

# Sustainability Certification Workbook for New Home Construction



The step-by-step guide for Home Builders interested in having New Home Construction projects Certified by Audubon Lifestyles and earning the Seal of Sustainability from the International Sustainability Council.



AUDUBON  
NETWORK  
for Sustainability



Audubon  
outdoors

AUDUBON  
Lifestyles

planit green

BROADCAST  
AUDUBON



Copyright © 2011 ISC-Audubon  
Last Revision: May 15, 2013

*A journey of 1000 miles starts with a single step, so the saying goes. That is the same philosophy that our Sustainability Programs are based on.*

*Over the past couple of decades many programs have been created that all have a focus on getting people to “save the earth” where they live, work and play. While that is certainly a laudable goal, the fact of the matter is that most of these programs are so complicated and so expensive that the vast majority of people do not participate in them.*

*What we are focusing on are the ten most important actions that people can take at home or at their places of business that will truly make a difference. We believe that this approach is more easily understood and that the proposed actions are keys to improving the quality of the environment in cost effective and meaningful ways.*

*It has been said that in many cases it is the first few actions taken that make the biggest difference and the last few are the most expensive and least beneficial. Becoming Certified from Audubon Lifestyles, and earning the Seal of Sustainability from the International Sustainability Council as demonstrated by taking the ten actions outlined in this program workbook might just be a single step, but when one thousand individuals take those same measures we truly create a meaningful journey toward improving the quality of the environment, and gain the monetary rewards associated with being more sustainable at the same time.*

*We are trying to save the earth, one person, one place at a time please join us in this journey!!*

*R. Eric Dodson*



*Executive Director*



## **The Sustainable Homes Program**

A Sustainable Future... It Starts Where People Live

How we build and operate our homes, both in design and choice of materials, is one of the most significant ways that we can affect our future. Much of the concern boils down to the use of energy. How much energy is embodied in the building materials themselves, in their transportation and assembling? Then once the house is built, how much energy does it consume to keep its inhabitants comfortable?

Consumption of energy has a direct influence on environmental quality, because of the inherent pollution through greenhouse gasses and other emissions. Then there is the loss of natural beauty, ecosystems and basic resources associated with the extraction of fossil fuels and building materials.

There are some very simple ways to design houses that require very little energy to keep them comfortable. Getting your New Home Construction designated as a Certified Sustainable Home and earning the Seal of Sustainability from the International Sustainability Council is a tremendous recognition of your commitment as a homebuilder to build with the environment in mind.

The ways in which we choose to live is a big part of the problem, but can also be a big part of the solution if we choose to adopt more environmentally sustainable lifestyles. That means exercising more care, or stewardship, in our use of the Earth's finite resources (trees, water, energy, minerals, land) to ensure that there will be enough left for our children and their children.

The Sustainable Homes Program helps individuals lower their environmental impact through adopting more resource efficient lifestyle practices and living in homes that are energy and cost efficient.





## PLATINUM MEMBER

### Take the first Step!

Only Platinum Members can participate in the Sustainable Landscapes Programs.

As a non-profit, public interest organization, we rely exclusively on private donations, philanthropic grants, and membership dues. Your membership is put to work immediately to advance the tenets of sustainability and environmental protection, and we are deeply grateful for your support.

In addition, Platinum Membership provides a number of online resources to assist with sustainable living, and was created to help foster sustainability by working with, and providing educational resources to individuals, businesses, organizations, universities, government entities, municipalities, communities, neighborhoods, and virtually anyone seeking assistance in balancing the triple bottom line of people, profit, and planet.

Our ability to reach our organization's mission and vision depends on your participation.

#### **Platinum Membership Benefits**

- Listed on the Audubon Network for Sustainability as a Platinum Member with business logo, reciprocated link, contact information, map and address information, and business description.
- Ability to use the Platinum Member Logo on all marketing, sales and promotional, and educational materials
- New Members Packet include: ISC-Audubon Platinum Member vehicle and front door stickers and decals, computer mouse pad, co-written thank you letter from ISC-Audubon and Platinum Member Certificate for framing and display.
- Coauthored Press Release Announcing Platinum Membership distributed worldwide
- Multiple Subscriptions to SustainAbility Newsletter
- Platinum Membership is the first step in gaining Chartered ISC Member Designation and earning additional recognition by the International Sustainability Council.
- The knowledge that you are contributing to helping ISC-Audubon to continue in our mission, and receive the recognition that you are doing just a little bit more!

Please join with us today and make a positive contribution toward being socially, environmentally and economically responsible where you live, work and recreate.

Learn more about the benefits of membership by visiting:  
[www.isc-audubon.org/join.html](http://www.isc-audubon.org/join.html)

## TEN Requirements for Sustainable New Home Construction

1. Use Optimum Value Engineering/Advanced Framing or Prefabricated Components
2. Windows & Exterior Doors
3. Build Overhangs, Especially over South- and West-Facing Windows
4. Size HVAC Correctly
5. Use Non-Toxic Indoor Paints and Finishes
6. Install Housewrap Properly
7. Energy-Efficient Appliances
8. Use Appropriate Air Sealing Details
9. Insulation
10. Use Technology and Innovation

We believe that every person plays important roles in regard to the future of our planet. This includes roles at home, at work and in society at large. It is incumbent on each of us to make positive contributions toward the common good by being socially, environmentally and economically responsible where we live, work and recreate.

Sustainable living is an approach to social, economic decisions and activities, for all society, rich and poor, which is compatible with the preservation of the environment upon which we all depend for life. It is based on a philosophy of interdependence and respect for all life, as well as non-living parts of nature, as well as taking responsibility now for generations yet to come.

The Sustainable Home Program—for New Home Construction is only available to Homebuilders who have joined ISC-Audubon as a Platinum Member.

Platinum Members receive the opportunity to not only have themselves listed on the Audubon Network for Sustainability, but also their certified homes if they so choose. Platinum Members receive the Platinum Member Logo for use in their own marketing materials to show their support of ISC-Audubon.

Striving for and ultimately achieving the Seal of Sustainability from the International Sustainability Council (ISC), and becoming Certified by Audubon Lifestyles means that the homebuilder is setting the new standard for excellence in their new home construction projects. Certification coupled with the Seal of Sustainability indicates that the homebuilder has adopted and put into place recognized Best Management Practices that equal environmental superiority, social responsibility, and economically vitality.

Homebuilders that complete the requirements of the Sustainable Homes Program become global examples of excellence not only in regard to the newly built home, but also by promoting sustainable living and lifestyles.



# Use Optimum Value Engineering/Advanced Framing or Prefabricated Components

*Offers: Material Savings, Time Savings, Energy Efficiency, Less Waste*

Optimum value engineering (OVE) refers to framing techniques that reduce the amount of lumber used to build a home while maintaining its structural integrity. OVE results in lower material and labor costs, less construction waste, and improved energy performance for the building. While an advanced framing system can be applied as a whole package, many of its components can be used independently, depending on the specific needs of the project.



A wide variety of prefabricated panels can be used in place of conventional framing. Prefabricated panels are produced in the factory, often using computer-controlled equipment that transfers panel-cutting instructions from digital CAD drawings. These panels can be assembled rapidly on-site, cutting cycle time significantly. They provide superior insulation and are often lightweight, making installation easier. Further, they can be designed to resist earthquakes, high winds, debris impact, moisture, and insect infestation.

Other popular prefabricated components include precast concrete walls, open web floor trusses, and panelized wall and roofing systems.

## **Audubon Lifestyle Home Recommendations:**

- Use optimum Value Engineering,/ Advanced Framing or Prefabricated Components

## **Additional Web Resources:**

[www.toolbase.org/Technology-Inventory/Whole-House-Systems/advance-framing-techniques](http://www.toolbase.org/Technology-Inventory/Whole-House-Systems/advance-framing-techniques)

1

## **Verification Requirements:**

*please provide the following*

- One photograph of framing using OVE or Advanced Framing
- Home engineering plans or blueprints



# Windows & Exterior Doors

*Offers: Durability, Energy Efficiency, Lower Equipment Costs*

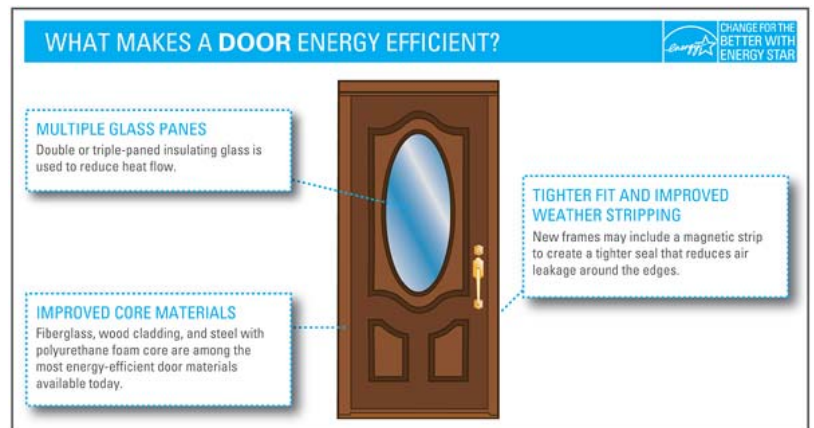
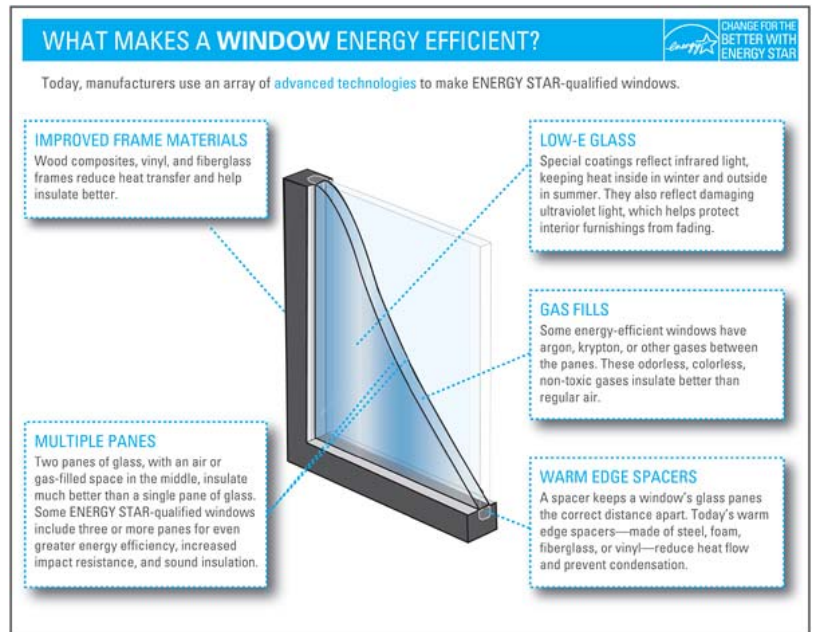
Qualified windows, doors, and skylights save you energy and money, increase the comfort of your home, and protect your valuable possessions from sun damage. Windows with a U-Value below 0.35 are your best choice. Exterior doors with improved core materials and double or triple pane glass can greatly reduce heat flow. A tight and sealed fit likewise is equally important. Failure to flash correctly is a leading cause of roof and window leaks--and callbacks--so be sure to give windows the time they're due. The improved comfort they deliver will surprise you. Be sure to select windows and doors appropriate for your climate. A high-performance window will cost you only about \$40 more than a conventional window, but it will save you about \$20 a year in heating and cooling costs.

## Audubon Lifestyle Home Recommendations:

- Install Low E windows
- Install Exterior Doors that meet Energy Star Rating

## Additional Web Resources:

[www.energystar.gov](http://www.energystar.gov)



## Verification Requirements:

*please provide the following*

- One photograph of windows or doors installed in home with Low-E Manufacturer's Sticker (or spec sheet documentation)

## Build Overhangs, Especially over South- and West-Facing Windows

*Offers: Durability, Energy Efficiency, Comfort*

Roof overhangs keep hot summer sun from overheating a home and help protect the home from rain. The larger the overhang for windows or doors, the less frequently moisture problems will occur on exterior and foundation walls. Properly sized roof overhangs over south-facing windows will also block unwanted summer sunlight but allow heat gain from sunlight in winter.

The local climate will determine the minimum size of overhangs. As a general rule, the wetter the climate, the larger the overhangs you'll need to install. Use 12-inch eaves and rakes in moderately dry climates, 18-inch eaves and 12-inch rakes in moderately moist climates, and a minimum of 24-inch eaves and 12-inch rakes in very wet climates.

### **Audubon Lifestyle Home Recommendations:**

- Install appropriate sized overhangs for climate

### **Additional Web Resources:**

[www.pathnet.org/sp.asp?id=14037](http://www.pathnet.org/sp.asp?id=14037)

[www.homepower.com/basics/design](http://www.homepower.com/basics/design)



3

### **Verification Requirements:**

*please provide the following*

- One photograph of overhangs

## Size HVAC Correctly *(if applicable)*

*Offers: Comfort, Energy Efficiency, Lower Equipment Costs*

It is important to determine the correct size HVAC system for residential heating and cooling equipment in order to improve homeowner comfort, and reduce both initial and operating costs, and maintenance and energy use.

Use the Air Conditioning Contractors of America (ACCA) guidelines for sizing HVAC equipment. Benefits include more satisfied customers and thus fewer callbacks, lower initial and operating costs, longer equipment run times and less cycling, and proper dehumidification during the cooling season.

Use The Air Conditioning Contractors of America's (ACCA) Manual J to estimate heating and air conditioning loads. This will be far more accurate than rules of thumb. Use The Air Conditioning Contractors of America's (ACCA) Manual S to select the proper equipment.



### **Audubon Lifestyle Home Recommendations:**

- Install Appropriate Heating and Air Conditioning System (HVAC)

### **Additional Web Resources:**

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

### **Verification Requirements:**

*please provide the following*

- A copy of the ACCA's Manual J calculations used for the home
- One photograph of the HVAC System

## Use Non-Toxic Indoor Paints and Finishes

*Offers: Indoor Air Quality*

Paints and finishes release low level toxic emissions into the air for years after application. The source of these toxins is a variety of volatile organic compounds (VOCs) which, until recently, were essential to the performance of the paint. New environmental regulations, and consumer demand, have led to the development of low-VOC and zero-VOC paints and finishes. Most paint manufacturers now produce one or more non-VOC variety of paint. These new paints are durable, cost-effective and less harmful to human and environmental health.

The term "non-toxic" is used here in its broadest sense. With paints and finishes, it's more a matter of degree. Even Zero-VOC formulations contain some small amounts of toxins. Three general categories of non-toxic (or low-toxic) paints include Natural Paints, Zero VOC, and Low VOC.

Benefits of using non-toxic paints and finishes include: Health—reduced toxins benefit everyone, including those with allergies and chemical sensitivities, Environmental—reduces landfill, groundwater and ozone depleting contaminants, effectiveness— low-VOC products perform well in terms of coverage, scrubability and hideability (covering flaws on previous coats), water-based, easy cleanup with soap and warm water, little or no hazardous fumes— low odor during application; no odor once cured, no off-gassing—painted areas can be occupied sooner, with no odor complaints, and finally they are not deemed hazardous waste—cleanup and disposal greatly simplified.

### **Audubon Lifestyle Home Recommendations:**

- Use non-toxic Indoor paints and Finishes

### **Additional Web Resources:**

[www.toolbase.org/Technology-Inventory/HVAC/hvac-in-conditioned-space](http://www.toolbase.org/Technology-Inventory/HVAC/hvac-in-conditioned-space)



5

### **Verification Requirements:**

*please provide the following*

- One photograph of paint or finish product

## Install Housewrap Properly

*Offers: Energy Efficiency, Durability*

Housewrap is often viewed solely as an air barrier, but properly installed housewrap also blocks, collects and channels water that gets past the siding. Improperly installed housewrap, however, is a problem waiting to happen. If housewrap is not lapped correctly, for example, water may drain behind windows.

Because housewraps are designed to allow water vapor to diffuse through them, they are best used in mixed and cold climates. For hot and humid climates, #15 felt paper, which limits water vapor transmission through walls in both directions, is a better choice.

Making a T-cut for windows and sealing penetrations space. Use The Air Conditioning Contractors of America's (ACCA) Manual D to design ducts to ensure proper air distribution rather than relying on rules of thumb.



### **Audubon Lifestyle Home Recommendations:**

- Offsetting housewrap and siding a minimum of 1" from roofing
- Continuing housewrap around corners

### **Additional Web Resources:**

[www.eere.energy.gov/buildings/info/documents/pdfs/28600.pdf](http://www.eere.energy.gov/buildings/info/documents/pdfs/28600.pdf)

### **Verification Requirements:**

*please provide the following*

- One photograph of housewrap

## Energy-Efficient Appliances

*Offers: Energy Efficiency, Less Waste, Financial Savings*

Home appliances now come in a range of energy-efficient models. These appliances meet strict energy efficiency guidelines set by the EPA and US Department of Energy. An ENERGY STAR qualified dishwasher, for example, will only cost about \$20 more than a comparable model, but because it is 25% more efficient than federal requirements, it can save you between \$15 and \$25 or more a year on your water heating bill.

When buying an appliance, remember that it has two price tags: what you pay to take it home and what you pay for the energy and water it uses. ENERGY STAR qualified appliances incorporate advanced technologies that use 10–50% less energy and water than standard models. The money you save on your utility bills can more than make up for the cost of a more expensive but more efficient ENERGY STAR model.



An ENERGY STAR refrigerator uses at least 15% less energy than federal allowances, and 40% less than conventional models sold in 2001. You can expect to pay about \$30 more up front; through energy savings, you'll be earning money back on your purchase within 5 years.

### **Audubon Lifestyle Home Recommendations:**

- All appliances should meet Energy Star standards

### **Additional Web Resources:**

[www.energystar.gov](http://www.energystar.gov)

7

### **Verification Requirements:**

*please provide the following*

- One photograph of appliances in home
- Make and model numbers of appliances

## Use Appropriate Air Sealing Details

*Offers: Energy Efficiency, Increased Comfort*

Air infiltration may contribute to as much as 30% of a building's heating and cooling costs, as well as draftiness, moisture, noise, and dust problems.

Significant leaks may occur near the attic, crawlspace, or basement, and around windows, doors, and chimneys. Plumbing chases, electrical outlets, attic accesses, ducts, and dropped ceilings are other likely suspects.

Perform air sealing before adding insulation. Use caulk for sealing gaps of less than 1/2 inch. Spray foam can fill small holes, as well as large cracks. Expanding foam will work around windows if the product was designed for this purpose. Use weatherstripping to seal areas with moveable components, such as windows and doors. For larger areas, use housewrap or 15# felt paper to form an airtight seal over the exterior sheathing, and polyethylene plastic to seal complicated leakage areas that may be of irregular shape.

### **Audubon Lifestyle Home Recommendations:**

- Install sealant tape on joint or seam between windows and exterior wall sheathing prior to the installation of exterior siding material
- Caulk or seal inside building perimeter between bottom plate and subfloor or concrete slab
- Caulk or seal all gaps between wall/ceiling electrical boxes, plumbing pipes, HVAC registers and drywall

### **Additional Web Resources:**

[www.energystar.gov](http://www.energystar.gov)



### **Verification Requirements:**

*please provide the following*

- Two example photographs of Air Sealing techniques

## Insulation

*Offers: Energy Efficiency, Comfort*

Sealing and insulating the "envelope" or "shell" of your home — its outer walls, ceiling, windows, doors, and floors — is often the most cost effective way to improve energy efficiency and comfort. It is estimated that a knowledgeable homeowner or skilled contractor can save up to 20% on heating and cooling costs (or up to 10% on their total annual energy bill) by sealing and insulating.

In houses with forced-air heating and cooling systems, ducts are used to distribute conditioned air throughout the house. In a typical house, however, about 20 percent of the air that moves through the duct system is lost due to leaks and poorly sealed connections. The result is higher utility bills and difficulty keeping the house comfortable, no matter how the thermostat is set.



### **Audubon Lifestyle Home Recommendations:**

- Insulate attic access panels to seal all gaps around panels
- Insulate water pipes that run in un-air conditioned spaces with foam pipe insulation
- Adequate insulation in attic space and exterior walls

### **Additional Web Resources:**

[www.energystar.gov](http://www.energystar.gov)

9

### **Verification Requirements:**

*please provide the following*

- One photograph of insulated water pipes
- One photograph of exterior wall insulation
- One photograph of attic insulation



## Use Technology and Innovation

*Offers: Water Quality, Energy Savings, Resource Management, more*

We recognize that there are numerous ways to incorporate green technologies into new home construction. This is your opportunity to get credit for promoting innovation and green technology in your home construction project.

### Audubon Lifestyle Home Recommendations:

- Use native plants in landscaping
- Use pervious pavers in the driveway and walkways
- Incorporate solar or alternative energy techniques into the new home
- Proper Site Design
- Use recycled or reclaimed materials in the construction
- Include a water capturing system such as a rain barrel for landscape watering
- Green roofs
- Incorporate rapidly renewable resources such as bamboo flooring
- Install Salt Water Pool Filtration Systems
- Incorporate smarthome technology
- Install HVAC ductwork in conditioned spaces

### Additional Web Resources:

[www.audubonlifestyles.com](http://www.audubonlifestyles.com)



### Verification Requirements:

*please provide the following*

- One photograph of innovation or technology
- Describe the innovation or technology on the following page



## Sustainable Homes Program Application—for New Home Construction

Contact Name \_\_\_\_\_  
Company Name \_\_\_\_\_  
Company Address \_\_\_\_\_  
\_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_  
Email address \_\_\_\_\_  
Company website \_\_\_\_\_  
Community Name \_\_\_\_\_  
Home Site Address \_\_\_\_\_  
\_\_\_\_\_  
City, State, Zip \_\_\_\_\_

### Documentation Requirements

- Home engineering plans or blueprints
- A copy of the ACCA's Manual J calculations used for the home
- Plant inventory list (*if applicable*)
- Make and model numbers for all appliances in home

**The Sustainable Homes Program is free for ISC-Audubon Platinum Members.** Platinum Membership fees include a one-time registration fee of \$250 (first year membership included), and then only \$100 annually. Maintaining Platinum Membership is required in order to retain certification. To begin participation in the program mail, fax or email this application form with Platinum Membership (if applicable) registration fee (check or credit card). Membership applicable for one location only.

- We are already a Platinum Member and wish to submit this application for free
- I would like to become a Platinum Member. Please add the cost of membership (\$250) with this certification request and mail me a new Member packet today!

**Name on Card** \_\_\_\_\_  
**Credit Card Number** \_\_\_\_\_  
**Exp. Date** \_\_\_\_\_

By signing below you indicate that all photographs, and documentation submitted, and that all information submitted is accurate to the best of your knowledge.

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_  
**Print Name** \_\_\_\_\_

Please mail this completed registration form, with required verification documentation and photographs to:  
**ISC-Audubon — 35246 US Hwy 19 #299, Palm Harbor, FL 34684**