

C. ENERGY (360 points)

<p>PATH A Buildings over 20,000 square feet must complete the following sections:</p>	<p>PATH B Buildings less than or equal to 20,000 square feet must complete the following sections:</p>
<p>C.1 Building Energy Performance C.2 Energy Demand Minimization C.4 Renewable Sources of Energy C.5 Energy-efficient Transportation</p>	<p>C.1 Building Energy Performance C.2 Energy Demand Minimization C.4 Renewable Sources of Energy C.5 Energy-efficient Transportation OR C.2 Energy Demand Minimization and C.3 Right sized, Energy Efficient Systems as per ASHRAE Advanced Energy Design Guide C.4 Renewable Sources of Energy C.5 Energy-efficient Transportation</p>

C.1 Energy consumption (Path A & B) (110 points)

Objective: Reduce energy consumption for building operations by achieving a target that surpasses EPA Target Finder, taking into consideration intended use, occupancy, plug loads and other energy demands.

<p>C.1.1 Based on energy modeling, does energy usage for the whole building meet or surpass an energy target of 75% as evaluated by the EPA Target Finder? (based on the intended use, occupancy, operations and plug loads) See EPA Target Finder at the following web site: www.energystar.gov.</p>	<p>Points are awarded for 5-25% energy savings for the design that meets or surpasses an energy target of 75% as evaluated by the EPA Target Finder. The Green Globes system will calculate this based on the percentage energy savings over and above an energy target of 75%.</p> <p>MAXIMUM POINTS = 100 POINTS e.g.</p> <table border="1" data-bbox="820 1234 1388 1619"> <thead> <tr> <th>EPA PERFORMANCE TARGET</th> <th>SCORE</th> </tr> </thead> <tbody> <tr><td><input type="checkbox"/> 75%</td><td>10 points</td></tr> <tr><td><input type="checkbox"/> 80%</td><td>20 points</td></tr> <tr><td><input type="checkbox"/> 82%</td><td>30 points</td></tr> <tr><td><input type="checkbox"/> 84%</td><td>40 points</td></tr> <tr><td><input type="checkbox"/> 86%</td><td>50 points</td></tr> <tr><td><input type="checkbox"/> 88%</td><td>60 points</td></tr> <tr><td><input type="checkbox"/> 90%</td><td>70 points</td></tr> <tr><td><input type="checkbox"/> 92%</td><td>80 points</td></tr> <tr><td><input type="checkbox"/> 94%</td><td>90 points</td></tr> <tr><td><input type="checkbox"/> 96% or higher</td><td>100 points</td></tr> <tr><td><input type="checkbox"/> Don't know</td><td>0 points</td></tr> </tbody> </table>	EPA PERFORMANCE TARGET	SCORE	<input type="checkbox"/> 75%	10 points	<input type="checkbox"/> 80%	20 points	<input type="checkbox"/> 82%	30 points	<input type="checkbox"/> 84%	40 points	<input type="checkbox"/> 86%	50 points	<input type="checkbox"/> 88%	60 points	<input type="checkbox"/> 90%	70 points	<input type="checkbox"/> 92%	80 points	<input type="checkbox"/> 94%	90 points	<input type="checkbox"/> 96% or higher	100 points	<input type="checkbox"/> Don't know	0 points
EPA PERFORMANCE TARGET	SCORE																								
<input type="checkbox"/> 75%	10 points																								
<input type="checkbox"/> 80%	20 points																								
<input type="checkbox"/> 82%	30 points																								
<input type="checkbox"/> 84%	40 points																								
<input type="checkbox"/> 86%	50 points																								
<input type="checkbox"/> 88%	60 points																								
<input type="checkbox"/> 90%	70 points																								
<input type="checkbox"/> 92%	80 points																								
<input type="checkbox"/> 94%	90 points																								
<input type="checkbox"/> 96% or higher	100 points																								
<input type="checkbox"/> Don't know	0 points																								
<p>Enter the EPA Energy Target value. _____ %</p> <p>Enter the value for the projected annual energy use, obtained from an hourly annual energy simulation analysis which uses programs such as eQuest, DOE- 2, Trane Trace, or EnergyPlus. kBtu/ft². _____</p>																									

Final verification: Check that there has been energy modeling and that the results indicate a percentage of energy saving over and above the energy target identified by EPA Target Finder.

C.1.2 Has energy modeling been done using a number of runs to evaluate the effects of massing, orientation, overhangs, exterior shading and landscaping?	10 points
Describe the site, massing, orientation and shading strategy to optimize effects of microclimatic conditions. _____ Provide drawing references. _____	

Verification: Check that there has been energy modeling for a number of runs to evaluate the effects of massing, orientation, overhangs, exterior shading and landscaping.

C.2 Energy Demand Minimization (Path A & B) (135 points)

Response to microclimate and topography (30 points)

Objective: Reduce loads by taking advantage of site and microclimate opportunities to:

- reduce heat loss or gain through the envelope
- use natural ventilation strategies

C.2.1 Is the building located, oriented, and shaded to optimize the effect of microclimatic conditions for heating or cooling? Select applicable measures. Where site factors do not allow or favor orientation in response to microclimatic conditions mark “not applicable”.	
The building is oriented such that the east/west exposure is less than the north/south exposure.	6 points
There is an external overhang over the south windows that totally shades adjacent windows during the summer solstice.	3 points or n/a
There are vertical shading devices external to the eastern windows to reduce direct sunlight entry early in the morning.	2 point or n/a
There are vertical shading devices external to the western windows to reduce direct sunlight entry late in the day.	2 point or n/a
Describe the site, orientation and shading strategy to optimize effects of microclimatic conditions. _____ Provide drawing references. _____	

Verification: Review the site and landscaping plans to verify that: orientation is east-west, allowing a greater windows area to face north (an orientation that has little solar heat gain) or south (an orientation that is easier to shade); and that shading is provided. Review building elevations to determine the climatically responsive fenestration design, for example allowing a greater windows area to face north (in hot climatic region) and south (in cold climatic region), overhangs, external shading or other features which protect glazing on the south façade of the building, and/or on the east and/or west facades of the building. Where this has been marked “not applicable”, review the site drawings to confirm the site factors which do not allow or favor response to the microclimatic factors.

Final verification: Conduct a visual verification.

<p>C.2.2 Are there wind-mitigating measures (such as siting, orientation of entrances, topographical features, landscape vegetation, berms, fencing, or wind canopies) to reduce the harmful effects of wind such as snow or sand deposition, thermal loss, drafts, or deterioration of the building fabric?</p>	<p>5 points</p>
<p>Describe measures that are being used. _____ Provide drawing references. _____</p>	

Verification: Review the site and landscaping plans to verify that there are measures in place to mitigate harmful effects of prevailing wind such as windbreaks, location of entrances, downdraft canopies, street planting etc. In urban situations, check whether a wind study has been conducted and whether issues identified are addressed.

Final verification: Conduct a visual verification.

<p>C.2.3 Where there is engineered natural ventilation, does the indoor temperature and humidity meet ASHRAE Standard 55-2004 criteria on the 1% design cooling day? <i>ASHRAE Standard 55-2004, Thermal Conditions for Human Occupancy, Figure 5.3</i></p>	
<p>Yes, using natural ventilation</p>	<p>12 points</p>
<p>Yes, using hybrid ventilation</p>	<p>6 points</p>
<p>There is no natural ventilation</p>	<p>0 points</p>
<p>Describe the strategy and thermal simulation modeling results for natural or hybrid ventilation. _____</p>	

Verification: Verify that calculations have been done for the acceptable range of indoor temperature and humidity based on the 1% design cooling day.

Final verification: Conduct a verification of temperature measurements.

Daylighting (30 points)

Objective: Reduce loads on energy-using systems by using daylighting strategies, reducing electric lighting demand and using daylight controls.

<p>C.2.4 Is daylighting maximized through the following strategies? Select applicable. <i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy EN 36,38,39, 40</i></p>	
<p>Integration of the smallest effective aperture value (window-wall ratio x visual light transmission (VLT)) meeting daylight needs, and which falls between 0.15 – 0.30</p>	<p>6 points are awarded if the value falls between 0.15 – 0.30</p>
<p>Indicate window to wall ratio. _____:____ Indicate the visual light transmission (VLT)._____</p>	

<p>Continuous windows located close to the ceiling line to distribute light deeper into the space</p>	<p>Points are awarded where 1-100% of the floor areas located along perimeter walls receive daylight from continuous windows close to the ceiling. The Green Globes system will calculate this based on the stated percentage.</p> <p>Maximum points = 10 points</p>
<p>Indicate the net lettable floor area of a typical floorplate. _____</p> <p>Indicate the area that receives daylight from high continuous windows located close to the ceiling. _____</p>	
<p>Other day-lighting strategies, (e.g. light shelves, atria skylights, north-facing clerestories to provide daylight in interior zones)</p>	<p>4 points</p>
<p>Describe. _____</p>	
<p>Provide references to drawings and specifications. _____</p>	

Verification: Review drawings and specifications to verify that effective aperture values (window-wall ratio x VLT) fall between 0.15 – 0.30. The lower end of the range should be used in northern hemisphere, high latitudes where there are predominantly overcast conditions. The higher end of the range should be used in northern hemisphere, low latitudes, where there are predominantly clear sky conditions. Check the building plans and sections for continuous windows close to the ceiling to distribute light deeper into the space, for the stated percentage of the perimeter. Check the design drawings and specifications for other day-lighting strategies, (e.g. light shelves, skylights, north-facing clerestories to provide daylight in interior zones).

Final verification: Conduct a visual verification.

<p>C.2.5 Does glazing have a minimum visible light transmission to solar heat gain coefficient ratio (VLT/SHGC) of 1.55 or higher?</p> <p><i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy EN 35</i></p>	<p>10 points</p>																				
<p>Indicate VLT and SHGC values or VLT/SHGC values.</p>																					
<table border="1"> <tr> <td></td> <td style="text-align: center;">VLT</td> <td style="text-align: center;">SHGC</td> <td style="text-align: center;">VLT/SHGC</td> </tr> <tr> <td>North</td> <td></td> <td></td> <td></td> </tr> <tr> <td>South</td> <td></td> <td></td> <td></td> </tr> <tr> <td>East</td> <td></td> <td></td> <td></td> </tr> <tr> <td>West</td> <td></td> <td></td> <td></td> </tr> </table>		VLT	SHGC	VLT/SHGC	North				South				East				West				
	VLT	SHGC	VLT/SHGC																		
North																					
South																					
East																					
West																					
<p>Provide references to specifications. _____</p>																					

Final verification: Review the VLT and SHGC values in cut sheets to check that there is a minimum 1.55 ratio between the visual light transmission value and the solar heat gain coefficient of glazing.

Building envelope (40 points)

Objective: Reduce loads on energy-using systems by minimizing the energy that is gained or lost through the envelope.

<p>C.2.6 Does the thermal resistance of the building envelope for walls meet or exceeds the requirements of ASHRAE Standard 90.1-2004?</p>	<p>10 points</p>
---	------------------

<i>BENCHMARK, Criteria 6.1.-Opaque Envelope Performance</i>		
C.2.7 Does the thermal resistance of the building envelope for the roof meet or exceeds the requirements of ASHRAE Standard 90.1-2004?		10 points
Indicate the R value for walls and the code requirement.		
R-value for walls	ASHRAE 90.1 requirement for walls	
Indicate the R-value for the roof and the code requirement.		
R-value for roof	ASHRAE 90.1 requirement for roof	
Provide references to drawings and specifications. _____		

Final verification: Review wall and roof details to check that the overall wall and roof thermal resistance R-values meet or exceed the prescriptive packages for building envelope requirements based on climate zone for federal or state energy building codes based on the *ASHRAE Standard 90.1*.

C.2.8 Does the building’s fenestration system meet or has lower values than the Energy Star recommended U factor (thermal transmittance factor)?		7 points
<i>ASHRAE 90.1-2004 and BENCHMARK, Criteria 5.6.-Window, Skylight and Door Certification (National Fenestration Rating Council (NFRC) values)</i>		
Indicate the window U-factor that is used, and the code-required U-factor for fenestration.		
U-factor that is used	Energy Star recommended U factor	
Indicate the U factor of the window based on the building orientation		
	U factor	
North		
South		
East		
West		
Skylights		
Indicate which code is used. _____		
For windows, indicate % of glass to wall. _____		
For windows, indicate fixed of operable. _____		
For skylights, indicate % of glass to roof. _____		
Provide references to specifications. _____		

Final verification: Review cut sheets and details regarding the thermal properties of windows and check against the prescribed ASHRAE minimum u-values for the climatic zone.

C.2.9 Does the Solar Heat Gain Coefficient (SHGC) of the building’s fenestration system meet or improves upon the Energy Star recommended	6 points
--	----------

SHGC? <i>ASHRAE 90.1-2004 and BENCHMARK, Criteria 6.2-Fenestration Performance</i>	
Indicate the window U-factor that is used, and the Energy Star recommended SHGC for fenestration.	
U-factor that is used	Energy Star recommended SHGC
Indicate the SHGC of the window based on the building orientation	
Orientation	SHGC that is used
North	
South	
East	
West	
Skylights	
For windows, indicate % of glass to wall. _____	
For skylights, indicate % of glass to roof. _____	
Provide references to specifications. _____	

Final verification: Review specifications regarding the thermal properties of windows and check against the prescribed ASHRAE minimum SHGC.

C.2.10 Are the following practices implemented with respect to the air barrier to help assure the integrity of the building envelope? <i>ASHRAE 62.1-2004 Section 5.15.1</i>	
There is a continuous building envelope air barrier membrane joined in an air-tight and flexible manner to adjacent assemblies. <i>BENCHMARK, Criteria 5.5-Barrier Performance</i>	3 points
There is a mock-up of the air barrier system.	2 points
Whole building testing of air tightness via blower door or whole building pressurization was conducted.	2 points
Stack effect is controlled by air sealing and compartmentalizing vertical building shafts (stairs, elevators) from the main space.	2 points
Provide references to drawings and specifications. _____	

Verification: Review specifications and drawings for detailing of the air barrier. Investigate whether the performance specification comply with the requirement of *BENCHMARK, Criteria 5.5-Barrier Performance*. Check whether a mock-up of the air barrier system has been done. Review detailing and provisions for air sealing of the upper and lower parts of the building, enclosed stairways and vertical shafts and where horizontal and vertical surfaces meet, to check that they are sealed and avoid the “stack effect”.

Final verification: Check whether whole building testing of air-tightness via blower door or whole building pressurization was done. Do a walkthrough survey to verify that the mechanical

rooms are compartmentalized; doors are weather-stripped and fire-stop penetrations through rated walls are sealed; the size of cable holes in the elevator shafts and other electrical penetrations through the floor of the elevator rooms is not excessively large; parking, receiving dock and garbage compaction areas are isolated; penetrations into the underground parking areas such as cable conduit ducts, pipe penetrations and gaps between block infill and slabs are sealed and doors are weather-stripped. Use a smoke pencil to identify air leaks that could contribute to the stack effect.

C.2.11 Is the integrity of the building envelope optimized, using best vapor retarder practices? Select applicable. <i>ASHRAE 62.1 -2004, Section 5.15.1 and BENCHMARK, Criteria 6.1.-Opaque Envelope Performance</i>	
The vapor retarder is installed as required by the type of assembly and the climate region.	2 points
Calculations have been done to define the location and permeance of the vapor retarder as per 2005 ASHRAE Handbook of Fundamentals. Or Dynamic modeling has been done to provide assurance of the effectiveness of the vapor retarder.	6 points
Describe the results of the calculation or dynamic modeling. ____ Provide references to drawings and specifications. _____	

Final verification: Review specifications and drawings detailing of the vapor retarder. Check that there are calculations in accordance with *2005 ASHRAE Handbook of Fundamentals* or a report of dynamic modeling using WUFI or similar program defining the location and permeance of the vapor retarder.

Building Controls and Energy Metering (35 points)

Objective: Reduce loads on energy-using systems and encourage continuous energy efficiency and performance through monitoring energy consumption.

C.2.12 Is there sub-metering for lighting panels, air handling units, chillers, pumps, hot water heaters, furnaces, and boilers? For a small building less than 20,000 square feet, mark "not applicable".	7 points or N/A
Provide a brief summary of equipment or areas that are sub-metered. _____	

Verification: Review the specifications to check that there is sub-metering for major energy uses.

Final verification: Conduct a visual verification of sub-metering equipment.

C.2.13 Does the building have the following daylighting controls within 20-feet of window-walls and within 8 feet of skylight edges? Select the one most applicable. <i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy DL 9 and BENCHMARK, Criteria 8.10.-Daylighting Responsive Lighting Control</i>	
<ul style="list-style-type: none"> • Continuous dimming down to at least 20% of full light output. 	4 points
<ul style="list-style-type: none"> • Stepped or multi-level switching 	2 points
<ul style="list-style-type: none"> • Separate on-off switching. 	1 points

Provide references to drawings and specifications. _____

Verification: Review electrical drawings and specifications to check that there are daylighting lighting controls within 20 feet of window walls and within 8 feet of the skylight edges to adjust electric lighting to daylighting levels.

Final verification: Conduct a visual verification.

C.2.14 How large are the lighting control zones? In Multi-Residential Buildings, assume that the occupants will adequately control the lighting and mark “not applicable”.	
• Approximately a third of a floorplate	2 points
• Medium-sized zones such as 4 workstations for the office areas	4 points
• Small zones such as a single workstation or a washroom or within parts of a room for different functions such as discussions and slide shows.	4 points
• Zones vary from floor to floor to accommodate functional areas	2 points
Describe the lighting control zone strategy. _____ Provide drawings references. _____	

Verification: Review drawings and specifications to verify the lighting control zones.

Final verification: Conduct a visual verification.

C.2.15 Are there the following automatic controls to turn off lights when rooms are unoccupied? Select one. <i>BENCHMARK, Criteria 5.9.-Lighting Controls</i>	
• Lights switch on and off based on automatic time-of-day clock.	3 points
• There are occupancy sensor controls in each room or per 400 square feet of floor space, whichever is smaller.	4 points
Provide reference to drawings and specifications. _____	

Verification: Review drawings and specifications to check that there are automatic lighting controls to ensure that lights are turned off when there are no occupants.

Final verification: Conduct a visual verification.

C.2.16 Are there following building controls? Select one. <i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy HV14 and BENCHMARK, Criteria 5.7.-Monitoring and Trend Logging</i>	
• HVAC controls have time of day scheduling or temperature setback	2 points

<ul style="list-style-type: none"> • Full Building Automation Systems 	5 points
Provide references to specifications. _____	

Final verification: Review specifications of the HVAC controls to check that there is time-of-day scheduling, temperature setback.

C.2.17 Are there the following automated natural ventilation control mechanisms? Select one. Mark “not applicable” where windows do not open.	
<ul style="list-style-type: none"> • Automatic operable windows, window treatments or vents provide fresh air directly from outside in response to room and external temperatures. 	2 point or n/a
<ul style="list-style-type: none"> • Interlock between the use of operable windows and automated HVAC control avoid wasting energy for example, by opening a window to cool down a space which is being heated. 	3 point or n/a
Provide references to drawings and specifications. _____	

Verification: Review drawings and specifications to check whether there are automatic operable windows, window treatments or vents in response to room and external temperatures to provide fresh air directly from outside, and automated interlock between the use of operable windows and HVAC control to avoid wasting energy for example, by opening a window to cool down a space which is being heated.

Final verification: Conduct a visual verification.

C.2.18 Are the following measures used to control outdoor air dampers? Select applicable. Mark “not applicable” if there are no air dampers.	
<i>ASHRAE Standard 90.1-1999, Advanced Energy Design Guide, Strategy HV23, HV22, HV7</i>	
<ul style="list-style-type: none"> • Air economizer mode that uses outdoor air for cooling in lieu of mechanical cooling when the temperature and humidity of the outdoor air is low enough to met cooling needs. 	2 points or n/a
<ul style="list-style-type: none"> • Demand-controlled ventilation that responds to changes in carbon dioxide levels in spaces that accommodate varying and high occupancy loads during occupied periods Mark “not applicable” where occupancy is moderate and unvarying. 	2 points or n/a
<ul style="list-style-type: none"> • Controls to shut off outdoor and exhaust air dampers during unoccupied periods. 	2 points or n/a
Provide references to specifications. _____	

Final verification: Review drawings and specifications to check whether the following measures are present: air economizer; demand-controlled ventilation; and controls to shut off outdoor and exhaust dampers during unoccupied periods.

C.2.19 (Innovation criteria) Does the building contain the following vertical transport features to conserve energy? Where there are no elevators or escalators or where there is only one elevator or 2 escalators, mark "not applicable."	
<ul style="list-style-type: none"> • Capability of shutting down elevators for part of the day. 	1 point or n/a
<ul style="list-style-type: none"> • Capability to slow down or stop escalators when detectors indicate no traffic. 	1 point or n/a
Provide references to specifications. _____	

Verification: Review specifications to check that there are automated features to help save energy used by elevators and/or escalators.

Final verification: Conduct a visual verification.

C.3 "Right sized" energy-efficient systems (Path B only) (110 points)

Objective: Reduce energy needed by using "right-sized energy-efficient equipment.

C.3.1 Are lighting power densities at or below those indicated in ASHRAE Standard 90.1-2004 and BENCHMARK? <i>ASHRAE 90.1-2004 and BENCHMARK, Criteria 6.7-Light Power Density</i>	15 points or n/a
Indicate the average lighting power density of the building. _____ Indicate the maximum code-required lighting power density for the building. _____ Indicate the proposed building type that was used. _____ Indicate which lighting power density calculation method was used _____ Indicate which energy code was used. _____	

Final verification: Review drawings and specifications to check that the average lighting power density for the building corresponds to the ASHRAE 90.1 and BENCHMARK.

C.3.2 Is there an efficient electric lighting system (T5 or T8 or metal halide) with electronic ballasts, designed to be supplemented with task-lighting?	10 points
Provide references to the specifications. _____	

Final verification: Review drawings and specifications to check that the lighting system uses T5 or T8 fixtures or metal halide (outdoors) with electronic ballasts, designed to be supplemented in offices with task-lighting.

C.3.3 Does cooling equipment meet or exceed the recommended seasonal energy efficiency ratio (SEER) or Energy Efficiency Ratio (EER) indicated in ASHRAE Standard 90.1-2004? Where there is no air-conditioning, mark "not applicable." <i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide and BENCHMARK, Criteria 6.5.-Mechanical Equipment Efficiency</i>	25 points or n/a
---	------------------

Indicate the EER ____ or SEER ____.

Indicate the required EER ____ or SEER ____.

Indicate equipment type. _____

Indicate the size category. _____ Btu/h or _____ tons.

Final verification: Review cut sheets to check whether the cooling equipment meets or exceeds the EER or SEER required based on ASHRAE 90.1-2004.

<p>C.3.4 Are there measures (such as multiple compressors or modular boilers) to reduce the capacity and operate efficiently at part loads, yet meet the minimum HVAC requirements? Where there is no part load, mark “not applicable.”</p>	<p>10 points or n/a</p>
<p>Describe the measures. _____</p>	

Final verification: Review drawings and specifications to check that there are measure to reduce the capacity and operate efficiently at part loads yet meet the minimum HVAC requirements.

<p>C.3.5 Does the heating equipment meet or exceeds the recommended annual fuel utilization efficiency (AFUE) (or Thermal Efficiency for indirect gas-fired heater) at the required capacity indicated in ASHRAE Standard 90.1-2004? Where there is no heating, mark “not applicable.”</p> <p><i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide and BENCHMARK, Criteria 6.5.-Mechanical Equipment Efficiency</i></p>	<p>25 points or n/a</p>
<p>Indicate the efficiency. _____</p> <p>Indicate the required efficiency. _____</p> <p>Indicate equipment type. _____</p> <p>Indicate the size category. _____ Btu/h</p>	

Final verification: Review cut sheets to check that the heating equipment meets or exceeds the value listed for annual fuel utilization efficiency (AFUE) (or Thermal Efficiency for indirect gas-fired heaters) for the required capacity based on ASHRAE 90.1-2004.

<p>C.3.6 For heat pump application, does the heating efficiency meet or exceed the ASHRAE Standard 90.1-2004 heating seasonal performance factor (HSPF) or coefficient of performance (COP) for the required capacity? Where there is no heat pump, mark “not applicable”.</p> <p><i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy HV6</i></p>	<p>5 points or n/a</p>
<p>Indicate the performance and what factor was used. _____</p> <p>Indicate the required performance. _____</p> <p>Indicate equipment type _____</p>	

Indicate the size category. _____

Final verification: Review cut sheets to check whether the heating efficiency of heat pumps meets or exceeds the heating seasonal performance factor (HSPF) or coefficient of performance (COP) for the required capacity as recommended by ASHRAE 90.1?

<p>C.3.7 Are the following thermal zones provided? If the building is less than 10,000 square feet, mark “not applicable”.</p> <ul style="list-style-type: none"> • At least one thermal zone for each of the perimeter exposures • One for the interior <p><i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy HV13</i></p>	<p>Check any two for 5 points or n/a</p>
<p>Provide drawing references. _____</p>	

Final verification: Review the mechanical drawings and specifications to check whether the referenced HVAC zones are provided.

<p>C.3.8 Is fan power improved by the following measures? Where there is no ductwork, mark “not applicable.”</p> <p><i>ASHRAE Standard 90.1-2004, Advanced Energy Design Guide, Strategy HV9, HV10, HV11, HV12</i></p>	
<ul style="list-style-type: none"> • The duct distribution system has: <ul style="list-style-type: none"> • diffusers and registers sized with a full flow pressure drop no greater than 0.01 inch of water column, and noise criteria (NC) of 35 or less • supply and return ductwork sized with a pressure drop no greater than 0.08 inches of water column per 100 lineal feet of duct run 	<p>Check all items for 3 points or n/a</p>
<ul style="list-style-type: none"> • Flexible duct work is: <ul style="list-style-type: none"> • limited to 10 feet or less • limited to connections between duct branches and diffusers, and connections between duct branches and variable air volume terminal units • installed with durable elbow support when used as an elbow 	<p>Check all items for 2 points or n/a</p>
<ul style="list-style-type: none"> • Sealed duct joint and seams are leak-tested at the rated pressure with overall leak rate less than 10%. 	<p>2 points or n/a</p>
<ul style="list-style-type: none"> • There is insulated ductwork: <ul style="list-style-type: none"> • for all supply air ductwork • for return ductwork located above insulated ceilings immediately below the roof or in unconditioned spaces • for all outdoor ductwork 	<p>Check all items for 3 points or n/a or n/a</p>

<ul style="list-style-type: none"> • for all exhaust and relief air ductwork between the motor-operated damper and penetration of the building exterior • along with vapor retardant on the outside of the insulation where condensation is possible. 	
<ul style="list-style-type: none"> • Motors for fans that are 1 horsepower or more meet National Electric Manufacturers' Association (NEMA) premium efficiency motor guidelines. <p><i>BENCHMARK, Criteria 6.6-Variable Speed Control</i></p>	5 points
<p>Provide references to drawings and specifications. _____</p>	

Final verification: Review cut sheets and drawings to check that the duct distribution system has:

- diffusers and registers that are sized with a static pressure drop no greater than 0.01 inch of water column and maximum noise criteria (NC) of 35 or less.
- supply and return ductwork that are sized with a pressure drop no greater than 0.08 inches of water column per 100 lineal feet of duct run
- Flexible duct work that is:
 - insulated
 - limited to 8 to 10 feet.
 - limited to connections between duct branches and diffusers, and connections between duct branches and variable air volume terminal units
 - installed with durable elbow support when used as an elbow
- Sealed duct joint and seams, leak-tested at the rated pressure
- insulated ductwork for all supply air ductwork, for return ductwork located above insulated ceilings immediately below the roof or in unconditioned spaces, for all outdoor ductwork, for all exhaust and relief air ductwork between the motor-operated damper and penetration of the building exterior. There is vapor retardant on the outside of the insulation where condensation is possible. Note: In conditioned spaces without a finished ceiling, only supply air duct mains and major branches should be insulated, except in areas where it may be necessary to prevent condensation.
- Motors that meet National Electric Manufacturers' Association (NEMA) premium efficiency motor guidelines for fans that are one (1) horsepower or more

C.4 Renewable Sources of Energy (Path A & B) (45 points)

Objective: Reduce the consumption of non-renewable energy resources and the associated green house gas emissions.

<p>C.4.1 What percentage of the total energy load is from renewable energy?</p>	<p>Points are awarded where renewable energy supplies 1-50% or more of the total load. The Green Globes system will calculate this based on the stated percentage.</p> <p>Maximum points = 45 points</p>
<p>Provide estimated percentage of the total energy load that will be from renewable energy._____</p>	

Final verification: Review details of the renewable energy system and check that there are calculations that demonstrate the renewable energy contribution.

C.5 Energy-efficient transportation (Path A & B) (70 points)

Objective: Reduce fossil fuel consumption for commuting.

C.5.1 Is public transit, with service every 15 minutes during commuting hours, located within:	
100 yards of the facility	50 points
250 yards of the facility	40 points
400 yards of the facility	30 points
550 yards of the facility	20 points
700 yards of the facility	10 points

Final verification: Review site plan and map showing public transit routes to verify the distance. Review schedule of services.

C.5.2 Is there designated preferred parking for car/van pooling and shelter from weather for persons waiting for a ride?	6 points
Provide drawing references. _____	

Verification: Review drawings to check that there is designated preferred parking for can/van pooling and shelter for persons waiting for a ride.

Final verification: Conduct a visual verification.

C.5.3 Is there safe, covered storage areas with fixed mountings to secure bicycles against theft?	10 points
Provide drawing references. _____	

Verification: Review drawings to check that there are covered storage areas with fixed mountings to secure bicycles.

Final verification: Conduct a visual verification.

C.5.4 Are there showers and changing facilities for tenants and staff?	4 points
Provide drawing references. _____	

Verification: Review drawings to check that there are showers and changing facilities for tenants and staff.

Final verification: Conduct a visual verification.