

# Alternative and Clean Energy

Program Guidelines | March 2010

> ready > set > succeed



# Table of Contents

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<b>Section I</b>	<b>Statement of Purpose</b>	1
<b>Section II</b>	<b>Eligibility</b>	1
A.	Eligible Applicants	1
B.	Eligible Project Costs	1
<b>Section III</b>	<b>Program Requirements</b>	3
A.	Matching Funds Requirement	3
B.	Other Requirements	3
C.	Fees	4
<b>Section IV</b>	<b>Grants, Loans and Guarantees</b>	4
A.	Loans	4
B.	Grants	5
C.	Guarantee	5
<b>Section V</b>	<b>Application Process</b>	6
A.	Application procedures	6
B.	Application Evaluation	6
C.	Procedures for Accessing Funds	7
<b>Section VI</b>	<b>Program Inquiries</b>	7
<b>Appendix I</b>	<b>Supplemental Information</b>	8
<b>Appendix II</b>	<b>Authorized Official Resolution</b>	10
<b>Attachment I</b>	<b>High Performance Building Standards</b>	
<b>Attachment II</b>	<b>Letter of Intent</b>	



## Section I – Statement of Purpose

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The Alternative and Clean Energy Program (the Program) provides financial assistance in the form of grant and loan funds that will be used by eligible applicants for the utilization, development and construction of alternative and clean energy projects in the Commonwealth. The Program is administered jointly by the Department of Community and Economic Development (DCED) and the Department of Environmental Protection (DEP), under the direction of the Commonwealth Financing Authority.

## Section II – Eligibility

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### A. Eligible Applicants

The following applicants are eligible for grants/loans:

1. **A Business** – a corporation, partnership, sole proprietorship, limited liability company, business trust, or other commercial entity approved by the Commonwealth Financing Authority. The term shall also include not-for-profit entities.
2. **An Economic Development Organization** – a nonprofit corporation or association whose purpose is the enhancement of economic conditions in their community.
3. **A Political Subdivision** – A municipality, county, or school district.

### B. Eligible Project Costs

1. Funds may be used for any of the following **Clean Energy Project** costs:
  - a. Costs associated with the construction or renovation of a High Performance Building including: building construction costs; the acquisition of land and buildings, rights-of-way, and easements; the clearing and preparation of the land; planning, designing, and modeling work; registration and certification of the project; commissioning and enhanced verification of building performance. (See Attachment I for High Performance Building Standards)
  - b. The site preparation of a business park consisting exclusively of certified High Performance Buildings including: the construction of water and sewer lines, storm water systems, excavation, construction of access roads, parking facilities, pipelines, transformers and utility transmission lines, traffic control devices and engineering.
  - c. Installation of equipment for use by an eligible applicant to facilitate or improve energy conservation or energy efficiency (including but not limited to heating, lighting, and cooling equipment). Energy Star rated equipment is required if the type or class of equipment being installed is rated under the Energy Star Program (refer to [www.energystar.gov](http://www.energystar.gov)). The Authority may participate in establishing pools of funding by leveraging investments from private sector financial institutions to help accomplish the CFA's energy conservation goals.

- d. Installation of an alternative energy system which produces energy from sources defined under the Alternative Energy Portfolio Standards Act of 2004 including but not limited to waste coal, biomass, wind energy, geothermal technologies, clean coal technologies, waste energy technologies, large-scale or low-impact hydro, biologically derived methane gas, fuel cells, coal mine methane, or by-products of the pulping and wood manufacturing process in a new or existing building.
- e. Replacement or enhancement of an existing energy system that utilizes nonrenewable energy with an energy system that utilizes alternative energy (as defined in 1d. of this section).
- f. Modification of the contract terms of an energy service project by a political subdivision pursuant to a new energy savings contract (ESCO) with a qualified provider under the Guaranteed Energy Savings Act (GESA) of 1996. The PA Department of General Services manages the GESA program for the Commonwealth, and maintains a list of qualified providers on their website ([www.dgs.state.pa.us](http://www.dgs.state.pa.us)).
- g. Preparation of plans, specifications, studies, surveys, and energy audits necessary or incidental to facilitating or developing an eligible project.
- h. Administrative costs of the applicant to administer a Program grant. Administrative costs include advertising, legal and audit costs, as well as documented staff expenses. Administrative costs shall not exceed 3% of the Program grant or loan.

Ineligible cost include, but are not limited to fees for securing other financing, interest on borrowed funds, refinancing of existing debt, and cost incurred prior to the approval of CFA financing.

- 2. Funds may be used for the construction or development of an **Alternative Energy Production Project** including:
  - a. A facility that produces or distributes energy from sources defined in the Alternative Energy Portfolio Standards Act of 2004 including but not limited to waste coal, biomass, wind energy, geothermal technologies, clean coal technologies, municipal solid waste energy technologies, large-scale or low-impact hydro, biologically derived methane gas, fuel cells, coal mine methane, or by-products of the pulping and wood manufacturing process.
  - b. A facility that manufactures or produces alternative fuels. The term “alternative fuels” shall include ethanol, biodiesel, or any other alternative fuel approved by the authority.
  - c. A facility that manufactures or produces products, including component parts that provide alternative energy (as defined in subparagraph a. of this section) or alternative fuels (as defined in subparagraph b. of this section).
  - d. The purchase and installation of equipment used for the manufacturing of component parts of alternative energy or alternative fuel production systems.
  - e. A facility that manufactures or produces products, including component parts that improve energy efficiency or conserve energy.
  - f. A facility used for the research and development of technology to provide alternative energy sources or alternative fuels.
  - g. A project for the development or enhancement of rail transportation systems that deliver alternative fuels or high efficiency locomotives.
  - h. Preparation of plans, specifications, studies, and surveys, necessary or incidental to facilitating or developing an eligible project.
  - i. Administrative costs of the applicant to administer a Program grant. Administrative costs include advertising, legal and audit costs, as well as documented staff expenses. Administrative costs shall not exceed 3% of the Program grant or loan.

## **Section III – Program Requirements**

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### **A. Matching Funds Requirement**

Matching funds means any new public or private investment in the proposed project made by an eligible applicant. Eligible applicants must provide evidence of a commitment of matching funds at the project site. The amount of the matching investment required must be at least \$1 for every \$1 of Program funds awarded by the CFA.

### **B. Other Requirements**

#### **1. Conflict of Interest Provision**

An officer, director, or employee of an applicant who is a party to or has a private interest in a project shall disclose the nature and extent of the interest to the governing body of the applicant, and may not vote on action of the applicant concerning the project, nor participate in the deliberations of the applicant concerning the project.

#### **2. Nondiscrimination**

No assistance is awarded to an applicant under this program unless the applicant certifies to the Authority that they shall not discriminate against any employee or against any person seeking employment because of race, color, handicap, national origin, age, or sex. All contracts for work to be paid with program assistance must contain the Commonwealth's official nondiscrimination clause.

#### **3. Project Records**

The applicant must maintain full and accurate records with respect to the project and must ensure adequate control over related parties in the project. The Authority requires access to such records, as well as the ability to inspect all work, invoices, materials, and other relevant records at reasonable times and places. Upon request of the Authority, the applicant must furnish all data, reports, contracts, documents, and other information relevant to the project.

#### **4. Pennsylvania Prevailing Wage Act**

All or a portion of the construction work associated with the project may be subject to the Pennsylvania Prevailing Wage Act, as determined by the Pennsylvania Department of Labor & Industry. It is the responsibility of the funding recipient to ensure that the Pennsylvania Prevailing Wage Act is followed if applicable.

#### **5. Proof of Notification**

The applicant must provide proof that the county and host municipality or municipalities have been notified about the intended project.

#### **6. Project Audit**

For projects receiving grant funds in excess of \$100,000, an audit from a Certified Public Accountant (CPA) licensed in Pennsylvania listing all project costs must be submitted to DCED within 90 days after expiration of the grant. In the opinion section of the audit, a statement shall be made certifying that Commonwealth funds were disbursed in accordance with the terms of the grant agreement.

#### **7. Guideline Provisions**

The Alternative and Clean Energy Program guidelines may be modified or waived by the CFA unless otherwise required by law.

## 8. Post Construction Verification Requirement for High Performance Projects

- a. Upon substantial completion of project, applicant must submit a copy of credits submitted to USGBC, NGBS or GBI for review/ acceptance.
- b. Applicants for small business, new construction or major renovation projects must submit final documentation that performance standards have been met, as follows:
  - (1) Verification of LEED NC Version 3 and GBI Green Globes registration.
  - (2) Copy of LEED NC Version 3 and GBI Green Globes Certificate at project completion and final LEED NC Version 3 and GBI Green Globes Checklist.

## C. Fees

The Commonwealth Financing Authority charges a \$100 non-refundable application fee for the Alternative and Clean Energy Program applications made payable to *the Commonwealth Financing Authority*. Application fee is due at the time of submission. There is a commitment fee on all approved loans. The commitment fee is 1% of all approved loan amounts, capped at \$10,000.

# Section IV – Grants, Loans and Guarantees

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## A. Loans

### 1. Loan Amount

- a. The maximum amount of any loan for any alternative energy production or clean energy project shall not exceed \$5 million or 50% of the total project cost, whichever is less. The maximum loan amount for a geothermal system will not exceed \$3 per square foot of space to be served by the system or \$5 million, whichever is less. The CFA will consider loan requests over \$5 million for projects that will significantly impact the Authority's goals to leverage private sector investments and to encourage alternative energy production and energy conservation in the Commonwealth.
- b. The maximum amount of any loan for a manufacturer of alternative and/or clean energy generation equipment or components shall not exceed \$35,000 for each new job projected to be created by the business within three years after approval of the loan. If the manufacturer fails to create the projected number of jobs within three years, the Authority may require the interest rate to be increased by 3% for the remaining term of the loan.
- c. All eligible applicants may apply for loans for eligible projects except that political subdivisions may not apply for Alternative Energy Production Projects as defined in Section II B, 2.
- d. Maximum loan for a High Performance Building shall not exceed \$5 million or 50% of the total eligible building construction/renovation costs, whichever is less.

### 2. Repayment Term

Loans may be amortized over a period not to exceed 25 years or the useful life of the asset, whichever is less and will be repaid over a period not to exceed 10 years. Loans for energy conservation or energy efficiency projects (including geothermal systems) as defined in Section II, B, 1, c of these guidelines will have a 10 year amortization.

### 3. **Interest Rate**

The interest rate for the loan will be fixed at the time of approval of the loan. The interest rate for energy conservation or energy efficiency projects is 1%. Interest rates for other eligible projects are subject to change based on market conditions. The current interest rate is posted on the [www.newPA.com](http://www.newPA.com) website.

### 4. **Security**

All loans are to be secured by a lien on the asset financed. The Authority may require additional security as necessary, including but not limited to, a pledge of additional assets or securities or dedicated revenues.

## **B. Grants**

1. The maximum amount of any grant for any alternative energy production or clean energy project shall not exceed \$2 million or 50% of the total project cost, whichever is less. The CFA will consider grant requests over \$2 million for projects that will significantly impact the Authority's goal to leverage private investment and encourage alternative energy production and energy conservation in the Commonwealth.
2. The maximum amount of any grant for a manufacturer of alternative and/or clean energy generation equipment or components shall not exceed \$10,000 for every job projected to be created by the business within three years after approval of the grant. If the manufacturer fails to create the projected number of jobs, the Authority may require the full amount of the grant to be repaid.
3. The maximum grant amount for an Energy Savings Contract (ESCO) shall not exceed \$500,000.
4. Political subdivisions are eligible to apply for grants only for Clean Energy Projects as defined in Section II B, 1. Businesses and non-profit economic development organizations are eligible to apply for grants only for Site Preparation Projects as defined in Section II B.1.b. of these guidelines and Alternative Energy Production Projects.
5. The maximum grant amount for a High Performance Building is \$2 million or 10% of the total eligible building construction/renovation costs, whichever is less.
6. The maximum amount for any grant that will be used solely for planning and feasibility studies shall not exceed 50% of the total cost of such planning or feasibility studies or \$175,000, whichever is less. Grants may be used to pay for any eligible project costs as defined in Section II of these guidelines.

Due to the significant energy savings and the brief pay back period associated with most energy conservation and energy efficiency projects as defined in Section II, B, 1, c. of these guidelines, the Authority will not approve grant requests for these projects.

## **C. Guarantee**

The Authority may award grants to applicants that would serve as a guarantee for the financing in the project. The Guarantee is subject to the following conditions:

1. The grant will be in the form of a standby letter of credit and issued directly to the company/developer.
2. The grant funds may only be drawn upon in the event the company defaults on its financing and there is a deficiency in collateral for the lending institution to collect upon. The grant will pay up to 75% of the deficiency.
3. The term of the grant will not be more than 5 years.
4. The amount of the grant shall not exceed \$5 million.

## **Section V – Application Process**

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### **A. Application Procedures**

To apply for funding, the applicant must submit the electronic on-line Department of Community and Economic Development Single Application for Assistance located at [www.esa.dced.state.pa.us](http://www.esa.dced.state.pa.us). Once submitted, please print ten (10) copies of the application, and send with the required supplemental information (please see Appendix I of these guidelines) via US Mail along with the signature page. Please reference the Web ID number on any documents sent with the signature page. Applications must be received at least 60 days prior to the next scheduled Authority meeting at which Alternative and Clean Energy program applications will be considered. An application review schedule for the Authority meetings can be found on the [www.newPA.com](http://www.newPA.com) website.

### **B. Application Evaluation**

All applications for financial assistance will be reviewed by the Department of Community and Economic Development and the Department of Environmental Protection under the direction of the CFA to determine eligibility and competitiveness of the proposed project. Projects will be evaluated using the appropriate criteria from the following list of evaluation criteria for the various types of eligible projects:

1. The level of non-CFA matching investment in the project.
2. The technical and financial feasibility of the project.
3. Energy savings generated or peak load reduced by the project.
4. Conventional energy displaced by the deployment of the alternative energy production project.
5. The amount of alternative energy or alternative fuels produced by the project.
6. The number and quality of the jobs to be created or preserved in Pennsylvania by the project including construction jobs.
7. The financial need of the project.
8. The capital efficiency of the project.
9. Project readiness.
10. The level to which the project exhibits principles of sound land and water use.
11. Environmental benefits arising from the project including the creation of allowances that can be used to facilitate additional economic development in the region.
12. The nation and state of origin of equipment/components used in the project.

## C. Procedures for Accessing Funds

1. Upon approval of an application by the Authority, a commitment letter will be issued to the applicant explaining the terms and conditions of the loan or grant. The commitment letter must be signed and returned to the Authority within 45 days of the date of the commitment letter or the offer may be withdrawn by the Authority.
2. Following the acceptance of an offer by the applicant, a loan closing will be scheduled and, if applicable, a grant agreement will be sent to the applicant for execution. In the case of a grant and loan combination involving an unrelated private developer, the Authority will contract directly with the applicant for the grant funds and will enter into separate loan documents between the Authority and the private developer. The applicant shall obtain the services of a professional engineer or architect licensed in Pennsylvania who will certify to the Authority during construction that the expenses were incurred and were in accordance with the plans approved by the Authority. The Authority will release funds to the applicant at not less than 30-day intervals, with a maximum of twelve disbursements over the life of the project.
3. For High Performance Building Projects, the application must be submitted prior to final building permit issuance and preferably in pre-design or schematic design.
4. Funds will be disbursed following the post construction verification that performance standards have been met. See post construction verification requirements.

## Section VI – Program Inquiries

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Program inquiries should be directed to:

PA Department of Community and Economic Development  
Center for Business Financing – Site Development Division  
Alternative and Clean Energy Program  
Commonwealth Keystone Building  
400 North Street, 4th Floor  
Harrisburg, PA 17120-0225

Telephone: (717) 787-7120  
Fax: (717) 772-3581  
E-mail: [ra-dcedcbf@state.pa.us](mailto:ra-dcedcbf@state.pa.us).

These guidelines can also be accessed online at [www.newPA.com](http://www.newPA.com).

# Appendix I – Supplemental Information

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## Alternative and Clean Energy Program

In addition to completing the Department of Community and Economic Development Single Application for Assistance, please include the following items when applying for a loan/grant under the Alternative and Clean Energy Program:

- Exhibit 1:** Provide a description of the project and project user which discusses all of the following: (a) a brief executive summary describing the project; (b) the specific location of the site and project characteristics, such as the total acreage and/or square footage of the project; (c) any characteristics of the area in which the site is located that demonstrate a need for economic development; (d) the historical and proposed use of the site; (e) the specific costs and improvements to be paid for with Program funds; (f) the experience of the project user, including a discussion of previous projects completed; (g) the estimated start and end dates of construction; (h) the number of construction jobs, spinoff jobs and net new full-time jobs to be created and/or preserved by the project; (i) a description of how the project will reduce reliance on conventional energy resources; (j) the estimated energy benefits and the method used to reach the estimate; (k) the estimated environmental benefits of the project such as tons of air emissions avoided (sulfur dioxide, ozone precursors, mercury, and CO<sub>2</sub> or other greenhouse gases), water consumption avoided, avoided waste products, and the method used to reach the estimate; (l) impacts on the availability and price of energy resources and; (m) if the project will generate electricity, whether there are interconnection, net metering, and/or power purchase agreements in place; (n) the nation and state of origin of any equipment used in the alternative and clean energy project; and (o) if the project is an energy savings contract, describe the financing details on the ESCO, including the anticipated length and the payback period.
- Exhibit 2:** Funding commitment letters from all other project funding sources, if applicable (including equity commitments). Letters should include the term, rate, and collateral conditions, and must be signed and dated.
- Exhibit 3:** A statement of the amount and type of assistance requested. If requesting a loan, a description of the proposed repayment terms.
- Exhibit 4:** Attach financial statements of the business, parent company, and any other proposed guarantors, if any, for the last three years of operation. Financial statements should include balance sheets, income statements, cash flow statements, and notes to financials. Start-up companies must provide three years projected financial statements. For public sector or non-profit applicants, provide the most recent audited financial statements of the applicant. Financial statements should include balance sheets, income statements, and notes to financials.
- Exhibit 5:** For loans, identify the collateral that will be offered to the CFA as security for the loan. If the proposed collateral is real estate, provide two completed as-is appraisals or one appraisal prepared by either a Member of American Institute of Real Estate Appraisers (MAI) or a PA State Certified Appraiser. The appraisals must be no more than six months old. If a personal guarantee is being offered as security, attach personal financial statements for the proposed guarantor and their spouse. The personal financial statements should not be more than six months old and must be signed.

- Exhibit 6:** A color-coded map or plot plan detailing the location of the project, overlaid with the corresponding zoning of the project area.
- Exhibit 7:** A statement as to the estimated cost of the project. The estimate must be prepared by an engineer, architect, or other qualified professional and should be accompanied where appropriate by copies of the signed bids/quotations, contractor estimates, or sales agreements that verify project cost estimates.
- Exhibit 8:** A projected cash flow analysis, which includes all expenses and revenues covering the period of time from project commencement through full repayment of the loan.
- Exhibit 9:** A letter from the appropriate planning agency certifying that the proposed project is in compliance with the comprehensive land use plans and zoning and subdivision codes.
- Exhibit 10:** For public sector applicants, provide a resolution duly adopted by the applicant's governing board formally requesting the grant/loan, designating an official to execute all documents, describing briefly the project scope, and identifying the grant amount requested per year (see Appendix II for a Sample Resolution).
- Exhibit 11:** For High Performance Building applicants, provide a letter identifying the standards to be met. See sample letter Attachment II.

Send 10 copies of completed application with all supplemental information and attachments to:

PA Department of Community and Economic Development  
Center for Business Financing – Site Development Division  
Alternative and Clean Energy Program  
Commonwealth Keystone Building  
400 North Street, 4th Floor  
Harrisburg, PA 17120-0225

If you have any questions on completing the application, please call the Center for Business Financing at (717) 787-7120.

## Appendix II – Authorized Official Resolution

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Be it RESOLVED, that the \_\_\_\_\_ (Name of Applicant) of \_\_\_\_\_ (Name of County) hereby request an Alternative and Clean Energy Program grant and/or a loan of \$ \_\_\_\_\_ at a \_\_\_\_\_ % rate and \_\_\_\_\_ year term from the Commonwealth Financing Authority to be used for \_\_\_\_\_.

Be it FURTHER RESOLVED, that the Applicant does hereby designate \_\_\_\_\_ (Name and Title) and \_\_\_\_\_ (Name and Title) as the official(s) to execute all documents and agreements between the \_\_\_\_\_ (Name of Applicant) and the Commonwealth Financing Authority to facilitate and assist in obtaining the requested grant/loan.

I, \_\_\_\_\_, duly qualified Secretary of the \_\_\_\_\_ (Name of Applicant), \_\_\_\_\_ (Name of County) \_\_\_\_\_, PA, hereby certify that the forgoing is a true and correct copy of a Resolution duly adopted by a majority vote of the \_\_\_\_\_ (Governing Body) at a regular meeting held \_\_\_\_\_ (Date) and said Resolution has been recorded in the Minutes of the \_\_\_\_\_ (Applicant) and remains in effect as of this date.

IN WITNESS THEREOF, I affix my hand and attach the seal of the \_\_\_\_\_ (Applicant), this \_\_\_\_ day of \_\_\_\_, 20\_\_.

\_\_\_\_\_  
Name of Applicant

\_\_\_\_\_  
County

\_\_\_\_\_  
Secretary

**ATTACHMENT I**

**COMMONWEALTH OF PENNSYLVANIA - HIGH PERFORMANCE BUILDING STANDARDS**

**Department of General Services**

**Consensus Final 9.11.09**

**Residential New Construction**

To qualify as a High Performance Building under this program, a residential new construction project must meet all of the following:

1. Must achieve at least Gold Certification under the USGBC LEED for Homes rating system, or at least Gold Certification under the National Green Building Standard, ICC 700-2008.
2. Evidence of meeting the LEED or the NGBS standard must be provided through independent third-party verification, which shall include blower door testing. Building Envelope Performance Criteria: 5 ACH50 (air changes per hour at 50 pascals). Envelope leakage shall be determined by a certified rater using a RESNET-approved testing protocol. Independent third-party verification will be conducted by an agency or entity having no direct affiliation or financial interest with the applicant, program or system being evaluated.
3. Under either rating system, must meet the criteria for each of the following standards:

**A. Building Orientation for Solar Design**

**LEED ID 1.5 OR NGBS 704.3.1.1**

**LEED ID 1.5**

Design the home such that all of the following requirements are met:

- (1) The glazing area on the north-and south-facing walls of the building is at least 50% greater than the sum of the glazing area on the east- and west-facing walls.
- (2) The east-west axis of the building is within 15 degrees of due east-west.
- (3) The roof has a minimum of 450 square feet of south-facing area that is oriented appropriately for solar applications.
- (4) At least 90% of the glazing on the south-facing wall is completely shaded (using shading, overhangs, etc.) at noon on June 21 and unshaded at noon on December 21.

**OR NGBS 704.3.1.1**

Building orientation, sizing of glazing, and design of overhangs are in accordance with all of the following:

- (1) The long side (or one side if of equal length) of the building faces within 20 degrees of true south.
- (2) Vertical glazing area is between 5 and 7 percent of the gross conditioned floor area on the south face.
- (3) Vertical glazing area is less than 2 percent of the gross conditioned floor area on the west face, and glazing is ENERGY STAR compliant or equivalent.
- (4) Vertical glazing area is less than 4 percent of the gross conditioned floor area on the east face, and glazing is ENERGY STAR compliant or equivalent.
- (5) Vertical glazing area is less than 8 percent of the gross conditioned floor area on the north face, and glazing is ENERGY STAR compliant or equivalent.

- (6) Skylights, where installed, are in accordance with the following:
  - (a) shades and insulated wells are used, and all glazing is ENERGY STAR compliant or equivalent
  - (b) horizontal skylights are less than 0.5 percent of finished ceiling area
  - (c) sloped skylights on slopes facing within 45 degrees of true south, east or west are less than 1.5 percent of finished ceiling area
- (7) Overhangs or adjustable canopies or awnings or trellises provide shading on south-facing glass for the appropriate climate zone in accordance with Table 704.3.1.1.
- (8) The south face windows have a SHGC of 0.40 or higher.
- (9) Return air or transfer grilles/ducts are in accordance with Section 704.4.5.

**B. Site Selection**

**LEED LL 2 and LL 3.2 and/or LL 3.3 OR NGBS 503.8(1)**

LEED LL 2

Do not develop buildings, built structures, roads or parking areas on portions of sites that meet any of the following criteria:

- (1) Land whose elevation is at or below the 100-year floodplain as defined by FEMA.
- (2) Land that is specifically identified as habitat for any species on federal or state threatened or endangered lists.
- (3) Land within 100 feet of any water, including wetlands as defined by U.S. Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, or land within distances given in applicable state or local regulations, whichever is more stringent. New wetlands constructed as part of stormwater mitigation or other site restoration efforts are exempt from this part of the requirement.
- (4) Land that prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (park authority projects are exempt).
- (5) Land that contains “prime soils”, “unique soils”, or “soils of state significance”, as identified in state Natural Resources Conservation Service soil surveys. Verification of soil types should be conducted by the project civil engineer, wetlands, engineer, or biologist. If no project team member is qualified to verify this requirement, follow the steps laid out in the LEED for Homes Reference Guide. Sites that are previously developed are exempt from this requirement.

OR NGBS 503.8(1) (Lot Design)  
Environmentally sensitive areas are avoided.

**C. Erosion Control during Construction**

**LEED SS Prerequisite 1.1 OR NGBS 503.3 and 504.3**

LEED SS Prerequisite 1.1

Prior to construction, design and plan appropriate erosion control measures. During construction, implement these measures. Erosion control measures must include all of the following:

- (1) Stockpile and protect disturbed topsoil from erosion (for reuse).

- (2) Control the path and velocity of runoff with silt fencing or comparable measures.
- (3) Protect on-site storm sewer inlets, streams, and lakes with straw bales, silt fencing, silt sacks, rock filters, or comparable measures.
- (4) Provide swales to divert surface water from hillsides.
- (5) If soils in a sloped area (i.e., 25%, or 4:1 slope) are disturbed during construction, use tiers, erosion blankets, compost blankets, filter socks and berms, or some comparable approach to keep soil stabilized.

OR NGBS 503.3 (Lot Design)

On-site soil disturbance and erosion are minimized by one or more of the following:

- (1) Construction activities are scheduled to minimize length of time that soils are exposed.
- (2) Utilities are installed using one or more alternative means:
  - (a) tunneling instead of trenching
  - (b) use of smaller (low ground pressure) equipment or geomats to spread the weight of construction equipment
  - (c) shared utility trenches or easements
  - (d) placement of utilities under paved surfaces instead of yards
- (3) Limits of clearing and grading are demarcated on the plan.

and NGBS 504.3 (Lot Construction)

On-site soil disturbance and erosion are minimized by one or more of the following:

- (1) Limits of clearing and grading are staked out.
- (2) "No disturbance" zones are created using fencing or flagging to protect vegetation and sensitive areas from construction activity.
- (3) Sediment and erosion controls are installed and maintained in accordance with the storm water pollution prevention plan, where required.
- (4) Topsoil is stockpiled and stabilized for later use to establish landscape plantings.
- (5) Soil compaction from construction equipment is reduced by distributing the weight of the equipment over a larger area (laying lightweight geogrids, mulch, chipped wood, plywood, OSB, metal plates, or other materials capable of weight distribution in the pathway of the equipment).
- (6) Disturbed areas that are complete or to be left unworked for 21 days or more are stabilized within 14 days using methods as recommended by the EPA, or in the approved storm water pollution prevention plan, where required.
- (7) Soil is improved with organic amendments and mulch.
- (8) Utilities are installed using one or more alternative means (e.g., tunneling instead of trenching, use of smaller equipment, use of low ground pressure equipment, use of geomats, shared utility trenches or easements).

**D. Minimize Disturbed Area of Site**

**LEED SS 1.2 OR NGBS 503.1**

LEED SS 1.2

Where the site is not previously developed:

- (1) Develop a tree or plan preservation plan with "no-disturbance" zones clearly delineated on drawings and on the lot. Any "no-disturbance" zones must also be protected from parked construction vehicles and building material storage. Soils

compacted by vehicles or stored materials can cause major difficulties in establishing any new landscaping; and

- (2) Leave undisturbed at least 40% of the buildable lot area, not including area under roof. Only softscapes can be counted toward this credit; projects cannot receive credit for preserving preexisting hardscapes, such as driveways.

OR

Where the site is previously developed:

- (1) Develop a tree or plant preservation plan with “no-disturbance” zones clearly delineated on drawings and on the lot. Any “no-disturbance” zones must also be protected from parked construction vehicles and building material storage. Soils compacted by vehicles or stored materials can cause major difficulties in establishing any new landscaping; and
- (2) Rehabilitate the lot by undoing any previous soil compaction, removing existing invasive plants, and meeting the requirements of SS 2.2 Landscaping.

OR NGBS 503.1

Natural resources are conserved by one or more of the following:

- (1) A natural resources inventory is completed under the direction of a qualified professional.
- (2) A plan is implemented to conserve the elements identified by the resource inventory as high-priority resources.
- (3) Items listed for protection in the resource inventory plan are protected under the direction of a qualified professional.
- (4) Basic training in tree or other natural resource protection is provided for the on-site supervisor.
- (5) All tree pruning on-site is conducted by a Certified Arborist.
- (6) Ongoing maintenance of vegetation during construction is in accordance with TCIA A300.

**E. Surface Water Management, Permeable Lot – 100%  
LEED SS 4.1 OR NGBS 503.4 (1), (2) and (3)**

LEED SS 4.1

Design the lot such that at least 100% of the built environment, not including area under roof, is permeable or designed to capture water runoff for infiltration on-site. Area that can be counted toward the minimum includes the following:

- (1) Vegetative landscape (e.g., grass, trees, shrubs).
- (2) Permeable paving, installed by an experienced professional. Permeable paving must include porous above-ground materials (e.g., open pavers, engineered products) and a 6-inch porous subbase, and the base layer must be designed to ensure proper drainage away from the home.
- (3) Impermeable surfaces that are designed to direct all runoff toward an appropriate permanent infiltration feature (e.g., vegetated swale, on-site rain garden, or rainwater cistern).

OR NGBS 503.4 (1), (2) and (3) (Lot Design)

- (1) Natural water and drainage features are preserved and used; and

- (2) A storm water management plan is developed and implemented that minimized concentrated flows and simulates flows found in natural hydrology (e.g., vegetative swales, French drains, wetlands, drywells, and rain gardens); and
- (3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios. (Greater than 75% of the site shall be permeable.)

**F. Water Reuse, Rainwater Harvesting System – 75%  
LEED WE 1.1 OR NGBS 801.8**

LEED WE 1.1

Design and install a rainwater harvesting and storage system (including surface runoff and/or roof runoff) for landscape irrigation use or indoor water use. The storage system must be sized to hold all the water from a 1-inch rainfall event (equivalent to 0.62 gallons per square foot of roof area used for capture), taking into consideration the size of the harvest system (i.e., 75% of total roof area).

OR NGBS 801.8

Rainwater collection and distribution is provided.

- (1) Rainwater is collected and used.; and
- (2) Rainwater is distributed using a renewable energy source or gravity.

**G. Very High Efficiency Fixtures and Fittings  
LEED WE 3.2 OR NGBS 801.4(2)(b), 801.5.1(2) and 801.6(2)**

LEED WE 3.2

Meet the following requirements by installing very high efficiency fixtures or fittings.

- (1) The average flow rate for all lavatory faucets must be  $\leq 1.5$  gpm OR lavatory faucets must meet the U.S. EPA WaterSense specification and be certified and labeled accordingly; and
- (2) The average flow rate for all showers must be  $\leq 1.75$  gpm per stall; and
- (3) The average flow rate for all toilets must be  $\leq 1.1$  gpf.

OR NGBS 801.4(2)(b)

All showerheads are in compliance with 1.6 to less than 2.0 gpm.

and NGBS 801.5.1(2)

Water-efficient lavatory faucets with 1.5 gpm or less maximum flow rate when tested at 60 psi in accordance with ASME A112.18.1 are installed for all lavatory faucets.

and NGBS 801.6(2)

A water closet is installed with an effective flush volume of 1.28 gallons or less when tested in accordance with ASME A112.19.2 (all water closets) and ASME A112.19.14 (all dual flush water closets), and is in accordance with EPA WaterSense *Tank-Type High-Efficiency Toilet*.

**H. Exceptional Energy Performance – HERS 50 max.  
LEED EA 1.2 OR NGBS 702.2(3)**

LEED EA 1.2

Exceed the performance of ENERGY STAR for Homes (by achieving a 50 on the Home Energy Standards (HERS) Index).

OR NGBS 702.2(3)

Energy efficiency features are implemented to achieve energy cost performance that exceeds the 2006 ICC IECC by 50%. A documented analysis using software in accordance with ICC IECC, Section 404, or ICC IECC Section 506.2 through 506.5, applied as defined in the ICC IECC, is required.

**I. Construction Waste Reduction**

**LEED MR 3.2 OR NGBS 603.3, 605.2 and 605.3**

LEED MR 3.2

Reduce or divert waste generated from new construction activities from landfills and incinerators to a level below the industry norm. Use either of two options:

- (1) Reduced construction waste. Generate 2.5 pounds (or 0.016 cubic yards) or less of net waste (not including waste diverted for reclamation or recycling) per square foot of conditioned floor area.
- (2) Increased waste diversion. Divert 25% or more of the total material taken off the construction site from landfills and incinerators.

*Note: Land clearing and demolition waste (e.g., from removal of existing structures on the site) should not be counted in this calculation.*

OR NGBS 603.3

Facilitation for sorting and reuse of scrap building material (e.g., provide a central storage area or dedicated bins).

and NGBS 605.2

On-site recycling measures following applicable regulations and codes are implemented, such as the following:

- (1) Materials are ground or otherwise safely applied on-site as soil amendment or fill. A minimum of 50 percent (by weight) of construction and land-clearing waste is diverted from landfill; or
- (2) Alternative compliance methods approved by the PA DEP.

and NGBS 605.3

Construction materials (e.g., wood, cardboard, metals, drywall, plastic, asphalt roofing shingles, or concrete) are recycled offsite.

**J. ENERGY STAR with Indoor Air Package**

Complete all the requirements of the U.S. Environmental Protection Agency's ENERGY STAR with Indoor Air Package (IAP).

**K. Basic Operations Training**

**LEED AE Prerequisite 1.1 OR NGBS 1001.1 and 1002.1**

#### LEED AE Prerequisite 1.1

Provide the home's occupant(s) with the following:

- (1) An operations and maintenance manual or binder that includes all the following items:
  - (a) The completed checklist of LEED for Homes features.
  - (b) A copy of each signed Accountability Form.
  - (c) A copy of the durability inspection checklist.
  - (d) The product manufacturer's manuals for all installed equipment, fixtures, and appliances.
  - (e) General information on efficient use of energy, water, and natural resources.
  - (f) Operations and maintenance guidance for any LEED for Homes-related equipment installed in the home, including:
    1. space heating and cooling equipment;
    2. mechanical ventilation equipment;
    3. humidity control equipment;
    4. radon protection system;
    5. renewable energy system; and
    6. irrigation, rain water harvesting, and/or graywater system.
  - (g) Guidance on occupant activities and choices, including the following:
    1. cleaning materials, methods, and supplies;
    2. water-efficient landscaping;
    3. impacts of chemical fertilizers and pesticides;
    4. irrigation;
    5. lighting selection; and
    6. appliance selection.
  - (h) Educational information on "green power".
- (2) A minimum one-hour walkthrough of the home with the occupant(s), featuring the following:
  - (a) Identification of all installed equipment.
  - (b) Instruction in how to use the measures and operate the equipment.
  - (c) Information on how to maintain the measures and equipment.

#### OR NGBS 1001.1

A building owner's manual is provided that includes the following, as available and applicable.

- (1) A green building program certificate or completion document.
- (2) List of green building features (can include the national green building checklist).
- (3) Product manufacturer's manuals or product data sheet for installed major equipment, fixtures, and appliances. If product data sheet is in the building owners' manual, manufacturer's manual may be attached to the appliance to the appliance in lieu of inclusion in the building owners' manual.
- (4) Information on available local utility programs that purchase a portion of energy from renewable energy providers.
- (5) Explanation of the benefits of using energy-efficient lighting systems (e.g., compact fluorescent bulbs, light emitting diode (LED)) in high-usage areas.
- (6) A list of practices to conserve water and energy.
- (7) A diagram showing the location of safety valves and controls for major building systems.

- (8) Maintenance checklist.
- (9) List of common hazardous materials often used around the building and instruction for proper handling and disposal of these materials.
- (10) Information on organic pest control, fertilizers, deicers, and cleaning products.
- (11) Information on native landscape materials and/or those that have low-water requirements.
- (12) A narrative detailing the importance of maintenance and operation in retaining the attributes of a green-built building.

and NGBS 1002.1

Building owners/occupants are familiarized with the green building goals and strategies implemented and the impacts of the occupants' practices on the costs of operating the building. Training is provided to the responsible party(ies) regarding all equipment operation and control systems. Systems include, but are not limited to the following:

- (1) HVAC filters
- (2) Thermostat operation and programming
- (3) Lighting controls
- (4) Appliances and settings
- (5) Water heater settings
- (6) Fan controls

## Residential Major Renovation

To qualify as a High Performance Building under this program, a residential major renovation project must meet all of the following:

1. Must achieve at least Gold Certification under the USGBC LEED for Homes rating system, or at least Gold Certification under the National Green Building Standard, ICC 700-2008 (Green Building Path).
2. Evidence of meeting the LEED or the NGBS standard must be provided through independent third-party verification, which shall include blower door testing. Building Envelope Performance Criteria: 5ACH 50 (air changes per hour at 50 pascals). Envelope leakage shall be determined by a certified rater using a RESNET-approved testing protocol. Independent third-party verification will be conducted by an agency or entity having no direct affiliation or financial interest with the applicant, program or system being evaluated.
3. Under either rating system, must meet the criteria for each of the following standards:

**A. Minimize Disturbed Area of Site**

**LEED SS 1.2 OR NGBS 503.1** - See above

**B. Surface Water Management, Runoff from Roof**

**LEED SS 4.3 OR NGBS 503.4 (1), (2) and (3)**

LEED SS 4.3

Design and install one or more of the following runoff control measures:

- (1) Install permanent stormwater controls (e.g., vegetated swales, on-site rain garden, dry well, or rainwater cistern) designed to manage runoff from the home.
- (2) Have the site designed by a licensed or certified landscape design or engineering professional such that all water runoff from the home is managed through an on-site design element.

OR NGBS 503.4 (1), (2) and (3) (Lot Design)

- (1) Natural water and drainage features are preserved and used; and
- (2) A storm water management plan is developed and implemented that minimized concentrated flows and simulates flows found in natural hydrology (e.g., vegetative swales, French drains, wetlands, drywells, and rain gardens); and
- (3) All or a percentage of impervious surfaces are minimized and permeable materials are used for driveways, parking areas, walkways, and patios. (Greater than 75% of the site shall be permeable.)

**C. Water Reuse, Rainwater Harvesting System – 75%**

**LEED WE 1.1 OR NGBS 801.8** - See above

**D. Very High Efficiency Fixtures and Fittings**

**LEED WE 3.2 OR NGBS 801.4(2)(b), 801.5.1(2) and 801.6(2)** - See above

**E. Exceptional Energy Performance – HERS 65 max.**

**LEED EA 1.2 OR NGBS 702.2(3)**

LEED EA 1.2

Exceed the performance of ENERGY STAR for Homes (by achieving a 65 on the Home Energy Standards (HERS) Index).

OR NGBS 702.2(3)

Energy efficiency features are implemented to achieve energy cost performance that exceeds the 2006 ICC IECC by 35%. A documented analysis using software in accordance with ICC IECC, Section 404, or ICC IECC Section 506.2 through 506.5, applied as defined in the ICC IECC, is required.

**F. Construction Waste Reduction**

**LEED MR 3.2 OR NGBS 603.3, 605.2 and 605.3** - See above

**G. ENERGY STAR with Indoor Air Package**

See above

**H. Basic Operations Training**

**LEED AE Prerequisite 1.1 OR NGBS 1001.1 and 1002.1** - See above

## Small Business New Construction

To qualify as a High Performance Building under this program, a small business new construction project must meet all of the following:

1. Must achieve at least Gold Certification under the USGBC LEED NC Version 3 rating system or at least three globes under the GBI Green Globes rating system for New Construction. If certification is sought under Green Globes instead of LEED, it is required that the applicable LEED criteria be met as identified below. The required LEED criteria should meet or exceed the corresponding Green Globes criteria as noted.

NOTE: References identified below as "GG X.X" refer to the Green Globes Design for New Buildings and Retrofits, Rating System and Program Summary, dated December 2004.

2. Evidence of meeting the LEED or the GG standard must be provided through independent third-party verification. Independent third-party verification will be conducted by an agency or entity having no direct affiliation or financial interest with the applicant, program or system being evaluated.
3. Under either rating system, must meet the criteria for each of the following standards:

### **A. Construction Activity Pollution Prevention LEED SS Prerequisite 1 (Meets or exceed GG B.2)**

#### LEED SS Prerequisite 1

Create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan must conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit OR local standards and codes, whichever is more stringent. The plan must describe the measures implemented to accomplish the following objectives:

- (1) To prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- (2) To prevent sedimentation of storm sewers or receiving streams.
- (3) To prevent pollution of the air with dust and particulate matter.

The EPA's construction general permit outlines the provisions necessary to comply with Phase I and Phase II of the National Pollutant Discharge Elimination System (NPDES) program. While the permit only applies to construction sites greater than 1 acre, the requirements are applied to all projects for the purposes of the prerequisite.

#### GG B.2

Provide a drainage, and erosion/sediment control plan that includes measures such as limiting grading, leaving steeper slopes undisturbed, avoiding soil compaction, and providing vegetative ground cover. Include measures for the construction stage.

### **B. Site Selection LEED SS 1 (Meets or exceeds GG B.1)**

#### LEED SS 1

Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any of the following criteria:

- (1) Prime farmland as defined by the U.S. Department of Agriculture in the United States Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (citation 7CFR657.5).
- (2) Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by the Federal Emergency Management Agency (FEMA).
- (3) Land specifically identified as habitat for any species of federal or state threatened or endangered lists.
- (4) Land within 100 feet of any wetlands as defined by the U.S. Code of Federal Regulations 40 CFR, Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent.
- (5) Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries that support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act.
- (6) Land that prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (park authority projects are exempt).

#### GG B.1

- (1) Demonstrate on the site plan, how any portion of the site identified as being a wetland or wildlife corridor, agricultural land, parkland, or an area notable for its scenic beauty, will be fully preserved. Carry out all required environmental assessments.
- (2) Select a site which meets one of the following criteria:
  - (a) An existing serviced site.
  - (b) Existing minimum development density of 60,000 sq. ft./acre.
  - (c) Remediate, previously contaminated site.
- (3) Minimize the disturbance of undeveloped areas of the site. Minimize the area of the site for the building, parking, and access roads, and locate new buildings on previously disturbed parts of the site. Preserve significant trees and natural slopes to maintain the existing direction of groundwater flow. Map all the existing site vegetation.

### **C. Stormwater Design: Quantity Control LEED SS 6.1 (Edited) (Meets or exceeds GG B.3)**

#### LEED SS 6.1 (Edited)

CASE 1. Sites with Existing Imperviousness 50% or Less

Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the predevelopment peak discharge rate and quantity for the 1- and 2-year 24-hour design storms.

CASE 2. Sites with Existing Imperviousness Greater Than 50%  
Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the 2-year 24-hour design storm.

GG B.3

Provide a stormwater management plan to prevent damage to project elements, including vegetation, on both the project site and those adjacent to it. Include an engineering design of the site drainage pattern, including volume calculations and site management strategies. Aim for no increase in run-off. Or, if the site already consists of more than 50% impervious surface in its pre-development state, aim for a reduction of 25% in storm water run-off.

**D. Stormwater Design: Quality Control**  
**LEED SS 6.2 (Meets or exceeds GG B.3)**

LEED SS 6.2

Implement a stormwater management plan that reduces impervious cover, promotes infiltration and captures and treats the stormwater runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs). BMPs used to treat runoff must be capable of removing 80% of the average annual postdevelopment total suspended solids (TSS) load based on existing monitoring reports. BMPs are considered to meet these criteria if:

- (1) They are designed in accordance with standards and specification from a state or local program that has adopted these performance standards, OR
- (2) There exists infield performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol (e.g., Technology Acceptance Reciprocity Partnership [TARP], Washington State Department of Ecology) for BMP monitoring.

GG B.3

See above.

**E. Reduce Water Consumption by 40%**  
**LEED WE 3 (Meets or exceeds GG D.1)**

LEED WE 3

Employ strategies that in aggregate use 40% less water than the water use baseline calculated for the building (not including irrigation). Calculate the baseline according to the table under WE Credit 3: Water Use Reduction in LEED 2009 for New Construction and Major Renovations.

GG D.1

Achieve one of the following water performance targets:

<i>Offices</i>	Less than 1.5 m <sup>3</sup> /m <sup>2</sup> /year
	Less than 1.0 m <sup>3</sup> /m <sup>2</sup> /year
	Less than 0.5 m <sup>3</sup> /m <sup>2</sup> /year
<i>MURBs</i>	Less than 300 m <sup>3</sup> /apartment/year
	Less than 150 m <sup>3</sup> /apartment/year

Less than 50 m<sup>3</sup>/apartment/year

## **F. Innovative Wastewater Technologies**

### **LEED WE 2 (Meets or exceeds GG D.2 and D.3)**

#### LEED WE 2

OPTION 1 – Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (e.g., water closets, urinals) or nonpotable water (e.g., captured rainwater, recycled graywater, on-site or municipally treated wastewater). OR

OPTION 2 – Treat 50% of wastewater on-site to tertiary standards. Treated water must be infiltrated or used on-site.

#### GG D.2

- (1) Increase water-efficiency through the use of the following technologies:
  - (a) Low flush toilets (less than or equal to 6 liters)
  - (b) Water-saving fixtures on faucets (7.5 L/min) and showerheads (9.0 L/min)
  - (c) Urinals with proximity detectors or waterless urinals where applicable
  - (d) Other appliances such as water efficient (H-axis) washing machines + low water dishwashers (38 L) where applicable
- (2) Where applicable, install features to minimize the consumption of make-up water for wet-cooling towers.

#### GG D.3

- (1) Where feasible, integrate a graywater collection, storage and distribution system to collect, store, treat and redistribute laundry and bathing effluent for toilet flushing, irrigation, janitorial cleaning, cooling and car washing.
- (2) Where feasible, integrate a biological waste treatment system for the site and building such as peat moss drain fields, constructed wetlands, aerobic treatment systems, solar aquatic waste systems (or living machines), and composting or ecologically-based toilets.

## **G. Enhanced Commissioning**

### **LEED EA Prereq. 1 and EA Credit 3 (Meets or exceeds GG A.3)**

#### LEED EA Prerequisite 1

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1: Fundamental Commissioning of Building Energy Systems and in accordance with the LEED Reference Guide for Green Building Design and Construction, 2009 Edition:

- (1) Prior to the start of the construction documents phase, designate an independent commissioning authority (CxA) to lead, review and oversee the completion of all commissioning process activities.
  - (a) The CxA must have documented commissioning authority experience in at least 2 building projects.
  - (b) The individual serving as the CxA:
    - i. Must be independent of the work of design and construction.

- ii. Must not be an employee of the design firm, though he or she may be contracted through them.
  - iii. Must not be an employee of, or contracted through, a contractor or construction manager holding construction contracts.
- (c) The CxA must report results, findings and recommendations directly to the owner.
- (2) The CxA must conduct, at a minimum, 1 commissioning design review of the owner's project requirements, basis of design, and design documents prior to the mid-construction documents phase and back-check the review comments in the subsequent design submission.
  - (3) The CxA must review contractor submittals applicable to systems being commissioned for compliance with the owner's project requirements and basis of design. This review must be concurrent with the review of the architect or engineer of record and submitted to the design team and the owner.
  - (4) The CxA or other project team members must develop a systems manual that gives future operating staff the information needed to understand and optimally operate the commissioned systems.
  - (5) The CxA or other project team members must verify that the requirements for training operating personnel and building occupants have been completed.
  - (6) The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.

#### LEED EA 3

Implement, or have a contract in place to implement, the following additional commissioning process activities in addition to the requirements of EA Prerequisite 1: Fundamental Commissioning of Building Energy Systems and in accordance with the LEED Reference Guide for Green Building Design and Construction, 2009 Edition:

- (1) Prior to the start of the construction documents phase, designate an independent commissioning authority (CxA) to lead, review and oversee the completion of all commissioning process activities.
- (2) The CxA must have documented commissioning authority experience in at least 2 building projects.
- (3) The individual serving as the CxA:
  - (a) Must be independent of the work of design and construction.
  - (b) Must not be an employee of the design firm, though he or she may be contracted through them.
  - (c) Must not be an employee of, or contracted through, a contractor or construction manager holding construction contracts.
  - (d) May be a qualified employee or consultant of the owner.
- (4) The CxA must report results, findings and recommendations directly to the owner.
- (5) The CxA must conduct, at a minimum, 1 commissioning design review of the owner's project requirements basis of design, and design documents prior to the mid-construction documents phase and back-check the review comments in the subsequent design submission.
- (6) The CxA must review contractor submittals applicable to systems being commissioned for compliance with the owner's project requirements and basis of design. This review must be concurrent with the review of the architect or engineer of record and submitted to the design team and the owner.

- (7) The CxA or other project team members must develop a systems manual that gives future operating staff the information needed to understand and optimally operate the commissioned systems.
- (8) The CxA or other project team members must verify that the requirements for training operating personnel and building occupants have been completed.
- (9) The CxA must be involved in reviewing the operation of the building with operations and maintenance (O&M) staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.

#### GG A.3

- (1) Engage an independent Commissioning Authority.
- (2) Provide “Design Intent” and “Basis of Design” documentation.
- (3) Include commissioning requirements in the Construction Documentation.
- (4) Develop a Commissioning Plan.

### **H. Fundamental Refrigerant Management**

#### **LEED EA Prerequisite 3 (Meets or exceeds GG F.2)**

##### LEED EA Prerequisite 3

Zero use of chlorofluorocarbon (CFC)-based refrigerants in new base building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion.

#### GG F.2

- (1) Select refrigeration systems that avoid the use of ozone-depleting substances (ODS) and potent industrial greenhouse gases (PIGGs).
- (2) Select refrigerants that have an ozone-depleting potential (ODP) equal to zero, or at a minimum, less than 0.05.
- (3) Ensure the air-conditioning system complies with the requirements of the Federal Halocarbon Regulations under CEPA and the Safety Code for Mechanical Refrigeration ASHRAE 15-1994.

### **I. Optimize Energy Performance – 40%**

#### **LEED EA 1 (Meets or exceeds GG C.1)**

##### LEED EA 1

Demonstrate a 40% improvement in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance rating according to the building performance rating method in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project.

#### GG C.1

Achieve a rating of 87% under the Energy Star Target Finder program.

**J. Measurement & Verification**  
**LEED EA 5 (Meets or exceeds GG requirement to use EPA ENERGY STAR Target Finder)**

LEED EA 5

Develop and implement a measurement and verification (M&V) plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2) or Option B: Energy Conservation Measure Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003. The M&V period must cover at least 1 year of post-construction occupancy. Provide a process for corrective action if the results of the M&V plan indicate that energy savings are not being achieved.

**K. Storage and Collection of Recyclables**  
**LEED MR Prerequisite (Meets or exceeds GG E.7)**

LEED MR Prerequisite 1

Provide an easily-accessible dedicated area or areas for the collection and storage of materials for recycling for the entire building. Materials must include, at a minimum: paper, corrugated cardboard, glass, plastics and metals.

GG E.7

Provide adequate handling and storage facilities for future occupants to recycle materials and compost organic waste.

**L. Construction Waste Management: Divert 50% From Disposal**  
**LEED MR 2.1 (Meets or exceeds GG E.6)**

LEED MR 2.1

Recycle and/or salvage nonhazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or comingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume, but must be consistent throughout. The minimum percentage debris to be recycled or salvaged is 50%.

GG E.6

Develop and implement a construction, demolition and renovation waste management plan.

**M. Minimum Indoor Air Quality Performance**  
**LEED IEQ Prerequisite 1 (Meets or exceeds GG G.1)**

LEED IEQ Prerequisite 1

Meet the minimum requirements of Sections 4 through 7 of ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality (with errata but without addenda).

AND

#### CASE 1 – Mechanically Ventilated Spaces

Mechanical ventilation systems must be designed using the ventilation rate procedure of the applicable local code, whichever is more stringent.

#### CASE 2 – Naturally Ventilated Spaces

Naturally ventilated buildings must comply with ASHRAE Standard 62.1-2007, Paragraph 5.1 (with errata but without addenda).

#### GG G.1

- (1) Avoid entraining pollutants into the ventilation air path by:
  - (a) Positioning air intakes and outlets at least 10 m apart, and inlets and not downwind of outlets.
  - (b) Locating inlets more than 20 m from major sources of pollution and at least the minimum recommended distances from lesser sources of pollution.
  - (c) Protecting air intakes openings.
  - (d) Specifying ventilation lining that will avoid the release of pollution and fibers into the ventilation air path.
- (2) Provide ventilation in accordance with ANSI/ASHRAE 62-2001
- (3) Verify that the ventilation system provides effective air exchange (that the outdoor air delivered to the space actually reaches the occupants)
- (4) Monitor indoor air quality either with CO<sub>2</sub> monitoring or electronic airflow monitoring
- (5) Provide a mechanical ventilation system that has the capability of flushing-out the building with 100% outside air at ambient temperatures above 0 ° C
- (6) Provide mechanical ventilation in enclosed parking areas
- (7) Specify personal controls over the ventilation rates, or, in naturally ventilated buildings, operable windows or trickle vents on windows
- (8) Specify a minimum filter efficiency of 65% arrestance, or 40% atmospheric dust-spot efficiency for air distributed to occupied spaces

#### **N. Environmental Tobacco Smoke Control**

##### **LEED IEQ Prerequisite 2**

##### LEED IEQ Prerequisite 2

Prohibit smoking in the building. Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property.

## Small Business Major Renovation

To qualify as a High Performance Building under this program, a small business major renovation project must meet all of the following:

1. Must achieve at least Gold Certification under the USGBC LEED NC Version 3 rating system or at least three globes under the GBI Green Globes rating system for New Construction. If certification is sought under Green Globes instead of LEED, it is required that the applicable LEED criteria be met as identified below. The required LEED criteria should meet or exceed the corresponding Green Globes criteria as noted.

NOTE: References identified below as "GG X.X" refer to the Green Globes Design for New Buildings and Retrofits, Rating System and Program Summary, dated December 2004.

4. Evidence of meeting the LEED or the GG standard must be provided through independent third-party verification. Independent third-party verification will be conducted by an agency or entity having no direct affiliation or financial interest with the applicant, program or system being evaluated.

2. Under either rating system, must meet the criteria for each of the following standards:

**A. Construction Activity Pollution Prevention**

**LEED SS Prerequisite 1 (Meets or exceed GG B.2) - See above**

**B. SS Credit 5.1 Site Development: Protect or Restore Habitat**

**LEED SS 5.1 (Meets or exceeds GG B.1)**

LEED SS 5.1

Restore or protect a minimum of 50% of the site (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or adapted vegetation.

GG B.1

- (1) Demonstrate on the site plan, how any portion of the site identified as being a wetland or wildlife corridor, agricultural land, parkland, or an area notable for its scenic beauty, will be fully preserved. Carry out all required environmental assessments.
- (2) Select a site which meets one of the following criteria:
  - (a) An existing serviced site.
  - (b) Existing minimum development density of 60,000 sq. ft./acre.
  - (c) Remediate, previously contaminated site.
- (3) Minimize the disturbance of undeveloped areas of the site. Minimize the area of the site for the building, parking, and access roads, and locate new buildings on previously disturbed parts of the site. Preserve significant trees and natural slopes to maintain the existing direction of groundwater flow. Map all the existing site vegetation.

**C. Stormwater Design: Quantity Control**  
**LEED SS 6.1 (Edited) (Meets or exceeds GG B.3)** – See above

**D. Stormwater Design: Quality Control**  
**LEED SS 6.2 (Meets or exceeds GG B.3)** – See above

**E. Reduce Water Consumption by 35%**  
**LEED WE 3 (Meets or exceeds GG D.1)**

LEED WE 3

Employ strategies that in aggregate use 35% less water than the water use baseline calculated for the building (not including irrigation). Calculate the baseline according to the table under WE Credit 3: Water Use Reduction in LEED 2009 for New Construction and Major Renovations.

GG D.1

Achieve one of the following water performance targets:

<i>Offices</i>	Less than 1.5 m <sup>3</sup> /m <sup>2</sup> /year
	Less than 1.0 m <sup>3</sup> /m <sup>2</sup> /year
	Less than 0.5 m <sup>3</sup> /m <sup>2</sup> /year
<i>MURBs</i>	Less than 300 m <sup>3</sup> /apartment/year
	Less than 150 m <sup>3</sup> /apartment/year
	Less than 50 m <sup>3</sup> /apartment/year

**F. Innovative Wastewater Technologies**  
**LEED WE 2 (Meets or exceeds GG D.2 and D.3)** - See above

**G. Enhanced Commissioning**  
**LEED EA Prereq. 1 and EA Credit 3 (Meets or exceeds GG A.3)** - See above

**H. Fundamental Refrigerant Management**  
**LEED EA Prerequisite 3 (Meets or exceeds GG F.2)** - See above

**I. Optimize Energy Performance – 30%**  
**LEED EA 1 (Meets or exceeds GG C.1)**

LEED EA 1

Demonstrate a 30% improvement in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance rating according to the building performance rating method in Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project.

GG C.1

Achieve a rating of 84% under the Energy Star Target Finder program.

**J. Measurement & Verification**

- LEED EA 5 (Meets or exceeds GG requirement to use EPA ENERGY STAR Target Finder)**  
– See above
- K. Storage and Collection of Recyclables**  
**LEED MR Prerequisite (Meets or exceeds GG E.7) - See above**
- L. Construction Waste Management: Divert 50% From Disposal**  
**LEED MR 2.1 (Meets or exceeds GG E.6) - See above**
- M. Minimum Indoor Air Quality Performance**  
**LEED IEQ Prerequisite 1 (Meets or exceeds GG G.1) - See above**
- N. Environmental Tobacco Smoke Control**  
**LEED IEQ Prerequisite 2 - See above**

**ATTACHMENT II**

[Applicant Letterhead]

Date  
Applicant Name  
Applicant Address  
Applicant Address  
Applicant City, PA, Zip Code

Project Name  
Project Address  
Project Address  
Project City, PA, Zip Code

To the Board Members of the Commonwealth Financing Authority:

[**APPLICANT NAME**] is requesting financial assistance under the Commonwealth Financing Authority's (CFA) for a High Performance Building under the Alternative Clean Energy (ACE) Program. The [**PROJECT OR BUILDING NAME**] is located at [**ADDRESS**] in the Commonwealth of Pennsylvania, and will comply with all required CFA ACE program guidelines and will achieve one of the following standards or higher:

- USGBC LEED Gold
- GBI Green Globes, Three Globes
- NGBS Gold Certification

The [**APPLICANT NAME**] will utilize the [**NAME AND VERSION OF RATING SYSTEM**] in the design and construction of the building. We fully understand and agree with all terms and conditions of the Alternative Clean Energy Program, hereby acknowledging that if the above listed level of certification, or higher, is not achieved [**APPLICANT NAME**] will not receive CFA funding under this program.

\_\_\_\_\_  
Applicant Signature

\_\_\_\_\_  
Date