

LEED Design

Mechanical Engineers' Responsibilities



Mechanical Design Issues

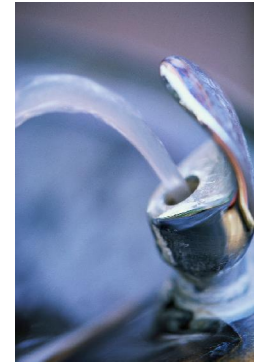
- ◆ Water Use Reduction (WA Credit 3.1 & 3.2)
- ◆ Energy Conservation (EA Prerequisite 2 & Credit 1)
- ◆ Indoor Air Quality (EQ Credit 1 & 2)
- ◆ Commissioning (EA Prerequisite 1 & Credit 3)



Water Use Reduction

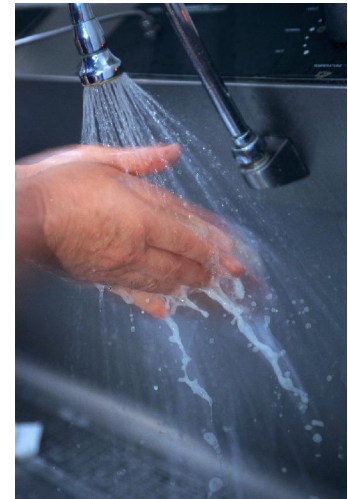
◆ Two Options

- 20% Reduction (Credit 3.1)
- 30% Reduction (Credit 3.2)
- Requirements: Submit a spreadsheet showing the reduction.
- Baseline is Energy Policy Act of 1992
- Calculations are laid out in the LEED Reference Manual



Water Use Reduction

- ◆ ½ GPM Sink Aerators
- ◆ Low Flow Shower Heads
- ◆ Double Flush Toilets
- ◆ Waterless or Rinse Only Urinals



Energy Conservation

- ◆ Optimize Energy Performance (EA Credit 1)
- ◆ Reduce Energy Use in The Following Areas:
 - Hot Water Generation
 - Ventilation Systems
 - Heating/Air Conditioning Systems
 - ASHRAE 90.1 Guidance



Hot Water Generation

- ◆ Reduce Over All Hot Water Use
- ◆ Determine the Most Efficient Way To Generate Hot Water Based on Building Usage
- ◆ Use More Instantaneous Hot Water Heaters





Ventilation Systems

- ◆ The Use of Air to Air Heat Exchangers For Warming or Cooling the Outside Air used for Ventilation
- ◆ Variable Speed Drives on Air Handling Systems (Air Flow vs. HP)
- ◆ Variable Air Volume Systems
- ◆ Occupied/Unoccupied Modes
- ◆ CO₂ Sensors In Return Air Ducts

Heating and Air Conditioning

- ◆ Heating with Hydronic Baseboard Rather Than Air Handling Units



Additional Items

- ◆ Energy Simulation Software
- ◆ Zero Use of CFC Based Refrigerants





Indoor Air Quality

- ◆ ASHREA 62 “Ventilation for Acceptable Indoor Air Quality”
- ◆ Credit 1 - CO₂ Monitoring
- ◆ Credit 2 - Ventilation Effectiveness
- ◆ Credit 6.1 – Controllability of Systems
- ◆ Credit 7.1 – Thermal Comfort (ASHREA 55)



References

- ◆ LEED Reference Guide For New Construction and Major Renovations V2.1
- ◆ Energy Policy Act of 1992
- ◆ ASHREA 90.1 Energy Standards for Buildings Except Low-Rise Residential
- ◆ ASHREA 129 Measuring Air-Change Effectiveness
- ◆ ASHREA 62 Ventilation for Acceptable Indoor Air Quality