



BUILDING INDUSTRY RESEARCH ALLIANCE

# Putting It all Together: Aggregating Benefits, Selling to Stakeholders

## The Benefits of Zero Energy Homes Reach Far Beyond Homeowners

Ryan Kerr  
ConSol/BIRA  
July 10, 2007  
ASES Solar 2007 Cleveland, OH



# What is Building America?

- The U.S. Department of Energy's Building America program aims to achieve **marketable**, cost-effective net-Zero Energy Homes by 2020.
- Today's near-Zero Energy Homes are built using advanced energy efficiency and solar energy technologies to reach utility bill reductions of at least 60% relative to a local code home

Q: Why not net-Zero today?

A: It's cost-prohibitive given Building America's definition-

Will monthly utility bill savings positively offset the portion of monthly mortgage payment linked to ZEH features, thereby creating positive monthly cash flow?

But...



# This equation is great for a custom home, but not for production builders

## Why?

- 1) This is not how Zero Energy Homes are marketed (portion of price absorbed by builder + cost builder is willing to pay is based on marketability not cash flow)
- 2) This equation assumes the benefits of Zero Energy Homes are only marketed to and paid for by the homebuyer

# A New Way Forward



Market the benefits of green Zero Energy Homes  
to all stakeholders receiving value

# Why?

- ✓ Evidence is beginning to mount displaying the quantifiable **community-scale** benefits of Zero Energy Homes for parties beyond the homeowner including:
  - Builders/Developers
  - Electric Utilities
  - Local Jurisdictions
  - States and the Nation
- ✓ The benefits of Zero Energy Homes can be as valuable to these stakeholders as they are to the homeowner. Benefits can be **leveraged to increase this value** to a particular party

# Stakeholders

Major Stakeholders who benefit through the Construction and Operation of Zero Energy Homes

- Homeowners
- Builders/Developers
- Electric Utilities
- Local Jurisdictions
- States/Nation

If we begin to market to all of these stakeholders, builders will be able to build a greater number of more efficient near Zero Energy Homes in more places in the absence of rebates

# Homeowners

## Benefits:

- Lower Utility Bills, hedge on future (Premier Gardens)
- Sense of public service to community & environment
- Improved comfort and indoor air quality
- Better resale value (16.6% higher at SheaHomes)
- Added durability and quality through 3<sup>rd</sup> party testing and inspections

These have been well documented and proven over time, we simply need to effectively communicate and market these benefits in ways that resonate with consumers

# Developers

## Benefits:

- Faster Entitlement
- No Go/Go for entitlement (Lodi, CA)
- Improved image with environmental, community, and other groups fighting new development

These benefits are beginning to be explored with great potential given the length the entitlement process can take.

# Builders

## Benefits:

- Added marketability of Zero Energy Home features
- **Faster Sales!**
- Less need to advertise with tremendous local, regional, and national media attention (NY Times, Newsweek, CNBC, etc) & it will only increase
- Improved image among buyers and industry

Builders can also benefit greatly from rebates and other incentives which will be explored later.

# Faster Sales

## Hot Housing Market

- Premier Gardens began construction later, and sold out earlier than neighboring Cresleigh Homes
- Clarum Home's Vista Montana sold out 3 times faster than expected and faster than neighboring communities

# Faster Sales

## Cool Housing Market

- Grupe Green – selling their 144 home community of green near-Zero Energy homes at Master Planned community (9 builders total)
  - Selling 4.6 homes per month compared to competition average of 1.9!
  - Given \$311,000 monthly carrying costs, Grupe would only have to sell 2.1 homes per month to completely pay for “green” features
  - At this rate, Grupe will sell out 45 months faster!

# Builders

## Benefits:

- Added marketability of Zero Energy Home features
- **Faster Sales!**
- Less need to advertise with tremendous local, regional, and national media attention (NY Times, Newsweek, CNBC, etc) & it will only increase
- Improved image among buyers and industry

Builders can also benefit greatly from rebates and other incentives which will be explored later.

# Electric Utilities

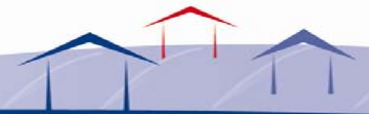
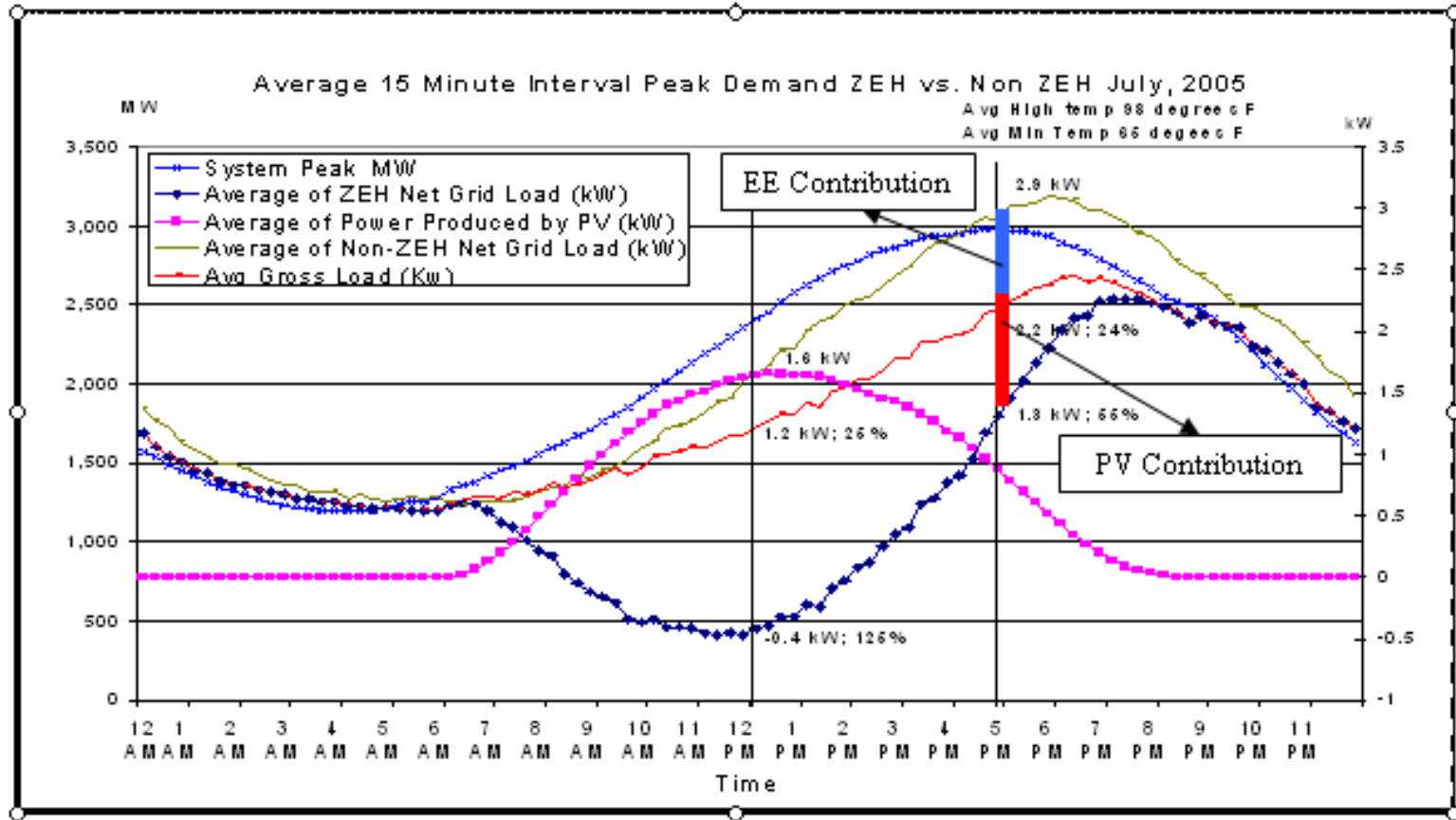
Benefits:

- ***Reduced Peak Electricity Use***
- Premier Gardens homes were not designed to reduce peak

What else can be done?

- Shift PVs to the west (possible with planning)
- Use pre-cooling strategies as appropriate
- Design ZEH features that both save energy & peak (radiant barriers, buried ducts, high SEER AC)

# Peak



# Electric Utilities

Benefits:

- ***Reduced Peak Electricity Use***
- Premier Gardens homes were not designed to reduce peak

What else can be done?

- Shift PVs to the west (possible with planning)
- Use pre-cooling strategies as appropriate
- Design ZEH features that both save energy & peak (radiant barriers, buried ducts, high SEER AC)

# Local Jurisdictions

## Benefits:

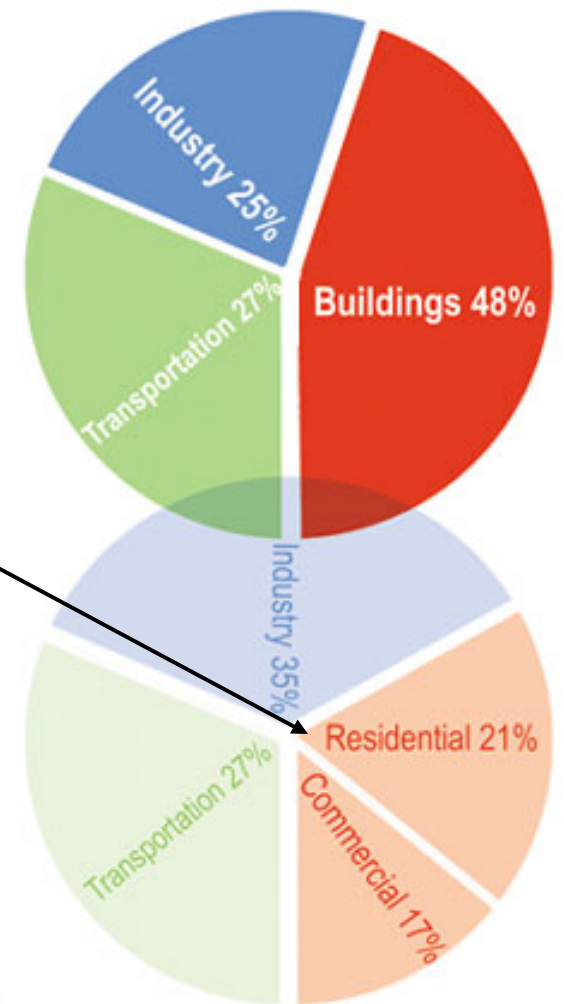
- Reduced Water consumption (20,000 gallons)
- Reduced Waste to local landfills (50-80 percent)
- Reduced stress on electrical and gas infrastructure and resources
- Green!

The California Green Builder Program is marketing these benefits to local jurisdictions with success. In many cases, jurisdictions are paying for the cost of program and additional features for the benefits it provides

# State and Nation

## Benefits:

- Greatly reduced energy consumption
- Greatly reduced CO2 emissions
- Residential buildings consume **21% of all energy** produced nationally



# Additional Stakeholders

- Lenders
- Insurance companies
- Gas Utilities
- ???

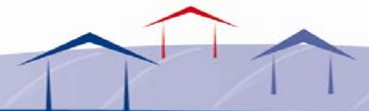
It will be important to continually identify the impact of green Zero Energy Homes to understand who benefits and how. The benefits to numerous parties can be of great value, but they will go unrealized if the builder is not incentivised to create value beyond the homeowner.  
(like peak savings)

# Overview

## Moving Past Rebates and Buy-downs, Making a Business Case for Zero Energy Homes

Stakeholder	ZEH Benefit	Stakeholder Payment
<b>Electric Utility</b>	<ul style="list-style-type: none"> <li>* Verified Peak Electricity Reduction (50%-100%)</li> <li>* Less impact on stressed infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>* Rates and Tariffs that incent less consumption, and peak avoidance</li> <li>* Builder incentives that encourage EE and Solar (Like the NSHP)</li> </ul>
<b>Local Jurisdictions</b>	<ul style="list-style-type: none"> <li>* Reduced impact on city infrastructure                             <ul style="list-style-type: none"> <li>- 20,000 gallons of water savings per home</li> <li>- 50% to 80% diversion of construction waste for recycling</li> <li>- 40% to 70% less energy consumption &amp; GHG emissions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>* Expedited Entitlement and Permitting</li> <li>* Single point of contact in Building Dept</li> <li>* Priority Field Inspections</li> <li>* Delayed or waived fees</li> </ul>
<b>Builder</b>	<ul style="list-style-type: none"> <li>* Differentiation, Increased Publicity, Industry Recognition, Faster Sales, Added marketability of ZEH features</li> </ul>	<ul style="list-style-type: none"> <li>* Builder pays for marketing benefit</li> </ul>
<b>Homeowner</b>	<ul style="list-style-type: none"> <li>* Reduced utility bills, added comfort, improved indoor air quality, environmental stewardship</li> </ul>	<ul style="list-style-type: none"> <li>* Homeowner pays more upfront for ZEH, but realizes positive monthly cash flow</li> </ul>
<b>State/Nation's Citizens</b>	<ul style="list-style-type: none"> <li>* Environmental and other large scale benefits (Waste, Water, Energy &amp; Resource Conservation)</li> </ul>	<ul style="list-style-type: none"> <li>* RECS to builder</li> <li>* Federal Tax Breaks and Incentives</li> </ul>

The added costs of a Zero Energy Home, when shared among stakeholders who gain from it's value, can be small compared to the value it provides. The value distribution will be different in each ZEH community, therefore it is important to understand who gains and by how much to properly allocate costs and ultimately determine cost-effectiveness.



# A New Way Forward

Work with developer/builder and local stakeholders to:

- Demonstrate potential benefits of large-scale ZEH community design for each stakeholder (energy, peak, water savings)
- Elicit participation from stakeholders in exchange for ZEH benefits (Does not have to be financial, could be faster permitting, delayed fees. Type and amount of payment will vary)
- Design homes to leverage goals of as many stakeholders as possible (peak example)



BUILDING INDUSTRY RESEARCH ALLIANCE

# Thank You

# Questions

**Ryan Kerr**

**ConSol/BIRA**

**RKerr@ConSol.ws**

**July 10, 2007**

**ASES Solar 2007 Cleveland, OH**

