New Jersey Housing and Mortgage Finance Agency

Green Future Guidelines

A Developer's Reference

Fall 2008

INTRODUCTION

The Green Future program consists of a list of required green items. This list is referenced within the Low-Income Housing Tax Credit Green Point, the Balanced Housing Green Requirements Documents and the Special Needs Housing Trust Fund Sustainability Guidelines. The Balanced Housing and Special Needs green items are a sub-set or expansion of the LIHTC Green Future Program (see chart on next page).

- For the LIHTC Green Future – Green Point, all items must be completed
- For the Balanced Housing Green Requirements, a subset of the Green Future items must be completed
- The SNHTF Sustainability Guidelines are not requirements of the funding and present options that go beyond Green Future items in the areas of Indoor Air Quality and Resource Efficiency.

IMPORTANT NOTES:

- The General Contractor will include or reference each Green Future item within the final Contractor's Payment Breakout – as submitted for HMFA financing and reviewed by the HMFA Green Technical Advisor.
- The Architect will include each Green Future item within 95% complete Plans and Specifications – to be approved by the HMFA Green Technical Advisor prior to the start of construction.
- The Checklist included in this packet is for ALL Green Future items, please refer to page 2 for your particular program requirements.

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LIHTC: GREEN FUTURE		BALANCED HOUSING		SPECIAL NEEDS HOUSING TRUST FUND	
Siting & Land Use					
SL-1	PASSIVE SOLAR, VENTILATION & SHADING DESIGN	SL-1	PASSIVE SOLAR, VENTILATION & SHADING DESIGN	SL-1	PASSIVE SOLAR, VENTILATION & SHADING DESIGN
SL-2	PRESERVATION PLAN	SL-2	PRESERVATION PLAN	SL-2	PRESERVATION PLAN
SL-3	FOLLOW STATE PLAN & SMART GROWTH PRINCIPLES	SL-3	FOLLOW STATE PLAN & SMART GROWTH PRINCIPLES	SL-3	FOLLOW STATE PLAN & SMART GROWTH PRINCIPLES
SL-3a	PEDESTRIAN PATHS & BIKE TRAILS			SL-3a	PEDESTRIAN PATHS & BIKE TRAILS
SL-3b	SECURE AND SAFE BIKE RACKS			SL-3b	SECURE AND SAFE BIKE RACKS
SL-3c	SAFE SHELTER FOR COMMUTERS			SL-3c	SAFE SHELTER FOR COMMUTERS
SL-3d	ACCESS TO NEIGHBORHOOD OR PROJECT PARK			SL-3d	ACCESS TO NEIGHBORHOOD OR PROJECT PARK
				SL-4	SPACE FOR A COMMUNITY GARDEN
				SL-5	ONSITE STORMWATER RETENTION & FILTRATION
Indoor Air Quality					
IA-1	DUCTS & HVAC PROTECTED FROM DUST	IA-1	DUCTS & HVAC PROTECTED FROM DUST	IA-1	DUCTS & HVAC PROTECTED FROM DUST
IA-2	LOW VOC INTERIOR PAINTS & FINISHES	IA-2	LOW VOC INTERIOR PAINTS & FINISHES	IA-2	LOW VOC INTERIOR PAINTS & FINISHES
IA-3	LOW VOC ADHESIVES & SEALANTS	IA-3	LOW VOC ADHESIVES & SEALANTS	IA-3	LOW VOC ADHESIVES & SEALANTS
IA-4	DURABLE, HEALTHY FLOORING	IA-4	DURABLE, HEALTHY FLOORING	IA-4	DURABLE, HEALTHY FLOORING
IA-5	MERV 8 OR HIGHER AIR FILTERS	IA-5	MERV 8 OR HIGHER AIR FILTERS	IA-5	MERV 8 OR HIGHER AIR FILTERS
IA-6	COMBUSTION DEVICES	IA-6	COMBUSTION DEVICES	IA-6	COMBUSTION DEVICES
IA-7	AUTOMATIC BATHROOM VENTILATION	IA-7	AUTOMATIC BATHROOM VENTILATION	IA-7	AUTOMATIC BATHROOM VENTILATION
IA-8	DIRECT VENT OF KITCHEN			IA-8	DIRECT VENT OF KITCHEN
IA-9	ENCAPSULATION OF NON-UF-FREE CABINETS			IA-9	ENCAPSULATION OF NON-UF-FREE CABINETS
IA-10	INSULATION WITH LOW FORMALDEHYDE CONTENT			IA-10	INSULATION WITH LOW FORMALDEHYDE CONTENT
IA-11	OPERABLE WINDOWS			IA-11	OPERABLE WINDOWS
IA-12	ACCESS TO DAYLIGHTING & VIEW FROM EACH BEDROOM			IA-12	ACCESS TO DAYLIGHTING & VIEW FROM EACH BEDROOM
Building Durability & Moisture Control					
DM-1	EXTERIOR WALL DRAINAGE PLANE	DM-1	EXTERIOR WALL DRAINAGE PLANE	DM-1	EXTERIOR WALL DRAINAGE PLANE
DM-2	WINDOW FLASHING DETAILS	DM-2	WINDOW FLASHING DETAILS	DM-2	WINDOW FLASHING DETAILS
DM-3	GUTTER DOWNSPOUTS DISCHARGE 3' FROM FOUNDATION	DM-3	GUTTER DOWNSPOUTS DISCHARGE 3' FROM FOUNDATION	DM-3	GUTTER DOWNSPOUTS DISCHARGE 3' FROM FOUNDATION
DM-4	INSTALL 30-YR FOR PITCHED & 20-YR FOR FLAT ROOF	DM-4	INSTALL 30-YR FOR PITCHED & 20-YR FOR FLAT ROOF	DM-4	INSTALL 30-YR FOR PITCHED & 20-YR FOR FLAT ROOF
Energy Efficiency					
EE-1	ALL UNITS ENERGY STAR CERTIFIED	EE-1	ALL UNITS ENERGY STAR CERTIFIED	EE-1	ALL UNITS ENERGY STAR CERTIFIED
EE-2	ENERGY STAR APPLIANCES	EE-2	ENERGY STAR APPLIANCES	EE-2	ENERGY STAR APPLIANCES
EE-3	ENERGY STAR LIGHTING FIXTURES	EE-3	ENERGY STAR LIGHTING FIXTURES	EE-3	ENERGY STAR LIGHTING FIXTURES
EE-4	WINDOWS WITH LOW-E COATING	EE-4	WINDOWS WITH LOW-E COATING	EE-4	WINDOWS WITH LOW-E COATING
EE-5	INSULATION OF BASEMENT CEILING	EE-5	INSULATION OF BASEMENT CEILING	EE-5	INSULATION OF BASEMENT CEILING
EE-6	DUCTWORK IN CONDITIONED SPACE			EE-6	DUCTWORK IN CONDITIONED SPACE
EE-7	OCCUPANCY & DAYLIGHTING CONTROLS			EE-7	OCCUPANCY & DAYLIGHTING CONTROLS
EE-8	HIGH-ENERGY FACTOR WATER HEATER			EE-8	HIGH-ENERGY FACTOR WATER HEATER
EE-9	EASY TO USE PROGRAMMABLE THERMOSTATS			EE-9	EASY TO USE PROGRAMMABLE THERMOSTATS
Resource Efficiency & Renewable Energy					
RE-1	RECYCLE / SALVAGE CONSTRUCTION DEBRIS	RE-1	RECYCLE / SALVAGE CONSTRUCTION DEBRIS	RE-1	RECYCLE / SALVAGE CONSTRUCTION DEBRIS
RE-2	RECYCLING CENTERS IN COMMON AREAS	RE-2	RECYCLING CENTERS IN COMMON AREAS	RE-2	RECYCLING CENTERS IN COMMON AREAS
RE-3	RECYCLING PLAN FOR EACH UNIT	RE-3	RECYCLING PLAN FOR EACH UNIT	RE-3	RECYCLING PLAN FOR EACH UNIT
Water Conservation					
WC-1	LOW-FLOW FIXTURES	WC-1	LOW-FLOW FIXTURES	WC-1	LOW-FLOW FIXTURES
WC-2	HIGH-EFFICIENCY TOILETS	WC-2	HIGH-EFFICIENCY TOILETS	WC-2	HIGH-EFFICIENCY TOILETS
WC-3	WATER EFFICIENT LANDSCAPING	WC-3	WATER EFFICIENT LANDSCAPING	WC-3	WATER EFFICIENT LANDSCAPING
WC-4	HIGH-EFFICIENCY IRRIGATION	WC-4	HIGH-EFFICIENCY IRRIGATION		
WC-5	PERVIOUS PAVERS FOR OUTDOOR PATIOS & WALKWAYS				
Operations & Maintenance					
OM-1	PROPERTY MANAGEMENT O&M MANUAL & TRAINING			OM-1	PROPERTY MANAGEMENT O&M MANUAL & TRAINING
OM-2	TENANT O&M MANUAL & TRAINING			OM-2	TENANT O&M MANUAL & TRAINING
OM-3	INTEGRATED PEST MANAGEMENT				

SITE AND LAND USE ----------

SL-1 Passive Solar, Ventilation & Shading Design

Requirement:

Passive Solar - The basic natural processes used in passive solar energy are the thermal energy flows associated with radiation, conduction and natural convection. When sunlight strikes a building, the building materials can reflect, transmit or absorb the solar radiation. These basic responses to solar heat lead to design elements, material choices and placements that can provide heating and cooling effects in a home. Passive solar energy means that mechanical means are not employed to utilize solar energy.

Passive Ventilation & Shading – In addition, buildings and windows should be oriented to resist cold northern winds and lack of sun in the winter and open to warmer southern breezes in the summer. Apply suitable roof overhangs, awnings and/or deciduous trees. Where lot lines permit, design roof to include 18 inch overhangs.

Site new construction projects for passive solar strategies including proper window types and placement, proper overhangs and passive shading. Consider (1) elongating the building on an east-west axis; (2) placing interior spaces requiring the most light, heating and cooling should be along the south face of the building; (3) utilizing a narrow floor plate (less than 40 feet), single-loaded corridors, and an open floor plan to optimize daylight penetration and passive ventilation; and (4) shade through use of deciduous trees, overhangs and/or canopies on the south and west to prevent the summer sun from entering the interior.

Benefit:
Passive design greatly increases actual comfort without the use of mechanical equipment, thereby lowering energy costs.

Submittal:
- Site plan with north arrow clearly displayed and nearby buildings noted with the number of floors for each. Locate the placement or maintenance of desirable trees to utilize passive design.
- Elevation with exterior shading devices where applicable.
- If the project is in an infill lot with no alternate site options, or there is something that precludes the project from incorporating passive solar design, please submit a narrative to this effect and what attempts have been made to comply.

Recommended Construction Specification Section: 02800, 02900, 07700, 08500, 08600, 10200 and 10700
Note: This item is addressed from the very beginning of project design.

SL-2 Preservation Plan

Requirement:
Minimize disturbed area and preserve viable existing trees and vegetation, including street trees. If removing a stand of trees that is not directly where the building will be, explain why the trees were removed.

Develop a tree/plant preservation plan that designates trees and existing vegetation to be protected during all construction activities that is clearly marked on all drawings and site. Clearly communicate this information to all subcontractors.

Benefit:
Existing trees can provide shade, reduce cooling loads and provide comfortable outdoor spaces in summer.

Submittal:
- Site plan with tree/plant preservation plan and note
- Tree preservation details
- Include tree demarking and preservation procedures in Specifications

Recommended Construction Specification Section: 02200 or 02300

SL-3 Follow State Plan & Smart Growth Principles

Requirement:
As much as possible within the site apply Smart Growth Principles, which are as follows (www.smartgrowth.org):
1. Create Range of Housing Opportunities and Choices
2. Create Walkable Neighborhoods
3. Encourage Community and Stakeholder Collaboration
4. Foster Attractive Communities with a Sense of Place
5. Make Development Decisions Predictable, Fair and Cost Effective
6. Mix Land Uses
7. Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas
8. Provide a Variety of Transportation Choices
9. Strengthen and Direct Development Towards Existing Communities
10. Take Advantage of Compact Building Design

Following are 4 items (3a-d) that should be incorporated and are a starting point under this title.

Benefit:
"Smart growth recognizes connections between development and quality of life. It leverages new growth to improve the community. The features that distinguish smart growth in a community vary from place to place. In general, smart growth invests time, attention, and resources in restoring community and vitality to center cities and older suburbs. New smart growth is more town-centered, is transit and pedestrian oriented, and has a greater mix of housing, commercial and retail uses. It also preserves open space and many other environmental amenities." -www.smartgrowth.org

Submittal:
- Plans and written description of Smart Growth Principles employed.

Recommended Construction Specification Section: N/A

SL-3a Pedestrian Paths & Bike Trails

Requirement:
Build sidewalks that are wide, pleasant, and buffered from automobile traffic. Include bike lanes in long drives and, if available, connect to existing municipal bike lane systems. Create pleasant walk- and bikeways through site to community areas, between buildings, surrounding neighborhoods, and parking, etc.

Benefit:
Providing alternative and safe means of transportation through and off the site encourages residents to walk, socialize, and feel a part of the community. The ability to walk safely through a residential area expands ownership and sense of place.

Submittal:
- Submit plans and specifications

- During Construction: Submit photographs of, at least, connections between living and parking spaces; site and neighborhood; walking trails and different buildings.

Recommended Construction Specification Section: 02700 or 02800

SL-3b Secure & Safe Bike Racks

Requirement:
Provide a safe and secure place to lock up bikes. Select an area that can be monitored via security, windows, and/or common passage, etc. See reference for 'Green Future: SL-3b.'

Benefit:
With a safe place to lock up bikes, it makes it more likely that residents will choose biking as transportation. Setting up a bike lock area in an unsecured area may encourage theft and vandalism.

Submittal:
- Submit plans and specifications
- During Construction: Submit photographs of bike lock signage and bike lock areas.

Recommended Construction Specification Section: 02800

SL-3c Safe Shelter for Commuters

Requirement:
If a mass transit stop if located very near (visible from) or on the site, provide a protected area for residents to wait. The shelter should include overhead protection and screening from prevailing wind and rain directions (winter – WNW; summer – S; http://www.ncdc.noaa.gov/oa/documentlibrary/wind/wind1996.pdf).

If there are no mass transit opportunities nearby, create a ride waiting area for residents.

Benefit:
A nice feature for those requiring alternative transportation; especially those unable to drive.

Submittal:
- Submit plans and specifications
- During Construction: Submit photographs of commuter shelter

Recommended Construction Specification Section: 02800

SL-3d Access to Neighborhood or Project Park

Requirement:
Provide access to an onsite park or to a neighborhood park within walking distance (1/2 mile).

Benefit:
Recreation, a place to socialize and physical exercise.

Submittal:
- Site and neighborhood plans
- During Construction: Submit photographs of community or neighborhood park and access routes

Recommended Construction Specification Section: 02800

SL-4 Space for a Community Garden

Requirement:
Provide defined areas where residents can plant. This includes areas around entryways and larger plots on-site. Resident planting areas will have defined borders and, for larger community gardens, a storage location nearby.

Submittal:
- Site plan
- During Construction: Submit photographs of community garden areas.

Recommended Construction Specification Section: 02800

SL-5 Onsite Stormwater Retention & Filtration

Benefit:
Onsite stormwater retention replenishes local underground water resources, filters water naturally, and reduces demands on local stormwater systems.

Submittal:
- Site Engineering Plan
- During Construction: Submit photographs of onsite stormwater retention

Recommended Construction Specification Section: 02600

INDOOR AIR QUALITY ----------

Considering the average American spends 90% of his or her time indoors, the EPA's recent proclamation that "indoor air pollution in residences, offices, schools, and other buildings is widely recognized as one of the most serious potential environmental risks to human health" should not be taken lightly. Indeed, the EPA lists poor indoor air quality as the fourth largest environmental threat nationwide.

Healthy indoor air quality has grown in significance with the advent of air tight, energy-efficient homes which result in lower levels of fresh air intake, thus potentially leaving occupants of new housing more susceptible to rising pollutant levels from synthetic building materials, home furnishings, chemically-based cleaning products, mold toxins, and other sources. In addition, the lack of consideration for combustion appliances and moisture control in the home has contributed to the problem of indoor air quality.

IA-1 Ducts and HVAC protected from dust during construction

Requirement:
Completely seal duct and HVAC equipment openings with plastic film and tape, or other suitable material, until after final cleaning of unit. If system is used during construction, install MERV 8 filters on all return grills.

Benefit:
Ductwork is exposed to large amounts of dust, debris and other foreign material during the construction process. If not properly flushed prior to occupancy, air quality and furnace performance will be affected negatively. Covering openings in ducts and other HVAC equipment during all phases of construction is the most effective preventative strategy to reduce unwanted and possibly harmful particulates in ductwork and interior ambient air.

Submittal:
1. Contract language indicating duct and equipment protection requirement and method
2. Signed statement indicating completion and compliance with requirement
3. During Construction: Submit 3 dated photos of protected ductwork and equipment

Recommended Construction Specification Section: 15050, 15700, 15800, or 15950

IA-2 Low VOC Interior Paints & Finishes

Requirement:
Follow VOC limits for all paints and sealants outlined in the following reference: 'Green Future: IA-2'

Benefit:
The strong smell that paint, glues and other adhesives emit is from the evaporation of volatile organic compound s(VOC's). VOC's contribute to poor indoor air quality problems, photochemical smog and include a variety of chemicals that can have both short and long-term health effects.

In addition, latex paints often require biocides and fungicides to protect paint from mold, mildew and bacteria. Most of the off gassing occurs during and in the first few days after application, but the health and comfort impacts on painters and occupants can be substantial during that period. Common effects are eye and respiratory irritation, headaches, dizziness, visual disorders, and memory impairment and in severe cases, cancer.

Submittal:
- Complete list of all paints and sealants with VOC content in g/l for each item in specifications
- During Construction: Submit photographs of paint cans, with label and VOC content clearly visible

Recommended Construction Specification Section: 09050, 09900 or 09700

IA-3 Low VOC Adhesives & Sealants

Requirement:
Follow VOC limits for all adhesives and sealants outlined in the following reference: 'Green Future: IA-3'

Benefit:
The strong smell that sealants, glues and other adhesives emit is from the evaporation of volatile organic compound s(VOC's). VOC's contribute to poor indoor air quality problems, photochemical smog and include a variety of chemicals that can have both short and long-term health effects.

Submittal:
- Complete list of all adhesives and sealants with VOC content in g/l for each item in specifications
- During Construction: Submit photographs of product labels and VOC content clearly visible

Recommended Construction Specification Section: 09050, 01600 and 12400

IA-4 Durable, Healthy Flooring

Requirement:
Meet requirements of the Flooring Guide below for detailed flooring options.

Acceptable flooring choices marked with "X"					
	Hardwood [1]	Carpet [4]	Linoleum	Tile [5]	Carpet tile
Kitchen			X	X	
Bath				X	
Building Entry			X	X	
Apartment entry [3]	X		X	X	
Dining room	X		X	X	X
Living room	X	X [2]			X
Halls in apt	X	X [2]			X
Bedrooms	X	X [2]			X
Building corridors	X			X	X
[1] includes also bamboo flooring					
[2] Hardwood flooring is preferred in living rooms halls and bedrooms					
[3] includes doors from basements					
[4] Tack-down carpet preferred – If glue down, use low VOC glue					
[5] Ceramic, Granite, Recycled Glass, Brick/Stone					

In general, carpet is a difficult product to label as sustainable. It is used so often in such large amounts, that the volume of waste generated from its high frequency of replacement does not equal its overall benefits. To reduce the waste stream and improve IAQ, limit carpet application in high use areas and utilize low VOC, durable carpet with at least 20% pre AND post consumer recycled content. The recycled content varies but most manufacturers use plastic bottles as the recycled content. There are also manufacturers that will set up a buy back program for developers to sell the purchased carpets back once the material is at the end of its life cycle. This is especially advantageous to developers responsible for maintaining and operating their projects.

Benefit:
This Flooring Guide that seeks to promote the integration of highly durable, low maintenance materials in high use and moisture-laden areas of the home. Utilizing hard surface flooring in high use areas reduces waste and increases indoor air quality.

Reduced maintenance costs, reduced landfill material and healthier indoor air environments. There are also manufacturers that will set up a buy back program for developers to sell the purchased carpets back once the material is at the end of its life cycle. This is especially advantageous to developers responsible for maintaining and operating their projects.

Submittal:
- Floor plan highlighting flooring type in each area of building.
- Cut sheets for all flooring installed clearly highlighting (1) Green-Label-Plus status and tack-down installation procedures for carpet; (2) Recycled content; and (3) Natural Linoleum instead of vinyl, etc.

Recommended Construction Specification Section: 09050, 09300, and 09600

IA-5 Medium Efficiency (or higher) air filters in ducted forced air systems

Requirement:
Install pleated furnace filters, minimum MERV 8, during testing and balanced of HVAC system and for the life of the system. If running ducted forced air system during construction, use MERV 8 filters during construction, replace regularly, and prior to system testing and balancing.

Benefit:
Pleated filters capture more particulates than typical furnace filters. MERV 8 filters are 30-35% more effective in eliminating air particulates than typical filters and no so fine as to require additional fans to move the air.

Submittal
- Filter cut sheet showing MERV value
- For homeownership units signed statement indicating box (minimum 6) filters left on site near furnace
- For rental units, submit a photograph of extra filters left on site for regular maintenance.
- During Construction: Submit photographs of MERV filters used during construction, filters replaced prior to occupancy, and filters left for regular maintenance.

Recommended Construction Specification Section: 15050, 15700, 15800 or 15950

IA-6 Combustion Devices

Requirement:
With the exception of gas stoves, all combustion devices must be power vented or sealed combustion.

Benefit:
Full combustion burning of natural gas produces carbon dioxide, water vapor, nitrogen, carbon monoxide, and nitrogen oxides - products that can pose serious health and safety risks to occupants. Sealed combustion or power vented appliances isolate the designated supply of combustion air from the living space, virtually eliminating the risk of back-drafting these products of combustion into the home, where they can be ingested.

Submittal:
- Venting detail in plans and specifications
- Combustion equipment cut sheets, with model numbers highlighted
- Clothes dryer exhaust: Clothes dryers must be vented directly to the outside

- During Construction: Submit photographs of vented devices.

Recommended Construction Specification Section: 15700, 15500 and 15400

IA-7 Automatic Bathroom Ventilation

Requirement:
Install fans that directly vent to the outside in bathroom with automatic timer control. This is also a minimum requirement for ENERGY STAR Certification. Fans shall have a maximum of 1.5 sones (noise level).

Benefit:
The elimination of fan noise helps to ensure ventilation utilization – nobody will turn it off since it is too noisy. The low sones and automatic controls will increase ventilation and minimize potential odors, moisture, and smoke.

Submittal:
- Spec Sheet and note on mechanical plans.
- During Construction: Submit photographs of equipment installed, with label clearly visible.

Recommended Construction Specification Section: 10200, 10800, 13800, 16050, 15050 or 15400

IA-8 Direct Vent of Kitchen

Requirement:
All kitchen exhausts shall be directly vented to the outside.

Benefit:
By code, many kitchens are not required to have direct venting to the outside if there is an operable window within a certain distance. Many times these windows are rarely opened to ventilate kitchen smells due to varying exterior temperatures and the use of HVAC. We have found that recirculating exhaust fans do not get rid of odors – resulting in residual smells and particulates building up in units and corridors.

Submittal:
- Venting details in plans and specifications
- Equipment cut sheets, with model numbers
- Engineering calculations that address kitchen venting, bathroom venting, and HVAC fresh air supply
- During Construction: Submit photographs of kitchen exhaust direct venting

Recommended Construction Specification Section: 10200, 10300 or 11460

IA-9 Encapsulation of non-UF (Urea Formaldehyde) free composite cabinets

Requirement:
If Urea Formaldehyde is in any particleboard or other composite wood product incorporated into the interior of the project (cabinetry, countertops, etc.), all exposed edges (those not covered by another, sealing material – including backs) must be coated and sealed with water-based polyurethane to slow the out-gassing rate of harmful toxins. Sealing can be done in shop, before delivery.

Note: There are a growing number of manufacturers producing particleboard, some of which are composed of agricultural waste, manufactured without urea formaldehyde-based glues.

Benefit:
Formaldehyde is a volatile organic compound found in a broad range of products such as particleboards, upholstery, drapery, carpet, furniture, construction material, and dry clean clothes. Exposure to formaldehyde can cause wheezing and coughing, skin rashes, severe allergic reactions, and possibly cancer.

Submittal:
- Contract language indicating what items will be sealed,
- A list of all interior wood composites, indicating which are zero formaldehyde.
- Provide cut sheets for zero-formaldehyde products
- During Construction: Submit photograph of person sealing edges of cabinetry and final result prior to final installation

Recommended Construction Specification Section: 06200, 06400, 09900 or 12400

IA-10 Insulation with Low Formaldehyde Content

Requirement:
The most common form of insulation in homes today is fiberglass, fabricated primarily from silica sand, which is spun into glass fibers and held together with an acrylic phenol-formaldehyde binder. The phenol-formaldehyde binder is potentially a health risk to workers who inhale fibers, and fibers can also be released after installed, so that it potentially continues to be a risk for inhabitants.

There are brands of fiberglass insulation that do not contain phenol-formaldehyde binding agents and are an unfaced white batt insulation bonded with a formaldehyde free thermosetting resin.

The Uniform Construction Code prohibits urea-formaldehyde foam insulation. We are asking for the binder used in batt insulation to be phenol-formaldehyde-free.

As an alternative: Fiberglass insulation can release particulate matter into the air, and some brands also release gaseous contaminants. This is especially a consideration for chemically sensitive people. One of the more reasonable priced alternatives to fiberglass insulation is cellulose spray-in insulation; of which recycled newspaper is a major component. Other alternative insulation systems to consider are soy foam, recycled denim, and oyster shell insulation.

Benefit:
Increased indoor health.

Submittal:
- Cut sheet for insulation used.
- During Construction: Submit photographs of insulation installation and of insulation labels.

Recommended Construction Specification Section: 07050 or 07200

IA-11 Operable Windows

Requirement:
Choose windows that can be opened. Operable windows provide opportunities for natural heating, cooling, and ventilation as well as providing a direct connection to the outdoors and the neighborhood. Also, ensure that the window is easily operable. For example, if the window is too heavy to lift and does not have a lip to grab then it is not readily operable; this could really be an issue for frail or elderly residents, who would have to call for assistance.

Benefit:

Fresh air and the ability to control one's surroundings.

Submittal:

- Cut sheets of windows selected
- During Construction: Submit photographs of open windows

Recommended Construction Specification Section: 08500

IA-12 Access to Daylighting & View from Each Bedroom

Requirement:
Every bedroom shall have access to sunlight and a view.

Benefit:
"Survival needs deal with aspects of the environment that directly affect human health, such as clean air and water, lack of pathogens or toxins, and opportunity for rest and sleep. Well-being needs, on the other hand, are associated with fulfillment, quality of life, and psychological health. Whereas failure to satisfy survival needs may lead to serious illness or death, failure to meet the well-being needs can lead to psychosocial maladjustment and stress-related illnesses. Environmental psychologists have also considered other needs such as comfort maintenance and sense of equity, which are important in today's building environments."

Psychosocial Value of Space
By Judith Heerwagen, J.H. Heerwagen & Associates Inc.

Submittal:

- Unit plans
- Whole-building plans that indicate nearby buildings and visual obstructions.

Recommended Construction Specification Section: N/A

BUILDING DURABILITY & MOISTURE CONTROL ----------

DM-1 Exterior Wall Drainage Plane

Requirement:
Provide exterior wall drainage plane using building paper, housewrap or layered water resistant sheathings (rigid insulation or a foil covered structural sheathing) with seams taped or sealed.

Benefit:
Proper attention to leak prevention reduces this water infiltration possibility in wall assembly.

Submittal:
- Section drawing showing detail
- Specification indicating method and products
- During Construction: Submit photographs of installation

Recommended Construction Specification Section: 07050 or 07100

DM-2 Window Flashing Details

Requirement:
All windows and exterior openings must demonstrate best practices for flashing details in order to create a weather resistant barrier. Details must be developed to meet the intent for both the window and wall system manufacturer's products. Window details will show pan and sill flashing, damming the edges of the bottom sill flashing, and location of weep holes to exterior facade. If possible, mock-ups should be created by the contractor and approved by the design team.

Benefit:
Common areas of window leakage occur at sill and header corners. Proper attention to window detailing reduces this water infiltration possibility in window assembly.

Submittal:
- Section drawing showing window flashing detail
- Specification indicating flashing method and products
- During Construction: Submit photographs of window opening and window flashing installation

Recommended Construction Specification Section: 07050, 07100, 08050, or 08500

DM-3 Gutter Downspouts discharge at least 3' from Foundation

Requirement:
If not required to feed directly into a stormwater or septic system, then install downspout extensions to discharge at least 3' from foundation. Ensure that the discharge area drains well and/or towards an on-site stormwater retention basin.

Benefit:
This reduces the amount of water that may pool near the building foundation.

Submittal:
- Specifications & Drawing detail
- During Construction: Submit photographs of gutter discharge and where the water will drain.

Recommended Construction Specification Section: 07050, 07100, 07700, or 02600

DM-4	***Roof: Install 30-yr for pitched & 20-yr for flat***

Requirement:
This requirement is also included in the LIHTC QAP under: 5:80-33.15 *Point System for the Family Cycle* (a) 9vii. Need a roof warranty for 30 years for pitched roofs and 20 years for flat roofs.

Submittal:
- Specification and Copy of Roof Warrantee

Recommended Construction Specification Section: 07050 or 07300

ENERGY EFFECIENCY ----------

EE- 1 All Units ENERGY STAR Certified

Requirement:
All Projects are required to be Energy Star Certified OR Equivalent as a threshold. Once a project is funded, developer must contact, depending on location of site, the appropriate Energy Star (or equivalent) program provider to guide project through Energy Star (or equivalent) process. **NOTE:** Review the 'Guide to NJ HMFA ENERGY STAR Requirements.'

Benefit:
ENERGY STAR was introduced in 1992 by the U.S. Environmental Protection Agency (EPA) as a voluntary labeling program designed to identify and promote energy efficient products in order to reduce carbon dioxide emissions. Housing built to New Jersey ENERGY STAR standards combine improved design with better overall construction that are at least 15 - 30% more energy efficient than the standard home. High quality construction features include added levels of insulation; high efficiency HVAC systems; and ENERGY STAR labeled windows that help to create greater comfort and improved indoor air quality.

Submittal:
- If not already included in the initial application for funding, submit the ENERGY STAR Partnership Agreement
- With your 95% complete plans and specifications, submit a signed ENERGY STAR Builder Upgrade Packet (or equivalent).
- During Construction: Submit a copy of your Pre-Drywall ENERGY STAR inspection (including the Thermal Bypass Checklist – to be completed by ENERGY STAR inspector).
- Soon after Construction Completion: Submit copies of ENERGY STAR Certificates and any incentives received.
- All of the above is outlined in the 'Guide to NJ HMFA ENERGY STAR Requirements.'

Recommended Construction Specification Section: There is no one specific section – all parties must be aware of this requirement from the beginning of design and/or involvement.

EE-2 ENERGY STAR Appliances

Requirement:
Refrigerator(s), clothes washer(s), and dishwasher(s) must be ENERGY STAR rated.
- **NOTE:** All washing machines shall be front loading.

Benefit:
Utilizing high efficiency compressors, better temperature control mechanisms and improved insulation and door seals, ENERGY STAR qualified refrigerators require only about half as much energy as models manufactured before 1993 and use at least 15% less energy than required by current federal standards. ENERGY STAR dishwashing and clothes washing machines save water and energy

Submittal:
- Refrigerator, clothes washer and dishwasher specs with model number and ENERGY STAR rating
- During Construction: Submit photographs of appliances installed, with ENERGY STAR label clearly showing.

Recommended Construction Specification Section: 10800, 11120, 11450, 11460, 12400, or 15600

EE-3 ENERGY STAR Lighting Fixtures

Requirement:
Install ENERGY STAR labeled lighting fixtures or the ENERGY STAR Advanced Lighting Package in all interior units, and use ENERGY STAR or high-efficiency commercial grade fixtures in all common areas and outdoors. Also, install ENERGY STAR or equivalent energy efficient lamps in all fixtures.

Benefit:
ENERGY STAR qualified lighting uses 2/3 less energy and lasts six to ten times longer than traditional lighting. It also lowers utility costs and green house gas emissions.

Submittal:
- Plans and Specifications will clearly state that all lighting fixtures and lamps will be ENERGY STAR labeled.
- During Construction: Submit photographs of a good sampling of ENERGY STAR fixtures and the lamps installed.

Recommended Construction Specification Section: 16050 or 16500

EE- 4 Windows w/ Low-E coating

Requirement:
All windows installed will meet ENERGY STAR guidelines and have a low-E coating.

When inspecting windows selected look for a complete thermal break around the window, especially at the corners. If necessary, crimp the corners of metal windows to keep thermal break from shrinking in over time – thus compromising the intent of the thermal barrier within the manufactured window system. Discuss with selected manufacturer the performance test results of windows without on-site corrections.

Benefit:
Low-e glass lowers the solar heat gain coefficient by blocking out most long-wave radiation (heat) while allowing most of the short-wave radiation (light) to enter. This means that residents use less heat in the winter, and less air conditioning in the summer. This also leads to reduced mildew and deterioration of window frame.

Submittal:
- Spec Sheet
- During Construction: Submit photographs of windows installed, with ENERGY STAR label and/or low-E label clearly showing.

Recommended Construction Specification Section: 08500

EE-5 Insulation of Basement Ceiling

Requirement
If building has an unconditioned basement, install insulation in the ceiling. Encapsulated batts will fulfill this requirement. Ceiling insulation must be adequately supported, which will reduce airborne particulates. Insulation may be covered with permeable covering such as Tyvek or drywall with permeable paint, such as latex.

Benefit
Insulating the basement ceiling will keep the cool from creeping into the unit above.

Submittal

- Contract language indicating encapsulated insulation,
- Section drawing showing cut sheet for encapsulated batts
- During Construction: Submit photographs of installed insulation.

Recommended Construction Specification Section: 07050 or 07200

EE- 6 Ductwork in Conditioned Space (except plenum)

Requirement:
If furnace is located in unconditioned basement, furnace supply and plenums may be located in basement, but supply and return ductwork must be located in conditioned space. All returns must be hard-ducted - No plenum or boxed joist returns are allowed. Plenums in basement must be insulated. Note that ENERGY STAR requires mastic sealant on ductwork and plenums, which must be inspected prior to insulation. Air filter slot must be well constructed to avoid air leakage.

Benefit:
Duct leakage and thermal losses are reduced by ductwork in conditioned space. Plenum or boxed joist returns accumulate dust and debris over time and are an air quality hazard.

Submittal:
Mechanical plans for building, which must show duct location
During Construction: Submit photographs of ductwork in various places and mastic sealing.

Recommended Construction Specification Section: 15050 or 15800

EE-7 Occupancy & Daylighting Controls

Requirement:
Lighting in community & meeting rooms, laundry, and other common spaces, must have occupancy and automatic daylight controls to reduce energy use when unoccupied. Common space DOES NOT include hallways, stairwells and any means of egress. For example, exterior porch and site lighting has daylight sensors and controls.

Benefit:
Utilizing lighting only when needed reduces cost

Submittal
- Include locations of all occupancy sensors and daylighting controls in plans
- Submit cut sheets for products
- During Construction: Submit photographs of occupancy sensors

Recommended Construction Specification Section: 16050 or 16500

EE-8 High Energy Factor Water Heaters beyond ENERGY STAR Requirements

Requirement:
Install water heater with energy factor greater than 60% AFUE for gas fired units and 0.95 for electric. For unit-by-unit water heaters, use electric water heater (tank type) of 0.91 EF (efficiency) or greater; a natural gas water heater (tank type) of 0.60 or greater for 50-gallon, 0.62 EF or greater for 40-gallon, or 0.65 EF or greater for an instantaneous model (tankless). **NOTE:** Beyond what is needed to meet ENERGY STAR.

Benefit:
Higher efficiencies translates into higher cost savings

Submittal:
- Provide equipment cut sheets, with model number and efficiency information as required above highlighted.
- During Construction: Submit photographs of equipment installed and of equipment labels with relevant information clearly visible.

Recommended Construction Specification Section: 11450, 15050, 15400, or 15500

EE-9 Easy to Use Programmable Thermostats

Requirement:
Provide a seven-day, digital programmable thermostat that runs on 24volts of the HVAC system, with battery backup, and no mercury. Make buttons large and system easy to use. Also, provide training to tenants.

Benefit:
Energy savings for heating setback and cooling set-up

Submittal:
- Cut sheet with exact model highlighted
- **Sample programming instructions**
- During Construction: Submit photographs of models installed
- See Operations & Maintenance OM-2 for training requirement

Recommended Construction Specification Section: 15900

RESOURCE EFFICIENCY ----------

RE-1 Recycle or salvage construction & demolition debris

Requirement:
Develop plan and protocol to properly sort and dispose of construction waste material separate from recycled material. Establish a system for daily collection and separation of materials designated to be recycled including concrete, metals, wood, recyclable plastics, bottles and cardboard, at a minimum. Specifications must include Waste Management Plan with Construction and Demolition waste % recycled specified.

Contractor must include in each subcontract the requirement to sort the above materials and dispose of each in the designated container or debris pile. Recycling areas shall be clearly marked to avoid co-mingling of materials.

A minimum of 50% project waste shall be diverted from landfill.

Benefit:
Recycling reduces landfill material and costs significantly less than disposing material as solid waste.

Submittal:
- Copy of on-site recycling and waste management plan.
- Summary of project waste diverted and recycled.
- Submit copies of tipping receipts and a tally indicating total weight or volume recycled, weight or volume in landfill and % recycled by weight or volume. All receipts and tally must be in EITHER weight or volume, not mixed.
- Dated photograph of dumpsters labeled for separation
- Alternatively, submit contract with hauler/recycler indicating off-site separation method and submittals 2 through 4.
- During Construction: Submit photographs of various dumpsters with materials separated and one photograph of final hauler facility where materials are recycled.
- At Final Construction Meeting: Submit final breakdown of recycled vs. non-recycled construction materials by weight and dumpster.

Recommended Construction Specification Section: 01500, 01700, or 02050

RE-2 Recycling Centers in Common Areas

Requirement:
Design buildings with easy access to recycling stations that are well marked, easy to understand and accessible and compatible with county or municipal recycling programs

Benefit:
Recycling reduces the amount of material directed to landfill and can reduce the cost of disposal fees.

Submittal
- Plans highlighting recycling areas
- Cut sheet for bins
- During Construction: Submit photographs of common recycling area.
- At Final Construction Meeting: Submit a copy of recycling contract with private company, municipality, or county for resident recycling.

Recommended Construction Specification Section: 01800, 02500, or 02800

RE-3 Recycling Plan for Each Unit

Requirement:
For all properties, provide a plan for the recycling of individual unit recyclables (glass, plastic, metals, and paper).

Benefit:
Providing designated containers and space for tenants to collect recyclable materials, encourages recycling practice.

Submittal:
- Plans highlighting recycling areas
- Cut sheet or other information for bins
- During Construction: Submit invoice for recycling bins
- During Construction: Submit photographs of each unit's recycling area.

Recommended Construction Specification Section: 01800, 14500, 12700, or 12400

WATER CONSERVATION ----------

WC-1 Low-Flow Fixtures

Requirements:
Faucets shall be a maximum of 1.5 gpm in the kitchen, and 0.5 gpm for the bathroom. Showerheads shall be a maximum of 2 gpm.

Benefits:
Showers and faucets account for approximately 25 percent of indoor water use. Saving water translates into utility savings, both by conserving water and reducing the energy required for water heating. Compared with pre-1992 fixtures, water-conserving fixtures can reduce the amount of water used in showers and sinks by 75 percent and 50 percent, respectively.

Submittal:
- Cut sheet for fixtures
- During Construction: Submit photographs of plumber(s) installing aerators.

Recommended Construction Specification Section: 10800 or 15400

WC-2 High Efficiency Toilets

Requirements:
Toilets shall have an efficiency of 1.3 gallons per flush, or better (less). You can also use dual-flush toilets, with a maximum flush of 1.3 gallons.

Benefits:
Toilets account for approximately 20 percent of indoor water use.

Submittal:
- Cut sheet for toilets
- Indicate model type in plans and specifications
- During Construction: Submit photographs of installed toilets, product label, and dual flush feature if installed.

Recommended Construction Specification Section: 10800 or 15400

WC-3 Water Efficient Landscaping (Native and/or drought tolerant plants and turf)

Requirement:
Select a type of grass that can withstand drought periods and become dormant during hot, dry seasons. Turf no more than 50% pervious cover.

If installing plants as an alternative, or in addition to turf areas, utilize native and/or drought resistant plants with either drip irrigation or no irrigation.

Benefit:
Native species are those that occur in the region in which they evolved over geologic time in response to physical and biotic processes characteristic of a region: the climate, soils, timing of rainfall, drought, and frost; and interactions with the other species inhabiting the local community. Thus native plants possess certain traits that make them uniquely adapted to local conditions, providing a practical and ecologically valuable alternative for landscaping, conservation and restoration projects.

The benefit of growing plants within the region they evolved is that they are more likely to thrive under the local conditions while being less likely to invade new habitats. Native plants are well adapted to local environmental conditions, maintain or improve soil fertility, reduce erosion, and often require less fertilizer and pesticides than many alien plants. These characteristics save time and money and reduce the amount of harmful run-off threatening the aquatic resources of streams, rivers, and estuaries.

Submittal:
- Landscaping plan with list of plants, including type of turf.
- Description of how the plan meets the criteria above.
- During Construction: Submit photographs of landscaping, showing extent of turf areas, planting beds, and significant trees.

Recommended Construction Specification Section: 02050; 02800 or 02900

WC-4 High Efficiency Irrigation

Requirements:
Irrigation shall be either drip Irrigation or no Irrigation. Install irrigation system controllers such as rain or soil moisture sensors, or use weather driven programming system. Include high efficiency nozzles and pressure regulating devices to maintain optimal pressure and prevent misting.

If irrigation is necessary, use recycled greywater, roof water, collected site run-off or irrigation system that will deliver up to 95% of the water supplied.

Benefits:
Accurate delivery of water reduces evaporation, lowers usage, and eliminates overspray.

Submittal:
- Written explanation
- Include in specifications
- Site Plan indicating placement, type, and details
- During Construction: Submit photographs of installed drip irrigation, lack or irrigation, or greywater recycling system.

Recommended Construction Specification Section: 02300; 02600; 02800 or 02900

WC-5 Pervious Materials for Outdoor Patios & Walkways

Requirements:
50% of material used for paving of outdoor patios and walkways are to be pervious.

Benefits:
Allowing rainwater to soak through to the ground reduces runoff, which floods our sewer systems and contaminates our natural waterways, and allows for the water to remain onsite – reducing the need to water native plants even further.

Submittal:
- Site Plan noting pervious surfaces, and specifications of materials
- During Construction: Submit photographs on installed pervious pavers

Recommended Construction Specification Section: 02050; 02700 or 02800

OPERATION AND MAINTENANCE----------

OM-1 Property Management O&M Manual and Training

Requirement:
Educate and train the property management team in the proper operation and maintenance of sustainable technologies. Include manual in 3-ring binder illustrating high performance features with product manufacturer's manual and general information and concepts of green building and energy and resource conservation. The binder will include information on each Green Future item.

Benefit:
Energy and resource conservation education empowers owners and encourages responsibility and sustainable behavior. The manual will also provide information on product specifications and resources for appropriate/equal product replacement or maintenance.

Submittal:
- Due at final construction meeting - Copy of manual, including
  - Overall maintenance schedule for owner, indicating maintenance item and frequency for that item.
  - Copy of Owner's and installation manuals for all equipment in unit, including controls, in binder.
  - General green building information about energy efficient and environmentally friendly products and equipment – for at least each Green Future item
  - A description of all property management-relative features required within the Green Future program.

Recommended Construction Specification Section: 01100

OM-2 Tenant Manual & Training

Requirement:
Provide hands-on training to tenants detailing building green features and their proper use. This can include programming the thermostat with tenants, with tenants doing the actual programming; instruction on controls for automatic bath fan operation and refrigerator coil cleaning; and the importance of energy efficient lighting and minimizing appliance electrical use (e.g. turning computers completely off). If tenents change furnace filter, provide instructions and filters.

Benefit:
Training provides the homeowner/tenant with the knowledge to effectively regulate comfort and energy consumption. The manual will serve as a hand reference guide.

Submittal:
- Due at final construction meeting - Copy of manual, including an overall description of controls, the importance of energy efficiency, sustainable design ideals, reference and direction for at least the following Green Future items (SL-3; IA-2; IA-3; IA-4; IA-5; IA-7; IA-8; IA-9; IA-11; EE-1; EE-2; EE-3; EE-7; EE-9; RE-2; RE-3; WC-1; and WC-2); and additional general green building information

Recommended Construction Specification Section: 01100

OM-3 Integrated Pest Management

Requirement:
Follow Integrated Pest Management practices.

Benefit:
IPM is an environmentally friendly approach to pest management that can significantly reduce or eliminate the use of pesticides.

Submittal:
- Sign and submit an IPM plan (see example under Green Future resources) with 95% complete plans and specs.
- In IPM plan, illustrate how the building will be constructed according to IPM best management.
- Reference IPM plan in project specifications.
- Also, include plan in final Operations & Maintenance Manual (OM-1).
- Alternatively, have the building Green Shield Certified.

Recommended Construction Specification Section: 10290; 01100; or 01800

GREEN FUTURE SPECIFICATION DIVISIONS
Suggested placements – for inclusion in Construction Breakdown by General Contractor

Note: *SL-1 & SL-2 are truly more a concern of the architect and landscape architect/engineer and should be dealt with during the earliest design stages.*
Also, see details in guidelines above

Division 1 – **General Conditions**
- IA-1 Ducts & HVAC protected from dust *(*see Division 15)*
- IA-3 Low VOC Adhesives & Finishes **(see Divisions 9 & 12)*
- EE-1 All Units ENERGY STAR Rated
- RE-1 Recycle/Salvage Construction & Demolition Debris **(see Divisions 2 & 14)*
- RE-2 Recycling Centers in Common Areas **(if outside – see Division 2)*
- RE-3 Recycling Plan for Each Unit **(see Divisions 12 & 14)*
- OM-1 Property Management O&M Manual & Training
- OM-2 Tenant O&M Manual & Training
- OM-3 Integrated Pest Management **(see Division 10)*

Division 2 – **Sitework & Landscaping**
- SL-1 Passive Solar, Ventilation & Shading Design **(see Divisions 7, 8 & 10)*
  - *Shade Trees*
- SL-2 Preservation Plan
- SL-3a Pedestrian Paths & Bike Trails
- SL-3b Secure & Safe Bike Racks
- SL-3c Safe Shelter for Commuters
- SL-3d Access to Neighborhood or Project Park
- SL-4 Space for a Community Garden
- SL-5 Onsite Stormwater Retention & Filtration
- DM-3 Gutter Downspouts discharge at least 3' from Foundation **(see Division 7)*
- RE-1 Recycle/Salvage Construction & Demolition Debris **(see Division 2)*
- RE-2 Recycling Centers in Common Areas **(if outside – see Divisions 1 & 14)*
- WC-3 Water Efficient Landscaping
- WC-4 High Efficiency Irrigation
- WC-5 Pervious Pavers for Outdoor Patios & Walkways

Division 3 - **Concrete**
Division 4 - **Masonry**
Division 5 - **Metals**

Division 6 – **Wood & Plastics**
- IA-9 Encapsulation of non-UF-free composite cabinets **(see Divisions 9 & 12)*

Division 7 – **Thermal & Moisture Protection**
- SL-1 Passive Solar, Ventilation & Shading Design **(see Divisions 2, 8 & 10)*
- IA-10 Insulation with Low Formaldehyde Content
- DM-1 Exterior Wall Drainage Plane
- DM-2 Window Flashing Details **(see Division 8)*
- DM-3 Gutter Downspouts discharge 3' from foundation **(see Division 2)*
- DM-4 Roof: Install 30-yr for pitched & 20-yr for flat

EE-5 Insulation of Basement Ceiling
OM-3 Integrated Pest Management

Division 8 – **Doors & Windows**
SL-1 Passive Solar, Ventilation & Shading Design* *(see Divisions 2, 7 & 10)*
- window types to prevent insolation
IA-11 Operable Windows
DM-2 Window Flashing Details **(see Division 7)*
EE-4 Specify Windows with Low-E coating

Division 9 – **Finishes**
IA-2 Low VOC Interior Paints & Finishes
IA-3 Low VOC Adhesives & Finishes **(see Divisions 1 & 12)*
IA-4 Durable, healthy flooring
IA-9 Encapsulation of non-UF-free composite cabinets **(see Divisions 6 & 12)*

Division 10 – **Specialties**
SL-1 Passive Solar, Ventilation & Shading Design* *(see Divisions 2& 8)*
- canopies, overhangs
IA-7 Automatic Bathroom Ventilation **(see Divisions 13, 15 & 16)*
IA-8 Direct Vent of Kitchen **(see Division 11)*
EE-2 ENERGY STAR Appliances **(see Divisions 11, 12 & 15)*
WC-1 Low-Flow Fixtures **(see Division 15)*
WC-2 High Efficiency Toilets **(see Division 15)*
OM-3 Integrated Pest Management **(see Division 1)*

Division 11 - **Equipment**
IA-8 Direct Vent of Kitchen **(see Division 10)*
EE-2 ENERGY STAR Appliances **(see Divisions 10, 12 & 15)*
EE-8 High-Energy Factor Water Heater **(see Division 15)*

Division 12 - **Furnishings**
IA-3 Low VOC Adhesives & Finishes **(see Divisions 1 & 9)*
IA-9 Encapsulation of non-UF-free composite cabinets **(see Divisions 6 & 9)*
EE-2 ENERGY STAR Appliances **(see Divisions 10, 11 & 15)*
RE-3 Recycling Plan for Each Unit **(see Divisions 1 & 14)*

Division 13 – **Special Construction**
IA-7 Automatic Bathroom Ventilation **(see Divisions 10, 15 & 16)*
EE-7 Programmable Thermostats

Division 14 – **Conveying Systems**
RE-2 Recycling Centers in Common Area **if chute in trash room (see Divisions 1 & 2)*
RE-3 Recycling Plan for Each Unit **(see Divisions 1 & 12)*

Division 15 – **Mechanical**
IA-1 Ducts & HVAC protected from dust **see also Division 1*
IA-5 Medium-efficiency or higher air filters
IA-6 Combustion Devices

IA-7 Automatic Bathroom Ventilation *(see Divisions 10, 13 & 16)*
EE-2 ENERGY STAR Appliances *(see Divisions 10, 11 & 12)*
EE-6 All Ductwork in Conditioned Space
EE-8 High-Energy Factor Water Heater *(see Division 11)*
EE-9 Easy to Use Programmable Thermostats
WC-1 Low-flow Fixtures *(see Division 10)*
WC-2 High-Efficiency Toilets *(see Division 10)*

Division 16 – **Electrical**

IA-7 Automatic Bathroom Ventilation *(see Divisions 10, 13 & 15)*
EE-3 ENERGY STAR Lighting Fixtures
EE-7 Occupancy & Daylighting controls

GREEN WORKSHEET

Complete and submit for Green Future Review
To be signed once finalized by the NJ HMFA Green Technical Advisor

NJ HMFA Green Future Program Checklist		
Dev. Name		
Project Name		
Item #	Green Feature	Location in Plans & Specs
Siting & Land Use		
SL-1	PASSIVE SOLAR, VENTILATION & SHADING DESIGN	
SL-2	PRESERVATION PLAN	
SL-3	FOLLOW STATE PLAN & SMART GROWTH PRINCIPLES	
SL-3a	PEDESTRIAN PATHS & BIKE TRAILS	
SL-3b	SECURE & SAFE BIKE RACKS	
SL-3c	SAFE SHELTER FOR COMMUTERS	
SL-3d	ACCESS TO NEIGHBORHOOD OR PROJECT PARK	
SL-4	SPACE FOR A COMMUNITY GARDEN	
SL-5	ONSITE STORMWATER RETENTION & FILTRATION	
Indoor Air Quality		
IA-1	DUCTS & HVAC PROTECTED FROM DUST	
IA-2	LOW VOC INTERIOR PAINTS & FINISHES	
IA-3	LOW VOC ADHESIVES & SEALANTS	
IA-4	DURABLE, HEALTHY FLOORING	
IA-5	MERV 8 OR HIGHER AIR FILTERS	
IA-6	COMBUSTION DEVICES	
IA-7	AUTOMATIC BATHROOM VENTILATION	
IA-8	DIRECT VENT OF KITCHEN	
IA-9	ENCAPSULATION OF NON-UF-FREE CABINETS	
IA-10	INSULATION WITH LOW FORMALDEHYDE CONTENT	
IA-11	OPERABLE WINDOWS	
IA-12	ACCESS TO DAYLIGHTING & VIEW FROM EACH BEDROOM	
Building Durability & Moisture Control		
DM-1	EXTERIOR WALL DRAINAGE PLANE	
DM-2	WINDOW FLASHING DETAILS	
DM-3	GUTTER DOWNSPOUTS DISCHARGE 3' FROM FOUNDATION	
DM-4	INSTALL 30-YR FOR PITCHED & 20-YR FOR FLAT ROOF	
Energy Efficiency		
EE-1	ALL UNITS ENERGY STAR RATED	
EE-2	ENERGY STAR APPLIANCES	
EE-3	ENERGY STAR LIGHTING FIXTURES	
EE-4	WINDOWS WITH LOW-E COATING	
EE-5	INSULATION OF BASEMENT CEILING	
EE-6	DUCTWORK IN CONDITIONED SPACE	
EE-7	OCCUPANCY & DAYLIGHTING CONTROLS	
EE-8	HIGH-ENERGY FACTOR WATER HEATER	
EE-9	EASY TO USE PROGRAMMABLE THERMOSTATS	

Resource Efficiency		
RE-1	RECYCLE / SALVAGE CONSTRUCTION DEBRIS	
RE-2	RECYCLING CENTERS IN COMMON AREAS	
RE-3	RECYCLING PLAN FOR EACH UNIT	
Water Conservation		
WC-1	LOW-FLOW FIXTURES	
WC-2	HIGH-EFFICIENCY TOILETS	
WC-3	WATER EFFICIENT LANDSCAPING	
WC-4	HIGH-EFFICIENCY IRRIGATION	
WC-5	PERVIOUS PAVERS FOR OUTDOOR PATIOS & WALKWAYS	
Operations & Maintenance		
OM-1	PROPERTY MANAGEMENT O&M MANUAL & TRAINING	
OM-2	TENANT O&M MANUAL & TRAINING	
OM-3	INTEGRATED PEST MANAGEMENT	

Project Name: _____

Project Developer: _____

Signed: _____ Date: _____

Project Architect: _____

Signed: _____ Date: _____

Project General Contractor: _____

Signed: _____ Date: _____

* All three must be signed prior to final approval.

Approval of Green Future Submission

Signed: _____ Date: _____

NJ HMFA Green Technical Advisor

Notes: _____