LEED – NC
USGBC
Leadership in Energy and Environmental Design
an Overview
INTERESTING FACTS

• Over the last 20 years the average family size has decreased while the average home size has increased
• Human health – green buildings reduce absenteeism by 15 – 47%
• The average household annually produces about 3,500 lbs of garbage, 450,000 gallons of waste water, and 25,000 lbs of $CO_2$
• Approximately 25% of landfill waste originates from construction sites
The Built Environment

- The built environment has a real impact on natural environment
- USGBC developed LEED as a tool to enable industry to design, build and operate buildings at a higher level of performance thus reducing the environmental impact
Why Build a Green Building?

- Market Attractiveness – Today’s Trends
- Employee Productivity/Health
- Building Operation Costs: Example cost of heating
- Environmental Stewardship
- Material Shortages/Escalation
LEED

Is a rating system that enables the user to measure actions that substantially reduce or eliminate negative environmental impacts originating from a building. Ratings are based on a set of performance standards specific to various categories of the building.
LEED

• LEED-NC: For new construction
• LEED-EB: For existing buildings
• LEED-CI: For commercial interiors
• LEED-CS: For core and shell
• LEED-Homes: For residential homes
• LEED-ND: For neighborhood development
LEED CRITERIA SECTIONS

• Sustainable Site
• Water Efficiency
• Energy and Atmosphere
• Materials and Resources
• Indoor Environmental Quality
• Innovative Design
Sustainable Site

- Ecology of site
- Least impact from building footprint – building placement – working with natural topography, geology and hydrology
- Work with natural topography – natural values of site
- Reduce heat islands
- Control runoff
- Solar orientation
- Proximity to transportation – public
Water Efficiency

- Water use reduction - Example: low water use appliances and fixtures
- Water reuse – Example: grey water systems
- Water efficient landscaping - Example: low water demand landscaping
- Innovative wastewater technology
Energy and Atmosphere

- Minimum energy performance
- Refrigerant management
- On-site renewable energy
- Enhanced commissioning and building management
- Measurement and verification
Materials and Resources

• Storage and collection of recyclables
• Building reuse goals
• Reclaimed woods and other materials
• Materials available locally – reduce transportation impact/costs
• Construction waste management
• Rapidly renewable material sources
Indoor Environmental Quality

- Outdoor air delivery monitoring
- Indoor air quality management plan during construction and before occupancy
- Low emitting materials
- Controllability of systems lighting and thermal
- Daylight and views
Innovative Design

• Extra points for design innovations
• Breaking new ground – emerging technologies
Other Considerations

Long life loose fit = Future ease to upgrade and/or retrofit.

One of our challenges today is not so much designing green for new construction, this only requires a commitment, but how do we retrofit existing buildings/houses across the planet?
SIGNATURE CENTER - LEED PLATIUM WINNER DESIGN-BUILD-OWN BY AAREDEX
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Audubon Energy Strategies

PASSIVE STRATEGIES
1. thermal mass: cmu walls, insulated on the outside, exposed on the inside
2. thermal mass: concrete floor, for night ventilation cooling
3. sunshading
4. cross-ventilation
5. balanced daylighting
6. exterior circulation between rooms: less building and conditioned space

ACTIVE STRATEGIES
1. off-grid: solar electricity, HVAC and domestic hot water
2. wastewater treated and retained onsite
3. stormwater retained on site
4. ceiling fans
5. misting system
Concordia Elevated Walkways
St John Island
Residential PV Roof Mount
Residential Wind
Residential Ground Mount PV
Smarter Residential Driveways