



**ENERMODAL
ENGINEERING**

Creating energy and resource efficient buildings



Taking the Fear out of LEED® Projects

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What's my role?



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When I was a contractor, I worked on new homes. It was a fact that every problem a trade encountered was somehow attributed to (blamed on ☺) the people that came before them. But no matter what the problem, it would still need to be dealt with in order for that trade to fulfill their responsibilities. The point is that you as contractors are the last ones in on a LEED project. The thing to remember is that a committed owner and a good design cannot guarantee a LEED building. You are the ones that make it happen.



The Message

- Building **green** is an essential part of any strategy for creating a sustainable future...
- Green buildings are not overly difficult or expensive
- They provide ecological and social benefits and
- Significant long-term economic savings...



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What is a Green Building?

- **Significant improvement over conventional buildings in five areas:**
 - environmental & resource impacts
 - water consumption
 - energy efficiency
 - durability and longevity
 - indoor environment
- **Exceeds code requirements**
- **Who determines a building's "green-ness"?**



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Measuring Green

- **Canadian Green Building Council (CaGBC)**

- National non-profit organization founded in 2002
- coalition of representatives from different segments of the design and building industry

- **CaGBC is working to:**


- change industry standards
- develop best design practices and guidelines
- advocate for green buildings
- develop educational tools to support its members in implementing sustainable design and construction practices.




- **How do we measure the “Green-ness” of a building?**





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LEED®




- **Leadership in Energy and Environmental Design, developed by U.S. Green Building Council**
- **Canadian version approved December 2004**
- **7 mandatory prerequisites**
- **70 point system for achieving green building status**
- **Most widely used system today**
- **Not reserved for the “elite”**



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You would be just as likely to see a LEED Canadian Tire as you would a City Hall as you would a high-end condo in Toronto.



The slide features a blue header with a green icon of a building with leaves and the text "LEED - Process". The main content is a bulleted list with three main categories: Design, Construction, and Certification. At the bottom left is the logo for ENERMODAL ENGINEERING, and at the bottom right is the tagline "Creating energy and resource efficient buildings".

LEED - Process

- **Design**
 - Integrated design process to incorporate environmental goals (LEED requirements)
 - Energy modeling
- **Construction**
 - Verify that environmental goals are successfully incorporated into final product
 - LEED “Building Reviews” = Cheap Insurance
- **Certification**
 - 3rd party review and audit

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Because of the documentation required during LEED construction, the system actually serves as a Quality Control Mechanism. Under third-party review, it needs to be proven that what was drawn and specified actually occurs. From recycled content, to construction waste diversion, to the type of paint used – you will have to prove that whatever was targeted has also been achieved.



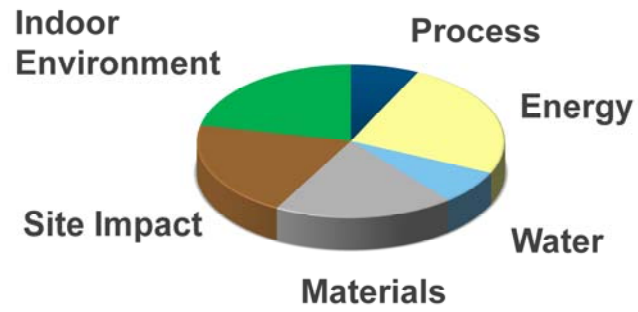
LEED 70 Points

26-32 – Certified

33-38 – Silver

39-51 – Gold

52+ – Platinum



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Sustainable Sites

- Prevent erosion and sedimentation related to construction
- Select land that has no negative environmental impacts
- Open space & native landscaping
- Encourage transportation alternatives
- Plan for stormwater management



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Features you may come across:

Extensive ESC plan; Stormceptors and cisterns; Specific roofing or paving products; etc.



Water Efficiency

- **Reduce/eliminate irrigation (Xeriscaping)**
- **Use efficient fixtures**
 - dual flush toilets
 - waterless/ ultra low-flow urinals
 - Low-flow faucets & showerheads
- **Harvest rainwater for**
 - Waste water conveyance
 - Fire protection
 - Site landscaping



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Features you may come across:

Ultra low-flow fixtures; Cisterns; Atypical irrigation designs, etc.



Energy & Atmosphere

- Reduce building energy consumption by at least 25%
- Eliminate ozone depleting chemicals
- Comprehensive building commissioning and monitoring
- Make use of Renewable Energy Technologies
- Purchase Green Power



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Features you may come across:

Commissioning agent for mechanical and electrical systems; Different controls and meters; Specialized HVAC equipment



Materials & Resources

- **Reuse of Existing Structure/Shell/Interior Elements**
- **Construction Waste Management During Construction**
- **Material Selection – Regional/Recycled/FSC content**



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Features you may come across:

Recycled content requirements in Steel, Asphalt, Concrete, etc.; Sourcing different suppliers (e.g. FSC, Regional); Sorting waste for recycling; etc.



Indoor Environmental Quality

- Low Off-Gassing Materials
- Daylighting in work spaces
- Views nature outside
- Improved air quality



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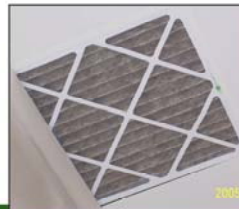
Features you may come across:

Specific paints, adhesives, sealants; specific VOC limits; More frequent cleaning of job site; IAQ testing before occupancy; Different HVAC controls.



Construction Practices

- **Protect building systems from contamination due to construction activities and the elements**



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Some credits, such as Indoor Air Quality During Construction, are solely the responsibility of the contractor to implement and achieve.



What You Need, for LEED?

1. Commitment!
2. Process
3. Interested & willing project team
4. Green Guru
 - Someone to take ownership of “green stuff”
 - Help to make informed decisions

“The GC appeared to be so enthralled by the LEED presentation that he didn’t move a muscle”



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Commitment

- The end result **ALWAYS** rests in the hands of the construction team
- LEED is all about changing the way we design and build buildings
- You must be committed to going green or project will flounder



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The Process – Pre-Bid Preparations

- Determine a bidding strategy that is in line with your company goals.
- Learn about LEED (www.cagbc.com)
 - Take a course; Become a LEED AP
- Figure out what you are already doing:
 - Erosion & Sedimentation Control
 - Rigorous documentation
 - Taking photos
 - Effective and involved supervisors
- Identify a LEED champion within your company



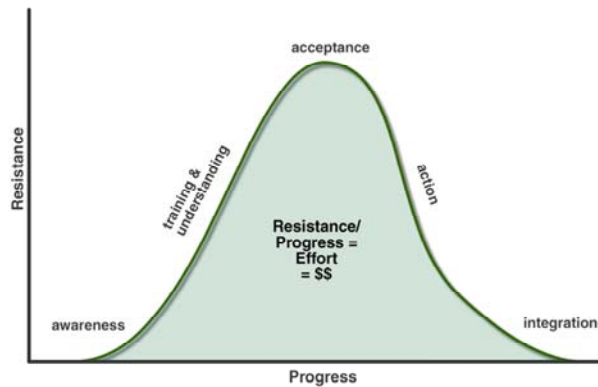
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The Process – Pre-Bid Preparations

- A green advocate on your team can help to expedite the change cycle
- Buy-in at a company-wide level is invaluable
- Consider the Millennials!

Green Building Acceptance and Managing Change



Courtesy: Doug Pinto & Doug Kube, Parolator



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As progress evolves, there typically is more and more resistance – to a point. A green advocate with support and authority from the company, can help ease your personnel through the acceptance stage. Once everyone is engaged in the actions, resistance will lessen.

Millennials are usually a great choice for this role as they have been raised on the message that the environment is important. They will have the easiest time buying into the LEED process. However, their superiors need to be their biggest fans.



The Process – Bidding

- **Read ALL the Specifications**
 - They can tell you a lot about the project
- **Be aware of “Contractor’s Responsibilities”**
- **Find out if there is a LEED Consultant**
- **Sell those things that you are already doing**
- **Use a bidding strategy that is in line with your company goals.**



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The Process – Starting the Job

- Designate someone as your LEED professional
- Read ALL Addenda for the Specifications
- Establish a relationship with the LEED Consultant early
- Source products with specific requirements
- Inform your sub-trades this is a LEED project
- Inform your suppliers this is a LEED project
 - Don't be swayed by manufacturer's claims!
- Make yourself aware of LEED Prerequisites
- Continuously follow

Rekker's Rules of LEED Construction




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Rekker's Rules of LEED Construction

- 1) Care
- 2) Communicate
- 3) Document
- 4) Document some more



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Care: Read the Specs; Empower your Green Guru; Understand the *intent*; Integrate the systems

Communicate... with your company; with your subtrades; with the LEED Contact;

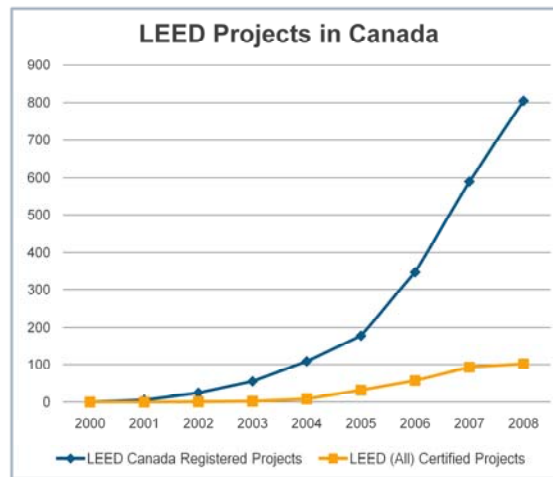
Document: Prove you are doing what you are supposed to do. Photos, Site Reports, CutSheets, Shop Drawings, etc.

Document some more: There will be a lot - don't expect to submit it all at the end. Leave time for feedback.



Growth of LEED in Canada

- Exponential growth in projects reflects the increase in awareness about the benefits and importance of pursuing LEED Certification

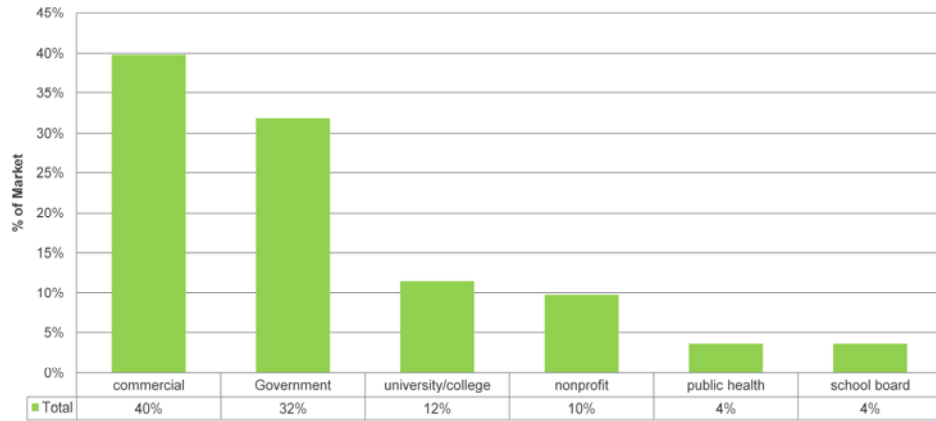


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Certified Project Mix

LEED Certified Projects



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Green building market growth

- There is an increasing demand for green buildings around the world
 - Global Trends Survey showed that 48% of planned non-residential projects “will be green”
 - 46% identified lack of green building professionals as a barrier to the uptake of green buildings
- The solution to delivering successful green buildings to the market place is...

— **IN THIS ROOM!!**



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