

Energy Efficiency Compliance Verification

Comprehensive Checklist for Sustainability Assessment

1. Motor Efficiency Standards (IEC 60034-30-1)

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Motor Power Rating

Verify rated power matches nameplate and documentation

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Efficiency Class

Confirm IE classification per IEC 60034-30-1

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Efficiency Threshold

Calculate if measured efficiency meets IEC 60034-30-1 minimum for rated power and IE class

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Load Factor

Verify operating load is within optimal range per IEC standards

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Power Factor

Confirm power factor meets industry best practices at rated load

2. Building Envelope Performance (ASHRAE 90.1)

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Wall U-Value

Calculate thermal transmittance compliance with ASHRAE 90.1 climate zone requirements

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Window SHGC

Verify Solar Heat Gain Coefficient per ASHRAE 90.1 climate zone limits

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Insulation R-Value

Confirm thermal resistance meets ASHRAE 90.1 minimum requirements

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Air Leakage

Verify infiltration rate meets ASHRAE 90.1 limits at test pressure

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Thermal Bridging

Calculate linear thermal transmittance per ASHRAE 90.1 methodology

3. HVAC System Efficiency (ASHRAE 90.1)

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Cooling COP

Verify chiller COP meets ASHRAE 90.1 minimum requirements

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Heating HSPF

Verify HSPF meets ENERGY STAR requirements for heating equipment

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Duct Leakage

Verify duct leakage meets ASHRAE 90.1 limits at operating pressure

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Variable Speed Control

Confirm VFD presence per ASHRAE 90.1 requirements

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Heat Recovery

Verify ERV effectiveness meets ASHRAE 90.1 minimum where required

4. Lighting Systems (ENERGY STAR & ASHRAE 90.1)

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Luminous Efficacy

Verify lumens per watt meets ENERGY STAR minimum for fixture type

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Power Density

Calculate LPD compliance with ASHRAE 90.1 allowable limits

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Occupancy Controls

Confirm automatic shut-off per ASHRAE 90.1 requirements

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Daylight Integration

Verify dimming controls in daylit zones per ASHRAE 90.1

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Minor Items

≥80% of lighting and monitoring items must pass

5. Renewable Energy Systems

- ☐ **Solar Panel Efficiency**
Verify panel efficiency meets manufacturer specifications
- ☐ **Inverter Efficiency**
Confirm weighted efficiency meets CEC/industry standards
- ☐ **System Performance Ratio**
Calculate PR meets industry benchmarks
- ☐ **Energy Yield**
Verify kWh/kWp/year meets design projections
- ☐ **Grid Integration**
Confirm compliance with IEEE 1547 interconnection standard

6. Energy Management & Monitoring

- ☐ **Metering Granularity**
Verify sub-metering for major end uses
- ☐ **Data Collection**
Confirm 15-minute interval capability
- ☐ **Baseline Establishment**
Verify 12-month historical data
- ☐ **Savings Calculation**
Confirm M&V protocol compliance
- ☐ **Reporting Frequency**
Verify monthly energy reporting capability

Compliance Scoring

Critical Items: All motor efficiency and safety items must pass

Major Items: ≥90% of building envelope and HVAC items must pass

Minor Items: ≥80% of lighting and monitoring items must pass

Overall Score: Weighted average ≥85% for compliance certification