# Beyond Code Building Programs

What They are, and What They can Mean to Your Community

# What We are Covering

- What are some of the keys to successful programs?
- What do typical program include – how do you reach those goals?
- Issues to consider
- Why consider house size?
- What about remodeling and additions?
- Costs and benefits for the community

# Keys to an Effective *Beyond Code* Program

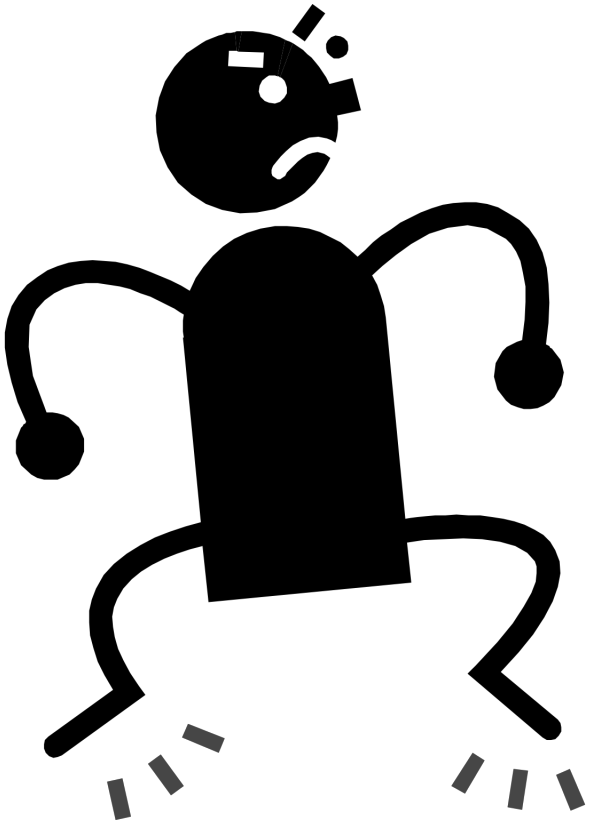
- Stakeholders involvement in the decision making process,
- Established goals
- Implementation, integration and staffing,
- Incentives, and
- Communication, Partnerships, and Education.

# Issues to Consider

- Voluntary or Mandatory?
- Support an Established Standard: LEED, NAHB Guidelines, IECC Standard, Earthcraft, etc
- Community Designed?

# Voluntary or Mandatory?

- Mandatory:
  - Eagle County Colorado,
  - Rohnert Park, California
  - Boulder, Colorado
  - Austin, Texas



# Support National Standard, Based on National Standard, or Locally Developed?

- Chandler, AZ – Supports LEED projects
- Scottsdale, AZ – Locally Developed
- Albuquerque, NM – Based on LEED
- Eagle County, CO – Locally Developed
- Other notable examples
  - Austin, TX – Locally Developed, LEED can exempt
  - Portland, OR – Supports LEED projects
  - Seattle, WA – Based on LEED
  - Rohnert Park, CA – Requires LEED

Projects Requiring an Austin Energy Green Building™ Rating

These zones require an Austin Energy Green Building™ Rating:
**Central Business District and Downtown Mixed Use** zoned projects requiring a site plan also require a minimum one-star Austin Energy Green Building Rating (per Land Development Code 25-2-593):
Ordinance 030612-93 (pdf)

**University Neighborhood Overlay** multi-family developments require a minimum one-star Austin Energy Green Building Rating (per Land Development Code 25-2-754):
Ordinance 040902-58 (pdf)
**Mueller Redevelopment** projects as follow:

Office, single tenant retail, and institutional buildings greater than 25,000sf require LEED Certified® certification and/or a minimum two-star Austin Energy Green Building Rating Multi-family developments with three or more units require LEED Certified® certification and/or a minimum two-star Austin Energy Green Building Rating Single-family and duplex units require a minimum three-star Austin Energy Green Building Rating.

# Will Requirements Vary with Zoning?

- Use Zoning to Designate Mandatory LEED Certification in Critical Corridors or Downtown Areas – City of Austin

# Incentives

- Time
- Money
- Marketing
- Education

# Money

## Financial Incentives…and Disincentives

- Chandler, AZ
- Eagle County, CO
- Seattle, WA

# Residential Rebates for Energy Efficient Construction

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Green Power
Electricity Basics
Energy Emergency
Integrated Resource Plan
Gateway West
Magic Valley Plan
Wood River Valley Plan
Treasure Valley Plan
Wind Integration Study

## Idaho Power ENERGY STAR Homes Northwest

Idaho Power and the Idaho Office of Energy Resources present ENERGY STAR Homes Northwest, a new residential construction program designed to build homes that are 30 percent more efficient than those built to standard code.

Before you buy a new home or make an investment in Idaho real estate, make sure you have the facts. Treasure Valley-area ENERGY STAR® homes are independently certified by the Idaho Office of Energy Resources and U.S. Environmental Protection Agency as more efficient, comfortable and durable than standard homes constructed according to local building codes.

### Home Buyers

Maximize the value of your real estate investment! Use the links below to learn more about this program and how you can benefit from this information.

- Upcoming News, Events and Training
- Home Buyer's Kit
- EPA Consumer Fact Sheets
- Registered Builders and Subcontractors List
- Registered ENERGY STAR Home Performance Specialists
- Idaho Office of Energy Resources
- U.S. Environmental Protection Agency

### Learn Why Behind the Walls is What Really Counts

All new homes look great from the outside. But to make sure that your next new home is truly energy efficient, it's important to look "behind the walls."

Homes that earn the ENERGY STAR include four "must have" features behind the walls that will make you more comfortable, reduce utility bills, and help protect the environment.

See the four "must have" features found in all ENERGY STAR qualified homes. Take the Tour!

### Builders, Suppliers and Subcontractors

Looking for a way to increase your business while boosting customer satisfaction, lowering callback rates, and meeting the increasing demand for energy efficient homes?

Building contractors can receive up to $400 per home for those built to Northwest Builder Option Package (NW BOP) standards in Idaho Power's service area.

For additional information on the Northwest Builder Option Package, visit the Northwest Energy Star Web site, or contact Becky Arte-Howell at 208-388-2785.

New Energy Star Certified Homes in Blaine County are eligible for $200 rebate

# Residential Tax Credits for Energy Efficient Construction

The federal tax credit for homes 50% above minimum code standard was extended again this year.

Northwest ENERGY STAR®
PARTNERS

CHANGE FOR THE BETTER WITH ENERGY STAR

Home | Utilities | Builders | Trade Allies | Retailers

**Builders**

- Getting Started
- Marketing Support
- Verification & Certification
- Performance Testing
- Lighting Information
- Tax Credits & Incentives
- Federal Tax Credit Information
- Technical Standards

## Federal Tax Credit Information

We are proud to announce that we are launching a federal tax credit path effective June 1, 2007. You will now be able to work with the program to obtain the federal tax credit in addition to ENERGY STAR certification.

The federal government provides a $2,000 credit paid to the builder on new homes whose space heating and cooling energy consumption is 50% below the annual consumption of a home constructed to the standards of the IECC 2003 and its supplements and current federal minimum equipment requirements.

Builders interested in building homes to federal tax credit standard should first contact an ENERGY STAR Homes verifier who has been approved to verify tax credit homes or a RESNET approved HERS rater who has the required professional liability coverage. Click here for a list of approved verifiers.

We have posted the following resources here:

- A *How to* Process
- Idaho Prescriptive Path of Heating Degree Days 6500 or higher
- Idaho Prescriptive Path of Heating Degree Days 6499 or lower
- Oregon/Washington Prescriptive Path - West of the Cascades

If you would like a packet containing hard copies of these we are happy to provide one for you - please send your request to info@northwestenergystar.com.

# New Tax Credits for Upgrades to Existing Homes

- **Federal Tax Credits for Energy Efficiency include:**
- **<u>Tax Credits for Consumers</u>**
  - **Tax credits are available at 30% of the cost, up to $1,500, in 2009 & 2010 (for existing homes only) for:**
    - **<u>Windows and Doors</u>**
    - **<u>Insulation</u>**
    - **<u>Roofs (Metal and Asphalt)</u>**
    - **<u>HVAC</u>**
    - **<u>Water Heaters (non-solar)</u>**
    - **<u>Biomass Stoves</u>**

# Commercial Rebates and Assistance for Energy Efficient Construction

Idaho Power offers incentives and design assistance for commercial projects.

## Working with You

Idaho Power's Building Efficiency program has been expanded and enhanced to provide more incentives for energy-savings design features that exceed code. The menu includes incentives for energy-saving lighting, cooling, building shell, and controls measures designed and built into commercial and industrial construction projects. Any size building can qualify for an incentive of up to $100,000 per project.

We are proud to offer these incentives along with other programs for our Commercial and Industrial customers. Our incentive programs are designed to help you enhance your energy efficiency and boost the bottom line. With this incentive, the economics of an energy-saving project can have a significantly higher return on investment (ROI).

## Specific incentives offered through *Building Efficiency* include:

### Lighting

**L1. Reduced Power Density Lighting**
For lighting system designs that are at least 10 percent better than code minimum, you can earn $0.005 per sq ft of the area served by the lighting per percent below code.

**L2. Daylight Photo Controls**
Lighting systems designed to operate with daylight photo controls can earn you $0.25 per sq ft of daylit space. Your daylighting plans need to be analyzed or reviewed by Idaho Design Lab (IDL) to qualify.

**L3. Occupancy Sensors**
Wall or ceiling mounted occupancy sensor controls installed in spaces where they are not required by code can earn you an incentive of $25 per sensor installed.

**L4. High Efficiency Exit Signs**
Exit signs that draw less than four watts per sign face can qualify for an incentive of $7.50 per sign.

### Air Conditioning (HVAC)

**A1. Premium Efficiency HVAC Units**
To qualify for an incentive of $75 per ton of cooling capacity, units must meet the Consortium for Energy Efficiency (CEE) High-Efficiency Commercial Air Conditioning and Heat Pumps Initiative (HECAC) Tier I minimum specifications. Single-phase units and split systems of five tons or less must meet CEE minimum specifications in HECAC Tier II. Refer to the CEE HECAC specification tables (www.cee1.org/com/hecac/hecac-tiers.pdf) for details.

**A2. Additional Unit Efficiency Bonus**
For HVAC units with efficiencies above the qualifying minimum HECAC standards, an additional $2.50 per ton for each 1/10 of a point the energy efficiency ratio, (S)EER, exceeds the minimum. Incentives of both A1 and A2 can be combined to earn incentives in the range of $100 per ton.

**A3. Efficient Complex Cooling Systems**
This measure provides incentives where larger and more complex HVAC systems (such as chiller-based systems) are part of the design. This measure offers incentives of $250 per ton of air conditioning for each point the equipment coefficient of performance (COP) exceeds code requirements.

**A4. Air Side Economizers**
For air conditioning units with a cooling capacity of four and a half tons or less, the addition of an outside air economizer – coupled with a commercial grade, two-stage thermostat can earn an incentive of $75 per ton.

### Building Shell

**B1. Reflective Roof Treatment**
Roof treatments with a total initial solar reflectivity of at least 0.70 and an emissivity of 0.75 or more qualify for an incentive of $0.05 per square foot of flat or slightly sloped roof area where the product or coating is applied. Roofs pitched more than 4 in 12 are not eligible for this incentive.

**B2. High Performance Windows**
High performance windows are National Fenestration Rating Council (NFRC) certified to meet two specifications – a U-factor of 0.30 or less and a Solar Heat Gain Coefficient (SHGC) of 0.30 or less. These windows can earn an incentive of $0.50 per square foot of qualifying window area.

**B3. Premium Performance Windows**
Premium performance windows are NFRC certified to meet high performance window specs and also have a Visible Light Transmittance (VLT) of 0.50 or greater. These windows can earn an incentive of $1 per square foot of qualifying window area.

### Controls

**C1. Energy Management Control System**
An incentive of $0.30 per square foot of controlled floor space is available for energy management systems that provide automatic control of at least two of the following: lighting, HVAC, refrigeration or other energy-using systems. Incentive payments require a brief control strategy summary to verify the system's energy savings, subject to Idaho Power approval. This incentive can never be more than the cost of the control equipment (not including installation).

**C2. Demand Control Ventilation**
This measure provides an incentive of $0.50 per cubic feet per minute (CFM) for ventilation systems that use carbon dioxide sensors to automatically adjust outside air flow based on occupancy levels. To qualify, HVAC systems must provide at least 1,500 CFM and serve areas with variable occupant loading.

**C3. Variable Speed Drives**
This measure provides an incentive of $60 per HP for variable speed controls for fans, pumps, and other variably-loaded electric motors between five and 100 horsepower operating at least 2,000 hrs/yr, and the VSD must be installed in accordance with IEEE Standard 519.

# Commercial Tax Credits for Energy Efficient Construction

A tax deduction of up to $1.80 per square foot is available to owners or designers of new or existing commercial buildings that save at least 50% of the heating and cooling energy of a building that meets ASHRAE Standard 90.1-2001. Partial deductions of up to $.60 per square foot can be taken for measures affecting any one of three building systems: the building envelope, lighting, or heating and cooling systems. The credits are available for systems “placed in service” from January 1, 2006 through December 31, 2008.

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ENERGY STAR®, a U.S. Environmental Protection Agency and U.S. Department of Energy program, helps us all save money and protect our environment through energy efficient products & practices. For more information, visit www.energystar.gov.

## ARE YOU READY TO TAKE ADVANTAGE OF THE NEW COMMERCIAL TAX INCENTIVES?

### INTRODUCTION

You may be eligible for a tax deduction of up to $1.80 per square foot for improving the energy efficiency of your existing commercial buildings or designing high efficiency into new buildings.

The Energy Policy Act of 2005 includes a tax deduction for investments in “energy-efficient commercial building property” designed to significantly reduce the heating, cooling, water heating, and interior lighting energy cost of new or existing commercial buildings. To be eligible, the energy-efficient commercial building property—such as a state-of-the-art lighting system—must be placed in service between January 1, 2006 and December 31, 2008.

To qualify for the full deduction, a building owner or tenant must make investments designed to reduce energy costs by 50% or more. A partial deduction of $0.60 per square foot is available for investments in one of three systems—lighting; heating and cooling; or building envelope—designed to reduce energy costs by 16 and 2/3% (i.e., one-third of the 50% requirement).

Tax deductions reduce your overall taxable income with the value of the deduction dependent on your tax bracket. Tax credits, such as the ones provided for consumers in the 2005 Energy Policy Act, reduce the amount of tax you owe dollar for dollar.

### Who Can Benefit from the Deduction?

The person or organization that pays for construction is generally the recipient of the deduction. This is usually the building owner, but for some HVAC or lighting efficiency projects, it could be the tenant.

For government-owned buildings, the person primarily responsible for designing the building or project may be able to claim the deduction.

### How Can I Qualify For The Tax Deduction?

To apply for the tax deduction, you must use one of the software tools approved by the Department of Energy. For a complete list of approved software, visit www.eere.energy/gov/buildings/info/qualified_software.

For more information, visit these websites:

- www.energystar.gov/taxcredits

The ENERGY STAR website includes links to more detailed information, as well as cost-effective solutions for improving the energy efficiency of your buildings.

- www.efficientbuildings.org

Sponsored by the Commercial Building Tax Deduction Coalition, including business, trade, government, energy efficiency, and other groups convened by the National Electrical Manufacturers Association.

- www.energytaxincentives.org

Sponsored by the Tax Incentives Assistance Project (TIAP), a coalition of public interest non-profit, government, and other organizations in the energy efficiency field.

### ENERGY STAR CAN HELP

These three steps are the cornerstone of many effective energy savings programs, and will help you identify the best opportunities to qualify for the tax deduction.

1. **Establish the energy use of your building(s) and set a savings goal—Take the ENERGY STAR Building Challenge**

It is hard to manage what we do not measure. With new easy to use energy use tracking tools, you can establish the current energy use of your building(s) and determine a reasonable energy savings goal.

Here’s how:

- Assess the current energy use of your building(s) to establish a reference using EPA’s national energy.

# Marketing

*Meeting the requirements of the Scottsdale Green Building Program, Desert Sky Development uses the "Integra Wall System" in this Scottsdale mountain home. Desert Sky Development offers their custom home clients the choice of masonry or traditional wood framed construction.*

*Courtesy Mike Frat Real Estate, Scottsdale*

# Education

SCOTTSDALE
GREEN BUILDING PROGRAM

City of Scottsdale
**Green Building Lecture Series**

Exploring a systems approach to design & construction, including; energy / resource efficiency, healthy & environmentally responsible building practices and much more.

Presented By:
City of Scottsdale Green Building Program

1st Thursday each Month
7-9 PM

Location:
Granite Reef Senior Center
1700 N. Granite Reef Rd.
Scottsdale, AZ

Information:
Scottsdale Green Building Program
(480) 312-2245

Website:
www.scottsdaleaz.gov/greenbuilding

Subscribe to:
Green Building Events
Go to
www.scottsdaleaz.gov/listserve

## Green Building
## Lecture Series Schedule
### FALL / WINTER 2007-2008

### Free Monthly Lecture Series

| Date | Topic |
|---|---|
| September 6 | **Intro To Green Home Building Standards** An overview of the green building standards including incentives, benefits, strategies, and materials compatible with our Sonoran Desert Environment |
| October 5 & 6 | **Green Building Expo** (Location Change: Scottsdale Center for the Performing Arts) Please visit the website for lecture schedules and details. www.greenbuildingexpo.com |
| November 1 | **Natural & Reclaimed Building Materials** Regional materials that are compatible with our harsh desert environment, abundant, rapidly renewable, and support the local economy. Learn about opportunities to reuse quality materials and divert waste from our landfills. |
| December 6 | **Alternative Materials: Green Pioneers** New building products and techniques for Green Building showing innovative entrepreneurial pioneers making Green a reality. "Includes a Building Materials Showcase" Presented by Rick Johnson, Inventor of IMBI Reinforced Insulated Masonry |
| January 3 | **Home Improvements & Green Remodeling** Green is everywhere. We will discuss how you make practical and healthy decisions for your home in the current sea of green. The presentation includes examples and an opportunity to get professional feedback on your specific questions and concerns. Presented by Anne Bertino of Bertino-Baumann Design Group and Mick Dalrymple of a.k.a. Green. |
| February 7 | **Building Science: The Systems Approach to Energy Efficiency** Learn about the principles of heat flow to create an energy efficient, safe, comfortable and healthy home. Hear about diagnostic tests used to evaluate energy performance problems and their possible solutions. |
| March 6 | **Interior & Indoor Environmental Quality** Indoor air pollutants can be six times higher than outdoor air. This lecture will address strategies for minimizing indoor pollutants including material selection, ventilation and filtration. |
| April 3 | **Water Efficiency in the Sonoran Desert** An overview of water conservation practices, including indoor plumbing fixtures, xeriscape, gray water & rainwater harvesting |
| May 1 | **Innovative Green Built Projects** (In the Phoenix/Scottsdale Area) See innovative local projects that excel from the synergistic benefits of energy efficiency, renewable resources, water efficiency, and climate responsive design. |
| June 5 | **Green Feng Shui** This lecture will highlight new design strategies blending the eastern practice of Feng Shui and the basics of green design for greater harmony & health. |

# Program Element – Building Size

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size** | Site | Lndscp | Water | Energy | MatRes | EQ | OM |

# Program Element – Building Size

Boulder, County: House size adjusts minimum energy efficiency

- New Construction
  - <1000 ft2 HERS index of 85
  - 1001-3000 ft2 HERS index of 60
  - 3001-4000 ft2 HERS index of 40
  - 4001-5000 ft2 HERS index of 25

| **Size** | Site | Lndscp | Water | Energy | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

# Site Selection

- Options include
  - Avoid environmentally sensitive areas
  - Select infill site
  - Select greyfield site
  - Select brownfield site
  - Select site with access to public transportation and bike paths

| Size | **Site** | Lndscp | Water | Energy | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

# Site Development and Landscaping

From Buckeye, AZ - Both Mandatory Requirements and Options to Select

- Mandatory
  - Protect east, west and southern entrances from southern sun
  - 80% landscaping is xeriscaping
- Options include
  - Permeable hardscape
  - Solar orientation
  - Shaded outdoor living area

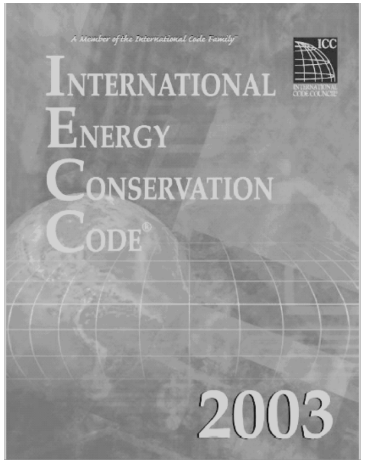
| Size | Site | **Lndscp** | Water | Energy | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

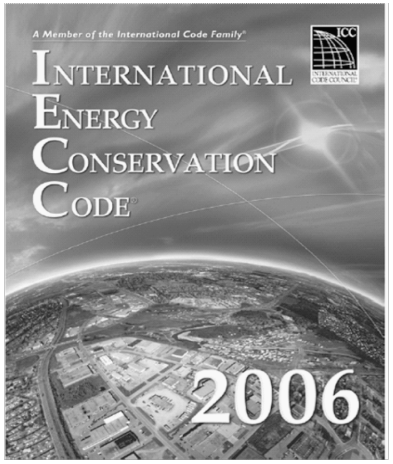
# Water Conservation

- Options include
  - Offset new water use in the city
  - Building water use reduction – plumbing, appliances, and fixtures
  - Use water efficient, native, and regionally appropriate landscaping
  - High-efficiency automatic irrigation
  - Rainwater channeling and/or harvesting
  - Wastewater technology

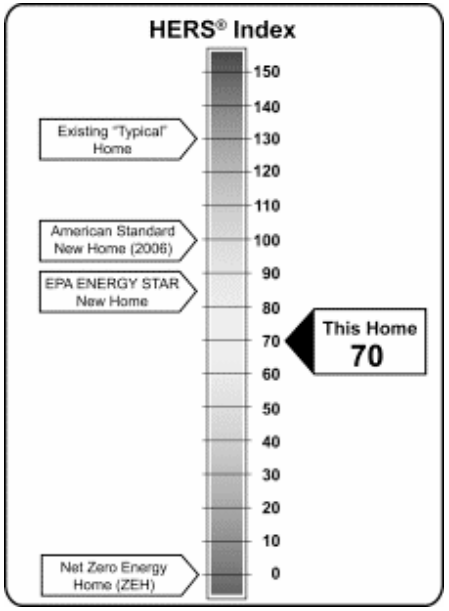
| Size | Site | Lndscp | **Water** | Energy | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

# Energy Conservation – Building Structure




- Percent above the IECC
- Energy Star
- HERS Index

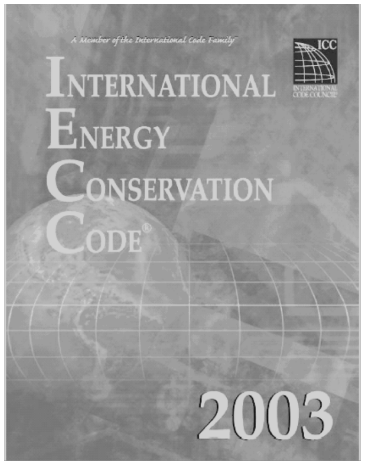


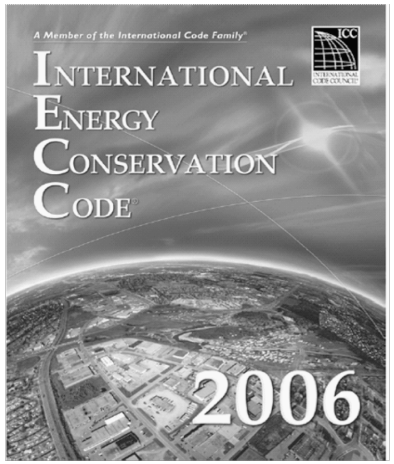

| Size | Site | Lndscp | Water | **Energy** | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

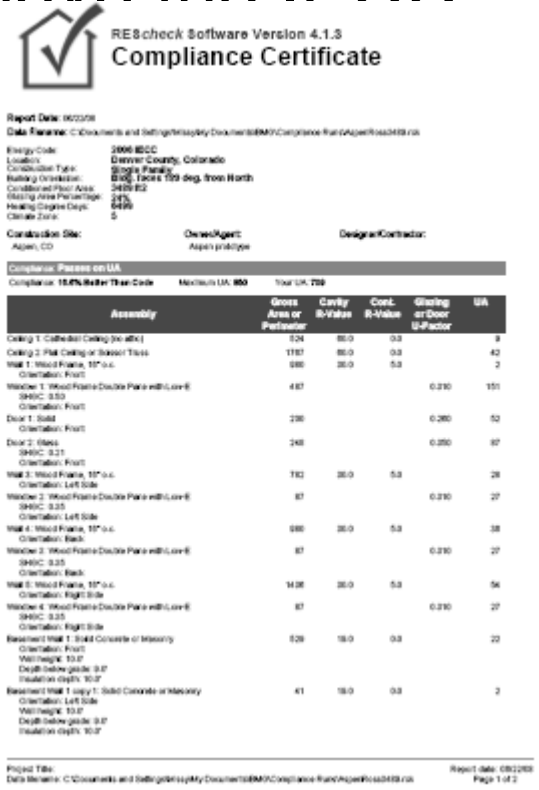
| Feature | 2003 IECC Climate Zone 16 | 2006 IECC | 2009 IECC | Northwest Energy Star (Assume Gas Furnace) |
|---|---|---|---|---|
| **Ceiling Insulation** | **R-38** | **R-49** | **R-49** | **R-38** |
| **Wall Insulation** | **R-19** | **19** | **20** | **R-21 or R-19 Advanced** |
| **Floors Over Unconditioned Space** | **R-19** | **30** | **30** | **R-30** |
| **Slab Floors - Unheated** | **R-14 (4 ft)** | **R-10 (4 ft)** | **R-10(4)** | **R-10 (2ft)** |
| **Slab Floors - Heated** | **R-16 (4 ft)** | **R-15 (4 ft)** | **R-15(4)** | **R-10 (Full Slab)** |
| **Basement Wall Insulation** | **R-18** | **R-10 Cont** | **R-15 Cont** | **R-19** |
| | | **R-13 Between Framing** | **R-19 Between Framing** | |
| **Windows – Vertical** | **U-0.35** | **U-0.35** | **U-0.35** | **U-0.35** |
| **Windows – Skylight** | **U-0.35** | **U-0.60** | **U-0.60** | **U-0.50** |
| **Window Area** | **Based on 15% glass to wall area** | **Unlimited / 18% base case if using performance approach** | **Unlimited / 15% base case if using performance approach** | **≤ 21% Conditioned Floor Area** |
| **Doors** | **U-0.35** | **U-0.35** | **U-0.35** | **R-5** |
| **Building Envelope Air Leakage Testing** | **Not Required** | **Not Required** | **List of Leakage Testing** | **Required** |
| **Furnace Efficiency** | **78% AFUE** | **78% AFUE** | **78%** | **90% AFUE** |
| **Air Conditioner Efficiency** | **13 SEER** | **13 SEER** | **13 SEER** | **13 SEER** |
| **Duct R-Value** | **R-8** | **R-8** | **R-8** | **R-8** |
| **Duct Leakage** | **NA** | **NA** | **Ducts in conditioned space or leakage testing** | |
| **Lighting** | **NA** | **NA** | **50% High Efficacy Lighting** | |

# Energy Conservation – Building Structure

- Benefits and Limitations of Specifying Compliance as a Percent above the IECC



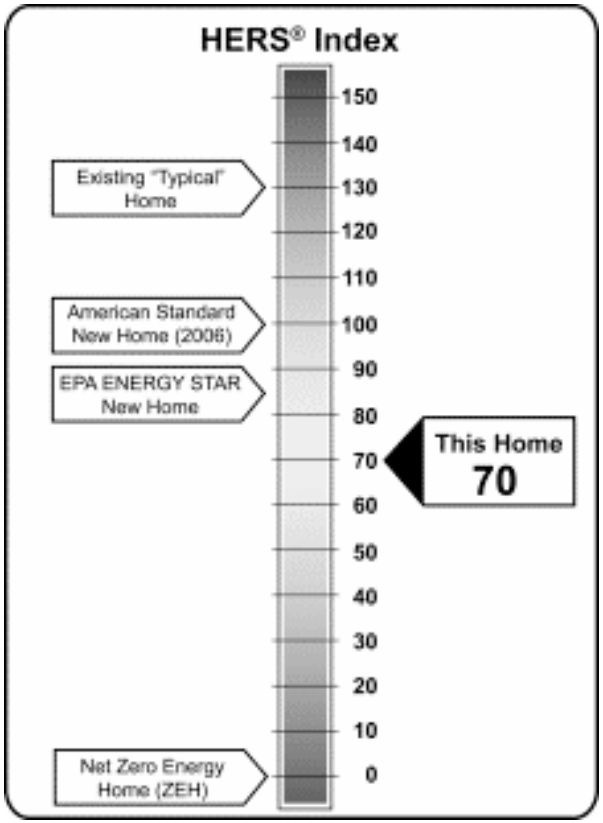





REScheck Software Version 4.1.3
Compliance Certificate

| Size | Site | Lndscp | Water | **Energy** | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

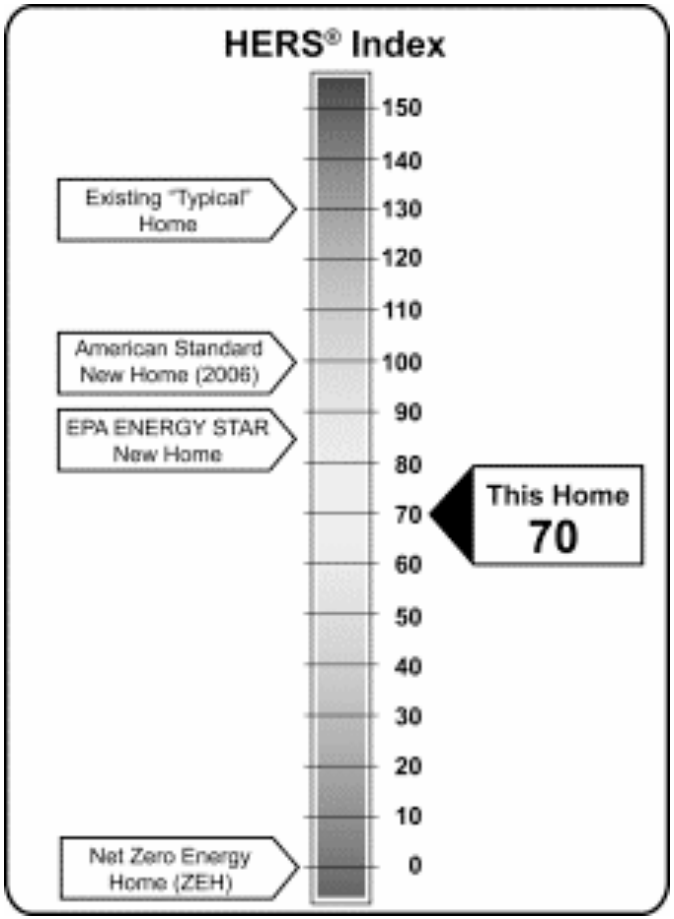
# Energy Conservation – Building Structure

- Benefits of a HERS Index
  - Comprehensive
  - Verifiable
  - Flexible by House Size
  - Tied to the IECC




| Size | Site | Lndscp | Water | **Energy** | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

# HERS Index – Adjust for house size

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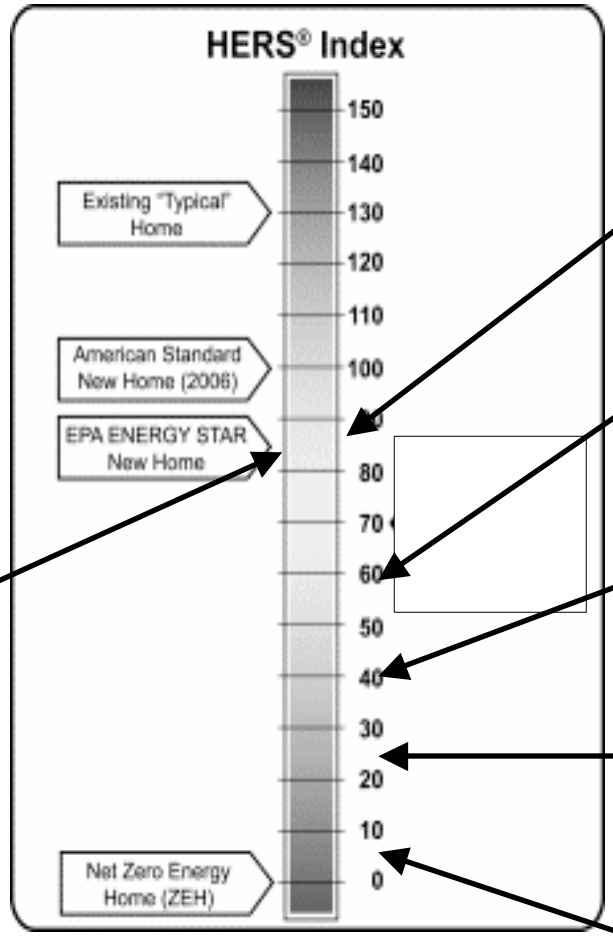
|---|---|---|---|---|---|---|---|
| Size | Site | Lndscp | Water | **Energy** | MatRes | EQ | OM |

# HERS Index – Energy Star




Boulder County, Co

<1000 ft2 HERS index of 85

1001- 3000 ft2 HERS index of 60

3001-4000 ft2 HERS index of 40

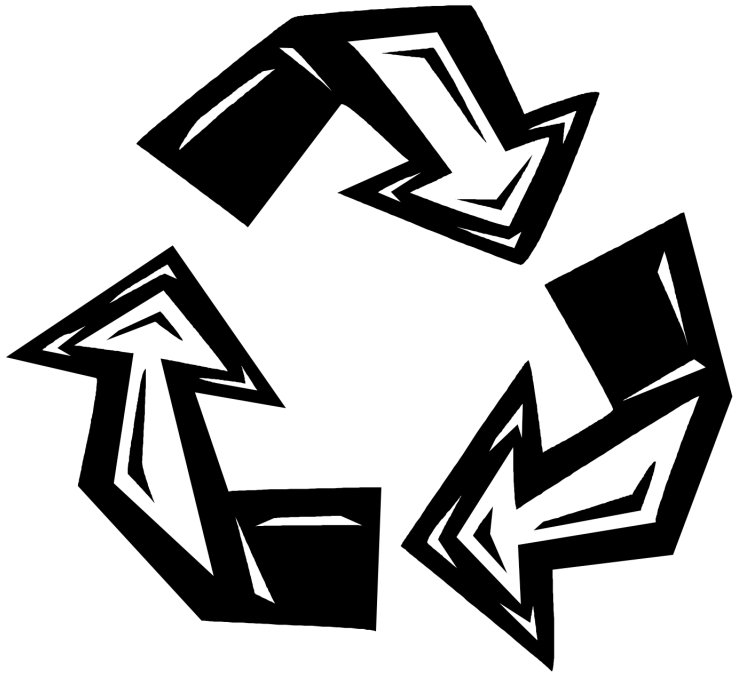
4001-5000 ft2 HERS index of 25

>5001 ft2 HERS index of <10

| Size | Site | Lndscp | Water | **Energy** | MatRes | EQ | OM |
|---|---|---|---|---|---|---|---|

# Materials and Resources.

- Reduce
- Reuse
- Recycle



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size | Site | Lndscp | Water | Energy | **MatRes** | EQ | OM |

## Section 5
## Indoor Environmental Quality

| | ITEM | PTS | HOW TO VERIFY |
|---|---|---|---|
| **5.1** | **Minimize potential sources of pollutants** | | |
| 5.1.1 | Install sealed combustion appliances for space and water heating | 6 | Builder spec sheet |
| 5.1.2 | Install induced/mechanical draft combustion equipment for space and water heating. | 4 | Builder spec sheet |
| 5.1.3 | Install combustion space heating and water heating equipment in isolated mechanical room or closet with an outdoor source of combustion and ventilation air. | 2 | Builder spec sheet |
| 5.1.4 | Install direct-vent, sealed-combustion gas fireplace, sealed wood fireplace, or sealed woodstove.<br>Or<br>No fireplace or woodstove installed. | 6 | Builder spec sheet |
| 5.1.5 | Use no central HVAC system (radiant heat or passive solar). Adequate ventilation is still required. See Section 3.2.2. | 6 | Builder spec sheet |
| 5.1.6 | Detached garage | 4 | Plans |
| 5.1.7 | Ensure a tightly-sealed door in between the garage and living area and provide continuous air barrier between garage and living areas including air sealing penetrations, walls, ceilings, and floors. | 2 | Builder-certified |
| 5.1.8 | Ensure particleboard, OSB, medium density fiberboard (MDF) and hardwood plywood substrates, used in the conditioned area, are certified to low formaldehyde emission standards ANSI A208.1, ANSI A208.2 and ANSI/HPVA HP1, respectively. Composite wood/agrifiber panel products must all either contain no added urea-formaldehyde resins or must be third party certified for low formaldehyde emissions. | 8 | Manufacturer's spec sheet or third party listing |
| 5.1.9 | Use non PVC materials for water supply lines. | 8 | Specifications |
| 5.1.10 | Install carpet, carpet pad, and floor covering adhesives that hold "Green Label" from Carpet and Rug Institute's indoor air quality testing program or meet equivalent thresholds verified by a third party. Must have all three. | 3 | Manufacturer's spec sheet |
| 5.1.11 | Mask HVAC outlets during construction and vacuum ducts, boots, and grilles before turning on central heating/cooling system. | 5 | Builder certified |
| 5.1.12 | Use low VOC emitting wallpaper. | 3 | Builder spec sheet |
| 5.1.13 | Use low VOC finishes other than paint. | 3 | Builder spec sheet |

# Indoor Air Quality – Minimize Pollutants

| Size | Site | Lndscp | Water | Energy | MatRes | **EQ** | OM |
|---|---|---|---|---|---|---|---|

# Owners Manual

**1.6 Owner's Manual**

What good are energy efficient appliances and good windows if you don't know how to operate them? An Owner's Manual can consist of a simple binder with the operation instructions for all major systems installed in the house. For examples of Owner's Manuals, please contact the High Country Conservation Center at (970) 668-5703.

**An owner's manual, which includes the operation instructions of all mechanical systems and energy saving systems installed in the house, shall be provided to the homeowner; many mechanical systems require professional service and this should be indicated in the owner's manual.** ***Not required for Multi-Family.***

Compliance: Inspected (Final)

| Size | Site | Lndscp | Water | Energy | MatRes | EQ | **OM** |
|---|---|---|---|---|---|---|---|

# Will Sustainable Homes be More Expensive?

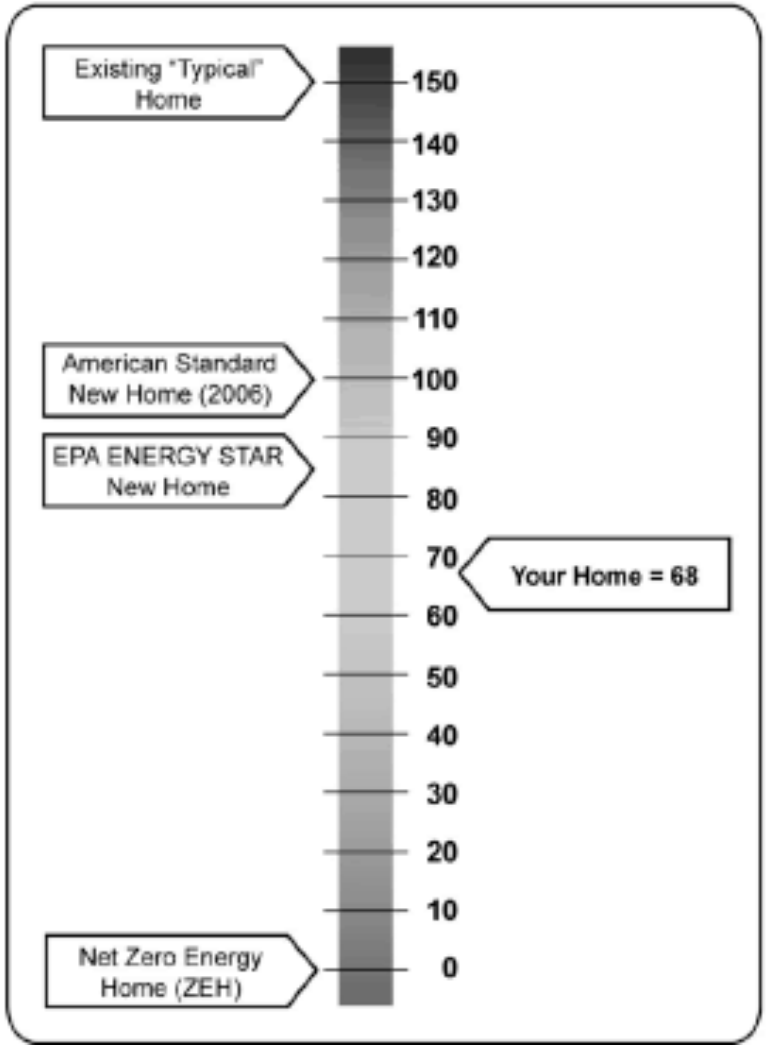
# Sustainable Homes Come in All Price Ranges

Courtesy - Mark L. Hixson, Design-Build

# What about the Existing Building Stock?

- ICC 700-2008 National Green Building Standard
- Eagle County, CO EcoBuild Checklist
- Seattle, WA

# Existing Home Ratings



# Commercial Programs

- Create more Comfortable Spaces
- Reduce Operating and Maintenance Costs
- Contribute to a More Vibrant/Active Community
  - Live
  - Walk
  - Work and Shop
- Reduce Carbon Emissions through
  - Community Energy Conservation
  - Building Energy Conservation
  - Waste Reduction

# National Standard or Locally Developed? What it means for enforcement

- National Programs and Standards Require Third Party Verification
  - Building Department focuses on traditional inspections, requiring certification paperwork
  - Certification required for final inspection and Certificate of Occupancy
- Local emphasis
  - LEED lacks emphasis on energy and water conservation desired in some communities
  - Solution – specify level of LEED certification and number of points in categories such as energy and water
- Locally Developed
  - Allows tailoring to the community
  - Requires cross-training of building and planning staff to ensure new standards are understood, supported and enforced
  - Can include some third party verification

# Chandler, Portland, Seattle – Support LEED and other Beyond Code Programs

- Voluntary
- Supports LEED Certification
- Proposed Incentives
  - Expedited Plan Review
  - Financial Assistance
  - Technical Assistance
  - Education

Table 1

LEED Fee Reimbursements

| | Rating | Percentage of LEED Certification Fee to be Reimbursed* |
|---|---|---|
| LEED | Certified | 50% |
| | Silver | 75% |
| | Gold | 100% |
| | Platinum | 200% |

* Fee reimburements are based on the USGBC member rate LEED Certification fees.

# Scottsdale, AZ – Locally Developed

- Voluntary
- Points Based
- Comprehensive
  - Sustainable Sites
  - Water Efficiency
  - Energy and Atmosphere
  - Materials and Resources
  - Indoor Environmental Quality

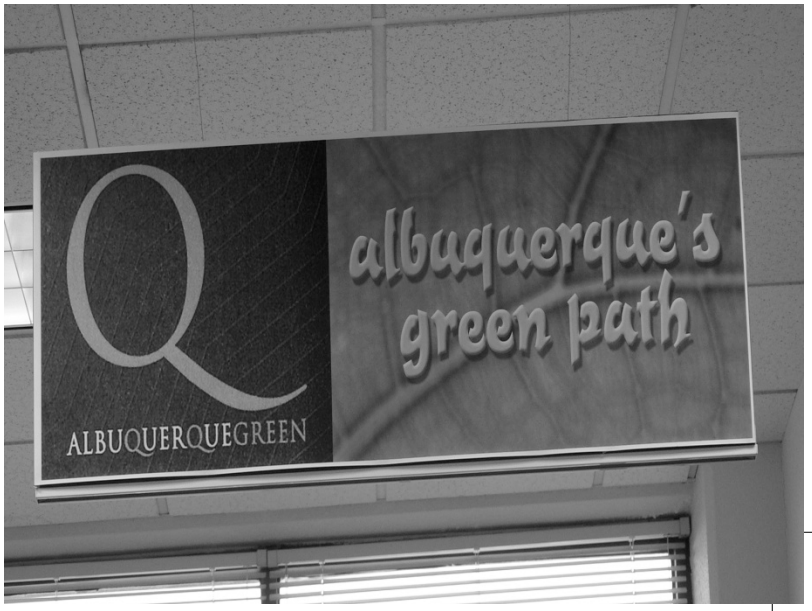
***The Duke,*** *Circle West Architects*

# Scottsdale, Energy Element

- Commercial
- Must meet all prerequisites in Commercial Building Checklist including:
  - Reducing heat island effect
  - On-site shielding of site lighting
  - Meet ASHRAE/IESNA 90.1 or 2003 IECC
  - Fundamental Building Systems Commissioning
  - On-site peak power demand (5%) through on-site renewable energy or off-site (green tags)
  - Daylighting required in 25% of all spaces occupied for critical visual tasks

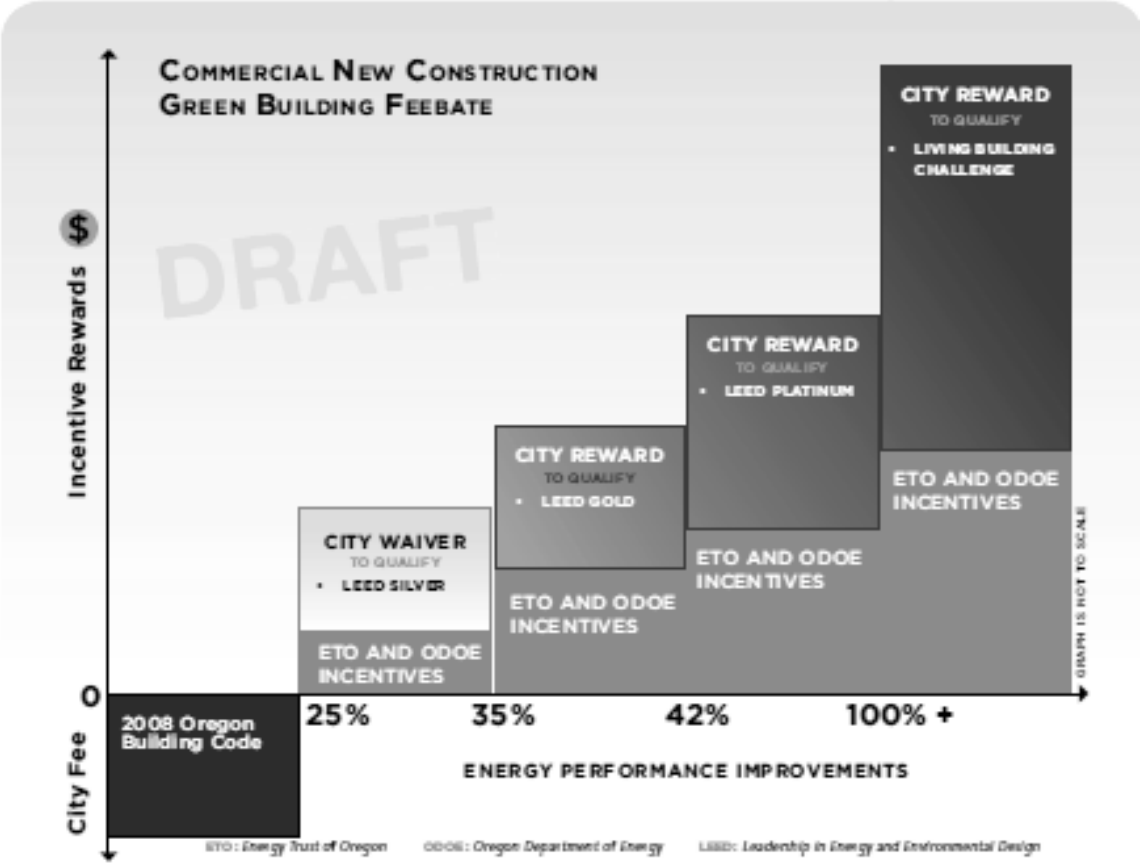
# Albuquerque, NM – Green Path, Based on LEED

- Voluntary
- LEED Gold, minimal 6 credits in Energy and Atmosphere,
  - EA 1 Optimizing Energy Performance or shared credits with
  - EA 6 Renewable Power



# Portland Proposal

- Mandatory performanc standards f commercial



# Rohnert Park, CA – Based on LEED

## Green Building Ordinance Step-by-Step Instructions

Effective date: July 1, 2007

**First Step:**
Review Chart "A" to determine the number of points required for your project. To determine if your project is exempt, see separate handout for complete listing of which projects are not covered under the Rohnert Park Green Building Ordinance.

**Second Step:**
Prepare the "Pre-Permitting Documentation" package to submit to the Building Division. A meeting with the Green Building Compliance Official (GBCO), or designated staff, is required to review the pre-permitting documentation (see note 1 below). Include the following three items in your "Pre-Permitting Documentation" submittal package:

**CHART "A"**

**Existing Single Family Dwellings:**
- Remodeling with NO new Floor Area _____ Exempt
- Additions less than 500 sq. ft. _____ Exempt
- Additions of more than 500 sq. ft. _____ 1 point

**New Single Family Dwellings:**
- 1 to 6 new dwelling units per acre of land _____ 110 points
- 7 to 12 new dwelling units per acre of land _____ 100 points
- More than 12 dwelling units per acre of land _____ 90 points

**Multi Family Dwellings**
- Remodeling without new Floor Area _____ Exempt
- All new Mulit-Family _____ 80 points

**New Commercial Buildings:**
- Less than 20,000 sq. ft. ____ LEED Certified Rating, Self-Certify
- 20,000 to 50,000 sq. ft ____ LEED Silver Rating, Self-Certify
- Over 50,000 sq. ft _____ LEED Silver Rating, Registered

**Commercial Tenant Improvements:**
- Less than 20,000 sq. ft. _____ 35% of possible LEED pts, Self-Certify
- 20,000 to 50,000 sq. ft _____ 45% of possible LEED pts, Self-Certify
- Over 50,000 sq. ft _____ 55% of possible LEED pts, Self-Certify

**A.**
**PRE-PERMITTING APPLICATION & PROJECT INFORMATION SHEET**
Includes the project title, contact person, name of the LEED® accredited professional or certified GreenPoint rater, etc.

**B.**
**PROJECT CHECKLIST/SCORECARD**
The **Commercial** project checklist must be prepared by a LEED Accredited Professional (go to www.usgbc.org, click on LEED AP, then click on Directory for a current list of LEED AP's.) The **Residential** project checklist must be prepared by a certified GreenPoint Rater (go to www.builditgreen.org and click on "GreenPoint Rated" for a list of certified raters.)
***NOTE: LEED checklists can be found at www.usgbc.org, by clicking on "LEED." GreenPoint Rated checklists can be found at www.builditgreen.org, by clicking on "GreenPoint Rated. Checklist/Scorecard must include 10% more points than required to allow for changes during construction.***

**C.**
**WORKSHEET**
For non-residential projects, provide a worksheet with an analysis of each credit claimed; along with any other documentation that may be necessary to show compliance.

# How Would the Community be Effected?

- Lifetime operational costs are decreased by 20% for a 2% investment in non-residential construction
- Homeowners enjoy more comfortable, healthier homes which are less expensive to maintain
- Commercial building upgrades can lead to 35% in annual savings
- Reduced Green House Gas Emissions
- Reduced demand for water
- Reduced demand on landfills
- Reduce public infrastructure costs
- Increased jobs – weatherization, energy raters, auditors, alternative energy installers

# Is There a Demand?

# Thank You!

## Resources

- BrittMakela.com
- USGBC.org
- ICCSafe.org
- NAHB.org
- Nwalliance.org
- SWenergy.org

# Thank You - Questions?