GUIDELINE

ASHRAE Guideline 32-2012

Sustainable, High-Performance Operations and Maintenance

Approved by the ASHRAE Standards Committee on January 25, 2012, and by the ASHRAE Board of Directors on January 25, 2012.

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SPECIAL NOTE

This Guideline was developed under the auspices of ASHRAE. ASHRAE Guidelines are developed under a review process, identifying a guideline for the design, testing, application, or evaluation of a specific product, concept, or practice. As a guideline it is not definitive but encompasses areas where there may be a variety of approaches, none of which must be precisely correct. ASHRAE Guidelines are written to assist professionals in the area of concern and expertise of ASHRAE's Technical Committees and Task Groups.

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The Manager of Standards of ASHRAE should be contacted for:

a. interpretation of the contents of this Guideline,
b. participation in the next review of the Guideline,
c. offering constructive criticism for improving the Guideline, or
d. permission to reprint portions of the Guideline.

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NOTE

Approved addenda, errata, or interpretations for this guideline can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

The concept of sustainability has had a major impact on what we expect from our buildings and the built environment. It has brought new focus on energy, water, health and productivity dimensions of how our buildings perform and how that performance is measured. This has been a significant and continuing change in the buildings industry.

This guideline is intended to assist those who operate and maintain buildings to achieve high performance: safe, productive indoor environments; low economic life cycle cost; low energy, water, and resource use and low impacts on the environment. It applies to the systems of commercial, institutional, industrial and laboratory buildings as they affect occupant comfort, indoor air quality, health & safety; and the energy & water consumed. These systems include the building envelope, HVAC, plumbing, complementary energy systems, utilities and electrical systems. The guideline is intended to provide next steps beyond compliance with ANSI/ASHRAE/ACCA Standard 180, Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems*, and to provide concepts, methods and details that will meet the intent of the "minimum standards of care" under ANSI/ASHRAE/USGBC/IES Standard 189.1,* Standard for the Design of High Performance Green Buildings.

The guideline recognizes that many newly designed buildings are designed to be "sustainable" and "high performance" and that many more will be retrofitted to achieve such designations. Such new and retrofitted systems will require performance-monitored O&M to maintain their intended performance. However, this guideline is written to apply to all buildings, not just new, labeled ones. The authors believe that all buildings can move toward sustainable high performance in their operations and maintenance.

The authors, a committee of volunteers with a range of practical experiences in building performance work, recognize that the present work is not definitive and that the buildings operation industry is changing rapidly. We hope that this guideline can provide a starting place for many more practitioners and building operators to gain knowledge of current best practices and, in turn, to shape, develop and evolve this document through future editions.

This guideline is not written in code language as it is intended to be a reference document and not developed for referencing within building codes.

1. PURPOSE

The purpose of this guideline is to provide guidance for optimizing the operation and maintenance of buildings in order to achieve the lowest economic and environmental life-cycle cost without sacrificing safety or functionality.

2. SCOPE

This guideline applies to the ongoing operational practices for a building and its systems, particularly with respect to energy efficiency, occupant comfort, indoor air quality (IAQ), health and safety.

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

3.1 General. This section contains definitions for certain terms, abbreviations, and acronyms used in this guideline. These definitions are applicable to all sections. Terms that are not defined herein but that are defined in standards referenced herein (e.g., ASHRAE/USGBC/IES Standard 189.1 [2009]) shall have the meanings defined in those standards.

3.2 Definitions

change management: a process for directed organizational change.

commissioning: a quality-focused process for enhancing the delivery of a project. The process focuses on verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the Owner's Project Requirements.

commissioning, ongoing: a continuation of the commissioning process well into the occupancy and operation phase in order to verify that a project continues to meet current and evolving Owner's Project Requirements. Ongoing commissioning process activities occur throughout the life of the facility; some of these will be close to continuous in implementation, and others will be either scheduled or unscheduled (as needed).

commissioning, re-: testing and tuning a building that has been previously commissioned to return it to acceptable operation.

commissioning, retro-: commissioning an existing building after acceptance that was not previously commissioned.

competencies: skills, behaviors, or knowledge identified as performance standards for a particular job. Competencies are applied to a particular job rather than an individual employee. They are typically validated by employees who are performing the competency at an acceptable level, also known as "journeyman" level to distinguish between entry and mastery levels of a skill. In writing competencies, consider how each will be evaluated.

high-performance building: a building that consistently delivers a highly productive environment without wasting resources. Such buildings may have specialized systems that require specific knowledge and awareness on the part of operators in order to maintain the intended operation and performance.