

GREEN STANDARDS  
UNION SQUARE AT SOUTH ELM  
GREENSBORO, NC



# Table of Contents

---

## **INTRODUCTION**

- Intro
- Intent and Principles
- Score Sheet

## **SITE PLANNING**

- Development and Connectivity
- Transportation Strategies
- Pollution Reduction
- Heat Reduction

## **BUILDING ENVELOPE AND SYSTEMS ENERGY EFFICIENCY**

- Energy Performance
- Power Demand Reduction
- Windows
- Energy Efficient Appliances and Lighting
- Renewable Energy
- Carbon Free Energy Power

## **RESOURCE EFFICIENCY**

- Resource Efficient Design
- Recycled and Natural Content Materials
- Locally Sourced Materials

## **WASTE MANAGEMENT**

- Construction Waste Management Practices
- Recycle Construction Waste

## **INDOOR AIR QUALITY**

- Construction Indoor Air Quality
- Moisture Control
- Ventilation
- Indoor Air Contaminants
- Environmental Tobacco Smoke
- Lighting and Heating Controls
- Views and Daylight

## **WATER**

- Indoor
- Outdoor

## **BONUS POINTS**

# INTRODUCTION

*Intent and Principles*  
*Score Sheet*

# Introduction

---

## *Introduction*

The Redevelopment Commission in the City of Greensboro North Carolina, partners in the infill mixed-use development of Union Square at South Elm -- *as part of their own requirements for the project* -- have stipulated that “Green” standards be incorporated into the planning and development criteria for the overall development, as well as any sub-component development on the site.

This requirement reflects the Commission’s desire that Union Square set a precedent for quality infill development, not just in terms of quality architecture and urban design, but also in terms of energy efficiency and sustainability. The following document lays out a basic framework for pursuing this goal that is designed to be both flexible and effective. It also seeks to engage sub-component developers and the consultant teams to continue to explore, propose, and implement the latest and most efficient techniques, materials, and methodologies for not only achieving, but demonstrating the tangible benefits of, long-term reduction in energy use and resource utilization that can serve as an example for similar projects throughout the City.

## *Purpose and Intent*

Use of the guidelines will encourage architects, builders and subcontractors to design and construct buildings that are resource and energy efficient, have lower maintenance requirements, and are healthy to work in, visit, and/or live in. In addition, the guidelines will help to protect and enhance local and regional environmental resources, through the use of sustainable materials and by ensuring the proper disposal or recycling of waste during and after the construction process. We are calling this the Union Square at South Elm Green Builder Program. Adherence to these guidelines will provide a benefit to the community and the environment, and will meet an unsatisfied market demand for housing that fits better with, and sits more lightly on, the Earth.

The Union Square at South Elm Green Builder Program is a compilation of several Green Building Programs, including the SouthFace Institute and aspects of the LEED program operated by the US Green Building Council and the Green Globes. We gratefully acknowledge the work of these organizations in creating excellent programs that serve as a models for others.

Over the last five years, building and energy codes have come a long way in terms of updating their requirements for things like energy efficiency, air quality, use of natural light, and renewable resources. However, there is still plenty of room to improve on those minimum requirements. The Union Square at South Elm Green Building Program works on a point system with a total of 30 points (out of 147 points) required to receive the **Green Builder certification**. While each building will have to receive this certification, the point system allows flexibility in how contractors and builders meet this requirement. The guidelines will also have some requirements that will be mandatory\*. Mandatory requirements and benchmarks are noted in green at the beginning of each section.

***\*NOTE: A Green Builder certificate is automatically awarded to any project awarded either a LEED certification at any level, or a Green Globes certification.***

## *Guiding Principles*

In addition to the green guidelines contained in this document, the general planning principles for Union Square at South Elm include:

- Continue the continuous street edge and building frontage condition that exists north of the site, on South Elm street, by aligning building facades close to the street to form the public space
- Define public space (plaza) at the intersection of Gate City Boulevard and South Elm Street with a continuous building edge
- Buildings should be designed for the urban condition, with views directed toward the street
- Provide a mix of uses across the site, both horizontally and vertically
- Define terminated vistas and important moments with architecturally significant elements.
- Provide and encourage connections through the site via mid-block pedestrian ways and plazas
- Shield parking lots behind buildings or from public ways with walls, fences, and/or landscaping
- Treat South Elm St. and Lee Blvd. as “A” streets. Bragg St. and Arlington St. should be designed to be predominantly pedestrian friendly but may accommodate services and servicing
- Provide on-street parking on S Elm Street, Bragg Street, and Arlington Street
- Incorporate the Bragg Street greenway into the plan as an integral component

## *Location*

Union Square at South Elm is a mixed-use infill project located at the south end of Greensboro's main downtown street, Elm Street, at its intersection with Gate City Boulevard (formerly Lee Street). This project will be a catalyst for future redevelopment in the city of Greensboro, as well as a model of urban infill development to guide future projects. Union Square will be the southern gateway to downtown Greensboro's central business district. The six blocks north of the site form an intact, turn-of-the-20th-century downtown. The four-mile Downtown Greenway loop, which runs along the southern end of Union Square, will help make walking or biking directly to the site a fun and healthy commuting option.



# Score Sheet

| CATEGORY                                    | MANDATORY                     | POINTS                                        | POINTS                                            | POINTS                                        | TOTAL POSSIBLE |
|---------------------------------------------|-------------------------------|-----------------------------------------------|---------------------------------------------------|-----------------------------------------------|----------------|
| Site Planning                               |                               |                                               |                                                   |                                               |                |
| Development and Connectivity                |                               | Open Space<br>2 points                        | Mixed Use<br>3 points                             | Connections - pedestrian paths<br>1 points    | 6 points       |
| Transportation Strategies- Bicycle Storage  |                               | Showers<br>2 points                           | Short term storage<br>1 point                     | Long term storage<br>2-4 points               | 6 points       |
| Transportation Strategies- Parking Capacity | Do not exceed local require.  | Preferred Parking<br>4 points                 |                                                   |                                               | 4 points       |
| Pollution Reduction- Stormwater             |                               | Vegetated Roof (40-55%)<br>2 points           | Vegetated Roof (56-70%)<br>4 points               | Vegetated Roof (70% or more)<br>6 points      | 6 points       |
| Pollution Reduction- Stormwater             |                               |                                               |                                                   | Rainwater Cistern<br>4 points                 | 4 points       |
| Pollution Reducton- Light Pollution         |                               |                                               |                                                   | IDA-IES Lighting Ordinance<br>6 points        | 6 points       |
| Heat Reduction 1                            |                               | Vegetated Roof (40-55%)<br>2 points           | Vegetated Roof (56-70%)<br>4 points               | Vegetated Roof (70% or more)<br>6 points      | 6 points       |
| Heat Reduction 2                            |                               | High Reflectance Roof<br>2 points             |                                                   |                                               | 2 points       |
| Building Envelope/ Systems Energy           |                               |                                               |                                                   |                                               |                |
| Energy Performance                          | Meet 2012 IECC                | Energy Star Score (75-80)<br>4 points         | Energy Star Score (81-85)<br>6 points             | Energy Star Score (86-90)<br>8 points         |                |
| Energy Performance                          | Use Energy Star Target Finder | Energy Star Score (91-95)<br>10 points        | Energy Star Score (96-100)<br>12 points           |                                               | 12 points      |
| Power Demand Reduction                      |                               | 75-79% (Green Globes standard)<br>4 points    | 80-85% (Green Globes standard)<br>6 points        | <85% (Green Globes standard)<br>8 points      | 8 points       |
| Windows                                     | Meet 2012 IECC                | 1.25-1.39 (Green Globes standard)<br>2 points | 1.40-1.54 (Green Globes standard)<br>4 points     | 1.55-1.69 (Green Globes standard)<br>6 points |                |
| Windows                                     |                               | 1.70-1.84 (Green Globes standard)<br>8 points | 1.85-1.99 (Green Globes standard)<br>10 points    |                                               | 10 points      |
| Energy efficient appliances and lighting    | Meet 2012 IECC                | Auto. outdoor lighting controls<br>2 points   | Auto. off controls in unoccupied rms.<br>2 points | Energy Star Appliances<br>1 point             | 5 points       |

## Score Sheet

| CATEGORY                                 | MANDATORY                                 | POINTS                                                            | POINTS                                                          | POINTS                                                           | TOTAL POSSIBLE |
|------------------------------------------|-------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------|----------------|
| Energy efficient appliances and lighting |                                           | All recessed lighting -CFLs<br>1 point                            | 25% of lighting LED<br>4 points                                 |                                                                  | 5 points       |
| Renewable Energy                         |                                           | 3% of building energy use met by on site renewables<br>4 points   | 6% of building energy use met by on site renewables<br>6 points | 9% of building energy use met by on site renewables<br>10 points | 10 points      |
| Carbon Free Energy Power                 |                                           | 35% electricity use -renewable energy power provider.<br>4 points |                                                                 |                                                                  | 4 points       |
| Resource Efficiency                      |                                           |                                                                   |                                                                 |                                                                  |                |
| Resource Efficient Design                |                                           | LCA methodology<br>10 points                                      |                                                                 |                                                                  | 10 points      |
| Recycled and Natural Content Materials   | All materials to meet code                | Recycled Materials<br>2 points                                    | Rapidly Renewable Materials 2 pts.                              |                                                                  | 4 points       |
| Locally Sourced Materials                | All materials to meet code                | Locally Sourced Materials 2 pts.                                  |                                                                 |                                                                  | 2 points       |
| Construction Waste                       |                                           |                                                                   |                                                                 |                                                                  |                |
| Construction Waste Management Practices  | Construction waste management plan        | Donate excess materials<br>1 point                                |                                                                 |                                                                  | 1 point        |
| Recycle Construction Waste               | Recycle 100% clean cardboard, scrap metal | Recycle construction waste 2 points                               |                                                                 |                                                                  | 2 points       |
| Indoor Air Quality                       |                                           |                                                                   |                                                                 |                                                                  |                |
| Construction Indoor Air Quality          |                                           | (SMACNA) IAQ Guidelines 1 pt.                                     |                                                                 |                                                                  | 1 point        |
| Moisture Control                         |                                           | Moisture Control Precautions<br>1 point                           |                                                                 |                                                                  | 1 point        |
| Ventilation                              |                                           | ASHRAE Standards (Paths A and C) 1 point                          | ASHRAE Standards (Path B) 2 points                              |                                                                  | 2 points       |

| CATEGORY                                                             | MANDATORY  | POINTS                                                    | POINTS                                           | POINTS                                              | TOTAL POSSIBLE                                 |
|----------------------------------------------------------------------|------------|-----------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|------------------------------------------------|
| Indoor Air Contaminants                                              |            | No Urea<br>Formaldehyde<br>2 points                       | Meet Green<br>Guard<br>Certification<br>4 points | Meet ECOLOGO<br>Product Certification<br>4 points   | 6 points                                       |
| Environmental Tobacco<br>Smoke                                       | No smoking |                                                           |                                                  |                                                     |                                                |
| Lighting and Heating<br>Controls                                     |            | Lighting Controls<br>2 points                             | Temperature<br>Comfort 2 points                  |                                                     | 4 points                                       |
| Views and Daylight                                                   |            | Views and<br>Daylight 2 points                            |                                                  |                                                     | 2 points                                       |
| Water                                                                |            |                                                           |                                                  |                                                     |                                                |
| Indoor Water Use                                                     |            | Percentage<br>below the<br>baseline<br>25-29%<br>2 points | 30-35%<br>6 points                               | 36-40%<br>8 points                                  |                                                |
| Indoor Water Use                                                     |            | > 40%<br>10 points                                        |                                                  |                                                     | 10 points                                      |
| Outdoor Water Use                                                    |            | No permanent<br>irrigation<br>2 points                    | Drip Irrigation<br>2 points                      | Reduce water use<br>for landscaping<br>50% 2 points | 6 points                                       |
| Outdoor Water Use                                                    |            | Rain water<br>collection<br>2 points                      |                                                  |                                                     | 2 points                                       |
| Bonus Points                                                         |            |                                                           |                                                  |                                                     | to be determined<br>on a case by<br>case basis |
|                                                                      |            |                                                           |                                                  |                                                     |                                                |
| TOTAL POINTS<br>POSSIBLE INCLUSIVE OF<br>MANDATORY POINTS            |            |                                                           |                                                  |                                                     | 147                                            |
| TOTAL POINTS NEEDED<br>FOR GREEN BUILDER<br>CERTIFICATION<br>PROGRAM |            |                                                           |                                                  |                                                     | 30                                             |

# SITE PLANNING

*Development and Connectivity*

*Transportation Strategies*

*Pollution Reduction*

*Heat Reduction*

# Site Planning

---

## DEVELOPMENT AND CONNECTIVITY

**Mixed Use Development - Intent:** To promote the efficient use of land and infrastructure by locating multiple uses within the same building, thus reducing auto-dependency and providing more services within walking distance to residential development on the site.

- **Mixed Use Development:**

Provide documentation demonstrating that more than one use or use group exists within the same building.

Examples include residential upper levels and ground floor office or retail. **(3 points)**

**Community Connectivity - Intent :** To provide a connection for pedestrians to access the buildings and amenities on the site.

- **Pedestrian Paths:**

Provide site plan demonstrating that pedestrian paths are to be accommodated to link the building to other amenities and buildings on the site **(1 point)**

**Access to Recreational Spaces and Public Spaces - Intent:** To provide the community and users of the site with pedestrian and bicycle access to public spaces and connectivity to the Greenway

- **Open Space:**

Provide outdoor space greater than or equal to 20% of the total site area (including building footprint)\*. **(1 point)**

**\* Credit may be given for adding ground floor retail that abuts existing or proposed open space that is designed and dedicated for public use.**

## TRANSPORTATION STRATEGIES

**Bicycle Storage and Changing Rooms - Intent:** To encourage the use of bicycles as a primary mode of transportation, thus reducing the amount of pollution from automobiles and other impacts from adding more parking spaces to the site.

- **Bicycle Storage: (see definitions below)**

1. Provide short-term bicycle storage (i.e. racks) for at least 2.5% of all peak transients or non-residents, with a minimum of four spaces **(1point) OR**

2. Provide long-term bicycle storage for at least 5% of all regular building occupants for full time employees or full time equivalent (FTE) for a commercial or institutional use, with a minimum of four spaces **(2 points)**

3. Provide long-term bicycle storage for at least 30% of all regular building occupants (full time residents) for a residential use, with a minimum of four spaces **(4 points)**

4. Provide one shower for the first 100 full-time employees or full time equivalent (FTE) for a commercial or institutional use and one additional shower for every 150 full-time employee or FTE thereafter. **(2 points)**

**Definitions:**

Full-time employees (in the building for 8 hours/day)

Part-Time employees (in the building less than 8 hours/day)

Calculate full time equivalent or FTE by dividing by 8 hours a day or use this formula: Total FTE Occupants = Total Occupant Hours ÷ 8 )

(Example - If you have 20 FTE and 8 employees who work 4 hrs. a day that would equal 20 FTE + (8 x 4 hrs = 32 hrs/8 hrs) + 4 FTE or a total of 24 FTE

Peak transients (students, customers, visitors, etc.)\

Example: For transient occupants (students, customers, visitors, delivery people, etc.) you would take the number of transients that are occupying your building during your PEAK period. If you have 15 “transients” in your building at your busiest time – say 1:30 p.m. – your transient FTE = 15.

Full-time residents (living full time in the building)

**Transportation Impacts - Parking Capacity - Intent: Create the minimum parking required for the uses on the site and provide alternative parking strategies to keep the number of spaces to a minimum, such as shared parking.**

- **Parking:**

*Mandatory requirement: Do not exceed the local code requirements for required parking spaces*

1. Provide preferred parking for carpools for 5% of the total parking space dedicated for the building. **(4 points)**

## **POLLUTION REDUCTION**

**Stormwater Design - Quality Control - Intent: To reduce the amount of impervious surfaces, increase on-site infiltration, and reduce the amount and quality of the stormwater runoff.**

- ***Vegetated Roof: Install a vegetated roof on the building.***

1. 40-55% roof coverage **(2 points)**
2. 56-70 % roof coverage **(4 points)**
3. 70% or greater roof coverage **(6 points)**

- ***Rainwater Cistern: Install a rainwater cistern system to store and recycle rainwater***

**25% or more of rainwater harvested (2 points)**

**Light Pollution Reduction - Intent: To minimize stray lighting, reduce glare on the site, and increase night sky access.**

- Provide a site lighting design for the exterior of the building and its associated outdoor areas by an Engineer or Lighting Professional that meets the performance requirements of the IDA-IES Model Lighting Ordinance for Lighting Zone 2 (moderate ambient light) for all residential and mixed use buildings or Lighting Zone 3 (moderately high ambient light) for civic uses. All residential building projects must meet the requirements of the IDA-IES Model Lighting Ordinance for Residential Lighting to receive this credit. **(6 points)**

## **HEAT REDUCTION**

**Heat Gain - Intent: To reduce heat gains and its impact on humans and wildlife habitats by limiting the amount dark, heat-absorbing materials on the site.**

- ***High Reflectance Roof: Use roofing materials that have an Solar Reflectance Index (SRI) equal to or greater than the following values:***

# Site Planning

---

Roof Slope less than or equal to 2:12

Initial SRI=78-81 (Green Globes standard) **(2 points)**

Roof Slope greater than 2:12

Initial SRI =29-38 (Green Globes standard) **(2 points)**

Definition of SRI: SRI measures the roof's ability to reject solar heat, defined such that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100.

- ***Vegetated Roof: Install a vegetated roof on the building.***

40-55% of total roof coverage **(2 points)**

56-70 % of total roof coverage **(4 points)**

70% or greater of total roof coverage **(6 points)**

# BUILDING ENVELOPE & SYSTEMS ENERGY EFFICIENCY

*Energy Performance*

*Power Demand Reduction*

*Windows*

*Energy Efficient Appliances and Lighting*

*Renewable Energy*

*Carbon Free Energy Power*

# Building Envelope and Systems Energy Efficiency

---

## INTRODUCTION

The building envelope defines the conditioned and unconditioned spaces in the project. The building envelope consists of two parts: a thermal barrier (insulation) and an air barrier (any number of materials and approaches).

## ENERGY PERFORMANCE - 2012 IECC

*Mandatory requirement: All buildings must meet the requirements as set forth in the 2012 International Energy Conservation Code and the 2012 North Carolina Energy Conservation Code*

- **Baseline Energy - Intent: To ensure a baseline level of energy efficiency for any proposed buildings in order to reduce excessive energy use**

## ENERGY PERFORMANCE - ENERGY STAR Target Finder

*Mandatory requirement: All building designs must use the ENERGY STAR Target Finder program to obtain an energy performance percentile score.*

<http://www.energystar.gov/buildings/service-providers/design/step-step-process/evaluate-target/epa%E2%80%99s-target-finder-calculator>

The ENERGY STAR Target Finder program allows designers to input a building's anticipated energy use based on an energy analysis run during the design phase. The score awarded is a percentile identifying how the building performs relative to other buildings of similar uses and calibrated for size and climate. A building is eligible to be ENERGY STAR certified if it receives a score of 75 or better. Points will be awarded on a scale for obtaining an ENERGY STAR Target Finder score from between 75-100. No points will be awarded if the score of the building is below 75.

For a score from 96-100 **(12 points)**

For a score from 91-95 **(10 points)**

For a score from 86-90 **(8 points)**

For a score from 81-85 **(6 points)**

For a score from 75-80 **(4 points)**

## POWER DEMAND REDUCTION

**Intent - To minimize peak monthly demand and flatten the monthly load profiles of the building's electricity usage.**

- Model the building's monthly power demand factor (lowest monthly kW demand / peak monthly kW demand).  
Reference ANSI/GBI Standard 01-2010 Section 8.2.3 Power Demand Reduction
  - >85% (Green Globes standard) **(6 points)**
  - 80-85% (Green Globes standard) **(4 points)**
  - 75-79% (Green Globes standard) **(2 points)**

## WINDOWS

*Mandatory requirement: All glazing and windows must meet the requirements as set forth in the 2012 International Energy Conservation Code and the 2012 North Carolina Energy Conservation Code*

**Intent - To minimize energy losses from glazing and window areas**

Points will be awarded for demonstrating additional measures above and beyond the North Carolina Energy Conservation Code listed U values for glazing in windows, skylights, and storefronts as per the Fenestration Ratio method as described below.

- **Fenestration Ratio:** Buildings that have a higher ratio of north/south fenestration as compared to east/west fenestration will demand less energy use. Fenestration includes any area, including frames, that transmits light. Points will be awarded for ratios of north/south fenestration to east/west fenestration as follows:
  - 1.85-1.99 (Green Globes standard) **(10 points)**
  - 1.70-1.84 (Green Globes standard) **(8 points)**
  - 1.55-1.69 (Green Globes standard) **(6 points)**
  - 1.40-1.54 (Green Globes standard) **(4 points)**
  - 1.25-1.39 (Green Globes standard) **(2 points)**

## ENERGY EFFICIENT APPLIANCES AND LIGHTING

*Mandatory requirement: All buildings must meet the requirements as set forth in the 2012 International Energy Conservation Code and the 2012 North Carolina Energy Conservation Code for lighting controls and lighting power*

- **Energy Efficient Appliances and Lighting -Intent: To provide the minimum required under the 2012 North Carolina Energy Conservation Code**

Automatic outdoor lighting controls: All exterior lighting shall have automatic photocell, motion or timer controls. **(2 points)**

Auto off controls in all unoccupied rooms. **(2 points)**

Interior room surface reflectances on ceilings of 80% or more on ceilings, on walls and vertical surfaces of 70% or more. **(2 points)**

Energy Star rated for all appliances in the project. **(1 point)**

All recessed light fixtures to be compact fluorescents. **(1 point)**

25% of lighting to be LED. **(4 points)**

Bonus Points will be awarded for demonstrating additional measures above and beyond the North Carolina Energy Conservation Code for lighting control requirements and interior and exterior lighting power.

# Building Envelope and Systems Energy Efficiency

---

## RENEWABLE ENERGY

- **Renewable Energy - Intent:** *To encourage the development of on-site renewable energy self-supply to reduce dependency on fossil fuel energy use.*

Points will be awarded for demonstrating renewable energy systems based on the percentages of building energy use met by renewable energy during the performance period.

3% of building energy use met by on site renewables **(4 points)**

6% of building energy use met by on site renewables **(6 points)**

9% of building energy use met by on site renewables **(10 points)**

## CARBON FREE ENERGY POWER

- **Carbon Free Energy Power - Intent:** *To sign up for a minimum 2-year renewable energy contract to provide at least 35% of the building's electricity based on the quantity of energy consumed (not the cost) from renewable sources, as defined by the Center for Resource Solutions' Green-e Energy product certification requirements or an equivalent.*

Document the annual electricity use for the project and then providing documentation of the renewable energy contract for at least 35% of the building's electricity use with a renewable energy power provider. **(4 points)**

Off-site renewable energy sources are defined by the Center for Resource Solutions Green-e Energy program's products certification requirements, or the equivalent.

# RESOURCE EFFICIENCY

*Resource Efficient Design*

*Recycled and Natural Content Materials*

*Locally Sourced Materials*

# Resource Efficiency

---

## ENERGY EFFICIENT DESIGN & ADVANCED MATERIALS

- **Energy Efficient Design - Intent: To reduce the waste of building materials and products and to lessen the demand for virgin materials and resources.**

Points will be awarded for demonstrating measures that show a reduction in the use of materials through an analysis of life cycle assessment (LCA) methodology. The ATHENA Impact Estimator for Buildings is one such software tool designed to evaluate whole buildings and assemblies based on LCA methodology.

Document at least two alternative design options for the project building using an LCA tool i.e. the ATHENA Impact Estimator for Buildings. The intent is to evaluate these two design options during the construction documentation phase of the work. Select the design with the least environmental impact as defined by the following criteria:

- GWP (Global Warming Potential)
- Acidification Potential
- Ozone Depletion Potential
- Smog Potential
- Eutrophication
- Fossil Fuel Use

**(10 points)**

## RECYCLED AND NATURAL CONTENT MATERIALS & RAPIDLY RENEWABLE MATERIALS

*Mandatory requirement: All materials must be approved by local building codes*

- **Recycled Materials - Intent: To specify building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.**

Points will be awarded for using up to 20% of the materials cost for the project as recycled materials. **(2 points)**

- **Rapidly Renewable Materials - Intent: To reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials.**

Points will be awarded if 20% of materials are renewable from natural sources within a ten-year cycle. **(2 points)**

## LOCALLY SOURCED MATERIALS

*Mandatory requirement: All materials must be approved by local building codes*

- **Locally Sourced Materials - Intent: To specify building products that are extracted and manufactured within a specified distance of the project.**

Building materials or products must be extracted, harvested or recovered, as well as manufactured within a 500 mile radius of the project site. Points will be awarded for documenting locally sourced building products for a minimum of 20% of the material cost for the project.

**(2 points)**

# WASTE MANAGEMENT

*Construction Waste Management Practices*

*Recycle Construction Waste*

# Waste Managment

---

## **CONSTRUCTION WASTE MANAGEMENT PRACTICES**

*Mandatory requirement: No construction materials shall be burned or buried on a job site on a job site or other area other than a state approved construction and demolition landfill.*

*Provide a construction waste management plan to be on-site.*

- **Donation of excess materials or re-use:** Builder shall avoid disposal of excess construction materials by donating excess to a nonprofit 501c(3) organization or by re-using the construction materials for another job. The value of donated or re-used materials must be \$500 or greater.\*

\*Builder must provide receipt of donation with final worksheet

**(1 point)**

## **RECYCLE CONSTRUCTION WASTE**

*Mandatory requirement: 100% of clean corrugated cardboard must be recycled according to the local recycling ordinance; builder shall recycle 100% of scrap metal according to the local Recyclable Material Ordinance; builder shall recycle 100% of unpainted, untreated wood waste according to the local Regulated Recyclable Material Ordinance. Wood pallets are included in this requirement.*

- **Recycle Construction Waste - Intent: Recycle construction waste to the appropriate recycling agencies in the area to reduce disposal of waste into landfills.**

Points will be awarded based on demonstrating the percentage of recycling of construction wastes by weight carried out on the site.

- Divert at least 50% of the total construction and demolition material **(2 points)**

# INDOOR AIR QUALITY

*Indoor Air Quality During Construction*

*Moisture Control*

*Ventilation*

*Indoor Air Contaminants*

*Environmental Tobacco Smoke*

*Lighting and Heating Controls*

*Views and Daylight*

# Indoor Air Quality

---

## INDOOR AIR QUALITY DURING CONSTRUCTION

- **Indoor Air Quality During Construction - Intent: To reduce indoor air quality problems resulting from construction and promote the comfort and well-being of construction workers and building occupants.**

During construction, meet or exceed all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3.

**(1 point)**

## MOISTURE CONTROL

- **Moisture Control - Intent: To control moisture levels in interior spaces.**

Install dehumidification equipment with sufficient latent capacity to maintain relative humidity at or below 60%. This must be achieved through one of the following:

Additional dehumidification system(s).

A central HVAC system equipped with additional controls to operate in dehumidification mode.

**(1 point)**

## VENTILATION

- **Ventilation - Intent: To reduce indoor air quality problems through adequate ventilation.**

Meet the minimum requirements of ASHRAE Standard 62.1–2010, Sections 4–7, Ventilation for Acceptable Indoor Air Quality (with errata), or a local equivalent, whichever is more stringent.

Three paths for assessing air exchange are acceptable:

Path A: Mechanical Ventilation Only

Path B: Natural Ventilation Only

Path C: Combination of Mechanical and Ventilation

**(1 point) for Paths A and C, (2 points) for Path B**

## INDOOR AIR CONTAMINANTS

- **Intent: To reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of installers and occupants.**

Points will be awarded based on demonstrating measures to reduce the quantity of indoor air contaminants. Materials that must comply with these standards are the following: all interior paints and coatings, interior adhesives and sealants, composite wood, floor coverings, ceilings or thermal or acoustic insulation.

**No urea formaldehyde materials for the above mentioned materials inside conditioned spaces  
(2 points)**

**Interior finish products in the above mentioned materials to either meet Green Guard Certification OR ECOLOGO Product Certification  
(4 points)**

## **ENVIRONMENTAL TOBACCO SMOKE**

*Mandatory requirement: Smoking is prohibited in all buildings and on-property smoking is prohibited within 25 feet of entries, outdoor air intakes and operable windows.*

***Intent: to prevent or minimize exposure of building occupants, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke***

A second means of compliance with this mandatory requirement can be achieved by demonstrating the following measures:

Compartmentalization of Smoking Areas

Prohibit smoking inside all common areas of the building. The prohibition must be communicated in building rental or lease agreements or condo or coop association covenants and restrictions. Make provisions for enforcement.

Prohibit smoking outside the building except in designated smoking areas located at least 25 feet (7.5 meters) from all entries, outdoor air intakes, and operable windows. The no-smoking policy also applies to spaces outside the property line used for business purposes.

Signage must be posted within 10 feet (3 meters) of all building entrances indicating the no-smoking policy.

Each unit must be compartmentalized to prevent excessive leakage between units:

Weather-strip all exterior doors and operable windows in the residential units to minimize leakage from outdoors.

Weather-strip all doors leading from residential units into common hallways.

Minimize uncontrolled pathways for the transfer of smoke and other indoor air pollutants between residential units by sealing penetrations in the walls, ceilings, and floors and by sealing vertical chases (including utility chases, garbage chutes, mail drops, and elevator shafts) adjacent to the units.

Demonstrate a maximum leakage of 0.23 cubic feet per minute per square foot (1.17 liters per second per square meter) at 50 Pa of enclosure (i.e., all surfaces enclosing the apartment, including exterior and party walls, floors, and ceilings).

# Indoor Air Quality

---

## **LIGHTING & HEATING CONTROLS**

- ***Intent: Allow for individuals to control their own lighting and heating controls***

Provide individual lighting controls for 90% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences.

**(2 points)**

**Temperature Comfort Controls:** Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to air temperature and humidity levels to meet individual needs and preferences. Operable windows may be used in lieu of controls for occupants located 20 feet inside and 10 feet to either side of the operable part of a window.

**(2 points)**

## **VIEWS & DAYLIGHT**

- ***Intent: To provide the building users to get daylight into the building and provide views to make a connection to the outdoors from within the occupied spaces of the building***

Demonstrate through records of indoor light measurements or through computer simulation that a minimum daylight illumination level of 10 fc and a maximum of 500 fc has been achieved in the applicable spaces. Measurements must be taken on a 10-foot grid and shall be recorded on building floor plans.

**(2 points)**

# WATER

*Indoor  
Hot Water  
Outdoor*

# Water

---

## INDOOR

- *Intent: To reduce the amount of municipal water used on site and lower output into wastewater systems*

Use the Green Globes Water Consumption Calculator to determine the base line scenario for the building, points are awarded based on the percentage below the baseline.

25-29% **(2 points)**

30-35% **(6 points)**

36-40% **(8 points)**

>40% **(10 points)**

## OUTDOOR

- *Intent: Reduce or eliminate the need for potable water to irrigate landscaping on site.*

Points will be awarded based on demonstrating measures to reduce outdoor water use.

Reduce the project's landscape water requirements by 50%

**(2 points)**

No permanent irrigation system for landscaping once plants are established (2 year period) **(2 points)**

Establish a minimum of 50% of landscape planting beds shall have a drip irrigation system. **(2 points)**

Establish a minimum of 50% of the rain from the roof shall be collected and stored for irrigation use. **(2 points)**

BONUS

Bonus Points will be awarded for demonstrating additional measures above and beyond the North Carolina Energy Conservation Code for lighting control requirements and interior and exterior lighting power.