

# Residential HVAC Quality Installation & the Coming ZNE Storm

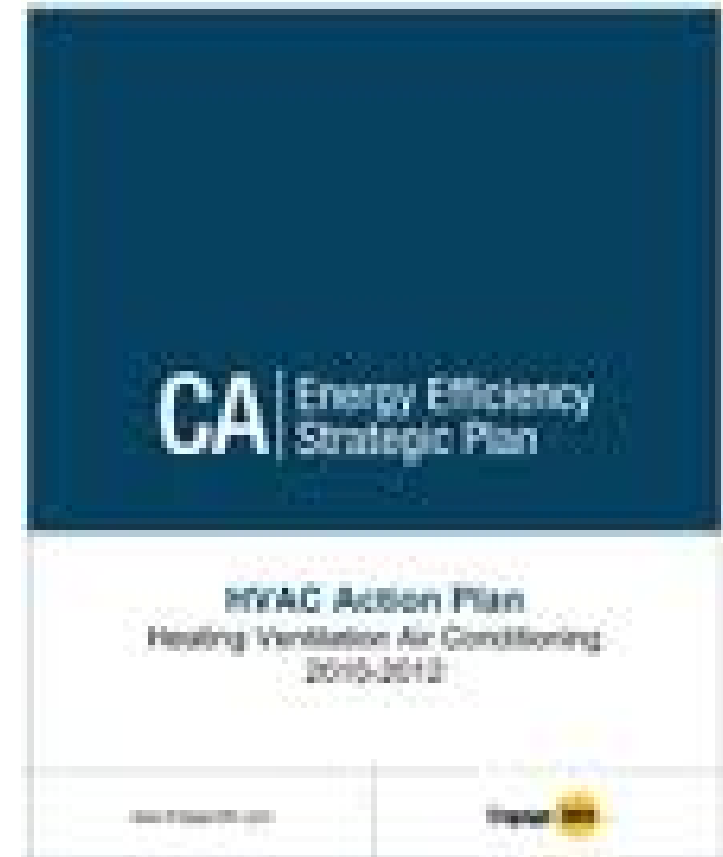
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ACEEE 2016 National Symposium on Market Transformation

# California Climate & the 2020 Vision

California Long-term Energy Efficiency  
Strategic Plan (CLTEESP), 2008.

Updated, 2011, pending 2016



*“Residential and small commercial HVAC will be transformed to ensure that technology, equipment, installation, and maintenance are of the highest quality to promote energy efficiency and peak-load reduction in California’s climate.”*

*-HVAC Chapter, CLTEESP*



# Western HVAC Performance Alliance

## WHPA – 24 Member Categories



California IOUs

CPUC

Certifying Bodies

Code Officials Associations

Contractors (Non-residential)

Contractors (Residential)

Contractor Associations

Controls Manufacturers

Distributors

Distributor Associations

Educators/Trainers

Energy Efficiency Groups

Engineering Societies

Government (non-CPUC)

HVAC Manufacturers

HVAC Manufacturer Associations

HVAC/Building Science Media

Organized Labor

Other Stakeholders

Property/Facility Firms

Property/Facility Associations

Publicly Owned Utilities

Research Institutions

Quality Assurance Providers

[www.performancealliance.org](http://www.performancealliance.org)

# California Residential HVAC Reality

## Residential HVAC

Quality Installation  
Quality Maintenance



## Energy Savings & Market Transformation

### ■ Residential Quality Installation

- 2010 - 2015
  - Over 40 contractors active, trained in ACCA Standard 5 & 9 (Elite & Wrightsoft)
  - Over 10,000 systems are installed with no call backs or complaints
  - Energy reduction 3.3M kWh
  - Over \$11M paid in incentives to customers
- 2016 – 2017
  - Production reduced by 50%
  - Increase Customer Awareness
  - Cross Promotion with Home Upgrade



# California Residential HVAC Reality

## Residential HVAC

Quality Installation  
Quality Maintenance



## Energy Savings & Market Transformation

### ■ Residential Quality Maintenance

- 2010 – 2014
  - ACCA 4 Standard
  - Little adoption
- 2016 – 2017
  - Incentives serve as feeder to RQI
  - Smart app under development

# California Residential HVAC Reality

## Residential HVAC

Quality Installation  
Quality Maintenance



## Energy Savings & Market Transformation

### ■ Code Compliance Pilot

- IOU and CPUC studies show <10% permitted
- SCE and SCG – pilot Desert Cities
- Incentive for permit completion
- Track HERS Unique ID#
- Outreach to Local Government
- Outreach to Distributors

# California Residential HVAC Reality

**Residential Quality Installation integrates  
with Advanced Home Upgrade**

Attic Insulation Duct  
Sealing  
Air Sealing  
Wall Insulation  
Floor Insulation  
Duct Insulation  
Pool Pumps

Heating System  
Cooling System  
Hot Water System  
Windows  
Radiant Barrier  
Cool Roof



- RQI Incentive Option
- Energy Star Verified HVAC Installation
- Integrated training, marketing and field support



# California Res HVAC & the Road to ZNE

**By 2020, all new residential construction is Zero Net Energy.**



## SCE's ZNE Demonstration Projects

	Project Name	Type	Vintage
1	Irvine Smart Grid Demonstration	Community	Retrofit
2	ABC Green Home 1.0, 2.0, 3.0	Custom Home	New Construction
3	ZNE Home at Edenglen	Production Home	New Construction
4	Grid Integration of ZNE Communities	Production Community	New Construction
5	Low Income Multifamily (LIMF)	Low Income Community	Retrofit
6	Low Income Residential Retrofit	Low Income Home	Retrofit
7	Solar Decathlon Student Mentorship	Residential Education	New Construction

# California Res HVAC & the Road to ZNE

**By 2020, all new residential construction is Zero Net Energy.**



## Overcoming Barriers for Residential HVAC Contractors