

A Tale of Two Green Building Approaches

A Delightful Comparison of IgCC and LEED

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Introduction

Premise

The Maryland High Performance Buildings Act (S.B. 208) requires that construction or major renovation of buildings funded solely with state funds achieve at least a LEED Silver rating or Two Green Globes.

The Maryland Department of Transportation (MDOT) is exempt, but wanted to explore the merits of sustainable construction policies.



Introduction

IgCC and LEED Overview

IgCC

- Initiated in 2009
- A ***construction code***
- Adopted by State/Local Authorities in part or in whole
- Buildings either meet or don't meet code (no recognition of different levels of "green")
- Adopted in 2011 by Maryland as an option for commercial & residential construction.

LEED

- Initiated in 2000
- A ***rating system***
- Pursued by Project Owners
- Buildings certified at different levels (Platinum, Gold, Silver, Certified) based on design elements
- Adopted in 2008 as a requirement (Silver) for buildings >7,500 sq.ft.



Introduction

Project Scope

- Compare IgCC against LEED and the existing Maryland Code to broadly identify potential cost and time impacts
- In this presentation, we summarize
 - Brief Overviews of IgCC, LEED and MD Code Compared
 - Key Findings: ● = Less Time/Cost, ● = Moderate Time/Cost, ● = More Time/Cost
(-) = No applicable requirement

**Note that our analysis excludes IgCC Chapters 1 – 3 as they are introductory chapters.*



Introduction

Why is this useful?

- Agencies considering adoption of the IgCC should be aware of the similarities and differences with LEED requirements
- Agencies should have a understanding of green building practices, standards, and codes that may have an impact on project cost and schedule



IgCC Chapter 4 & LEED (SS)

Overview

- IgCC Chapter 4 provides regulations for building site development, land use, and natural resources
- Similar in many instances to LEED Sustainable Sites (SS), with comparable intent and requirements
- Maryland Code is primarily comparable under the stormwater management regulations, in which Maryland is more comprehensive than IgCC & LEED



IgCC Chapter 4 & LEED (SS)

Key Findings

| Site Development Implementation | IgCC | | LEED | | MD Code | |
|---------------------------------------|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Natural Resources | | | | | | |
| Stormwater Management | | | | | | |
| Landscape Irrigation | | | | | - | - |
| Vegetation, Soils and Erosion Control | | | | | - | - |
| Building Site Waste Management | | | - | - | - | - |
| Transportation Impact | | | | | - | - |
| Heat Island Mitigation | | | | | - | - |
| Site Lighting | | | | | - | - |
| Other Provisions | | | - | - | | |



IgCC Chapter 5 & LEED (MR)

Overview

- IgCC Chapter 5 provides regulations for building materials used during and after construction
- Similar in many instances to LEED Materials and Resources (MR), with comparable intent and requirements
- There is no comparable standard under the Maryland Code



IgCC Chapter 5 & LEED (MR)

Key Findings

| Building Materials Implementation | IgCC | | LEED | | MD Code | |
|------------------------------------|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Construction Material Management | ● | ● | ● | ● | ● | ● |
| Construction Waste Management | ● | ● | ● | ● | - | - |
| Waste Management and Recycling | ● | ● | ● | ● | - | - |
| Material Selection | ● | ● | ● | ● | - | - |
| Lamps | ● | ● | - | - | - | - |
| Building Envelope Moisture Control | ● | ● | - | - | - | - |



IgCC Chapter 6 & LEED (EA)

Overview

- IgCC Chapter 6 provides regulations for buildings that promote energy conservation and reduction in CO₂ emissions
- Similar in many instances to LEED Energy and Atmosphere (EA), with comparable intent and requirements
- In general, IgCC requires a reduction in **energy use**, and LEED requires reduction in **energy costs**, which complicates the comparison of these two standards
- The Maryland Code, which is based on the International Energy Conservation Code (IECC), is somewhat comparable to IgCC and LEED, but is overall less stringent



IgCC Chapter 6 & LEED (EA)

Key Findings

Energy Efficiency Implementation

| | IgCC | | LEED | | MD Code | |
|---------------------------------------|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Modeled Performance Pathway | ● | ● | ● | ● | ● | ● |
| Energy Metering/Monitoring/Reporting | ● | ● | ● | ● | ● | ● |
| Automated Demand-Response | ● | ● | - | - | - | - |
| Building Envelope Systems | ● | ● | ● | ● | ● | ● |
| Building Mechanical Systems | ● | ● | ● | ● | ● | ● |
| Building Water Heating Systems | ● | ● | ● | ● | ● | ● |
| Electrical Power and Lighting Systems | ● | ● | ● | ● | ● | ● |
| Specific Appliances and Equipment | ● | ● | ● | ● | ● | ● |
| Building Renewable Energy Systems | ● | ● | ● | ● | - | - |
| Energy Systems Commissioning | ● | ● | ● | ● | - | - |



IgCC Chapter 7 & LEED (WE)

Overview

- IgCC Chapter 7 provides regulations for conserving water, protecting water quality, and providing safe water consumption
- Similar in many instances to LEED Water Efficiency (WE), with comparable intent and requirements
- There is no comparable standard under the Maryland Code



IgCC Chapter 7 & LEED (WE)

Key Findings

| Water Efficiency Implementation | IgCC | | LEED | | MD Code | |
|---|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Fixtures, Fittings, and Equipment | ● | ● | ● | ● | ● | ● |
| HVAC Systems and Equipment | ● | ● | ● | ● | ● | ● |
| Water Treatment Devices <i>(optional)</i> | ● | ● | ● | ● | - | - |
| Water Metering/Reporting | ● | ● | ● | ● | - | - |
| Nonpotable Water Requirements | ● | ● | - | - | - | - |
| Rainwater Collection <i>(optional)</i> | ● | ● | ● | ● | - | - |
| Graywater Systems <i>(optional)</i> | ● | ● | ● | ● | ● | ● |
| Reclaimed Water Systems <i>(optional)</i> | ● | ● | ● | ● | - | - |
| Alternate Onsite Nonpotable Water | ● | ● | - | - | - | - |



IgCC Chapter 8 & LEED (IAQ)

Overview

- IgCC Chapter 8 provides regulations for indoor air quality, HVAC control, acoustics and daylighting
- Similar in many instances to LEED Indoor Environmental Quality (IEQ), with comparable intent and requirements
- There is no comparable standard under the Maryland Code



IgCC Chapter 8 & LEED (IAQ)

Key Findings

| Indoor Quality Implementation | IgCC | | LEED | | MD Code | |
|------------------------------------|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Indoor Air Quality Plan | ● | ● | ● | ● | - | - |
| HVAC Ease of Maintenance | ● | ● | - | - | - | - |
| HVAC Systems | ● | ● | ● | ● | ● | ● |
| IAQ and Pollutant Control Measures | ● | ● | ● | ● | - | - |
| Prohibited Materials | ● | ● | - | - | - | - |
| Materials Emissions | ● | ● | ● | ● | - | - |
| Acoustics <i>(optional)</i> | ● | ● | - | - | - | - |
| Daylighting | ● | ● | ● | ● | - | - |



IgCC Chapter 9 & LEED (EA)

Overview

- IgCC Chapter 9 provides requirements for Commissioning of all buildings
- Similar to prerequisites and credits under LEED Energy and Atmosphere (EA), with comparable intent and requirements
- There is no comparable standard under the Maryland Code



IgCC Chapter 9 & LEED (EA)

Key Findings

| Commissioning Implementation | IgCC | | LEED | | MD Code | |
|-------------------------------------|-------------|------|-------------|------|----------------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Approved Agency | ● | ● | ● | ● | - | - |
| Commissioning Plan | ● | ● | ● | ● | - | - |
| Building Operations and Maintenance | ● | ● | ● | ● | - | - |



IgCC Chapter 10 & LEED

Overview

- IgCC Chapter 10 provides regulations for existing structures to ensure that the IgCC is possible and practical for a variety of existing conditions
- Loosely comparable to a variety of LEED prerequisites and credits
- There is no comparable standard under the Maryland Code



IgCC Chapter 10 & LEED

Key Findings

| Existing Buildings Implementation | IgCC | | LEED | | MD Code | |
|-----------------------------------|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Additions | ● | ● | - | - | - | - |
| Alterations to Existing Buildings | ● | ● | ● | ● | - | - |
| Change of Occupancy | ● | ● | - | - | - | - |
| Historic Buildings | ● | ● | - | - | - | - |
| Demolition | ● | ● | ● | ● | - | - |
| Jurisdictional Requirements | ● | ● | - | - | - | - |



IgCC Chapter 11 & LEED

Overview

- IgCC Chapter 11 provides regulations for additions and alterations to existing and historic building sites
- There are no comparable prerequisites or credits under the LEED Rating System
- Maryland Code, which is based on the International Existing Building Code (IEBC), is comparable. However, the IEBC is intended for buildings and not building sites



IgCC Chapter 11 & LEED(SS)

Key Findings

| Existing Site Implementation | IgCC | | LEED | | MD Code | |
|--|------|------|------|------|---------|------|
| | Time | Cost | Time | Cost | Time | Cost |
| Additions | ● | ● | - | - | ● | ● |
| Alterations to Existing Building Sites | ● | ● | - | - | ● | ● |
| Change of Occupancy | ● | ● | - | - | - | - |
| Historic Building Sites | ● | ● | - | - | ● | ● |



Summary

Key Findings

- Comparing the IgCC vs LEED can be complicated due to fundamental differences between the two systems
- Overall, IgCC is more stringent than LEED
- Energy Conservation and Water Resource Conservation requirements under the IgCC and LEED have the potential to substantially increase the construction cost of the project
- Impacts to project cost and schedule may be offset by lower O&M costs

Thank You!

