

LEED 2009 (V3)

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FHS Controls

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Agenda

- **Major Changes**
- **Scoring**
- **Building Categories**
- **Sections as it Relates to Controls**

Major Changes

- **Water**
 - More monitoring
 - Higher reduction required
- **Energy**
 - Higher reduction
 - More stringent requirements
- **IEQ**
 - Increased ventilation
 - Controllability changes (Lighting|Comfort)
- **Regional Points**

Scoring

- There are 100 core points and *10 bonus points*
 - Sustainable Sites (26)
 - Water Efficiency (10)
 - Energy & Atmosphere (35)
 - Materials & Resources (14)
 - Environmental Quality (15)
 - *Innovation and Design (5)*
 - *Regional Context (4)*
 - *LEED AP (1)*
- Certified (40-49)
- Silver (50-59)
- Gold (60-79)
- Platinum (80+)

Categories

- **Three Categories**
- **NC – New Construction**
- **Schools**
- **CS – Core & Shell**

Site Selection (SS)

- **SS Cr6-Storm Water Harvesting**
 - **May require pump controls**
 - **Monitor total use**

Water Efficiency (WE)

- **Prerequisite 1**
- **WE Cr1-Efficient Landscaping**
- **WE Cr2-Innovative Wastewater Reduction**
- **WE Cr3-Water Use Reduction**
- **WE Cr4-Process Water Use Reduction**

Water Efficiency (WE)

- **Prerequisite 1**
 - **20% baseline reduction in usage**
 - *Excludes irrigation*
 - **Will require meter(s)**
 - **Submeters if different fixture groups**
 - **Restaurant | Residential | Kitchen**

Water Efficiency (WE)

- **WE Credit 1-Efficient Landscaping**
 - **Option 1: 2 Cr**
 - **50% reduction in potable water**
 - **Metering**
 - **Monitoring of use from other sources**
 - **Rainwater/Recycled Water/Trucked in?**
 - **Option 2: 4 Cr**
 - **No use of potable water**

Water Efficiency (WE)

- **WE Credit 2-Innovative Wastewater Reduction**
 - **Option 1: 2 Cr**
 - **50% reduction in potable water**
 - **Low use fixtures**
 - **Option 2: 2 Cr**
 - **Treat 50% of waste water**
 - **Use on-site (irrigation | toilets)**
 - **Monitor re-use (Meter)**

Water Efficiency (WE)

- **WE Credit 3-Water Use Reduction**
 - **30% = 2 Cr | 35% = 3 Cr | 40% = 4 Cr**
- **WE Credit 4-Process Water Use Reduction**
 - **Schools only**
 - **Metering**
 - **Dishwashers | Clothes Washers | Ice Machines**

Energy and Atmosphere (EA)

- **Prereq 1-Fundamental Commissioning**
- **Prereq 2-Min. Energy Performance**
- **EA Cr1-Optimize Energy Performance**
- **EA Cr2-On-Site Renewable Energy**
- **EA Cr3-Enhanced Commissioning**
- **EA Cr5-Measurement and Verification**
- **EA Cr6-Green Power**

Energy and Atmosphere (EA)

- **Prereq 1-Fundamental Commissioning**
 - **Verification of Commissioning**
 - **Pre-functional Tests (Checklist)**
 - **Functional Performance Testing**
 - **Trends**
 - **Documentation**
 - **10 Month Review (Trends)**

Energy and Atmosphere (EA)

- **Prereq 2-Min. Energy Performance**
 - **Option 1: Whole Building Energy Simulation**
 - **Option 2: ASHRAE Advanced Energy Design**
 - **Option 3: Advanced Bldgs Core Perf. Guide**

Energy and Atmosphere (EA)

- **EA Cr1-Optimize Energy Performance**
 - **Option 1:**
 - **Performance over baseline (90.1)**
 - **1-19 points available - 1 pt per 2%**
 - **Energy Monitoring (kW meters)**
 - **Building Automation**
 - **Advanced Energy Strategies**

Energy and Atmosphere (EA)

- **EA Cr2-On-Site Renewable Energy**
 - 1-7 points over 1% to 13%
 - Power info from system (Meter or integration)
 - Solar | Wind | Photovoltaic
- **EA Cr3-Enhanced Commissioning**
 - Additional processes for the Cx
 - BAS can help with documentation

Energy and Atmosphere (EA)

- **EA Cr5-Measurement and Verification**
 - **Option B or D in IMPVP III**
 - **Option B**
 - **ECM isolation**
 - **Option D**
 - **Whole building**
 - **Must trend for at least a year**
 - **Metering (mostly Kw)**
 - **Create a plan to measure + corrective action**

Energy and Atmosphere (EA)

- **EA Cr6-Green Power**
 - **35% of building needs from renewable**
 - **Compare against building use (Kw meters)**
 - **2 year commitment**

Indoor Environmental Quality (IEQ)

- **Prereq 1-Min IAQ**
- **Prereq 2-Tobacco Smoke Control**
- **IEQ Cr1-Outdoor Air Delivery**
- **IEQ Cr2-Increased Ventilation**
- **IEQ Cr3-IAQ During Construction**
- **IEQ Cr5-Indoor Chem & Pollutant Control**
- **IEQ Cr6-Controllability of Systems**
- **IEQ Cr7-Thermal Comfort Design**
- **IEQ Cr8-Daylight and Views**
- **IEQ Cr10-Mold Prevention**

Indoor Environmental Quality (IEQ)

- **Prereq 1-Min IAQ**
 - **ASHRAE 62 or local code (stricter one)**
 - **Ventilation Rate Procedure**
 - **Prescribed Rates**
 - **IAQ Procedure**
 - **High occupancy spaces (CO₂)**
 - **OA Flow Monitoring HIGHLY recommended**
 - **Reset Methods (Both)**

Indoor Environmental Quality (IEQ)

- **Prereq 2-Tobacco Smoke Control**
 - **No Smoking**
 - **Smoking Rooms**
 - **Negative Pressure Room**
 - **Room Pressure Control**

Indoor Environmental Quality (IEQ)

- **IEQ Cr1-Outdoor Air Delivery**
 - **Outdoor Air Flow Monitoring**
 - **CO2 Monitoring**
 - (High Occupancy Spaces)
 - 25 people/1000 sq ft
- **IEQ Cr2-Increased Ventilation**
 - **30% above min requirements**
 - **Airflow Monitoring**

Indoor Environmental Quality (IEQ)

- **IEQ Cr3-IAQ During Construction**
 - **Flush Out Procedure**
 - **Space Temp and Space Humidity Req'd**
 - **Air Testing**
- **IEQ Cr5-Indoor Chem & Pollutant Control**
 - **May require exhaust fan control**
 - **May require negative pressure control**
 - **Copier Rooms | Hazardous Chemicals**
 - **Filter Monitoring**

Indoor Environmental Quality (IEQ)

- **IEQ Cr6-Controllability of Systems**
 - **Lighting**
 - Individual control for 90% of occupants
 - **Thermal Comfort**
 - Individual control for 50% of occupants
- **IEQ Cr7-Thermal Comfort Design**
 - **Verification**
 - Occupant Survey
 - * Monitor Space Temp | Humidity

Indoor Environmental Quality (IEQ)

- **IEQ Cr8-Daylight and Views**
 - **Enhanced lighting control**
 - **Photo resistive controls**
 - **50-80% lighting energy use reduction**
- **IEQ Cr10-Mold Prevention**
 - **Humidity Levels < 60%**
 - **De-Humidification Strategies**
 - **Leak Detection**

Innovation in Design (ID)

- **ID Cr1-Innovation in Design**
- **ID Cr2-LEED AP**

Innovation in Design (ID)

- **ID Cr1-Innovation in Design**
 - **Items not Prescribed by LEED 2009**
 - **Fault Detection & Diagnostics**
 - **Advanced Energy Control Strategies**
 - **Confirm Viability with LEED-Online**
 - **Going the extra mile**
- **ID Cr2-LEED AP**
 - **LEED Accredited Person**
 - **Principal Participant**

Regional Priority (RP)

- **Regional Priority**
 - **Priorities change based upon region**
 - **Check Database**

Questions

QUESTIONS????

Resources

- **IPMVP Volume III**
 - www.evo-world.org/
- **ASHRAE Standards 90.1 and 62**
 - www.ashrae.org
- **LEED Resources**
 - www.usgbc.org