

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning  
Commission

Published January 19, 2010

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Quality of Life for Families



Community Water Quality



Reduced Carbon Footprint



Bio-Diversity



Increased Energy Efficiency

**Orange Village**  
**Kathy U. Mulcahy, Mayor**

Ad Hoc Committee on Sustainable Building  
Chairman Judson A. Kline, AIA, LEED AP

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---

---

## **CONTENTS**

<b>Introduction</b>	<b>3</b>
<b>Defining the Program</b>	<b>4</b>
<b>Mission</b>	<b>4</b>
<b>Process</b>	<b>5</b>
<b>Philosophic Fundamentals</b>	<b>6</b>
<b>Committee on Sustainable Building Standards</b>	<b>6</b>
<b>Steps to Certification</b>	<b>7</b>
<b>Orange Goes Green Residential Construction</b>	<b>9</b>
<b>Orange Goes Green Site Development</b>	<b>33</b>
<b>Appendix:</b>	
<b>Residential Construction Criteria Checklist</b>	<b>48</b>
<b>Site and Development Criteria Checklist</b>	<b>53</b>

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission  
Published January 19, 2009

---

## Introduction

This Orange Goes Green Certification Program Manual (“Manual”) is a reference guide for developers, builders, home and property owners who wish to carry out the Orange Green Building Standards and achieve recognition through the Orange Goes Green Certification Program. The standards and process for the certification program the community seeks to encourage are detailed through the Manual.

Orange Village is introducing a number of initiatives within the community to build a more sustainable future for its citizens. Among these is the Orange Goes Green Certification Program (OGGCP), a set of voluntary Orange Village sustainable building guidelines leading to award and recognition within the community and throughout the region. The guidelines are standards by which buildings may be measured to determine the level of sustainability achieved. In completing the process, the building or site will receive a plaque and certificate recognizing the level achieved.

Orange Goes Green projects include:

- development projects and sites
- construction and remodeling of homes and buildings

The OGGCP provides Orange Village an opportunity to take a leadership position in northeast Ohio by creating a model set of guidelines other communities may utilize and emulate. Using the OGGCP guidelines, the property owner, developer and the Village can reduce the community’s carbon footprint, and improve property values, water quality, bio-diversity, environmental health, enhance community pride and save energy for the home owner.

Community motivation to produce the guidelines is informed by the Green City Blue Lake Institute Climate Change Work Group’s set of Big Hairy Audacious Goals (BHAGs), established for the seven county region of northeast Ohio. Among these goals is a 90% reduction in the carbon footprint produced in northeast Ohio by 2050. (Carbon footprint is the volume by weight of Carbon Dioxide produced in constructing, operating and maintaining a building.) In setting this goal, the Institute identified the various sources of contribution to the region’s carbon footprint.

Among the most significant are emissions from residential buildings, contributing 24% of the regions carbon. In order to achieve this major reduction goal, communities need to play a significant role in motivating more sustainable building practices in upgrading and remodeling homes. Orange Village is a largely residential community and the implementation of a strategy to change the way homes and buildings are constructed in the region, resulting in a significant reduction of carbon emissions.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## Defining the Program

Based upon the OGGCP guidelines as set forth in this Manual, builders, developers, property and home owners are able to evaluate their projects in performance areas of value, goals for emission reduction and quality of life aspirations of the community. Credits are given in areas of achievement.

The criteria for measurement of the performance has been derived from mandatory regulations established in local building and zoning codes and voluntary standards established through the development of the credit guidelines. Builders, developers, and property and home owners choosing to participate in the program offered and administered through the Orange Village Building Department will:

1. Complete a set of credit review forms
2. Submit these documents with plans to the building department
3. Undergo review and inspection for compliance by the building department
4. Receive a certificate and plaque acknowledging the level of achievement reached

In the development of the Orange Goes Green Certification Program criteria, Mayor Kathy U. Mulcahy, with the support of Village Council, the Building Department, Planning Commission and Architectural Review Board, directed the formation of an Ad Hoc Committee on Sustainable Building Standards ("Committee") populated by members of these boards and commissions along with the Village Architect, Law Department, Village Planner and interested citizens. The committee has also enlisted support and assistance from the Cuyahoga County Planning Commission, United States Green Building Council NEO and other appropriate resources to assist in guiding the effort.

## Mission

The Ad Hoc Committee on Sustainable Building Standards is charged with the mission to:

Produce a set of sustainable building guidelines establishing community expectations for land use and buildings constructed in Orange Village to:

- improve property values
- improve water quality and efficiency
- enhance bio-diversity
- improve environmental and community health
- encourage community engagement
- improve energy efficiency resulting in cost savings for residents
- reduce community carbon footprint and
- encourage innovative environmentally friendly design

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

The implementation of these guidelines is to be reasonably achievable without making it difficult or financially burdensome to homeowners, developers and builders producing buildings and projects within Orange Village.

In addition to the above expectations, additional goals include:

- Improve the community's quality of life by promoting a cleaner environment with reduced pollution and building emissions, and improved water quality
- Provide a source of community education on sustainable building
- Raise community expectations for building and development to improve outcomes for more energy efficient buildings constructed in the Village
- Develop a format allowing for continuous improvement and additional standards to be included over time
- Provide a legacy for the future of Orange Village

The Committee endeavored to create a set of guidelines and standards easily understood and a process readily implemented.

## Process

The Committee was formed and began work in January 2009. Following initial discussions on goals, challenges, strategies and opportunities, the committee divided into three work groups: site and development; buildings; and legislative policy. The outcome has resulted in a set of guidelines in documented credit forms identifying areas of accumulated points for addressing desired practices, this Manual defining the process and protocol for inquiry or interpretations, the benchmarks for certification awards and description of the ongoing management of the program. The program is linked to the Orange Village Zoning Code as a reference tool for use as a companion to the building and zoning plan review process.

While compliance to the Orange Goes Green Certification Program guidelines is not compulsory, the community places high value on the application of the principles and strategies it represents. At the time of inquiry into application for planning, zoning and building permits, the Village Building Department:

1. Offer applicants a package of information regarding the program
2. Record acknowledgement of the applicant's option to participate
3. Review the documents.

# **ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL**

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **Philosophic Fundamentals**

The process of developing the program and criteria has been guided by adherence to basic principles to assure its value, meaning to the community, while avoiding building code conflicts and unintended consequences resulting in objections to participation. A 4-Way test was developed to inform the decision-making process:

- Is it Reasonable?
- Will it improve the quality of life in Orange Village?
- Will it contribute to enhanced value?
- Will it provide environmental or better energy efficiency for the residents of the community?

In the establishment of the guidelines and credit forms, the Committee utilized several recognized standards including: USGBC LEED for Homes, LEED for Neighborhood Development, LEED for New Construction, the National Home Builders Association (NAHB) Model Green Home Building Guidelines References and Checklist and Energy Star Criteria. These standards were then filtered through the sieve of the existing Orange Village zoning, building codes and procedures to localize and simplify them for Orange.

## **Orange Committee on Sustainable Building**

Orange Village is grateful to the members of the Committee who volunteered their time and provided knowledge and insight in the development of the guidelines set forth in this Manual. The Committee members are:

Kathy U. Mulcahy, Mayor

Daniel Brown, Village Council, LEED AP

Judson A. Kline, Chair, AIA, LEED AP

Rebecca Schaltenbrand, Assistant Law Director

Louis Hovancsek, Building Commissioner

Ronald Kluchin, Village Architect

David Hartt, DB Hart Village Planner

Anthony Lazar, Planning Commission

Mary Fisco, Secretary to the Planning Commission

Paul Alsenas, Director, Cuyahoga County Planning Commission (CCPC)

Kristin Hopkins, Principal Planner, CCPC

Joyce Burke-Jones, Exec. Officer, Office of Sustainability, CCPC, LEED AP

Harley Cohen

Pamela Pierce, LEED AP

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission  
Published January 19, 2009

---

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## Steps to Certification

1. Complete a set of credit review forms
  - a. The Forms Section contains the documents to complete for certification. Choose each of the following forms that apply:
    - Residential Construction Criteria Checklist
    - Site and Development Criteria Checklist (The site, land, or multi-lot development, not including the building)
  - b. Complete the first page of the Criteria Checklist.
    - For Residential Construction, enter the Architect's Name, Homeowner's Name, and Property Address on the first page of the Checklist.
    - For Site Development, enter the Developer's Name, Project Name, and Property Address on the first page of the Checklist.
  - c. Verify that the project can meet the Prerequisite items as shown in the Maximum Points column of the Criteria Checklist. **The project cannot be certified at any level if these are not met.**
  - d. It is suggested that companies and persons involved with the project should meet to discuss which credits are feasible for this project. Each credit not show as a Prerequisite is optional.
  - e. Determine the project's desired certification level:

Category /Level	Max Credit	Certified	Green	Orange
Site & Development	119	42-63	64-85	86-119
Buildings	184	65-99	100-132	133-184

- f. In the YES and NO columns circle the expected credits (YES), and the credits which will not be attempted (NO). Allow for unforeseen problems by circling more YES credits than are needed to successfully obtain a certification level.

It is suggested that supplier and contractor contracts are written to meet or exceed your sustainability credit requirements. A misunderstanding with a supplier or contractor could potentially forfeit credits towards certification.

Note: Where credits may be available in multiple categories for the same application, the maximum credits would be achieved for the highest level attained. For example, the project may obtain 3 points for EA 5.7 Better Windows, 4 points for EA 5.8 Best Windows, and up to 12 points for EA 5.9 Exceptional Windows if the criteria are met for each credit.

4. Some credits require careful planning, and others require an inspection before the project is completed. For these reasons, the decision to certify the project should be made at the beginning of the project.
5. Submit the documents with plans for the project to the Building Department. Some credits require additional documentation or pictures to obtain points.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission  
Published January 19, 2009

---

6. Undergo review and inspection for compliance by the Building Department.

The sustainable intent should be considered along with the requirements of the credit. For example, if rainwater is collected and deposited in a way that negatively impacts another aspect of sustainable design, then the intent has not been met and the credit may be forfeited.

7. Receive a certificate and plaque acknowledging the level of achievement reached.

The Mayor and Council President sign the certificate and a plaque will be awarded by the Village for display on the property.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

## ORANGE GOES GREEN RESIDENTIAL CONSTRUCTION

### **ID Innovation and Design Process Credits**

#### **ID 1.1 5 Points**

#### **Engage the services of LEED Accredited Professional**

##### **Why?**

LEED APs (Leadership in Energy and Environmental Design Accredited Professionals) are recognized by the U.S. Green Building Council (USGBC) and trained in green building and sustainability practices. They can guide the building certification goals.

##### **How?**

The Green Building Certification Institute (GBCI) maintains a current list of LEED APs.

The GBCI LEED Professional Directory:

<http://www.gbci.org/>

Click the Directories tab, and then choose LEED Professional Directory.

Search for a LEED AP in Ohio using the “without specialty” option or specific specialties of interest.

##### **Suggestions**

The LEED AP should be hired at the beginning of your project to facilitate the process of integrating sustainability practices into the project.

##### **Submittals**

Submit a copy of the LEED AP’s certificate and a letter from the LEED AP stating the dates that they worked on the project.

#### **ID 1.2 5 Points**

#### **Prepare & Submit a Sustainable Development Plan**

##### **Why?**

A Sustainable Development Plan provides the overall impact and sustainability goals of the project and explains the intent and implementation. It is an excellent document to provide to your contractors, suppliers, family and friends to explain the importance and goals of sustainability in your project.

##### **How?**

Write a plan which includes the overall impact and sustainability goals of the project. List each of the credit sections from this Criteria Checklist proposed to achieve and discuss the approach and standards expected to maintain, and the benefits.

##### **Suggestions**

The LEED AP hired in ID 1.1 can assist in the creation a Sustainable Development Plan.

##### **Submittals**

Submit a typed and printed Sustainable Development Plan.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **ID 1.3 1 - 3 Points**

### **Encourage building or dwelling design orientation to maximize active and passive solar energy considerations**

#### **Why?**

The building orientation reduces the costs of lighting, heating and cooling. A building with correct orientation and sufficient overhangs will block the summer sun and allow the winter sun to enter the building.

#### **How?**

A computerized energy simulation analysis or recommendation from a licensed design professional can be done to determine the best orientation of a building. It can also be used to determine the expected energy costs and the correct size for heating and air conditioning equipment.

#### **Submittals**

Submit a description of the building orientation, the best orientation, and how it was determined. If an energy simulation was used, also provide a summary report showing the results.

## **ID 1.4 5 Points**

### **Provide Durability Design & Verification Process (submit durability checklist)**

#### **Why?**

A sustainable building should last longer than other buildings, have lower maintenance costs and cause less worries for the owner. Using long-lasting materials reduces the quantity of materials recycled or in landfills, and reduces the energy costs associated with removing materials and replacing them with other materials.

#### **How?**

Improve durability by using durable materials and prevent problems from excessive moisture, heat, sunlight, ultra-violet light, ozone, acid rain, and insects.

A list of durability considerations:

<http://www.buildinggreen.com/auth/article.cfm/2005/11/1/Durability-A-Key-Component-of-Green-Building/?checklist=1>

U.S. Department of Housing and Urban Development durability guide:

<http://www.huduser.org/publications/destech/durdesign.html>

#### **Submittals**

Submit a narrative including the durability checklist.

## **ID 1.5 1 - 5 Points**

### **Provide Innovative design for minimizing the environmental impact of the home by incorporating measures that have tangible and demonstrable benefits beyond what is indicated in Orange Goes Green Rating System**

#### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

## Submittals

Describe the innovation and the positive impact it is expected to obtain.

## LL Location and Linkages

### LL 2.1 5 Points

#### Residence fulfills the requirements provided by both the Orange Goes Green Residential Construction and Site Development Criteria Checklists

##### Why?

As projects may include site development work along with building construction, the credits available through the site may enhance opportunity for certification for the overall project. The property owner can gain both benefit and additional credits for pursuing the Site Development Path as well as the Sustainable Residential Construction building program.

##### How?

Complete the Orange Goes Green credit forms for Site Development and Residential Construction, and submit them when making application for approval.

##### Submittals

Initial each item fulfilled, sign and date the form at the bottom, and submit the completed Orange Goes Green Site Development Criteria Checklist.

## SS Sustainable Sites

### SS 3.1 Prerequisite

#### Provide recommended minimum controls for site erosion control during construction

##### Why?

Erosion control devices will prevent loss of the rich top soil used to grow plants and prevent water pollution. Water pollution in local streams can kill animals and fish by destroying their habitat.

##### How?

Leave natural land contours and plants since plant roots will hold the soil in place; fence off areas to remain untouched and minimize grading only to the area immediately surrounding the building; place fabric silt barriers on or around storm sewer drains and streams; seed disturbed areas with fast-growing plants, mulch, or cover with straw or a mat; design the site so water flows toward retaining ponds rather than off the property or into streams and sewers. Periodically inspect the silt barriers during construction to make sure they are in good working order. Replace or repair as needed.

## Suggestions

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

Prevent erosion by designing the site with proper drainage patterns and without steep hills.

## **Submittals**

Describe the erosion control measures used, submit dated pictures showing the prevention measures and inspection sheets indicating proper maintenance of the prevention measures.

## **SS 3.2 Prerequisite**

### **Provide landscaping plan for approval by the Village Planning Commission and Architectural Review Board**

#### **Why?**

Increase the value of your home and the resale value of the properties within the community.

#### **How?**

Hire a professional landscape designer to assist you in the design.

<http://www.apld.com>

<http://www.asla.org/ISGWeb.aspx?loadURL=firfin>

search for Ohio and Residential professionals

## **Submittals**

Submit a landscaping plan.

## **SS 3.3 1 Point**

### **Minimize the area of disturbance caused by construction activities**

#### **Why?**

Retain the natural beauty of your land and prevent damage to natural habitats outside of the immediate building area. Undisturbed soil allows water to infiltrate the soil easier than soil compacted by heavy equipment.

#### **How?**

Do not clear-cut the land or disturb the land more than 10 feet from the building footprint, access road, and utility ditches. Fence off areas to remain untouched and enforce the restrictions. Post signs. Plan and stage the construction activities so a minimal area is used for storage of construction equipment and materials.

## **Submittals**

Submit drawings indicating the fenced areas, and dated pictures showing the fenced areas and signage.

## **SS 3.4 1 Point**

### **Design structure to minimize the area of disturbance**

#### **Why?**

Retain the natural beauty of your land and prevent damage to natural habitats outside of the immediate building area.

#### **How?**

Design a multi-story home instead of a sprawling home that uses more land. Maintain as much of the land as possible in a natural state instead of grading. Do not grade the land farther than 10 feet from the structure. Design your home to sit closer to the road and minimize the driveway

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

length. Minimize parking areas and place garages and other structures close to your home.

## **Submittals**

Describe the design decisions used to minimize the area of disturbance.

### **SS 3.5 1 – 3 Points**

#### **Design landscaping utilizing native species of plant life**

##### **Why?**

Native species grow wild without human intervention. They use less water and require less maintenance, are draught resistant, and will survive the winter.

##### **How?**

Use native plants.

A list of native plants:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

Ohio native trees, bushes, and flowers:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

## **Submittals**

Provide landscape plans indicating species types and location. The plan is to include a schedule of planting indicating native and non-native plants.

### **SS 3.6 1 – 3 Points**

#### **Minimize the use of conventional turf in the designed landscape**

##### **Why?**

Conventional grass must be watered and takes more care than native plants.

##### **How?**

Use native plants instead of grass.

A list of native plants:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

Ohio native trees, bushes, and flowers:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

## **Submittals**

Based on percentage

### **SS 3.7 2 Points**

#### **Reduce local heat island effects through the use of shade trees, open pavers, and/or materials with a Solar Reflectance Index (SRI) of at least 29**

##### **Why?**

Asphalt parking lots and dark non-reflective materials capture heat during the day then release it at night increasing the temperature of the surrounding area. By using materials with an SRI of 29 or higher, the surrounding area will maintain a lower temperature during the summer and create a more comfortable environment.

##### **How?**

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

Retain the trees and plants already on the site or introduce additional shade plants. Use open pavers with ground cover between the pavers reducing runoff and allowing water to infiltrate into the ground instead of continuous asphalt or concrete. Use light colored paving and roofing with an SRI of at least 29.

## **Submittals**

Describe how the plan reduces heat island effect through shading. List roof and paving materials and provide the manufacturers' SRI values.

### **SS 3.8 1 - 3 Points**

**Design lot so that at least 70% of the constructed environment is either permeable or designed to capture water runoff for infiltration on-site**

#### **Why?**

Capturing the water before it runs off-site and infiltrating the water into the ground recharges the underground water supply in the local aquifer, lowers sewer costs, and reduces the quantity of water the local municipality must clean mechanically and chemically. Let nature clean the water for you by filtering it through your plants and land, providing a clean, chemical-free water supply.

#### **How?**

Use rain barrels or a roof-top garden for water captured from the roof. Use permeable pavement with ground cover planted between the pavers. Capture water before it reaches the sewer or the edge of the property by directing it into ponds or bioswales for infiltration into the ground.

## **Submittals**

Describe how water is captured and infiltrated or used within the property.

### **SS 3.9 1 - 3 Points**

**If the building site is constructed on a steep slope, provide either terracing with retaining walls, or plantings & ground cover at the rate of one tree per 500 square feet of disturbed area**

#### **Why?**

Trees, plantings, and retaining walls prevent the soil from washing away and the ground eroding. The rich top soil remains on the property instead of entering the sewer or polluting the local streams.

#### **How?**

To the extent possible avoid development on slopes. Where the building or site design requires building to extend into these areas, engage a geotechnical or civil engineer to provide design consultation in developing structures or grades to provide stability for the construction and surrounding site.

## **Submittals**

Describe the terracing, retaining walls, plantings, and ground cover used to prevent erosion on ground with slopes of 1:4 or higher.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission  
Published January 19, 2009

---

## **SS 3.10 1 - 3 Points**

### **Control permanent site drainage through the use of rain gardens and siltation devices**

#### **Why?**

Natural recharge of aquifers and underground water to organically filter the water and reduce mechanical treatment of rainwater.

#### **How?**

Use natural planting areas and gardens and direct water into these areas.

#### **Suggestion**

Use native plants and work with a landscape designer to develop the area and identify the volume of water. Engage a site professional.

#### **Submittals**

Submit a topographic and landscape plan with schedule of planting materials. The plan should indicate water flow into the garden. Provide volume calculations to indicate the amount of water handled.

1 Point = 10 - 25% reduction in runoff

2 Points = 26 - 50% reduction in runoff

3 Points = 50+% reduction in runoff

## **WE 4.0 Water Efficiency**

### **WE 4.1 5 Points**

#### **Design and install a rainwater harvesting and storage system**

##### **Why?**

Instead of paying for water (potable drinking water) use free rain water from rain barrels and underground cisterns to water plants in your garden.

##### **How?**

RealNEO offers a how-to video on rain barrel installation:

<http://realneo.us/content/rain-barrel-workshop>

##### **Suggestion**

Rain barrels must be covered to prevent insects from hatching. Cisterns and rain barrels, if they are too big, can harbor bacteria and other growth from stagnant water. If they are too small any overflow during a heavy rain must be handled in an alternative manner.

##### **Submittals**

Provide documentation of rain barrel or storage system installation.

### **WE 4.2 3 Points**

#### **Design & Install a greywater reuse system**

##### **Why?**

Greywater is water that comes from washing dishes, clothes and people. It is not toilet water (black water) and is not clean water directly from the faucet. Greywater is clean enough to be reused in toilets or in gardens instead of sending it directly to the sewage treatment plant.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## How?

A greywater plumbing system requires a dual set of pipes in the home, one for greywater and one for the municipal water supply.

## Suggestions

Use biodegradable products for washing. Avoid products with sodium, chlorine, and boron which accumulate over time and kill plants. Do not dump pesticides, paint thinners, or medicines down the drain.

## Submittals

Submit plumbing drawings indicating the secondary greywater system.

### WE 4.3 Prerequisite

**Provide third party inspection of the irrigation system if an irrigation system is installed.**

## Why?

The irrigation system inspection will indicate whether the system is working and efficient. A poorly designed or maintained system will waste water by not providing the optimum amount of water needed in individual areas.

## How?

The EPA WaterSense website lists landscape irrigation professionals:  
<http://www.epa.gov/WaterSense/pp/irrprof.htm>

## Submittals

Submit the irrigation inspection report.

### WE 4.4 2 - 3 Points

**Design landscape and irrigation system such that demand for irrigation is reduced.**

## Why?

Use less water and lower water cost.

## How?

Utilize native plants that do not require additional water. Use trees and layers of plants that shade other plants and reduce water needs. Use a drip watering system that reduces loss of water due to evaporation by placing the water close to the roots. Use a watering system that senses when plants need water. Use weather information to automatically determine when plants need water.

## Submittals

Describe how the landscape and irrigation plans reduce water usage and provide calculations and documentation prepared by a landscape professional or equal.

20% reduction = 2 points

40% reduction = 3 points

### WE 4.5 1 – 5 Points

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

## Provide high-efficiency (low flow) fixtures or fittings

### Why?

Low flow faucets, toilets, and shower heads reduce water usage consequently the cost of water.

### How?

Specify fixtures which use less than 1.6 gpm (gallons per minute). EPA WaterSense products are:

toilets - 1.28 gpm, faucets - 1.5 gpm, shower heads - 2 gpm

WaterSense products are listed on:

<http://www.epa.gov/WaterSense/pp/index.htm>

### Submittals

Submit the specification indicating the low flow devices, and provide the documentation of products installed.

## WE 4.6 1 - 5 Points

### Innovation

#### Why?

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

#### Submittals

Describe the innovation and the positive impact it is expected to obtain.

## EA 5.0 Energy and Atmosphere

### EA 5.1 Prerequisite

#### Design and Build residence by a certified ENERGY STAR Builder

##### Why?

An Energy Star Builder understands the practices and materials necessary for green buildings. Avoid missing certification by a few points because the contractor did not understand green building and energy efficient practices.

##### How?

Energy Star Builders in Ohio:

[http://www.energystar.gov/index.cfm?c=new\\_homes.hm\\_index](http://www.energystar.gov/index.cfm?c=new_homes.hm_index)

##### Submittals

Submit a copy of the Energy Star Builders credentials.

## EA 5.2 Prerequisite

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

## Meet the minimum energy performance requirements provided by ENERGY STAR for Homes

### Why?

Energy Star homes are a smart investment that have a higher resale value and substantially lower energy costs.

### How?

Energy Star homes are well insulated, with tight construction and use energy efficient appliances. See the details:

[http://www.energystar.gov/index.cfm?c=new\\_homes.nh\\_features](http://www.energystar.gov/index.cfm?c=new_homes.nh_features)

Energy Star homes have an Energy Star index of 85 or lower, using at least 15% less energy than a standard home.

### Submittals

Submit the energy audit documentation and include the home's index.

## EA 5.3 5 Points

### Exceed the minimum energy performance provided by ENERGY STAR for Homes; provide evaluation report by a professional energy rater

### Why?

Don't take the builder's and architect's word the new home is energy efficient. An Energy Star rater measures the homes energy efficiency and gives it a Energy Star Index score. With the Energy Star Rating, the home may qualify for and receive a lower cost Energy Efficient Mortgage where available.

### How?

Find an Energy Star Rater in Ohio:

[http://www.energystar.gov/index.cfm?fuseaction=new\\_homes\\_partners.showStateResults&s\\_code=OH](http://www.energystar.gov/index.cfm?fuseaction=new_homes_partners.showStateResults&s_code=OH)

### Submittals

Submit a copy of the Energy Star Rater's report.

## EA 5.4 3 – 5 Points

### Install insulation that meets the R-value requirements listed in Chapter 4 of the current International Energy Conservation Code

### Why?

Costs for heating and cooling will be reduced.

### How?

Install insulation with an R value of 38 for ceilings, 19 for walls, and 30 for floors, with caulking at joints to provide an air-tight building.

### Suggestions

Use a low VOC caulk. Use an infrared camera or energy audit as a tool to find voids in the insulation and caulking.

### Submittals

Submit design documentation of wall, ceiling and floor installation. Submit documentation indicating what was installed.

## EA 5.5 3 Points

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

## Provide an air leakage test by a energy rater; and meet the LEED criteria for reduced envelope leakage (minimum R Values)

### Why?

Costs for heating and cooling will be reduced. By auditing the installation you will know that it was properly installed and completed.

### How?

Contract with a professional energy rater to use a blower door and duct test or an infrared camera as a tool to verify proper installation.

Search for energy raters in Ohio:

<http://www.natresnet.org/directory/raters.aspx>

### Submittals

Submit a copy of the energy rater's report.

## EA 5.6 Prerequisite

### Good Windows: Design and install all windows with insulated glass with a U-value of less than .30.

#### Why?

Improve energy performance and reduce your heating and cooling costs.

#### How?

NFRC (National Fenestration Rating Council) rates windows.

Look for windows that have a U-Factor below .30, low condensation, and high VT (visible transmittance indicating the amount of light coming through the window). Also consider the quality and energy efficiency of the window frame.

<http://www.nfrc.org/>

<http://www.efficientwindows.org/>

### Submittals

Submit design documentation for windows and indicate the U-value.

Following construction, submit documentation indicating what was installed.

## EA 5.7-EA 5.9 1 – 12 Points

### Upgrade Windows: Upgrade windows with coating, argon gas, and/or triple pane to provide a U-value of less than .30.

#### Why?

Upgrading windows reduces the need for heating and cooling in your home, saving energy costs.

There are many different types of window coatings. Some films reduce ultraviolet rays and heat gain during summer, and reflect heat back into the room during winter. A window coating called LowE2 (spectrally-selective low emissivity) blocks infrared and ultraviolet light but allows visible light.

Argon is a non-toxic, non-reactive, clear, and odorless gas used between window panes. Because argon is less conductive than air, heat transfer is reduced between the inside and outside of the home.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

Triple pane windows allow for films to be applied inside the glass, and low-conductance edge spacers to reduce heat loss at the edge of the glass. This improves the overall U-value of the window.

## How?

NFRC (National Fenestration Rating Council) rates windows. Look for windows that have a U-Factor below .30, low condensation, and high VT (visible transmittance indicating the amount of light coming through the window). Also consider the quality and energy efficiency of the window frame.

<http://www.nfrc.org/>

<http://www.efficientwindows.org/>

The following table shows the possible points awarded:

	Percent of Windows in Home			
	25%	50%	75%	100%
Film coating/LowE2	1	2	3	4
Argon Gas	1	2	3	4
Triple Pane	1	2	3	4
Total	3	6	9	12

## Suggestions

Energy efficient windows may also provide a tax credit.

## Submittals

Submit house drawings, and window make, model, and percentages of different types. Following construction provide a copy of the purchase receipt

### EA 5.10 Prerequisite

#### Provide for reduced distribution losses in ductwork.

##### Why?

If the ductwork that carries the heat from the furnace to the conditioned space is not insulated, then the heat unintentionally escapes into the outdoors or a space where the heat is not needed - a basement, attic, or crawlspace. The furnace will work harder, use more fuel, and wear out faster; and the room where the heat is needed will not feel as comfortable because the air in the ducts cools before reaching the room.

##### How?

Insulate or seal all joints in ductwork with mastic (an adhesive).

AND

Do not install ductwork in exterior walls or unconditioned space unless a minimum R-6 insulation is used.

## Suggestions

Do not use duct tape to seal ducts because the adhesive will fail over time. Use a mastic and mesh tape that is low-VOC and UL 181 rated with a low flame spread and smoke rating during fire.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **Submittals**

Provide specifications describing the method for sealing ductwork. The ductwork will be visually inspected by the Orange Village inspector.

### **EA 5.11 3 – 5 Points**

#### **Greatly reduce air distribution losses as verified by professional energy rater**

##### **Why?**

A professional energy rater tests the air tightness of the home, assists in locating hidden air leaks, and provides a HERS Index comparing the home's energy usage with the average home.

##### **How?**

A duct leakage test is conducted to verify air leakage at 50 Pascals of air pressure.

3 points < 3 CFM

4 points < 2 CFM

5 points < 1 CFM

##### **Suggestions**

Hire a RESNET (Residential Energy Services Network) Home Energy Rater to conduct the test:

<http://www.natresnet.org/directory/raters.aspx>

Scroll down to the bottom of the page and choose "Ohio".

The HERS index can also be used to obtain a lower cost home mortgage, called an Energy Efficient Mortgage.

##### **Submittals**

Submit the energy rating documentation signed by the energy rater along with a copy of the rater's current certification credentials.

### **EA 5.12 Prerequisite**

#### **Provide Energy Star rated heating and cooling equipment and thermostat**

##### **Why?**

Energy Star certified appliances save money by being more energy efficient and durable. Energy Star is a joint program developed by the U.S. Environmental Protection Agency and Department of Energy.

##### **How?**

The Energy Star website provides a list of products, stores, and rebates:

<http://www.energystar.gov/>

##### **Submittals**

For each product, submit the product type, make, model, and Energy Star rating.

### **EA 5.13 3 – 5 Points**

#### **Design and Install high-efficiency HVAC equipment that exceed Energy Star rating.**

##### **Why?**

Improve system performance result in reduced energy costs.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## How?

Select high efficiency HVAC equipment.

The Energy Star website provides a list of products, stores, and rebates:

<http://www.energystar.gov/>

## Submittals

Submit design documentation indicating equipment specified and performance standards. Submit documentation indicating what was installed.

### EA 5.14 5 Points

#### Design and install an Energy Star high efficiency hot water distribution system

##### Why?

Improved system performance results in reduced energy costs.

##### How?

Select high efficiency water distribution equipment.

The Energy Star website provides a list of products, stores, and rebates:

<http://www.energystar.gov/>

## Submittals

Submit design documentation indicating equipment specified and performance standards. Submit documentation indicating what was installed.

### EA 5.15 3 Points

#### Insulate all domestic hot water piping with minimum R-4 insulation, including bends

##### Why?

Insulation will reduce heat loss, saving energy and delivering hot water more efficiently to the user, resulting in a lower energy cost and more comfort.

##### How?

Install pipe wrap with a minimum R-value of 4, including the bends.

## Submittals

Submit design documentation indicating insulation specified and performance standards. Submit documentation indicating what was installed.

### EA 5.16 Prerequisite

#### Install ENERGY STAR labeled light fixtures in all high-use rooms

##### Why?

Improved system performance results in reduced energy costs.

##### How?

Select high efficiency lighting fixtures.

The Energy Star website provides a list of products, stores, and rebates:

<http://www.energystar.gov/>

## Submittals

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

Submit design documents indicating fixtures specified and performance standards. Submit documents indicating what was installed.

## **EA 5.17 5 Points**

### **Install ENERGY STAR Advanced Lighting Package**

#### **Why?**

An assurance to homebuyers that their new home uses the latest in energy-efficient lighting technologies to improve energy performance and lower monthly costs.

#### **How?**

Install a minimum of 60% ENERGY STAR qualified hard-wired fixtures and 100% ENERGY STAR qualified ceiling fans where installed.

The Energy Star website provides a list of products, stores, and rebates:

<http://www.energystar.gov/>

#### **Submittals**

Submit design documentation indicating fixtures specified and performance standards. Submit documentation indicating what was installed.

## **EA 5.18 3 Points**

### **Install exterior lighting utilizing either motion sensor controls or integrated photovoltaic cells**

#### **Why?**

Improved system performance results in reduced energy costs.

#### **How?**

Select lighting containing motion sensors or integrated photovoltaic cells which will turn the lighting off when not needed.

#### **Submittals**

Submit design documents indicating fixtures and sensors specified and performance standards. Submit documents indicating what was installed.

## **EA 5.19 Prerequisite**

### **Install all ENERGY STAR labeled appliances; including refrigerators, dishwashers, and clothes washers**

#### **Why?**

Improved system performance results in reduced energy costs.

#### **How?**

Select Energy Star rated high efficiency appliances.

The Energy Star website provides a listing of products, stores, and rebates:

<http://www.energystar.gov/>

#### **Submittals**

Submit design documentation indicating appliances specified and performance standards. Submit documentation indicating what was installed.

## **EA 5.20 1 - 5 Points**

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

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## **Design and install a renewable electricity generation system that supplants a minimum of 10% of the electrical demand required by the residence**

### **Why?**

Reduce on-going electrical costs using an electrical generation system installed on the property. This reduces the dependence on commercial electricity sources.

### **How?**

Install equipment that may include photovoltaic, wind, or other electricity generating systems.

### **Submittals**

Submit design documentation from the installer or engineer indicating the system specified and performance standards. Submit documentation indicating what was installed.

- 1 point 10% reduction in use of grid electricity
- 2 points 20% reduction in use of grid electricity
- 3 points 30% reduction in use of grid electricity
- 4 points 40% reduction in use of grid electricity
- 5 points 50% or more reduction in use of grid electricity

## **EA 5.21 Prerequisite for existing equipment**

### **Provide proof of proper refrigerant charge of the air conditioning system**

#### **Why?**

Chlorofluorocarbon and hydro-chlorofluorocarbon (CFCs and HCFCs) are significant contributors to global warming potential (GWP) and the creation of green house gases (GHG). Elimination of the use of CFCs and HCFCs diminishes this impact on the environment.

#### **How?**

Utilize the services of a licensed HVAC specialist to properly charge the system with low GWP and GHG gases.

#### **Submittals**

Submit documentation showing the gases used and installer's certificate.

## **EA 5.22 Prerequisite for new equipment**

### **Install HVAC system with non-HCFC refrigerant**

#### **Why?**

Chlorofluorocarbon and hydro-chlorofluorocarbon (CFCs and HCFCs) are significant contributors to global warming potential (GWP) and the creation of green house gases (GFG). Elimination of the use of CFCs and HCFCs diminishes this impact on the environment.

#### **How?**

Utilize the services of a licensed HVAC specialist to install a HVAC system with low GWP and GFG gases.

#### **Submittals**

Submit documentation showing the gases used and installer's certificate.

## **EA 5.23 1 - 5 Points**

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **Innovation**

### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

### **How?**

Review the innovations that other LEED buildings have used:  
<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>  
or ask the LEED AP for suggestions.

### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

## **ME 6.0 Materials and Resources**

### **ME 6.1 Prerequisite**

**Provide a construction waste management reduction plan and implement such that 25% or more of all materials removed from site are diverted from landfills or incinerators**

### **Why?**

Reduce costs and energy consumption by reusing materials and diverting materials from the landfill.

### **How?**

Ask the architect to design the project utilizing existing building materials where possible. Employ contractors that understand and are conscientious in monitoring the waste stream. Hire waste hauling companies that sort and recycle materials.

### **Submittals**

Submit the waste hauler's receipts indicating the weight or volume percentage of the materials diverted and recycled.

### **ME 6.2 2 Points**

**Utilize and substantiate any tropical wood products as FSC certified**

### **Why?**

FSC (Forest Stewardship Council) certifies wood coming from responsibly managed forests, not clear-cutting of endangered forests. The chain-of-custody from the forest to the home is maintained to verify the wood used in the home.

### **How?**

Ask the contractor to purchase tropical wood with the FSC logo stamped on it and ask for the invoice showing the chain of custody documentation. Search for retailers containing FSC wood products:

<http://www.fscus.org/productsearch/retailers/>

### **Suggestions**

Do not use tropical woods since they are not locally produced. Consider requiring all wood, not only tropical wood, to be FSC certified.

### **Submittals**

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

Submit invoices for tropical wood showing the FSC chain of custody. Village inspections will note the FSC designation stamped on the wood.

## **ME 6.3 3 Points**

### **Utilize environmentally preferable products that meet the specifications**

#### **Why?**

The use of these types of products and materials improve environmental quality of the building, contribute to healthy living and energy savings.

#### **How?**

Select materials and products with certified green labels and work with a design professional in the process of identifying these items and how they can be incorporated into the project. A source of information for green products and labeling is:

<http://www.greenerchoices.org/eco-labels/eco-home.cfm?redirect=1>

#### **Submittals**

Include specifications for proprietary products proposed for the project and indicate the rating sources for the products. At completion of construction provide record of product labels for review and inspection.

## **ME 6.4 2 Points**

### **Provide for off-site fabrication for framing; or limit the overall waste factor for on-site framing to 10% or less**

#### **Why?**

Prefabricated framing can efficiently re-use the waste material, removing it from landfills.

#### **How?**

Utilize a local prefabricated framing manufacturer who then ships the framing to the site at the exact time needed for installation.

#### **Submittals**

Submit the documentation from the vendor.

## **ME 6.5 1 - 5 Points**

### **Innovation**

#### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### **How?**

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

#### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **EQ 7.0 Indoor Environmental Quality**

### **EQ 7.1 5 Points**

#### **Provide the requirements for USEPA's ENERGY STAR Indoor Air Package (IAP)**

##### **Why?**

Improve system performance result in reduced energy costs and improve air quality.

Poor air quality can cause cancer, respiratory illness, trigger heart disease and asthma, and may even kill. Indoor air typically has 2 to 5 times more chemical contaminants than outdoor air.

##### **How?**

Select high efficiency air handling systems.

##### **Submittals**

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### **EQ 7.2 Prerequisite**

#### **Install CO monitors on each floor**

##### **Why?**

Carbon Monoxide (CO) causes sickness and can kill.

##### **How?**

Install wired CO or combination CO and smoke alarms.

##### **Submittals**

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### **EQ 7.3 1 Point**

#### **All fireplaces and woodstoves to have doors**

##### **Why?**

Doors on fireplaces and woodstoves prevent loss of energy and drafts.

##### **How?**

Buy units including doors or install doors. Screens are not sufficient.

##### **Submittals**

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### **EQ 7.4 2 Points**

#### **All space and water heating equipment must have closed combustion, or power-vented exhaust**

##### **Why?**

Indoor air quality is more important in a tight green home. Closed combustion or power-vented exhaust reduced CO and other combustion gases from accumulating within the building.

##### **How?**

Select closed combustion or power-vented exhaust equipment.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## Submittals

Submit documentation indicating equipment specified and installed.

### EQ 7.5 2 Points

**Install dehumidification equipment with sufficient capacity to maintain relative humidity at or below 60%**

#### Why?

High humidity promotes mold growth and is uncomfortable, requires more energy to heat or cool the home.

#### How?

Install a dehumidifier that is either stand-alone or part of the air handling equipment.

## Submittals

Submit documentation indicating equipment specified and installed.

### EQ 7.6 2 Points

**Provide a basic outdoor air ventilation system that meets the current ASHRAE Standard 62.2.**

#### Why?

A proper ventilated building will reduce energy costs, improve comfort and provide a healthier environment.

#### How?

Utilize easily operable windows for natural ventilation or mechanical ventilation, with 3 air changes per hour and 15 CFM of outdoor air per person.

## Submittals

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### EQ 7.7 4 Points

**Provide a third-party performance test for the current ASHRAE Standard 62.2**

#### Why?

A proper ventilated building will reduce energy costs, improve comfort and provide a healthier environment. A third part verifier will determine that the building was built to specifications and is performing properly.

#### How?

Utilize the services of an accredited HERS rater to perform the necessary testing.

## Submittals

Submit documentation indicating the test results and the rater's certificate.

### EQ 7.8 3 Points

**Provide room by room design calculations for heating and cooling and install ducts based on efficient design**

#### Why?

Design air handling equipment and building envelope based upon calculations will result in improved energy efficiency and performance, resulting in lower costs.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **How?**

Engage the services of an engineer or designer to develop plans, specifications, and calculations for the home. This will result in properly sized equipment and distribution.

## **Submittals**

Submit design documents and calculations.

### **EQ 7.9 Prerequisite**

**Provide adequate return air flow in each room through the use of multiple returns, transfer grilles, or jump ducts**

## **Why?**

A proper ventilated building will reduce energy costs, improve comfort and provide a healthier environment.

## **How?**

Engage the services of an engineer or designer to develop plans, specifications, and calculations for the home. This will result in properly sized equipment and distribution.

## **Submittals**

Submit design documents and calculations.

### **EQ 7.10 4 Points**

**Provide a third-party performance test per ACCA (Air Conditioning Contractors of America) Quality Installation Specifications**

## **Why?**

The inspection verifies the quality of the equipment selected and installed. Energy efficient buildings need much smaller air conditioning and heating units than standard. Over-sized or under-sized equipment will not run efficiently, resulting in a home that is not as comfortable and is more costly to operate.

## **How?**

Utilize the services of an ACCA Quality Installation Inspector.

## **Submittals**

Submit documentation indicating the test results and the inspector's certificate.

### **EQ 7.11 2 – 3 Points**

**Provide air filters with minimum efficiency reporting value (MERV) > 8**

## **Why?**

Higher MERV rated filters reduce more contaminants from the air and produce healthier environments reducing allergies and colds.

## **How?**

Purchase and install the highest rated filters permitted by your equipment.

## **Suggestions**

Verify that the equipment permits use of the higher rated filters; otherwise the equipment will not work properly.

## **Submittals**

Provide documentation of the filters installed.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission  
Published January 19, 2009

---

## **EQ 7.12 1 Point**

### **Provide a preoccupancy air flush for 48 hours, including duct cleaning and replacement of all air filters**

#### **Why?**

Construction is dusty, dirty, and some construction products and equipment may leave undesirable elements in the air. After construction, indoor air should be cleaned and the air quality verified before the building is occupied.

#### **How?**

Place large fans in the windows to provide large quantities of air flowing through the building, unmask the ducts and equipment or clean the ducts and replace the air filters.

#### **Suggestions**

Optimally, newly installed ducts and HVAC equipment should be sealed once installed, and not used until construction is complete.

#### **Submittals**

Provide an affidavit of performance of the flush-out.

## **EQ 7.13 1 Point**

### **Design and build the residence with radon-resistant construction techniques, test for radon**

#### **Why?**

Radon is invisible, odorless, and tasteless. A form of radiation, it causes cancer. Radon may come up from the earth beneath the basement.

#### **How?**

Provide the piping and fans to ventilate the sub-basement and basement through roof vents. Test for radon. If radon is present then ventilate appropriately.

#### **Submittals**

Submit a radon report provided by a professional radon inspector indicating the length of the test, the method used, and the results. The radon ventilation system will be inspected by Orange Village.

## **EQ 7.14 1 Point**

### **No HVAC in garage; tightly seal shared surfaces between garage and conditioned spaces**

#### **Why?**

Carbon monoxide from the HVAC (heating, ventilation, and air conditioning) system, cars, and fossil fuel equipment may enter the home. Carbon monoxide causes sickness and death.

#### **How?**

Do not install HVAC in the garage. Tightly seal the ceiling of the garage if a room exists above the garage. Install exterior doors in the opening between garage and home with caulking and an air-tight barrier to reduce gas infiltration.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **Submittals**

Provide drawings indicating the location of HVAC equipment and the sealing of the garage from the rest of the home.

### **EQ 7.15 1 Point**

#### **Place CO detectors in adjacent rooms that share a door with a garage**

##### **Why?**

Carbon monoxide from the HVAC (heating, ventilation, and air conditioning) system, cars, and fossil fuel equipment may enter the home. Carbon monoxide causes sickness and death.

##### **How?**

Install wired CO or combination CO and smoke alarms.

## **Submittals**

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### **EQ 7.16 1 – 2 Points**

#### **Install exhaust fan in garage (1 pt) with automatic timer or occupant sensor (2 pts)**

##### **Why?**

Carbon monoxide from cars and fossil fuel equipment may build up in the garage. Carbon monoxide causes sickness and death. An exhaust fan can remove or dilute carbon monoxide in the air.

##### **How?**

Install an exhaust fan in the garage with an automatic timer or occupant sensor.

## **Submittals**

Submit design documentation indicating equipment and systems specified and performance standards. Submit documentation indicating what was installed.

### **EQ 7.17 1 Point**

#### **Prohibit smoking during construction**

##### **Why?**

Smoking has been linked to many health related maladies. Smoking bi-products can become imbedded in materials during construction and may not be removed through a flush-out process.

##### **How?**

Install and post signs to prohibit smoking. Designate areas away from the construction where this activity may occur. Review this requirement with the contractor and sub-contractor at kick-off. Suggest creating and signing an agreement with the contractor to restrict smoking during construction.

## **Submittals**

Submit design documentation indicating the project to be conducted as a smoke free environment. Monitor during construction for enforcement. At the conclusion of the project, the contractor to provide an affidavit of compliance.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **EQ 7.18 1 - 5 Points**

### **Innovation**

#### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### **How?**

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

#### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

## **AE 8.0 Awareness and Education**

### **AE 8.1 Prerequisite**

#### **Home Builder to provide Basic Operation Training to home buyer**

#### **Why?**

The home buyer may not be aware of how to maintain their new home and how to keep it green.

#### **How?**

Create a home owner's Basic Operation manual containing, at minimum:

- a list of items and equipment with their maintenance schedule
- the company name and phone number of companies to call for maintenance
- photos of equipment indicating their location
- all equipment operating manuals
- instructions on how to operate and maintain the home's air quality

#### **Submittals**

Submit the table of contents for the home owner's manual and portions of the Manual that may be copied. Do not include the equipment operating manuals with the submission.

## **AE 8.2 1 - 5 Points**

### **Innovation**

#### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### **How?**

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

#### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

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## ORANGE GOES GREEN SITE DEVELOPMENT

### GR 1.0 General Requirements

#### GR 1.1 5 Points

##### Engage the services of LEED Accredited Professional

###### Why?

LEED APs (Leadership in Energy and Environmental Design Accredited Professionals) are recognized by the U.S. Green Building Council (USGBC) and trained in green building and sustainability practices. They can guide the team toward your building certification goals.

###### How?

The Green Building Certification Institute (GBCI) maintains a current list of LEED APs.

The GBCI LEED Professional Directory:

<http://www.gbci.org/>

Click the Directories tab, and then choose LEED Professional Directory. Search for a LEED AP in Ohio using the “without specialty” option or specific specialties you are interested in.

###### Suggestions

The LEED AP should be hired at the beginning of the project to facilitate the process of integrating sustainability practices into your project.

###### Submittals

Submit a copy of the LEED AP’s certificate and a letter from the LEED AP stating the dates that they worked on your project.

#### GR 1.2 5 Points

##### Prepare & Submit a Sustainable Development Plan

###### Why?

A Sustainable Development Plan provides the overall impact and sustainability goals of the project and explains the intent and implementation. It is an excellent document to provide to the contractors, suppliers, family and friends to explain the importance and goals of sustainability in your project.

###### How?

Write a plan which includes the overall impact and sustainability goals for the project. List each of the credit sections from this Criteria Checklist are proposed to achieve and discuss the approach and standards expected to be maintained, and the benefits they provide.

###### Suggestions

The LEED AP hired in ID 1.1 can assist in the creation a Sustainable Development Plan.

###### Submittals

Submit a typed and printed Sustainable Development Plan.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

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## **SS 2.0 Sustainable Sites**

### **SS 2.1 5 Points**

#### **Site Selection based upon prior use of existing site**

##### **Why?**

Building on a site that already has buildings and infrastructure saves trees and natural resources. Residents are willing to pay more to live in a community which works to retain their parks and woods.

##### **How?**

Choose land that was previously graded with existing roads, electricity, water, and sewer.

##### **Submittals**

Submit a plan showing existing infrastructure.

### **SS 2.2 Prerequisite**

#### **Provide for Minimum setbacks: Riparian Setbacks; 25' for small watercourse, 75 ft for large watercourse; 100 year flood plain; per code 1176.05(d)(3)**

##### **Why?**

Building back from waterways disturbs less native plants and animals, retains the beauty of the natural landscape, and reduces the possibility of polluting the water. It also reduces the risk of flooding, resulting in lower insurance premiums.

##### **How?**

Do not disturb the land or build within 25 feet of small watercourses, 75 feet of large watercourses, or within 100 year flood plains.

View a FEMA flood plain map:

<http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

##### **Submittals**

Submit the FEMA flood plain map for Orange with your property location outlined and shaded.

### **SS 2.3 3 Points**

#### **Provide for minimum wetland setbacks; for isolated wetlands (15')**

##### **Why?**

Preserving wetlands provide habitat for wildlife, recreational areas, and better quality drinking water for the area through wetland filtering of groundwater. Not building on a wetland reduces your risk of flooding, a wet basement, shifting foundation, and deteriorating roads.

##### **How?**

Do not disturb the land or build within 15 feet of a wetland.

Wetlands mapper:

<http://www.fws.gov/wetlands/Data/Mapper.html>

Wetlands clues checklist:

<http://dnr.wi.gov/wetlands/clues.html>

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## Submittals

Submit a map showing wetlands on or near the property, and the areas the land will be disturbed through building and infrastructure improvements

### SS 2.4 1 – 3 Points

#### Provide for maximum amount of tree preservation, including replacement

##### Why?

A property with trees and other plants is more valuable and provides shade and wildlife habitat.

##### How?

Create a landscape plan showing trees and plants to be removed, saved, or replaced. Minimize damage to trees and plants that are to be saved by installing fencing around the drip line and perimeters of planted areas. Prohibit trenching, significant grade changes, and compaction of soil in planted areas to be preserved.

Building with trees:

<http://www.arboday.org/programs/treeCityUSA/bulletins/bulletin20Supp.cfm>

## Suggestions

During construction trees may be intentionally cut down or unintentionally killed by wounds from construction equipment, diversion of water from the roots, compaction of soil and lack of air to the roots from heavy vehicles, excavation near the roots, or excavated dirt piles placed on top of roots or plants. Hire a landscape architect to determine which trees and plants to save. Fence off the areas to be left undisturbed. Check and maintain the fencing regularly.

## Submittals

Submit a landscape plan showing all existing trees and replacements. Indicate fenced areas.

### SS 2.5 3 Points

#### Provide for steep slope protection by restricting development on areas with slopes greater than 25%

##### Why?

Steep slopes promote soil erosion with loss of top soil into streams and sewers. Stream pollution kills animals and fish by destroying their habitat, while sewer pollution ultimately increases sewage treatment costs.

##### How?

Do not disturb the soil and plants on slopes greater than 25%. Do not allow construction equipment to compact these soils. Provide and maintain fencing around the area.

## Submittals

Submit a plan indicating areas with slopes greater than 25%, describe the erosion control measures used, fencing, and signage. Submit dated pictures showing the prevention measures and inspection sheets indicating proper maintenance of the prevention measures.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **SS 2.6 3 Points**

### **Minimize site disturbance by limiting construction activity to within 10 ft of infrastructure or pavement**

#### **Why?**

Retain the natural beauty of the land and prevent damage to natural habitats outside of the immediate building area. Undisturbed soil allows water to infiltrate the soil easier than soil compacted by heavy equipment.

#### **How?**

Do not clear-cut the land or disturb the land more than 10 feet from the building footprint, access road, and utility ditches. Fence off areas to remain untouched and enforce the restrictions. Post signs. Plan and stage the construction activities so a minimal area is used for storage of construction equipment and materials.

#### **Submittals**

Submit drawings indicating the fenced areas, and dated pictures showing the fenced areas and signage.

## **SS 2.7 5 Points**

### **Provide ODNR report indicating site has no influence on habitats of endangered or threatened species**

#### **Why?**

Keep your property beautiful and do not allow animals and plants to become extinct. Human's ability to create new medicines, adapt to threats, and even to exist may depend on maintaining the biodiversity of our environment.

#### **How?**

Engage the services of an environmental consultant to produce a report based upon information available through the Ohio Department of Natural Resources (ODNR)

<http://ohiodnr.com/>

Ohio Endangered Species by county:

<http://www.fws.gov/midwest/Endangered/lists/ohio-cty.html>

#### **Submittals**

Submit a letter report description of the property indicating the presence or lack thereof endangered or threatened species on the property.

## **SS 2.8 1 – 5 Points**

### **Provide a plan to create areas of natural habitats**

#### **Why?**

Properties with natural habitats improve the environment and the value of the property.

#### **How?**

Protect the natural areas with fencing during construction. Monitor and maintain the fencing.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## Submittals

Submit a landscape plan showing all existing natural habitats and plans to save or remove the natural habitats. Document the areas saved after construction.

### SS 2.9 1 – 5 Points

#### Innovation

##### Why?

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

##### How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

## Submittals

Describe the innovation and the positive impact it is expected to obtain.

### NP 3.0 Neighborhood Pattern & Design

#### NP 3.1 1 Point

#### Design for compact development which would include clustered buildings and homes

##### Why?

Preserve open spaces allowing for more trees, wildlife, parks, and walkable areas. Compact development promotes a healthy livable community in which residents can walk to all services instead of driving. This uses less energy, pollutes less, and improves individual health and fitness.

##### How?

Build clustered homes and buildings – vertical, smaller, and closer together.

## Suggestions

Consider the community's clustering regulations and allowance for development of parcels with multiple home sites or units.

## Submittals

Submit building plans for review.

### NP 3.2 1 Point

#### Design for maximum neighborhood connectiveness utilizing cross streets

##### Why?

Short connected streets slow traffic in a neighborhood resulting in less accidents, provide multiple ways for emergency vehicles to access a location, and promote walking and biking between areas of the neighborhood.

##### How?

Create streets that are no longer than **600** ft. without a break. Reduce the number of cul-de-sacs which do not provide connections to other areas of the neighborhood.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **Submittals**

Submit a street plan showing the length and width of streets.

### **NP 3.3 5 Points**

#### **Design the community in a manner that will encourage circulation**

##### **Why?**

Connections within neighborhoods promote interaction and community contributing to greater security and engaged residents. By developing neighborhoods with easy circulation connections are reinforced and more easily established.

##### **How?**

Design for walkability and bikeability with multiple services, public facilities, parks, gardens, and open spaces within the neighborhood; homes clustered and closer to the road; traffic calming techniques such as short blocks; and permeable bike paths, walking paths, and sidewalks.

## **Submittals**

Submit the community design plans and document expected community circulation patterns.

### **NP 3.4 Prerequisite**

#### **Provide sidewalks on at least one side of the street. Dwellings within 150 ft of sidewalk**

##### **Why?**

Sidewalks encourage walking, permeable sidewalks are preferable. Buildings close to the sidewalk provide more natural habitat, which permits a place for wildlife to exist and increases the value and beauty of the neighborhood.

##### **How?**

Build close to the street, within 150 ft of the sidewalk and provide a permeable sidewalk on at least one side of the street.

## **Submittals**

Submit the community design plans showing sidewalk location and width, and building placement.

### **NP 3.5 1 Points**

#### **Encourage diverse dwelling types through the design of multiple unit types**

##### **Why?**

By providing various dwelling types and styles, a development can appeal to a broad range of tastes and diverse residents leading to a more attractive and interesting community satisfying more varied needs.

##### **How?**

Developing a variety of design and building types and finishes distinct but compatible in appearance, size, character and proportion.

## **Suggestions**

Engage a team capable of offering unique and creative designs.

## **Submittals**

Submit plans, elevations and materials for consideration reflecting an intention to produce variety in unit or building types.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **NP 3.6 Prerequisite**

**Provide open spaces within a project per codes 1148.151, 152, and 1170**

### **Why?**

Open space provides healthy environment for wildlife, plants and people. These areas offer opportunity to recharge the aquifer, reduce run-off and the need for stormwater management and treatment facilities.

### **How?**

Develop designs maximizing the open space by creating efficient building footprints and limiting areas of pavement and disturbed lands.

### **Suggestions**

Engage a team capable of offering unique and creative designs.

### **Submittals**

Submit the development plans required by the community.

## **NP 3.7 1 – 3 Points**

**Provide universal design features for accessibility in excess of code requirements**

### **Why?**

Enhancing handicapped access enables more extensive use of the project making it attractive to a larger segment of users. Communities with an aging population, a project providing greater access will appeal to a broader market.

### **How?**

Refer to the Americans with Disabilities Act Architectural Guidelines (ADAAG) for specific standards and then determine areas where these can be expanded for the project.

### **Suggestions**

Consult with the design professionals in regard to standards and applications.

### **Submittals**

Submit the community plans and specifications identifying accessible applications.

## **NP 3.8 1 – 3 Points**

**Provide for open spaces for community uses in excess of code**

### **Why?**

Parks, gardens, and other types of open spaces, both large and small, are a valued part of the community, providing recreation, beauty and promote a calm and friendly environment.

### **How?**

Develop designs maximizing the open space by creating efficient building footprints and limiting areas of pavement and disturbed lands.

### **Submittals**

Submit the development plans required by the community.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **NP 3.9 5 Points**

**Provide in the design for the creation of conservation easements with the property**

### **Why?**

The creation of conservation easements preserve in perpetuity desires for open space, natural habitat and stormwater management zones. They result in maintaining natural buffers and provide tax benefits to the grantor of the easement.

### **How?**

Work with a civil engineer and attorney along with organizations such as the Western Reserve Land Conservancy to design and draft the documents necessary to establish the easements <http://www.wrlc.cc/>

### **Submittals**

Submit plans and legal description indicating easement areas and legal documents granting the easements.

## **NP 3.10 1 – 5 Points**

**Innovation**

### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

### **How?**

Review the innovations that other LEED buildings have used: <http://www.usgbc.org/ShowFile.aspx?DocumentID=3569> or ask the LEED AP for suggestions.

### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

## **HI 4.0 Heat Island Effects, Non-Roof (Parking and Paving)**

### **HI 4.1 1 – 3 Points**

**Reduce paved areas by allowing for shared usage and max number of parking spaces, in commercial applications only; or provide for land bank parking where applicable**

### **Why?**

Parking reduction encourages walking and reduces pollution and energy use, allows for more open space and reduces run-off and storm water treatment.

### **How?**

Design parking lots based upon actual uses and cross-uses. Consider land bank parking (land set aside for future parking demand, but not built initially) as a strategy for reducing parking area.

### **Suggestions**

Assess specific parking needs for the particular uses and validate with occupant requirements considering time peak loads for each occupant type to determine actual parking requirements.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## Submittals

Submit parking plans with a schedule of parking demand.

### HI 4.2 1 Point

**Provide bicycle parking at rate of 15% of the number of residential units, or 15% of the number of parking spaces in a commercial application**

#### Why?

Sufficient bicycle parking encourages the use of bicycles and promotes health and community connectiveness.

#### How?

Provide bicycle parking for 15% of residential units and 15% of commercial parking spaces.

#### Suggestions

Provide shelter against rain, snow and wind, and the ability to lock the bicycle to a fixed object. Consider providing bathrooms and changing areas close to the bicycle parking.

## Submittals

Submit the community design plans showing bicycle parking.

### HI 4.3 3 Points

**Reduce the effects of heat islands in hardscape areas through the use of select paving materials (SRI of 29), shade trees, or overhangs, or through the use of permeable paving**

#### Why?

Asphalt parking lots and dark non-reflective materials capture heat during the day then release it at night increasing the temperature of the surrounding area. By using materials with an SRI of 29 or higher, the surrounding area will maintain a lower temperature during the summer and create a more comfortable environment.

#### How?

Retain the trees and plants already on the site or introduce additional shade plants. Use open pavers with ground cover reducing runoff and allowing water to infiltrate into the ground instead of continuous asphalt or concrete. Use light colored paving and roofing with an SRI of at least 29.

## Submittals

Describe how the heat island effect is reduced through shading. List roof and paving materials and provide the manufacturers' SRI values.

### HI 4.4 1 Point

**Provide a minimum of one street tree per house lot, or a maximum of 40 feet apart**

#### Why?

Trees provide shading, oxygen, wildlife habitat, a wind break, and a pleasing view.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## How?

Save or plant at least one street tree per house, a maximum of 40 feet apart.

Ten best street trees:

[http://forestry.about.com/od/urbanforestry/tp/street\\_trees.htm](http://forestry.about.com/od/urbanforestry/tp/street_trees.htm)

Ohio Street Tree Evaluation Project (STEP)

<http://www.dnr.state.oh.us/tabid/5545/Default.aspx>

## Suggestions

Consider visual uniqueness; resistance to drought, salt, soil compaction, wind resistance; maintenance; and the messiness of the flowers or fruit.

## Submittals

Submit the community design plans showing trees and lots.

### HI 4.5 1 – 3 Points

#### Utilize recycled materials in the construction of roads, sidewalks, and curbs

##### Why?

Recycled material uses less resources and keeps material out of land fills.

##### How?

Specify materials that are made from recycled materials for all roads, sidewalks, and curbs.

U. S. Department of Transportation study on recycled paving systems:

[http://www.fhwa.dot.gov/pavement/pub\\_details.cfm?id=403](http://www.fhwa.dot.gov/pavement/pub_details.cfm?id=403)

## Suggestions

Use recycled asphalt and recycled aggregate within concrete. Consider crushing up existing material on-site for re-use in the same project.

## Submittals

Provide paving specifications indicating use of recycled products.

### HI 4.6 1 – 5 Points

#### Innovation

##### Why?

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

##### How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

## Submittals

Describe the innovation and the positive impact it is expected to obtain.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

---

## LS 5.0 Landscaping and Stormwater Management

### LS 5.1 Prerequisite

#### Provide SWPP Plan Meeting EPA Requirements and Orange Village Erosion Control Requirements

##### Why?

A storm water pollution prevention plan (SWPP Plan) reduces the pollution of storm water, which reduces the death of local plants, animals and fish, and lowers the costs of clean water.

##### How?

EPA SWPP guide:

<http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>

##### Submittals

Submit a SWPP guide.

### LS 5.2 3 Points

#### Design landscaping utilizing native species of plant life

##### Why?

Native species grow wild without human intervention. They use less water and require less maintenance, draught resistant, and will survive winter.

##### How?

Use native plants.

A list of native plants:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

Ohio native trees, bushes, and flowers:

[http://ohioline.osu.edu/b865/b865\\_01.html](http://ohioline.osu.edu/b865/b865_01.html)

##### Submittals

Provide a landscape plan indicating species type and location and include a schedule of planting identifying native and non-native species.

### LS 5.3 3 Points

#### Reduce or eliminate the use of potable water for irrigation

##### Why?

Use less water and lower your water cost.

##### How?

Utilize native plants that do not require additional water. Use trees and layers of plants that shade other plants and reduce water needs. Use a drip watering system that reduces loss of water due to evaporation by placing the water close to the roots. Use a watering system that senses when plants need water. Use weather information to automatically determine when plants need water.

##### Submittals

Describe how the landscape and irrigation plans reduce water usage and provide calculations and documentation prepared by a landscape professional or equal.

20% reduction = 2 points

40% reduction = 3 points

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **LS 5.4 3 Points**

**Provide stormwater management plan that either retains or infiltrates a minimum of 25% of all runoff, through the use of rain gardens or bioswales**

### **Why?**

Capturing the water before it runs off-site and infiltrating the water into the ground recharges the underground water supply in the local aquifer, lowers sewer costs, and reduces the quantity of water the local municipality must clean mechanically and chemically. Let nature clean the water for you by filtering it through your plants and land, providing a clean, chemical-free water supply.

### **How?**

Capture water before it reaches the sewer or the edge of the property by directing it into gardens, ponds or bioswales for infiltration into the ground.

### **Submittals**

Describe how water is captured and infiltrated or used within the site.

## **LS 5.5 3 Points**

**Provide for tree protection plan during construction**

### **Why?**

A property with trees and other plants is more valuable and provides shade and wildlife habitat.

### **How?**

Create a landscape plan showing trees and plants to be removed, saved, or replaced. Minimize damage to trees and plants that are to be saved by installing fencing around the drip line and perimeters of planted areas. Prohibit trenching, significant grade changes, and compaction of soil in planted areas to be preserved.

Building with trees:

<http://www.arboday.org/programs/treeCityUSA/bulletins/bulletin20Supp.cfm>

### **Suggestions**

During construction trees may be intentionally cut down or unintentionally killed by wounds from construction equipment, diversion of water from the roots, compaction of soil and lack of air to the roots from heavy vehicles, excavation near the roots, or excavated dirt piles placed on top of roots or plants. Hire a landscape architect to determine which trees and plants to save. Fence off the areas to be left undisturbed. Check and maintain the fencing regularly.

### **Submittals**

Submit a site plan showing all existing trees and replacements. Indicate fenced areas.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

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## LS 5.6 1 – 5 Points

### Innovation

#### Why?

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

#### Submittals

Describe the innovation and the positive impact it is expected to obtain.

## LE 6.0 Lighting & Energy

### LE 6.1 Prerequisite

**Submit lighting plan indicating placement and location of all outdoor fixture types along with a fixture schedule.**

#### Why?

Lighting improves safety and security.

#### How?

The right quantity and quality of light for the area reduces glare and does not spill over into neighboring property or up into the night sky. Quality lighting uses fixtures and lights that use less energy, last long and require minimal maintenance.

#### Suggestions

Also use automatic timers or sensors to turn lights on or off as needed.

#### Submittals

Submit a lighting plan indicating placement and location of all outdoor fixture types along with a fixture schedule. The plan should indicate light levels and spread for fixtures.

### LE 6.2 Prerequisite (for large residential and all commercial development only)

**Perform a photometric study and apply design toward energy savings**

#### Why?

Enjoy a lower energy bill by using a photometric study during design to provide the right amount of light in the right areas.

#### How?

Hire a qualified lighting professional.

#### Submittals

Obtain a letter from a lighting professional indicating they have completed the photometric study for your project. (For projects less than 10 Acres for single unit development the photometric plan is not a prerequisite.)

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## **LE 6.3 5 Points**

### **Outdoor lighting supplied by Energy Star fixtures, or better**

#### **Why?**

A Energy Star fixtures use less energy and therefore result in lower energy costs.

#### **How?**

The Energy Star website provides a list of products, stores, and rebates:  
<http://www.energystar.gov/>

#### **Submittals**

Submit design documentation indicating outdoor fixtures specified and performance standards. Submit documentation indicating what was installed.

## **LE 6.4 Prerequisite**

### **Provide light pollution controls**

#### **Why?**

Light pollution spills unwanted and unneeded light into the sky or neighboring property and may result in a higher energy bill.

#### **How?**

Select lighting containing motion sensors or integrated photovoltaic cells which will turn the lighting off when not needed. Utilize cut-off shades to light only the necessary area.

#### **Submittals**

Submit design documentation indicating fixtures and sensors specified and performance standards. Submit documentation indicating what was installed.

## **LE 6.5 1– 5 Points**

### **Innovation**

#### **Why?**

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

#### **How?**

Review the innovations that other LEED buildings have used:  
<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>  
or ask the LEED AP for suggestions.

#### **Submittals**

Describe the innovation and the positive impact it is expected to obtain.

## **WM 7.0 Waste Management**

### **WM 7.1 Prerequisite**

#### **Provide waste recycling containers**

##### **Why?**

Non-recycled waste ends up in land-fills.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

---

## How?

Purchase waste recycling containers.

Commonly recycled material:

<http://www.obviously.com/recycle/guides/common.html>

## Suggestions

Recycle before, during and after construction. Recycle construction waste and waste from the community. Provide for curbside recycling.

## Submittals

Submit the recycling plan.

### WM 7.2 5 Points

#### Provide a waste management plan that reduces construction waste

## Why?

Reduce costs and energy consumption by reusing materials and diverting materials from the landfill.

## How?

Ask your architect to design the project utilizing existing building materials where possible. Employ contractors that understand and are conscientious in monitoring the waste stream. Hire waste hauling companies that sort and recycle materials.

## Submittals

Submit the waste hauler's receipts indicating the weight or volume percentage of the materials diverted and recycled.

### WM 7.3 1 – 5 Points

#### Innovation

## Why?

As building science and products improve there will be new and innovative ways to go green and incorporate in the building, beyond the points achieved in the above section.

## How?

Review the innovations that other LEED buildings have used:

<http://www.usgbc.org/ShowFile.aspx?DocumentID=3569>

or ask the LEED AP for suggestions.

## Submittals

Describe the innovation and the positive impact it is expected to obtain.

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

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## ORANGE GOES GREEN RESIDENTIAL CONSTRUCTION CRITERIA CHECKLIST

Architect Name

---

Homeowners Name

---

Address (Street/City/State)

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<b>Certification Level</b>	<b>Attempting</b>	<b>Attained</b>
<b>Orange (133-184)</b>		
<b>Green (100-132)</b>		
<b>Certified (65-99)</b>		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

P=credit acknowledged through review process

A=credit achieved through validation and inspection

## ID 1.0 Innovation and Design Process Maximum Credits 23

Yes	No	Category	Credit Description	Max Credit	P	A
Y	N	ID 1.1	Engage the services of a LEED Accredited Professional	5		
Y	N	ID 1.2	Prepare & Submit a Sustainable Development Plan	5		
Y	N	ID 1.3	Encourage building or dwelling design orientation to maximize active and passive solar energy considerations	1 - 3		
Y	N	ID 1.4	Provide Durability Design & Verification Process (submit durability checklist)	5		
Y	N	ID 1.5	Provide Innovative design for minimizing the environmental impact of the home by incorporating measures that have tangible and demonstrable benefits beyond what is indicated in Orange Goes Green Rating System	1 - 5		

## LL 2.0 Location and Linkages Maximum Credits 5

Y	N	LL 2.1	Residence fulfills the requirements provided by both the Orange Goes Green Residential Construction and Site Development Criteria Checklists	5		
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## SS 3.0 Sustainable Sites Maximum Credits 19

Y	N	SS 3.1	Provide recommended minimum controls for site erosion control during construction	Prerequisite		
Y	N	SS 3.2	Provide landscaping plan for approval by the Village building code	Prerequisite		
Y	N	SS 3.3	Minimize the area of disturbance caused by construction activities	1		
Y	N	SS 3.4	Design structure to minimize the area of disturbance caused by construction activities	1		
Y	N	SS 3.5	Design landscaping utilizing native species of plant life	1 - 3		
Y	N	SS 3.6	Minimize the use of conventional turf in the designed landscape softscapes	1 - 3		
Y	N	SS 3.7	Reduce local heat island effects through the use of shade trees, open pavers, and/or materials with a Solar Reflectance Index (SRI) of at least 29	2		
Y	N	SS 3.8	Design lot so that at least 70% of the constructed environment is either permeable or designed to capture water runoff for infiltration on-site	1 - 3		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

Y	N	SS 3.9	If the building site is constructed on a steep slope, provide either terracing with retaining walls, or plantings & ground cover at the rate of one tree per 500 sf of disturbed area	1 - 3		
Y	N	SS 3.10	Control permanent site drainage through the use of rain gardens and siltation devices	1 - 3		

## WE 4.0 Water Efficiency

Maximum Credits 21

Y	N	WE 4.1	Design and install a rainwater harvesting and storage system	5		
Y	N	WE 4.2	Design & Install a graywater reuse system	3		
Y	N	WE 4.3	Provide third party inspection of the irrigation system if an irrigation system is installed.	Prerequisite		
Y	N	WE 4.4	Design landscape and irrigation system such that demand for irrigation is reduced.	2 - 3		
Y	N	WE 4.5	Provide high-efficiency (low flow) fixtures or fittings	1 - 5		
Y	N	WE 4.6	Innovation	1 - 5		

## EA 5.0 Energy and Atmosphere

Maximum Credits 61

Y	N	EA 5.1	Design and Build residence by a certified ENERGY STAR Builder	Prerequisite		
Y	N	EA 5.2	Meet the minimum energy performance requirements provided by ENERGY STAR for Homes	Prerequisite		
Y	N	EA 5.3	Exceed the minimum energy performance provided by ENERGY STAR for Homes; provide evaluation report by a professional energy rater	5		
Y	N	EA 5.4	Install insulation that meets the R-value requirements listed Chapter 4 of the 2004 International Energy Conservation Code, by at least 5% for 5 points	3 - 5		
Y	N	EA 5.5	Provide an air leakage test by professional energy rater; and meet the LEED criteria for reduced envelope leakage (minimum R Values)	3		
Y	N	EA 5.6	Good Windows: Design and install all windows with insulated glass with a U-value of less than 3.	Prerequisite		
Y	N	EA 5.7	Better Windows: Upgrade all windows with film coating (minimum R Values)	1-12		
Y	N	EA 5.8	Best Windows: Upgrade all windows with film coating and argon gas (minimum R Values)			
Y	N	EA 5.9	Exceptional Windows: Upgrade all windows to triple pane (minimum R Values)			
Y	N	EA 5.10	Provide for reduced distribution losses in ductwork	Prerequisite		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

Y	N	EA 5.11	Greatly reduce air distribution losses from duct leakage as verified by professional energy rater	3 - 5		
Y	N	EA 5.12	Provide ENERGY STAR rated heating and cooling equipment and thermostat	Prerequisite		
Y	N	EA 5.13	Design and Install high-efficiency HVAC equipment that exceeds Energy Star rating per the mechanical table provided	3 - 5		
Y	N	EA 5.14	Design and install an Energy Star high efficiency hot water distribution system	5		
Y	N	EA 5.15	Insulate all domestic hot water piping with minimum R-4 insulation, including bends	3		
Y	N	EA 5.16	Install ENERGY STAR labeled light fixtures in all high-use rooms	Prerequisite		
Y	N	EA 5.17	Install ENERGY STAR Advanced Lighting Package	5		
Y	N	EA 5.18	Install exterior lighting utilizing either motion sensor controls or integrated photovoltaic cells	3		
Y	N	EA 5.19	Install all ENERGY STAR labeled appliances; including refrigerators, dishwashers, and clothes washers	Prerequisite		
Y	N	EA 5.20	Design and install a renewable electricity generation system that supplants a minimum of 10% of the electrical demand required by the residence	1 - 5		
Y	N	EA 5.21	Provide proof of proper refrigerant charge of the air conditioning system	Prerequisite		
Y	N	EA 5.22	Install HVAC system with non-HCFC/CFC refrigerant	Prerequisite		
Y	N	EA 5.23	Innovation	1 - 5		

## ME 6.0 Materials and Resources

Maximum Credits 12

Y	N	ME 6.1	Provide a construction waste management reduction plan and implement such that 25% or more of all materials removed from site are diverted from landfills or incinerators	Prerequisite		
Y	N	ME 6.2	Utilize and substantiate any tropical wood products as FSC certified	2		
Y	N	ME 6.3	Utilize environmentally preferable products that meet the specifications indicated in the table provided	3		
Y	N	ME 6.4	Provide for off-site fabrication for framing; or limit the overall waste factor for on-site framing to 10% or less	2		
Y	N	ME 6.5	Innovation	1 - 5		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

## EQ 7.0 Indoor Environmental Quality Maximum Credits 38

Y	N	EQ 7.1	Provide all the requirements of the USEPA's ENERGY STAR Indoor Air Package (IAP)	5		
Y	N	EQ 7.2	Install CO monitors on each floor	Prerequisite		
Y	N	EQ 7.3	All fireplaces and woodstoves to have doors	1		
Y	N	EQ 7.4	All space and water heating equipment must have closed combustion, or power-vented exhaust	2		
Y	N	EQ 7.5	Install dehumidification equipment with sufficient capacity to maintain relative humidity at or below 60%	2		
Y	N	EQ 7.6	Provide a basic outdoor air ventilation system that meets ASHRAE Standard 62.2-2007	2		
Y	N	EQ 7.7	Provide a third-party performance test for ASHRAE Standard 62.2-2007	4		
Y	N	EQ 7.8	Provide room by room design calculations for heating and cooling and install ducts based on efficient design	3		
Y	N	EQ 7.9	Provide adequate return air flow in each room through the use of multiple returns, transfer grilles, or jump ducts	Prerequisite		
Y	N	EQ 7.10	Provide a third-party performance test for per ACCA Quality Installation Specifications	4		
Y	N	EQ 7.11	Provide air filters with minimum efficiency reporting value (MERV) > 8	2 - 3		
Y	N	EQ 7.12	Provide a preoccupancy air flush for 48 hours, including duct cleaning and replacement of all air filters	1		
Y	N	EQ 7.13	Design and build the residence with radon-resistant construction techniques, test for radon	1		
Y	N	EQ 7.14	No HVAC in garage; tightly seal shared surfaces between garage and conditioned spaces	1		
Y	N	EQ 7.15	Place CO detectors in adjacent rooms that share a door with a garage	1		
Y	N	EQ 7.16	Install exhaust fan in garage for 1 point, with automatic timer or occupant sensor for 2 points.	1 - 2		
Y	N	EQ 7.17	Prohibit smoking during construction.	1		
Y	N	EQ 7.18	Innovation	1 - 5		

## AE 8.0 Awareness and Education Maximum Credits 5

Y	N	AE 8.1	Home Builder to provide Basic Operation Training to home buyer	Prerequisite		
Y	N	AE 8.2	Innovation	1 - 5		

**Total Points 184**

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

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## ORANGE GOES GREEN CERTIFICATION PROGRAM SITE DEVELOPMENT CRITERIA CHECKLIST

Developer Name

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Project Name

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Address (Street/City/State)

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<b>Certification Level</b>	<b>Attempting</b>	<b>Attained</b>
<b>Orange (86-119)</b>		
<b>Green (64-85)</b>		
<b>Certified (42-63)</b>		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

P=credit acknowledged through review process

A=credit achieved through validation and inspection

## GR 1.0 General Requirements Maximum Credits 10

Yes	No	Category	Credit Description	Max Credits	P	A
Y	N	GR 1.1	Engage the services of LEED Accredited Professional	5		
Y	N	GR 1.2	Prepare & Submit a Sustainable Development Plan	5		

## SS 2.0 Sustainable Sites Maximum Credits 32

Y	N	SS 2.1	Site Selection based upon prior use of existing site	5		
Y	N	SS 2.2	Provide for Minimum setbacks: Riparian Setbacks; 25' for small watercourse, 75 ft for large watercourse; 100 year Floodplain; per code 1176.05(d)(3)	Prerequisite		
Y	N	SS 2.3	Provide for minimum wetland setbacks; for isolated wetlands (15')	3		
Y	N	SS 2.4	Provide for maximum amount of tree preservation, including replacement	1 – 3		
Y	N	SS 2.5	Provide for steep slope protection by restricting development on sites with slopes greater than 25%	3		
Y	N	SS 2.6	Minimize site disturbance by limiting construction activity to within 10 ft of infrastructure or pavement	3		
Y	N	SS 2.7	Provide ODNR report indicating site has no influence on habitats of endangered or threatened species	5		
Y	N	SS 2.8	Provide a plan to create areas of natural habitats	1 – 5		
Y	N	SS 2.9	Innovation	1 – 5		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

## NP 3.0 Neighborhood Pattern & Design Maximum Credits 24

Y	N	NP 3.1	Design for compact development which would include clustered buildings and homes	1		
Y	N	NP 3.2	Design for maximum neighborhood connectiveness utilizing cross streets	1		
Y	N	NP 3.3	Design the community in a manner that will encourage circulation	5		
Y	N	NP 3.4	Provide sidewalks on at least one side of the street. Dwellings within 150 ft of sidewalk	Prerequisite		
Y	N	NP 3.5	Encourage diverse dwelling types through the design of multiple unit types	1		
Y	N	NP 3.6	Provide open spaces within a project per codes 1148.151, 152, and 1170	Prerequisite		
Y	N	NP 3.7	Provide universal design features for accessibility in excess of code requirements	1 – 3		
Y	N	NP 3.8	Provide for open spaces for community uses in excess of code	1 – 3		
Y	N	NP 3.9	Provide in the design for the creation of conservation easements with the property	5		
Y	N	NP 3.10	Innovation	1 – 5		

## HI 4.0 Heat Island Effects, Non-Roof (Parking and Paving) Maximum Credits 16

Y	N	HI 4.1	Reduce paved areas by allowing for shared usage and max number of parking spaces, in commercial applications only; or provide for land bank parking where applicable	1 - 3		
Y	N	HI 4.2	Provide bicycle parking at rate of 15% of the number of residential units, or 15% of the number of parking spaces in a commercial application	1		
Y	N	HI 4.3	Reduce the effects of heat islands in hardscape areas through the use of select paving materials (SRI of 29), shade trees, or overhangs, or through the use of permeable paving	3		
Y	N	HI 4.4	Provide a minimum of one street tree per house lot, or a maximum of 40 feet apart	1		
Y	N	HI 4.5	Utilize recycled materials in the construction of roads, sidewalks, and curbs	1 - 3		
Y	N	HI 4.6	Innovation	1 - 5		

# ORANGE GOES GREEN CERTIFICATION PROGRAM MANUAL

Orange Village Building Department and Planning and Zoning Commission

Published January 19, 2009

## LS 5.0 Landscaping and Stormwater Management Max Credit 17

Y	N	LS 5.1	Provide SWPP Plan Meeting EPA Requirements and Orange Village Erosion Control Requirements	Prerequisite		
Y	N	LS 5.2	Design landscaping utilizing native species of plant life	3		
Y	N	LS 5.3	Reduce or eliminate the use of potable water for irrigation	3		
Y	N	LS 5.4	Provide stormwater management plan that either retains or infiltrates a minimum of 25% of all runoff, through the use of rain gardens or bioswales	3		
Y	N	LS 5.5	Provide for tree protection plan during construction	3		
Y	N	LS 5.6	Innovation	1 - 5		

## LE 60 Lighting & Energy Maximum Credits 10

Y	N	LE 6.1	Submit lighting plan indicating placement and location of all outdoor fixture types along with a fixture schedule.	Prerequisite		
Y	N	LE 6.2	Perform a photometric study and apply design toward energy savings (apply to large residential/commercial only)	Prerequisite		
Y	N	LE 6.3	Outdoor lighting supplied by Energy Star fixtures, or better	5		
Y	N	LE 6.4	Provide light pollution controls	Prerequisite		
Y	N	LE 6.5	Innovation	1 - 5		

## WM 7.0 Waste Management Maximum Credits 10

Y	N	WM 7.1	Provide waste recycling containers	Prerequisite		
Y	N	WM 7.2	Provide a waste management plan that reduces construction waste	5		
Y	N	WM 7.3	Innovation -	1 - 5		

**Total Points 119**