



Newman Consulting Group, LLC
HVAC Engineering & Business Consultants
Environmental Building Consultants
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**Using Mechanical Systems to Achieve SPiRiT
Program Gold Status in New Construction**
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SPIRiT

Sustainable Project Rating Tool

Sustainable Project Certification Levels

SPIRiT Bronze	25 to 34 Points
SPIRiT Silver	35 to 49 Points
SPIRiT Gold	50 to 74 Points
SPIRiT Platinum	75 to 100 Points

Facility Points Summary

1.0 Sustainable Sites (S)	Max 20
2.0 Water Efficiency (W)	Max 05
3.0 Energy and Atmosphere (E)	Max 28
4.0 Materials and Resources (M)	Max 13
5.0 Indoor Environmental Quality (IEQ) [Q]	Max 17
6.0 Facility Delivery Process (P)	Max 07
7.0 Current Mission	Max 06
8.0 Future Missions	Max 04
Total	100

General Information

- Points follow USGBC LEED® System

- Format

Intent – Primary Goal

Requirement – Quantifiable Conditions

Technologies/Strategies

Design Charrettes

- Must Actively Engage All Stakeholders In Design Process
- Everyone Must Be Going in Same Direction = **Teamwork**
- Experienced Team Leaders
- Train Entire Team in Holistic Delivery Process

Design Charrettes – cont.

- Identify Project Goals & Metrics
- Plan & Execute Charrettes At Critical Phases of Project
- Identify & Resolve Tradeoffs
 - Sustainability
 - First Costs & Life Cycle Costs
 - Mission Requirements

Basis of Points

- USGBC LEED® Guidelines
Based on ANSI/ASHRAE/IESNA
Standard 90.1-1999

Now Available: Standard 90.1 - 2004
(includes all addenda since 1999)

- SPiRiT Guidelines

HVAC Oriented Points

- Energy and Atmosphere –
28 Pts. Max
- Indoor Environmental Quality –
17 Pts. Max

Energy and Atmosphere

28 Points

Optimize Energy Performance – 20 Points

See *ASHRAE Advanced Energy Design Guide for Small Office Buildings* – Savings of 30% Above Standard 90.1

- 1 Pt. For Energy Use Reduction by 2.5%
 - 10% = 4 Points
 - 25% = 10 Points
 - 30% = 12 Points

Methods of Reducing Energy

- Enthalpy/Energy Recovery Heat Exchangers
- Microchannel Heat Exchangers
- VAV Systems
- Geothermal Heat Pumps
- Blow-thru vs. Draw-thru Constant Volume Systems
- Multiple Constant Volume AHUs
- VFDs on Chillers, Pumps
- Air & Water Economizers
- Low S.P. Drop Final Filters – MERV 16 !!!

Methods of Reducing Energy – cont.

- Dedicated Outdoor Air Systems (DOAS)
- Desiccant Systems
- Indirect Evaporative Cooling
- Displacement Ventilation & Underfloor Air Distribution
- Smaller Centrifugal Compressors – Oil-less, With Magnetic Bearings
- Improved Duct Sealing
- Occupancy-Based Control
- Cool Storage

Methods of Reducing Energy – Cont.

- Reheat from Waste Energy
- Radiant Ceiling Cooling
- Natural Ventilation
- Thermal Chimneys
- Passive Cooling
- Photo-Voltaics
- Wind Energy

NOTE: Maintain Humidity Control!!

Indoor Environmental Quality

17 Points

Largest Component of IEQ
is
Indoor Air Quality (IAQ)

4 Major Considerations

3 Depend Largely on the Designer

Indoor Air Quality – cont.

- Limit Pollution at Source
- Isolate Unavoidable Pollution Sources
- Provide (for) Adequate Supply and Proper Filtering of O.A. and R.A.
- Operate and Maintain Building and Its Equipment in Proper and Clean Condition
- Leave Enough Space To Accomplish the O & M

Jim Newman's Keys to Success With the SPiRiT Program

- Use Common Sense and
- Read It Carefully
- Read It Carefully
- Read It Carefully !

References & Resources

- CREST
<http://solstice.crest.org/sustainable/index.html>
- DOE
<http://www.sustainable.doe.gov>
- <http://www.eren.doe.gov>
- Environmental Building News
<http://www.ebuild.com>
- Rocky Mountain Institute
<http://www.rmi.org>
- Corps of Engineers
<http://www.cecer.army.mil>
- The Home Energy Saver
– <http://hes.lbl.gov/HES/>
- Renewable Energy
– <http://www.nrel.gov/>
- Energy 10
– <http://www.sbicouncil.org/enTen>
- EPA <http://www.energystar.gov>
- Moist 3.0
– <http://www.bfrl.nist.gov/863/moist.html>
- Daylighting <http://www.lbl.gov>
- Green-E <http://www.green-e.org>

References & Resources – Cont.

- www.epa.gov/iaq
- www.fire.nist.gov/bfrlpubs/build94/PDF/b94024.pdf
- www.epa.gov/rtp/new-bldg/environmental/s_01445.htm
- www.buildinggreen.com/elists/halpaper.html
- www.rochestermidland.com/division/institut/ghouse.html
- www.fmlink.com.au/images.au/Papers/bauman.htm
- www.strionair.com
- www.edcmag.com
- www.ashrae.org
- www.usgbc.org
- www.newmanconsulting.com



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THANK YOU

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