

Energy Efficiency and Sustainable Construction Standards for State Buildings

Georgia Peach **Green** Building Rating System



In accordance with the
Energy Efficiency and Sustainable Construction Act of
2008 (O.C.G.A. §50-8-18)

June 2013

History and Purpose

- The Energy Efficiency and Sustainable Construction Act of 2008 (the “Act”, codified at O.C.G.A. § 50-8-18)
- Rate and recognize buildings owned or managed by the state that optimize energy performance
- Increase the demand for materials and furnishings produced in Georgia, conserve energy
- Improve the environmental quality in this state, protect the state’s natural resources, and reduce the burden on the state’s water supply

Structure and Management of the Peach Program

- Comprised of an Executive Committee and a Review Committee
- Executive Committee consist of members from the leadership of GSFIC, BOR & GEFA
- The Review Committee consists of three (3) employees of the State of Georgia and Four (4) members from Industry Partners
- Executive Committee may appoint Affiliate Members to the Review Committee
- Review Committee shall meet at least on a quarterly basis
- **Questions/Comments? Submit to:**
 - Peach Committee Chairman – Gifton Passley, GSFIC
 - Phone – (404) 463-5772
 - Email – georgiapeach@docs.e-builder.net

Peach Award Nomination Submittals

- Submitted by an Authorized Representative of the Using Agency
- Each nomination to be accompanied by check for \$1,000 payable to GSFIC
- Submittal Status will be provided within three (3) months of the submission date
- Award will be Certification Letter and Plaque
- Email Submittals in PDF format to Gifton Passley, GSIFC Committee Chairman
- (georgiapeach@docs.e-builder.net)

Why Pursue GA Peach Green Building Certification

- Improves occupant health/quality of life
- Better thermal comfort
- Boosts employee and student productivity
- Better employee retention and attraction
- Reduces long-term operating and occupancy costs
- Elevates student knowledge of sustainability
- Better indoor air quality work environment
- Reduce energy consumption/helps reduce USA demand for foreign energy sources
- Reduces greenhouse gas emissions/smaller carbon footprint
- Saves water resources
- Public award recognition & press release posted on websites
- Use of GA base products to support local economy & jobs

Scope

Construction, Rehabilitation and Maintenance of State-Funded Facilities:

- New construction building projects exceeding 10,000 SF
- A renovation project that is more than 50% of the replacement value of the facility (as determined by the Dept. of Administrative Services Risk Management Division)
- Any change in occupancy
- Any roof replacement project exceeding 10,000 SF
- A commercial interior tenant fir-out project exceeding 10,000 SF of leasable area where the state is intended to be the lessor of such property
- Exception: Any building, regardless of size, that does not have conditioned space as defined by ASHRAE or a state owned building that is on the historical registry or any local, county or municipal building

Rating System Point Scale

Minimum Requirements

- Fundamental Commissioning
- Water-Use Reduction
- Georgia-based Materials

Mandatory (No Points)

Mandatory (No Points)

Mandatory (No Points)

Incentives

- Additional (Enhanced) Commissioning
- Water-Use Reduction
- Georgia-based Materials & Resources
- Energy Modeling & Life Cycle Cost Analysis





10 Points

2-20 Points

2-20 Points

5-50 Points

Total Point Certification Level

- 12-30 Points = 
- 31-50 Points = 
- 51-70 Points = 
- 71-100 Points = 

Owner's Project Requirements

Document that details the following:

- Owner's expectations & goals
- General project description
- Program objectives, requirements and functions
- Codes and regulations
- General quality of materials & construction
- Occupancy requirement
- Performance criteria/energy efficiency
- Cost (budget considerations & limitations)
- Indoor environmental quality requirements

Basis of Design (BOD)

BOD = The concepts, basis of calculations, decisions and product selections used to meet the OWNER'S PROJECT REQUIREMENTS

- Systems narratives (types of systems & quality of materials)
- Codes & regulations
- Indoor/outdoor design criteria (temperature/humidity)
- Building envelope criteria (thermal performance)
- Life safety requirements
- Noise design criteria
- Indoor air quality criteria

What is Commissioning?

A systematic process of ensuring that systems are designed, installed, functionally tested, documented and capable of being operated and maintained per the design intent and the Owner's project requirements.

The best benefit is to start Cx early in the design phase (Enhanced Cx) and continue the process through the phases of design, construction and the life of the facility.

Benefits of Commissioning

- Better bid documents
- More accurate budgets
- More “control” of project
- Projects delivered on time
- Fewer change orders
- Fewer warranty issues
- Satisfied Client

Team Effort

Commissioning succeeds when...

- Every team member understands and carries out their responsibilities
- Every team member cooperates and coordinates with each other and third-party agencies

Communication and accountability are essential for effective teamwork – and these are the responsibility of the commissioning authority

Commissioning Plan

- A descriptive “roadmap” of the Cx process for the project
- Outlines the Cx process (organization, schedule, resources, documentation)
- Define Cx scope
- Lists systems to be commissioned
- Details rigor of commissioning
- Cx team roster
- Roles & responsibilities
- Cx team communication & reporting protocols
- Construction observation/Cx Issues Log/ Deficiency Resolution
- Prefunctional checklist requirements
- Functional Performance Test procedures
- Training/O&M procedures

What is Commissioning?

(Validates the “design”?!)

Commissioning

“retro” ;
“re”; or
“ongoing”
Cx

**Commissioning
validates the design!**
That the design works and
meets the “design intent”



Design
Intent



Design

Construction

O & M

That the construction is installed
correctly per the “design”

“Inspections”
validate
construction



Changing
Needs

This is not commissioning!

Water Use Reduction - Mandatory

- Minimum reduction in water use 15% less than current adopted minimum International Plumbing Code baseline water usage
- Strategies
 - Utilize “high-efficiency” plumbing fixtures
 - Low flow urinals 1/8 GPF
 - Waterless urinals
 - Sensor faucets with 0.5 GPM aerators
 - Sensor faucets with 0.3 GPM aerators
 - Low flow toilets with 1.1-1.28 GPF
 - Dual-flush toilets 1.6/0.8 GPF
 - Low flow shower heads 1.8/1.5/1.0 GPM
 - Low flow kitchen faucets 1.8 GPM

Georgia-based Materials & Products - Mandatory

- Required – min 10% of all building materials used
- Qualifying products harvested, extracted or manufactured within Georgia
- Strategies
 - Establish project goals
 - Identify materials & suppliers
 - Submittal review for verification
 - Construction review for verification
 - GC to track materials & cost of products
 - GC provides documentation
- Project Costs
 - Default Materials Value (DMV)
 - DMV based on construction costs (work Divisions 2-10 only)
 - Apply a 45% factor to total construction cost (includes labor & equipment) ex:
 $DMV = \text{total construction cost} \times 0.45$
 - Actual Materials Value (AMV)
 - $AMV = \text{actual materials cost}$ (Divisions 2-10 only, excludes labor & equipment)

Incentive - Enhanced Commissioning

Value = 10 Points

- 2 Design peer reviews (50% CDs, 95% CDs) – Document Review Log with responses, track resolution
- Independent submittal review of commissioned systems
- MEP Systems Manual
- O&M and Occupant Training Verification

Incentive – Water Use Reduction

Baseline – 15% less than current adopted minimum International Plumbing Code requirements

Water-Use Reduction Percentage

15%

25%

35%

45%

55%

65%

75%

85%

95%

100%

Points Earned

0 (Minimum Requirement)

2

4

6

8

10

12

14

16

20

Incentive – Georgia-based Materials & Products

Georgia-based Materials &
Products Percentage

Points Earned

10%	0 (Minimum Requirement)
20%	2
30%	4
40%	6
50%	8
60%	10
70%	12
80%	14
90%	16
100%	20

Incentive – Energy Modeling & Life Cycle Cost Analysis

5 to 50 Points

Energy Modeling

- Computer simulation of building envelope & MEP systems
- Comparison – “baseline” building per Current Adopted International Energy Code (ASHRAE 90.1) vs “proposed” building per ASHRAE 90.1

Energy Cost Savings Percentage

Points Earned

0%	0 (Minimum Requirement)
5%	5
10%	10
15%	15
20%	20
25%	25
30%	30
35%	35
40%	40
45%	45
50%	50

Life Cycle Cost Analysis

- “Simple” payback analysis
 - Payback 7 years max without performing further analysis
- Computer simulation analysis comparing “baseline” project with “proposed” project
 - Payback 10 years max (higher first cost offset by lower operating costs & maintenance)
- Checklist forms

GA Peach Application Submittals

- Mandatory
 - Executive Project Summary
 - Commissioning Checklist
 - Water-use Reduction Checklist
 - GA-based Materials & Products Checklist
- Incentives
 - Additional (Enhanced) Commissioning Checklist
 - Water-use Reduction Checklist
 - GA-based materials & Products Checklist
 - Energy Modeling Checklist
 - Life Cycle Cost Analysis

Executive Project Summary

- Building/facility outlining the scope
- Number of Stories
- Gross Square Footage
- Stated Cost Limitation
- Project Duration
- Other Key Characteristics/Information of the Building/Facility/Building Photos (4 max)
- Primary Point of Contact (name, phone #, email)
- Design & Construction Team Key Members (Design Professionals of Record – Architect, MEP Engineers; General Contractor, MEP subcontractors)

Resources

- GA Peach Rating System – <http://www.dca.state.ga.us/>
- GA State Financing & Investment Commission (GSFIC) Cx Guidelines – <http://gsfic.georgia.gov/>
- AABC Commissioning Group – www.commissioning.org
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE Guideline 0-2005) – www.ashrae.org
- Building Commissioning Association – www.bcxa.org
- Building Commissioning Guide, Office of Energy Efficiency & Renewable Energy Federal Energy Management Program, US Dept. of Energy – www.eere.energy.gov
- California Commissioning Collaborative (CCC) – www.cacx.org/
- Cx Assistant Commissioning Tool – www.ctg-net.com/edr2002/cx/
- *The Building Commissioning Handbook*, Second Edition by John A. Heinz & Rick Casault, The Building Commissioning Association, 2004: <http://www.bxca.org/resources/index.shtm>
- US General Services Administration (GSA), *The Building Commissioning Guide* – <http://www.wbdg.org/ccb/GSAMAN/buildingcommissioningguide.pdf>
- Portland Energy Conservation, Inc. (PECI) – <http://www.peci.org/>

Water-Use Reduction

- The Environmental Protection Agency's "Water Sense" Label identifies plumbing fixtures and fittings that effectively meet the 15 percent reduction in water use when compared to water use based on plumbing fixture selection in accordance with the current adopted International Plumbing Code
<http://www.iccsafe.org/cs/PMG/Pages/default.aspx>
- U.S. Environmental Protection Agency's Water Use Efficiency Program: <http://www.epa.gov/owm/water-efficiency/>

Georgia-based Materials & Products

- Georgia Dept. of Economics Development Manufacturing Homepage:
<http://www.georgia.org/Business/Industries/Manufacturing.htm>
- Georgia Dept. of Economic Development Manufacturing Directory:
<http://georgiafacts.net/location/manufacturing.aspx?s=0.0.5.3013>
- Georgia Dept. of Economic Development's Manufacturing Directory with Environmentally Preferable Purchasing designations:
<http://georgiafacts.net/net/location/manufacturing.aspx?s=0.0.5.3013&TypeID=70200>
- Georgia Forestry Commission's Forest Marketing and Forest Products Directory: <http://www.gfc.state.ga.us>

Energy Modeling & Life Cycle Cost Analysis Resources

- DOE process for commercial energy compliance: www.energycodes.gov/implement/determinations.com.stm
- Energy Modeling Software:
 - eQuest: <http://www.doe2.com/equest>
 - DOE-2: <http://www.doe2.com/>
 - e+ Energy Plus: <http://apps.1.eere.energy.gov/buildings/energyplus/>
 - Trane Trace 700: <http://www.trane.com/CPS/Uploads/UserFiles/CD5%20files/TRACE/CDS-SLB005-EN.pdf>
 - Carrier “Hourly Analysis Program” (HAP): http://www.commercial.carrier.com/commercial/hvac/general/0,,CLI1_DIV12_ETI11936,00.html
 - Energy Soft/EnergyPro: <http://www.energysoft.com/>
- Life Cycle Cost Analysis Software:
 - ASTM standard for LCC: <http://www.astm.org/Standards/E917.htm>
 - ATHENA EcoCalculator for Assemblies: <http://www.athenasmi.org/tools/ecoCalculator/>
 - Building Life-Cycle Cost (BLCC): <http://www1.eere.energy.gov/femp/program/lifecycle.html>
 - Building for Environmental & Economic Sustainability (BEES): <http://www.wbdg.org/tools/bees.php>
 - ECOTECT: <http://ecotect.com/products/ecotect>
 - Facility Energy Decision System (FEDS): <http://www.pnl.gov/FEDS/>
 - Federal Energy Management Program (FEMP), Building Life-Cycle Cost (BLCC) Programs: http://www1.eere.energyenergy.gov/femp/information/download_blcc.htm#blcc5
 - Building & Fire Research Laboratory (BRFL) – “Life Cycle Costing Manual for the Federal Energy Management Program”: <http://www.bfrl.nist.gov/oaepublications/handbooks/135.pdf>

PEACH PLAQUE

