Sustainability Certification Workbook for

Multifamily Homes

Audubon Lifestyles Certified

The step-by-step guide for owners and managers of Multifamily Homes interested in becoming Certified by Audubon Lifestyles and earning the Seal of Sustainability from the International Sustainability Council.

Audubon Network for Sustainability · ISC · Audubon outdoors · Audubon Lifestyles · planit green · Broadcast 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

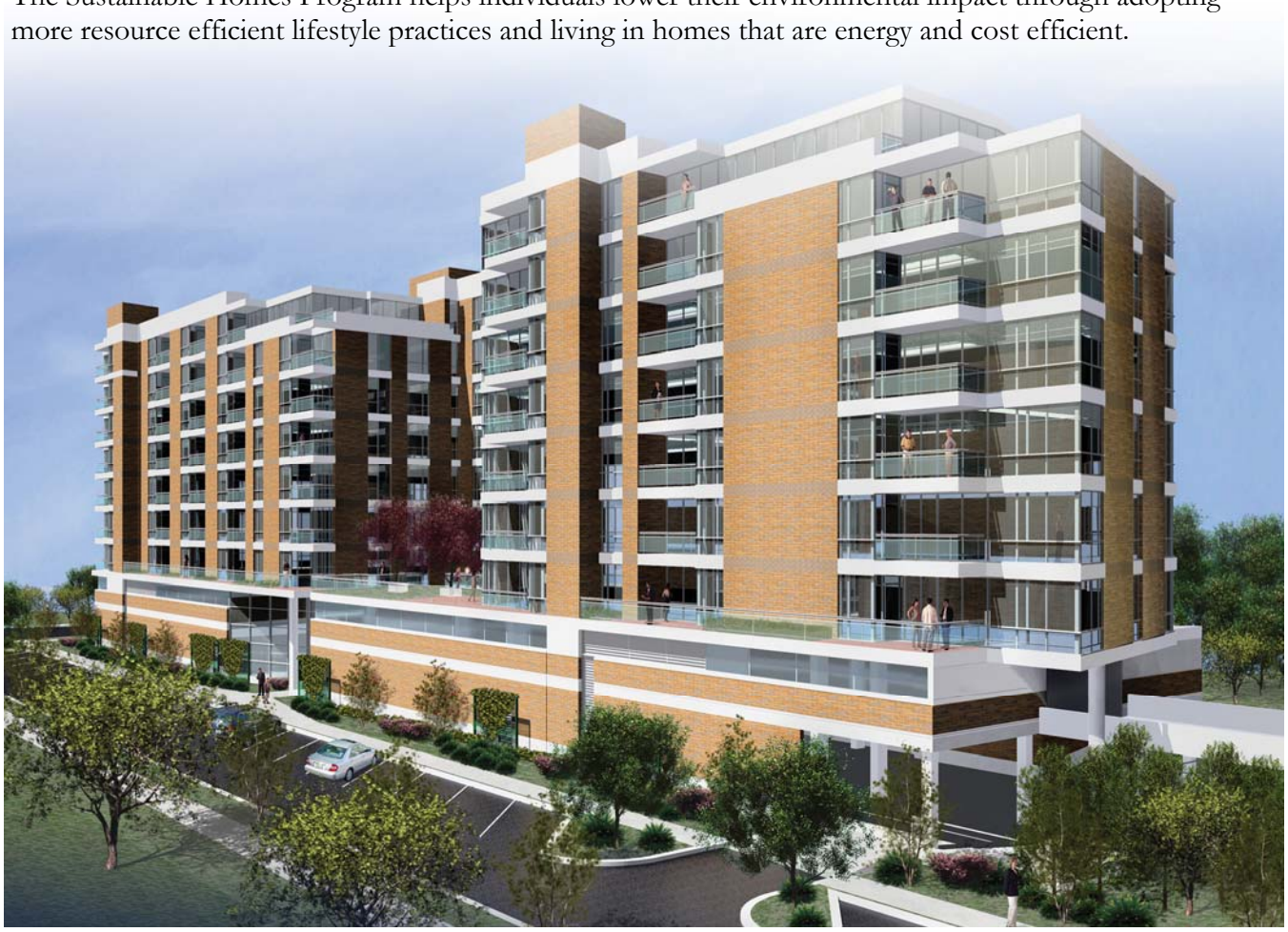
How we build and operate our homes, both in design and choice of materials, is one of the most significant ways that we can affect our future. Much of the concern boils down to the use of energy. How much energy is embodied in the building materials themselves, in their transportation and assembling? 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.



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

TEN Requirements for Sustainable Multifamily Homes

1. Air Conditioning
2. Heating
3. Hot Water Heating
4. Water Conservation
5. Windows & Exterior Doors
6. Energy Efficient Appliances
7. Recycling and Waste
8. Insulation
9. Ventilation
10. Use Technology and Innovation

Program intended for:

High-Rise Buildings
Low-Rise or Garden Buildings
Co-ops & Condominiums
Senior Citizen Centers
Assisted & Communal Living
Military Housing & Barracks
Dorms & College Residence Halls

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.

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

Air Conditioning

Offers: Durability, Energy Efficiency, Comfort, Financial Savings

There are four factors that affect heating and cooling costs: the outdoor temperature; the thermal efficiency of your home (insulation); the efficiency of your heating and cooling system; and the temperature you want to maintain inside the home (thermostat setting).

If a building is designed with energy-efficient features such as good insulation, high performance windows, air sealing and high efficiency duct systems, a right-sized air conditioner will provide better comfort and performance. A right-sized unit cycles on/off less than an oversized system, thus operating at a higher efficiency, and provides more uniform and consistent performance. Oversized units are loud, create cold zones and stress the equipment more than a properly sized unit.

It is advisable to have your system routinely serviced by a qualified HVAC mechanic once a year, but that doesn't mean there's nothing you can do to help keep the system in proper working order. Estimates show that up to 90% of all HVAC systems have dirty filters that could be costing as much as 20% more than normal to keep a home comfortable. All duct work, whether in attic space or underneath the house, should be well insulated.

Adequate airflow rates are also important for air handlers. Low airflow rates can lead to ice buildup on the cooling coil and to compressor failure. At higher altitudes, this is even more of an issue due to the thinner air, and fans should be somewhat oversized to ensure an adequate amount of heat is transferred into the coils. Careful ductwork sealing, insulation, sizing and placement significantly increases the efficiency of cooled air delivery

Audubon Lifestyle Home Recommendations:

- Choose a highly efficient and properly sized HVAC system for the multifamily home.
- Clean HVAC registers regularly to ensure unrestricted air flow.
- Use installed and programmable digital thermostat

Additional Web Resources:

www.cee1.org

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Verification Requirements:

please provide the following

- ☐ One example photograph of programmable thermostat installed in each dwelling unit
- ☐ One example photograph of air conditioning system installed *(or example of individual systems)*

Heating

Offers: Durability, Energy Efficiency, Comfort, Financial Savings

In retrofit projects, before replacing heating systems, minimize the heating load with insulation, high performance windows and other energy-efficiency measures. Most multifamily buildings have either:

- ◊ Independent, unit-sized furnaces in each dwelling;
- ◊ Multi-unit or independent hydronic heating
- ◊ Independent electric baseboard heating;
- ◊ Package terminal heat pumps; or
- ◊ Electric or gas wall heaters.

To keep construction costs low, many affordable housing projects utilize low-cost wall-mounted or baseboard electric heaters. These are poor choices because electric heating is inefficient and expensive. Compared to heating with electricity, gas heating is more economical and environmentally preferable. Natural gas is combusted directly at the place of use, with minimal distribution losses. Electricity is often transported great distances from where it is generated, becoming less than 40% efficient due to losses during generation and transmission.

High efficiency gas heating provides residents with greater comfort because the home is evenly heated, reducing cold spots. Furnaces also pose less of a fire hazard than electric wall units. High efficiency gas furnaces cost considerably less to operate than electric or gas wall heaters and may last longer. Sealed-combustion, direct venting central furnaces reduce the possibility of backdrafting of combustion gasses, a potential health problem. Programmable thermostats conserve energy by allowing for setback when residents are away or asleep.

Audubon Lifestyle Home Recommendations:

- Specify furnaces and boilers that meet Energy Star Requirements
- An installed and programmable digital thermostat

Additional Web Resources:
www.energydesignresources.com
www.flexyourpower.org/res/naturalgas
www.energystar.com

Verification Requirements:

please provide the following

□ One example photograph of programmable thermostat installed in each dwelling unit
□ One example photograph heating system installed

Hot Water Heating

Offers: Durability, Energy Efficiency, Financial Savings

Water heating accounts for a significant portion of energy use in multifamily housing—sometimes many times higher than heating and cooling combined. Reduce energy use by installing high efficiency storage-tank or tankless water heaters or central boilers. The type of water heating equipment required depends on how much hot water is needed, how it will be metered, and several other considerations.

Tankless or instantaneous water heaters can be more efficient than standard storage-tank systems since they only heat water when it is needed; there is no tank of hot water slowly losing heat 24 hours a day.

Solar collectors that preheat water for boilers and storage-tank heaters can further reduce energy use. Central boilers are particularly well suited for combining with solar water heating.

As in the HVAC system, the thermostat setting of a water heater is an important factor to consider. Lowering the thermostat to between 130° and 140° can not only save money, it can also reduce the scalding dangers associated with very high temperatures.

To insulate individual water heaters there are relatively inexpensive water heater insulation blankets at home improvement stores. Newer water heaters (less than seven years old) don't need a tank wrap, but can benefit from pipe insulation, which can be purchased separately. Insulate the water lines leading from the tank for the first 3 feet with pipe wrap or tubular foam insulation.

Audubon Lifestyle Home Recommendations:

- Install an insulating blanket on water heaters older that 7 years
- Insulate the first three feet of pipe leading from water heater
- Set your water heater thermostat to between 130° and 140°

Additional Web Resources:

www.waterheaterrescue.com

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Verification Requirements:

please provide the following

□ One example photograph of water heating system

Water Conservation

Offers: Water Conservation, Energy Savings, Financial Savings

Many commonly used appliances can be modified to conserve water or bought specifically for their water conserving qualities. Inexpensive and simple to install, low-flow shower heads and faucet aerators can reduce your home water consumption as much as 50%, and reduce your energy cost of heating the water also by as much as 50%.

This conservation of water and energy is not only good for the environment, but the savings in your utility bills will pay for the cost of the aerators within a few months. From then on, you enjoy continued savings.

Water-efficient fixtures reduce water and sewer costs, reduce demand on water supplies and treatment facilities, and reduce heating energy consumption and associated greenhouse gas emissions.

Audubon Lifestyle Home Recommendations:

- Install water-efficient faucets, showerheads, toilets and urinals that meet these specifications:
  - ◊ Kitchen faucets: 2.0 gpm
  - ◊ Pre-rinse spray valves in commercial kitchens: 1.6 gpm
  - ◊ Bathroom lavatory faucets: 1.5 gpm, WaterSense qualified
  - ◊ Showerheads: 2.0 gpm
  - ◊ High efficiency toilets: 1.28 gpf, WaterSense qualified (including dual-flush)
  - ◊ High efficiency or waterless urinals: .5 gpf

  (gpm = gallons per minute gpf = gallons per flush)
- Check and repair leaking faucets, pipes and toilets

Additional Web Resources:
www.earth911.org/water/water-conservation
www.epa.gov/watersense

Verification Requirements:

please provide the following

□ One example photograph of bathroom sink or kitchen sink faucets installing in dwelling units
□ One example photograph of toilet for installing in dwelling units
□ One example photograph of showerhead installing in dwelling units

Windows & Exterior Doors

Offers: Durability, Energy Efficiency, Lower Equipment Costs

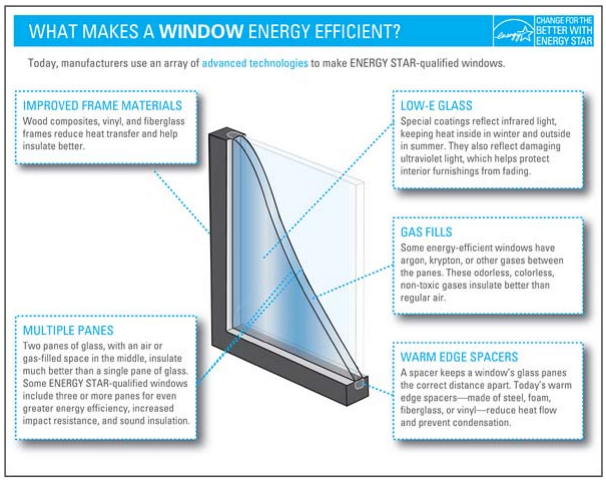
Older multifamily buildings often have single-pane windows that drive up energy costs, make the homes uncomfortable, and allow too much noise in from outside. Although it's expensive to replace windows, the benefits are compelling. Today's high performance windows have specific characteristics that greatly improve energy efficiency, including double glazing, low-conductivity frames, coatings on glazing surfaces that reduce heat gain and loss, tight sealing of the window's components, and low-conductivity gas fills.

High performance windows control heat gain and loss and associated HVAC costs, reduce noise levels, improve occupant comfort, increase daylight and views, and reduce furniture fading. In some instances where single-pane windows are old and drafty, installing high performance windows can increase the livable areas of a room. Insulated windows reduce condensation on windows, which helps prevent water damage and mold growth.

Audubon Lifestyle Home Recommendations:

- Replace Single-Pane Windows with High Performance Dual -Pane Windows
- Consider using high performance dual pane windows with appropriate low-emittance (low-e) glazing.
- Install thermally insulated window treatments when appropriate

Additional Web Resources:
www.h-m-g.com/multifamily/aheea/handbook.htm
www.efficientwindows.org



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Verification Requirements:

please provide the following

- ☐ One example photograph of qualified windows installed in home or thermally insulated window treatments provided in each dwelling unit.
- ☐ One example photograph of insulated front door used in dwelling units.

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

Verification Requirements:

please provide the following

- ☐ One example photograph of appliances provided in dwelling units
- ☐ Make and model numbers for appliances provided in dwelling units

Recycling and Waste

Offers: Waste Reduction

Most residents and commercial tenants will recycle and most maintenance staff will implement recycling programs if it is made easy.

Landowners should always discuss with city or county staff to learn the various requirements regarding the trash and recycling infrastructure as they relate to sewer drains, fire sprinklers, enclosures, stormwater, roofing and space requirements. In addition, speaking directly with waste haulers will provide exact requirements in order to facilitate collection of recycling and trash. Recycling infrastructure should include collection of mixed paper, cardboard, containers (metal, glass, plastic) and possibly food waste and other organic material. Use simple and clear signage. Recycling and food waste bins should be labeled and distinct from garbage bins.

Recycling should be as easy as throwing out garbage, but multifamily housing is rarely designed to facilitate this. Long walks to bins or poorly designed collection areas are common barriers to recycling. Residents may be unaware of recycling opportunities because they have little or no contact with the waste company. Often, the waste bill is paid directly by the property manager. Proper design of collection areas and consistent education is critical to making recycling easy, sanitary and useful for residents and commercial tenants.

A well-organized recycling program can improve residents' attitudes toward recycling. It's important to provide instruction to residents and staff on proper recycling procedures. Composting in a community garden fosters social interaction.

Audubon Lifestyle Home Recommendations:

- Buy and provide multiple recycle bins and provide them to inhabitants of the multifamily home. Specifically in the home office, kitchen, and garage.
- Participate in the curbside pickup program or take recyclables to a local recycler

Additional Web Resources:
earth911.org/recycling

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Verification Requirements:

please provide the following

□ One example photograph of recycle bins provided to each dwelling unit.
□ One example photograph of community recycling area *(if applicable).*

Insulation

Offers: Energy Efficiency, Comfort

There is nothing you can do that more effectively controls the cost of keeping your home comfortable than insulating it properly. That includes sufficient R-values of insulation in the attic, walls and floor, as well as buttoning up air leaks throughout the house. Keep in mind that attic insulation should be at least R-30, wall insulation at least R-12, and floor insulation at least R-19.

Adding insulation to your walls and attic, and installing weather stripping or caulking around doors and windows can lower your heating costs more than 25 percent, by reducing the amount of energy you need to heat and cool your home. Insulate your homes to ENERGY STAR standards to increase occupant comfort, reduce indoor and outdoor noise, and lower your energy bills.

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:

- Add insulation to your attic of at least R-30.
- Insulate heating and air conditioning duct work with at least 2 inches of insulation.

Additional Web Resources:
www.insulation.org

Verification Requirements:

please provide the following

□ One photograph of insulated water pipes
□ One photograph of attic insulation
□ One photograph of heating and air-conditioning duct work

Ventilation

Offers: Energy Efficiency, Increased Comfort, Health and Indoor Air Quality

Today's residential buildings are constructed more tightly than in the past. But air leakage still accounts for up to 25% of the heating and cooling energy used by a typical residence. Reducing air leaks saves energy, although tighter construction does affect ventilation and may necessitate ventilation systems to provide adequate air changes. Tighter construction and imbalanced forced-air HVAC systems can cause significant differences in pressure from outside to inside. Temperature and wind on the outside constantly change the ambient pressure, causing drafts and leaks. Residents may notice doors slamming shut behind them or air being pulled under doorways.

Ventilation is especially important in bathrooms and kitchens, not just to exhaust odors but to remove moisture that can cause mold and other problems. Appropriate kitchen ventilation also helps remove carbon monoxide, nitrogen dioxide and other pollutants produced by gas cooking appliances, as well as particulates produced by cooking food.

Sealing air leaks improves energy efficiency and acoustical performance. Ventilation (natural or mechanical) improves indoor air quality. Efficient bathroom and kitchen exhaust systems reduce energy use compared to standard models, are quieter, and reduce moisture and indoor air quality problems.

Audubon Lifestyle Home Recommendations:

- Provide operable windows and skylights for natural ventilation.
- Install Energy Star–qualified ceiling fans in all bedrooms and living rooms.
- Install effective exhaust systems in bathrooms and kitchens.
- Build residences that are tightly sealed to increase energy efficiency. Use heat recovery ventilators and energy recovery ventilators in conjunction with outside air intake to save energy and balance pressure differences. Have a HERS rater conduct infiltration testing, duct testing, and sealing if needed.

Additional Web Resources:
www.energystar.gov
www.buildinggreen.com

Verification Requirements:

please provide the following

□ Two example photographs of good ventilation techniques used in the multifamily building

Use Technology and Innovation

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

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

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
- centralized laundry

Additional Web Resources:
www.audubonlifestyles.com

Verification Requirements:

please provide the following

□ One photograph of innovation or technology used in the multifamily building
□ Describe the innovation or technology on the following page

Please take a moment to write comments, or tell us more about the house including the innovation or technology project

We are proud of the participants that have gone through the Sustainable Home Program, and have found that the best way to encourage others to get involved is by talking about select homes that have gone through the program. We ask that the text above, information, and photos provided in this application be made available in order to featured this home on the various ISC-Audubon websites, and in the SustainAbility Newsletter. We recognize that privacy is very important to homeowners, and will not disclose any address information in any way.

☐ **I agree, and allow ISC/Audubon to feature my home on the web and in print OR**

☐ **Please do not disclose any of the information to the public in any way**

Sustainable Homes Program Application—for Multifamily Homes

Property Manager Name _____

Contact Name *(if different)* _____

Address _____

_____

City, State, Zip _____

Phone _____

Fax _____

Email address _____

Website _____

Neighborhood Name _____

Home Site Address _____

_____

City, State, Zip _____

Total # of Dwelling Units _____

Documentation Requirements

- Home engineering plans, or blueprints (if available)
- Make and model numbers for all appliances in home
- Description of Innovation or Technology project
- 19 project specific photographs

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