ASHRAE Standard 100 – 2015
Energy Efficiency in Existing Buildings

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ASHRAE Std. 100 – 2015
Energy Efficiency in Existing Buildings

1. The need for ASHRAE Std. 100
2. What is ASHRAE Std. 100
3. Compliance
ASHRAE Std. 100 – The Need

• Existing Buildings
  – In the US – Approx. 5.6 Million commercial buildings (CBECS 2012)
  – In Canada – Approx. 0.5 Million commercial/institutional buildings (SCIEU 2009)

• Building Energy Use
  – Buildings Consume
    • 40% of All Energy
    • 69% of all Electricity
  – Buildings Produce 39% of all CO₂ Emissions
ASHRAE Std. 100 – The Need

75% to 80% of All Buildings
That will exist in 2030
Exist Today

Our Greatest Opportunity to
Reduce Energy consumption &
provide for a Sustainable Future
is in:

Existing Buildings
ASHRAE Std. 100 – The Need

- International Energy Conservation Code (IECC)
- ASHRAE Std. 90.1
- ASHRAE Std. 90.2

Are energy codes and standards for the design and construction of NEW buildings
ASHRAE Std. 100 – What is it?

ASHRAE Standard 100 – 2015
Energy Efficiency in Existing Buildings

Provides the **minimum** requirements for energy efficient **design** and **operation** of **existing** residential, commercial, institutional and industrial buildings
ASHRAE Std. 100 – What is it?

• Provides Guidance to building owners and operators on processes and procedures needed to reduce the energy consumption of their buildings

• Provides a code ready standard that can be used by state and local jurisdictions to write directly into building codes

• Provides a verifiable process that federal & state authorities and utility companies can use to support tax incentive, rebate and other programs
ASHRAE Std. 100 – What is it?

Basic Index

1. Purpose
2. Scope
3. Definitions
4. Compliance Requirements
5. Energy Management Plan
6. Operation and Maintenance Requirements
7. Energy Use Analysis & Target Requirements
8. Energy Audits Requirements
9. Implementation & Verification
10. Residential Buildings & Dwelling Units
ASHRAE Std. 100 – What is it?

References

2. Informative Annex B: Timeline
3. Normative Annex C: Forms
4. Informative Annex D: Operation and Maintenance Requirements for Building Systems and Elements
5. Informative Annex E: Energy Efficiency Measures
6. Informative Annex F: Standard 100 Compliance Flow Chart
7. Informative Annex G: Climate Zones
8. Informative Annex H: Simple Payback and Life-Cycle Cost Analysis
10. Informative Annex J: Derivation of Building Energy-Use Intensity Targets
12. Normative Annex L: Operation and Maintenance Implementation
ASHRAE Std. 100 – Compliance

Section 4
Compliance Requirements
Section 4 – Compliance Requirements

1. Compliance Process
   • Building Types
   • Timeline
   • Forms

2. Energy Management Plan

3. Operation and Maintenance Requirements

4. Building Energy Use
   • Buildings *with* Energy Targets
   • Buildings *without* Energy Targets
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Section 5

Energy Management Plan
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Section 5 – Energy Management Plan

• Annual building net energy use shall be monitored and recorded as an Energy Use Intensity (EUI)
• Equipment replacement minimum standards are equal to
  – ASHRAE Std. 90.1, *Energy Standard for Buildings, Except Low-Rise Residential Buildings*, and
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Section 6

Operation and Maintenance
Section 6 – Operation and Maintenance

• For compliance – Establishing an O & M Program is mandatory
• Annex L defines the minimum O&M requirements
• Requirements are targeted to be
  – Feasible for buildings of all sizes and occupancies
  – Practical for the average owner
  – Achieve energy efficiency
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Section 7
Energy Use Analysis and Targets
Energy-Use Intensity (EUI) Targets

- 53 Building Types
- 16 Climate Zones
- Annex J
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Sect 7 – Energy Use Analysis and Targets

• Authority Having Jurisdiction may pick level of compliance in reference to Benchmark for Target and may be set on both a Site or Source basis

• Owner to conduct energy use analysis from utility bills to get Baseline EUI, Energy Use Intensity, (kBTU/ft²-yr) or (MJ/m²-yr)
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Sect 7 – Energy Use Analysis and Targets

• If building type is listed in Target List, compare Baseline to Target
  – If Baseline <= Target, Sec. 7 requirement is met
  – If Baseline > Target, Sec. 7 requirement is not met and must complete Sec 8 & 9

• If building type is not listed in Target list, Sec 8 & 9 must be completed
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Section 8

Energy Audit Requirements
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Section 8 – Energy Audit Requirements

• Buildings that Don’t Meet Targets
  – Audit Level to be sufficient to identify EEMs that would result in the building meeting its energy target

• Buildings w/o Targets
  – Audit Level 2
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Section 9

Implementation and Verification Requirements
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Section 9 – Implementation & Verification

• Developing/Implementing an Energy Efficiency Plan
  – Implements EEMs
    • Buildings with Targets - As required to meet EUI target
    • Buildings w/o Targets - Optimized Bundle of EEMs with simple payback less than or equal to 5 years
  – Training of Building staff
  – Multiple Buildings
Thank You!

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