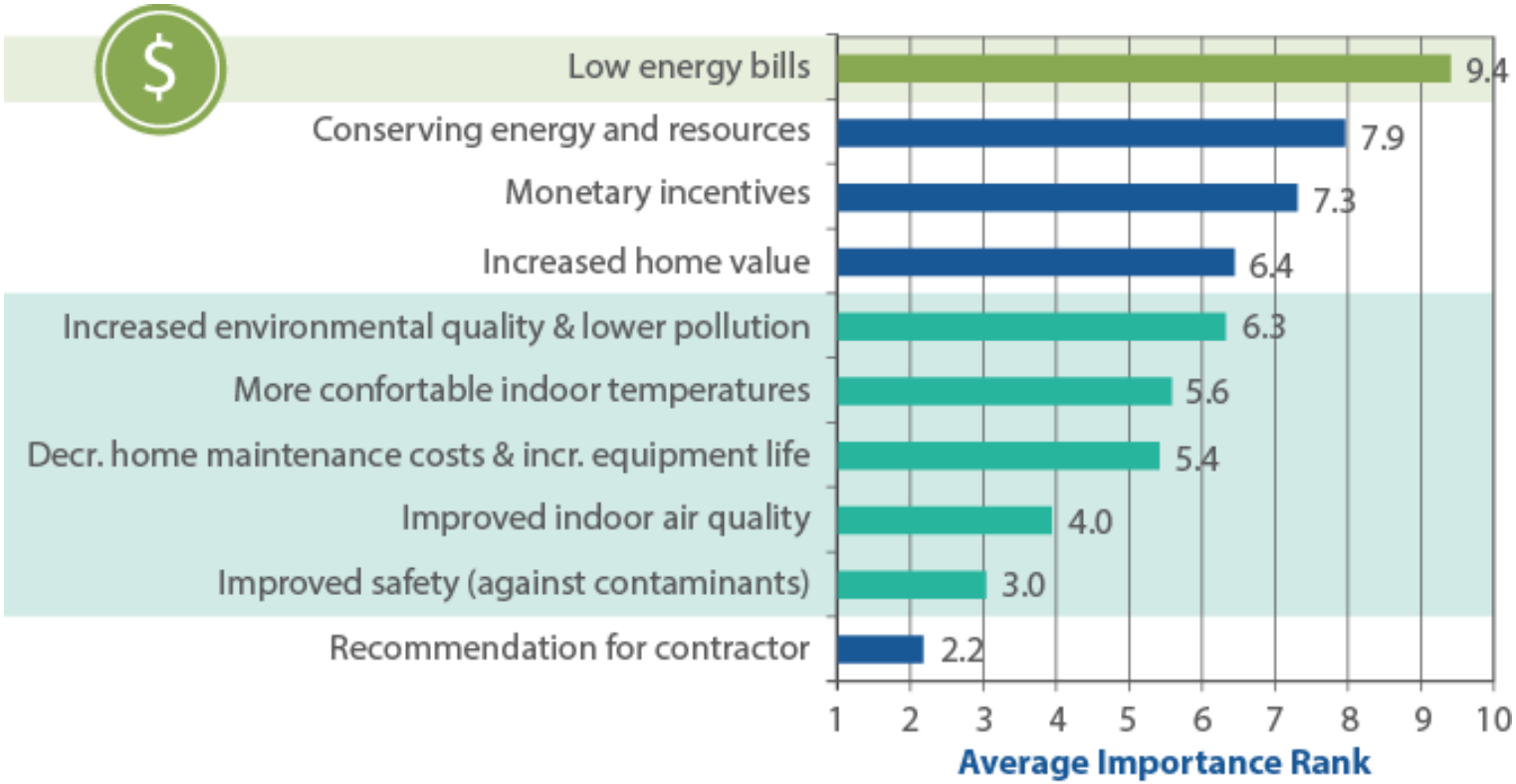
Motivations for Installing Solar

Respondents ranked a preset list of six motivations in order of most to least importance, if they were a part of the decision-making process (6 refers to most important).



Motivations for Performing Energy Efficiency Upgrades

Respondents ranked a preset list of 10 motivations in order of most to least importance, if they were a part of the decision-making process, (10 refers to most important).



Center for Sustainable Energy™

Comfort, Health and Safety

People mentioned that they are concerned about comfort, health and safety

52%

report hot/cold zones in their homes

42%

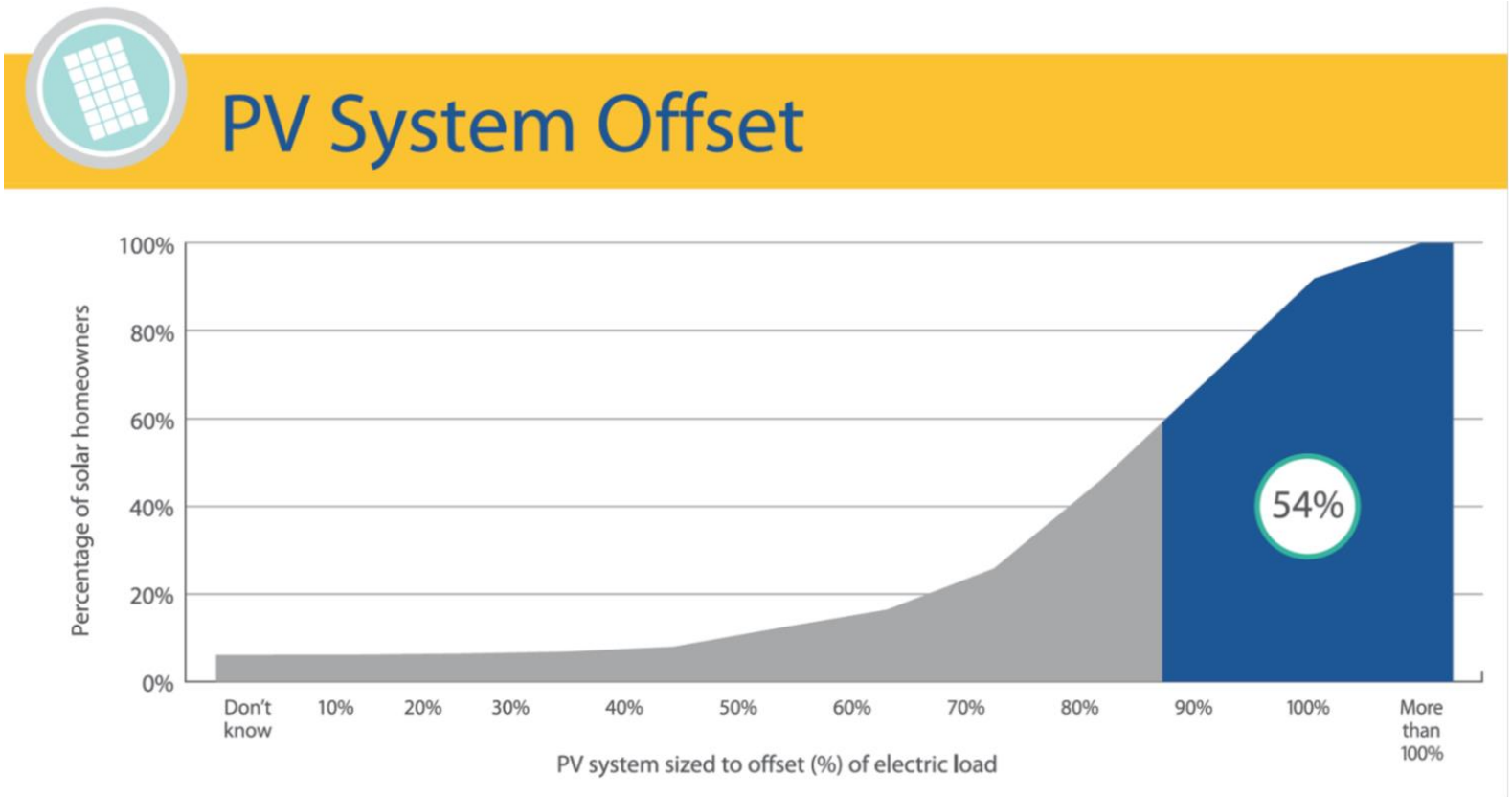
indicate that someone in the household suffers asthma or allergies

21%

are concerned about mold in their homes

Center for Sustainable Energy™

PV System Offset

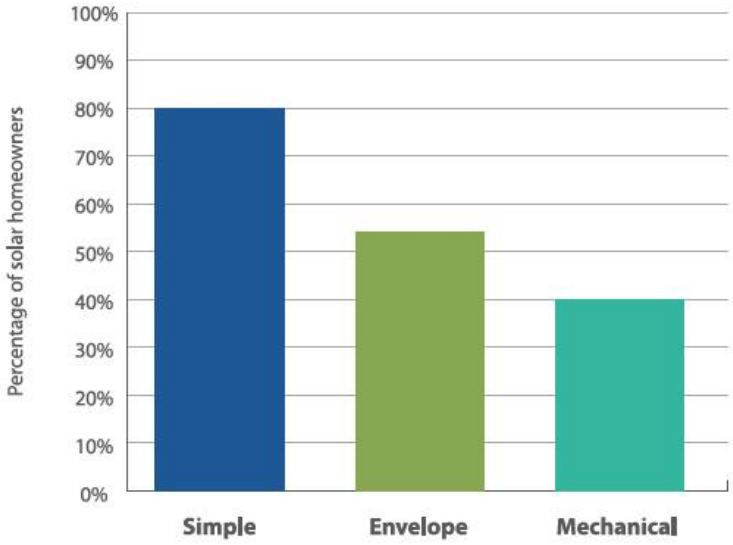


54% sized their systems to offset more than the recommended 80% of their electric load

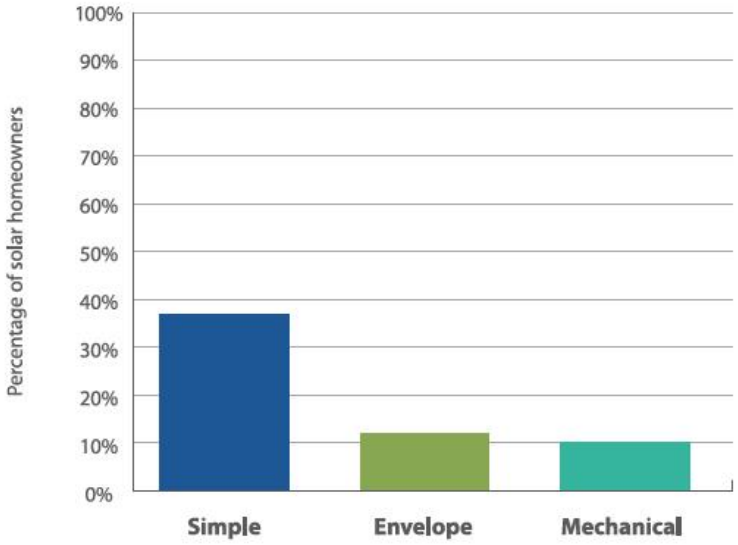
Center for Sustainable Energy™

Timing of Energy Efficiency upgrades

Energy Efficiency Upgrades
Before or with PV Installation



Energy Efficiency Upgrades
After PV Installation



Center for Sustainable Energy™

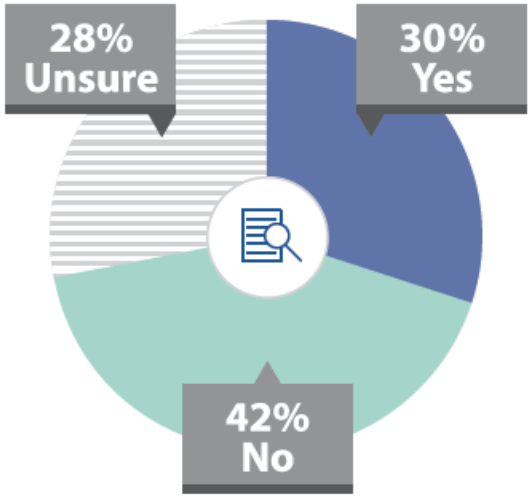
Installed Energy Efficiency Measures

	Energy efficiency measures installed	Preinstallation	Postinstallation
Simple	Lighting (i.e. CFLs, LEDs, motion sensors)	**56%**	28%
Simple	Low-flow shower heads and fixtures	**44%**	5%
Simple	Ceiling fans	**46%**	5%
Simple	Attic fans	24%	3%
Simple	Energy-efficient appliance (must be ENERGY STAR®)	**52%**	12%
Envelope	Windows	**44%**	6%
Envelope	Doors	20%	4%
Envelope	Air sealing	10%	2%
Envelope	Insulation (weather stripping/sealing ducts)	27%	5%
Envelope	Cool roof	3%	2%
Mechanical	Duct/seal/replacement	12%	2%
Mechanical	Solar water heater	7%	1%
Mechanical	Tankless/high-efficiency water heater	13%	3%
Mechanical	High-efficiency furnace	21%	4%
Mechanical	High-efficiency air conditioner	20%	4%
	None	13%	**52%**

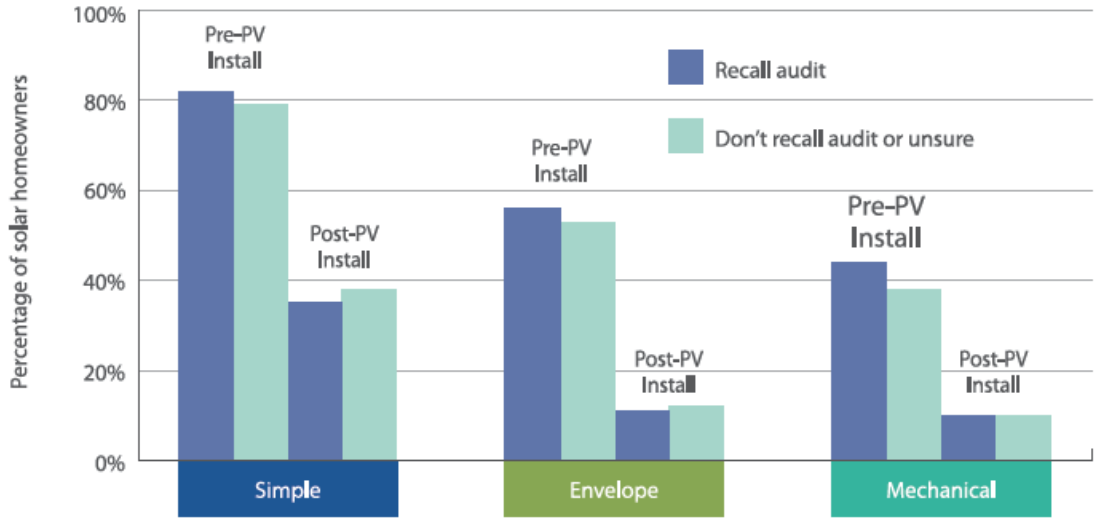
Awareness of the Required CSI Audit

Tested the awareness as a measure of effectiveness of the required California Solar Initiative audit

Homeowners Recalling the CSI Audit



Impact of CSI Energy Audits on Upgrades



Center for Sustainable Energy™

Discussion

- Potential missed opportunities
  - What are the **benefits** of pursuing EE and solar simultaneously?
  - What are some of the **challenges** that need to be overcome?
  - What are some of the **strategies** to integrate the two effectively?
  - How can these strategies **overcome** the challenges?

Benefits

Smaller PV system size

Center for Sustainable Energy™

Benefits

More cost-effective energy reduction

Center for Sustainable Energy™

Benefits

Higher consumer satisfaction

Center for Sustainable Energy™

Benefits

Avoiding “double incentives”

Center for Sustainable Energy™

Challenges

- EE and solar programs are in different siloes
  - Rebate structures
  - Marketing and outreach
- Many solar contractors do not offer home performance services or collaborate with home performance contractors
- Lack of customer understanding of EE
  - May be unique to Southern California
- Solar is more visible than EE
- Different pay back times/uncertainty in pay back periods for EE
- Insufficient financing options to cover combined projects
  - PACE is helping

Strategies


Let's Get Married!
Face it...you're not getting any younger.
someecards.com

Strategies for Program Integration

- Stringent EE requirements in a solar rebate program (e.g. Austin Energy)
- Enticing incentives for combining PV+EE (e.g. Wisconsin)
- Integrating solar as a measure of whole house energy upgrade program

Center for Sustainable Energy™

How can these strategies overcome the challenges?

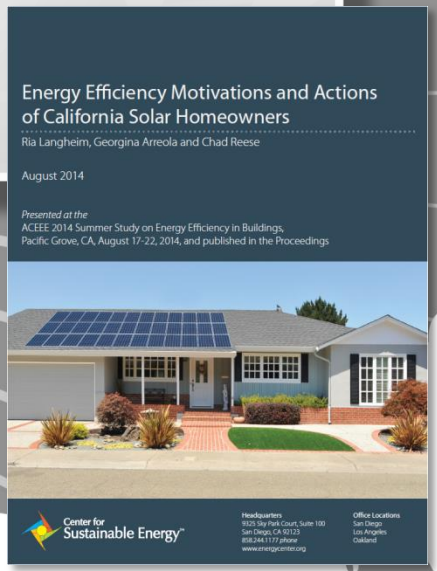
- Increase demand from homeowners for holistic EE-solar upgrades
- Facilitate better cross-over between energy efficiency and solar contractors

Center for Sustainable Energy™

Ria Langheim, Research Analyst

ria.langheim@energycenter.org

www.energycenter.org



Center for Sustainable Energy™