Recommendations for a Standard 180 User Manual

Summary

Commercial HVAC maintenance user manual. Recommendations for development of a user manual for ANSI/ASHRAE/ACCA Standard 180. Addresses table of contents, audience, media.

Finalized: December 9, 2015

Use of this Document

This document provides recommendations for a Standard 180 user manual.

It is based on an official [WHPA Work Product](#) of December 9, 2015, titled "CQM Committee ANSI/ASHRAE/ACCA Standard 180 User Manual Working Group Phase 1 Final Report." This Work Product was developed by the WHPA Commercial Quality Maintenance Committee.

This document, and also the WHPA Work Product, may be used in part or whole at no charge. Attribution to the Western HVAC Performance Alliance is requested.

We would also ask that you inform the WHPA through info@performancealliance.org if you have made use of either document, so that we can inform and encourage the hundreds of volunteers who donate their time to providing expert HVAC advice in order to support energy efficiency objectives.

Recommendations for a Standard 180 User Manual

Table of Contents

(EDITOR'S NOTE – The **comments in red** in the document below are comments by the authors regarding plans for a future version of this document.)

Background

Standard 180 User Manual Prospectus

The *Standard 180 User Manual* will provide a road map for the implementation of Standard 180. Its mission is to facilitate communication between the groups affected by the standard. Standard 180 is currently a voluntary standard, not a model code. It was written in language that it can be adopted by local jurisdictions but it currently has not yet been adopted in any jurisdictions. Therefore, in addition to aiding facilitating communication of Standard 180, the *User Manual* should illustrate the benefits of standard adoption to the audience, in particular the Responsible Party.

Audience:
1. The Manager (facility manager, plant manager, contractor, account/sales manager, etc)
   - Motivated by serving the Responsible Party. Finances.
   - *Manager must plan and inform.*
   - Responsibilities and obligations under Standard 180: Perform requirements of maintenance under financial constraints.
   - The Manager is central to the communication to the Responsible Party. The Manager must ascertain the objectives of the Responsible Party; educate on the economic, societal, and thermal comfort and indoor air quality benefits of maintenance; and recommend maintenance and service options that fit the economic objectives of the Responsible Party.
   - The Manager also communicates to the Technician, directing the Technician on the recommended maintenance plan and ultimately, the service plan.
2. The Responsible Party (owner, CFO, corporate facility executive)
   - Motivated by economics produced by more efficient buildings, reduced repairs/extended equipment life and/or avoidance of equipment failure. May also be motivated to provide occupants with improved air quality and comfort. May be motivated by societal obligations.
   - *Responsible Party must know maintenance and service responsibilities.*
   - Responsibilities and obligations under Standard 180: Provide resources to improve energy efficiency, equipment life, indoor air quality, thermal comfort. In rare cases, utilities may require compliance in a rate contract.
   - Manager should be able to provide Responsible Party with data that illustrates how compliance with the Standard will result in savings and improvements.
3. The Technician (in-house technician, contractor employed technician, service manager, etc)
   - Motivated by work/pride.
   - *Technician provides the service; must do.*
   - Responsibilities and obligations under Standard 180: Meet employer requirements of providing a minimum amount of maintenance.
   - In-depth technical training instructions need not be presented in the *User Manual*. This is not intended to be a technician's technical service bulletin). Communication may be able to be addressed through a maintenance checklist and service report tool.

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Standard 180 *User Manual* Explanation of Contents

- Standard 180 Overview [estimate 2 pages; may grow to 4 or 5 pages if flow charts are added with explanation]
  - Intent of the Standard
    - The goal is to illuminate, clarify, and interpret Standard 180 in language accessible to the Manager and Responsible Party.
    - Question: Include flow Charts 1: Basic Information Flow and/or Chart 2: Basic Process Flow? See draft flow charts on the last two pages.
  - Scope of the Standard:
    - Define and articulate scope: packaged HVAC systems. While the standard indicates where its provisions do not apply, it would be helpful if the *User Manual* could also establish conditions where it does apply.
- Benefits from this *User Manual* [estimate 2 pages]
  - Responsible Party benefits are clearly, compellingly outlined. In addition to minimum compliance, the benefit of more robust plans can be outlined.
  - This section can benefit from financial data showing how investments in regular maintenance can result in substantial savings due to more efficient buildings, reduced repairs/extended equipment life, and/or avoidance of equipment failure.
  - Benefits of improved air quality and comfort to building occupants addressed.
  - Benefits to environment addressed.
- How to use this Manual [estimate 2-4 pages]
  - User scenarios: Tell stories, ideally with some illustrations/stock photos, with scenarios illustrating how the implementation of Standard 180 and this *User Manual* facilitated the benefits previously outlined.
- Implementing Standard 180 [estimate 3 pages]
  - Responsibilities for establishing a maintenance program. Brief recap of items 4.1 (Responsible Party) and 4.2 (Maintenance Programs).
  - Establishing a Maintenance Program
    - Illustrate the steps Manager and Responsible Party take to design and create a Maintenance Program.
      - Establishing performance objectives: Recommendations on who leads this step and how performance objects are set for a facility (see Appendix A too). Question: Can an example be provided?
      - Conditions indicating action: Clear illustration of conditions presenting a need for immediate maintenance/repair (see Appendix B).
  - Establishing Inspection and Maintenance Task Frequencies
    - Discussion of how and who establishes frequency and maintenance intervals.
    - Discussion of finding unacceptable condition indicators or performance indicators during two successive inspections.
      - Investigating possible causes
      - Resolving the deficiency

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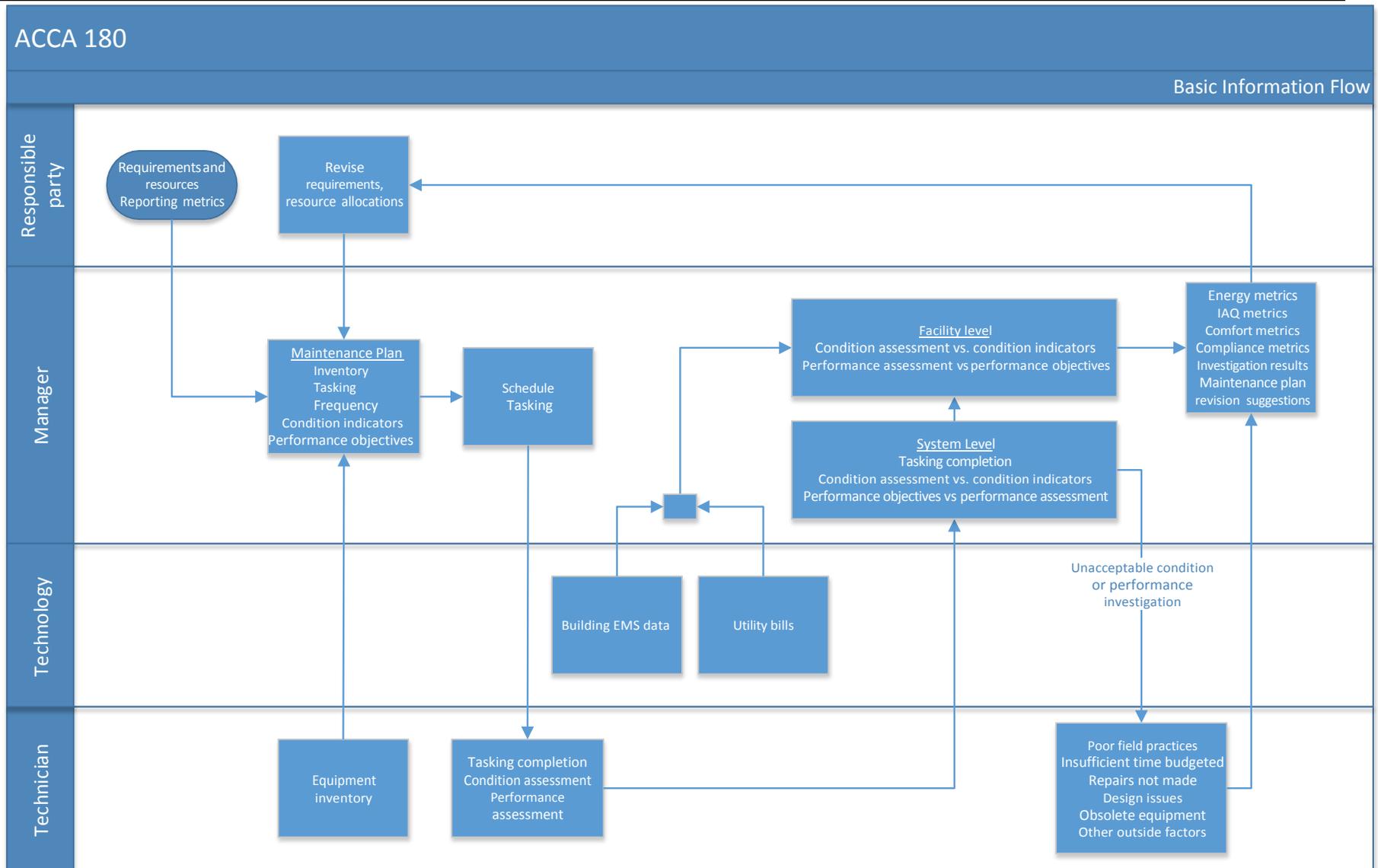
- o Inspection and Maintenance Tasks Tools: [estimate 30 pages if we have one Checklist and Report; 60 pages if we have two]
    - ▪ Manager and Responsible Party Outline Checklist of Inspection and Maintenance Tasks and frequency (Section 5).
    - ▪ Report of Inspection and Maintenance Tasks and Recommendations. (Technician generated. For Manager and Responsible Party review).
- Definitions/Glossary [estimate 1 page]
    - o Pick up from Standard 180.
- Appendix [estimate 7-28 pages]
    - o Operationalizing the Standard: Technician document that spells out technical detail regarding service as well as if-then flow of information for technician work. This content already exists as an operations manual. Determination to be made as to whether this operations manual document is included/adapted or simply referenced.
    - o Pick up from Standard 180.

Estimated page counts run from 47-82 pages (48 – 80-96 pages if printed)
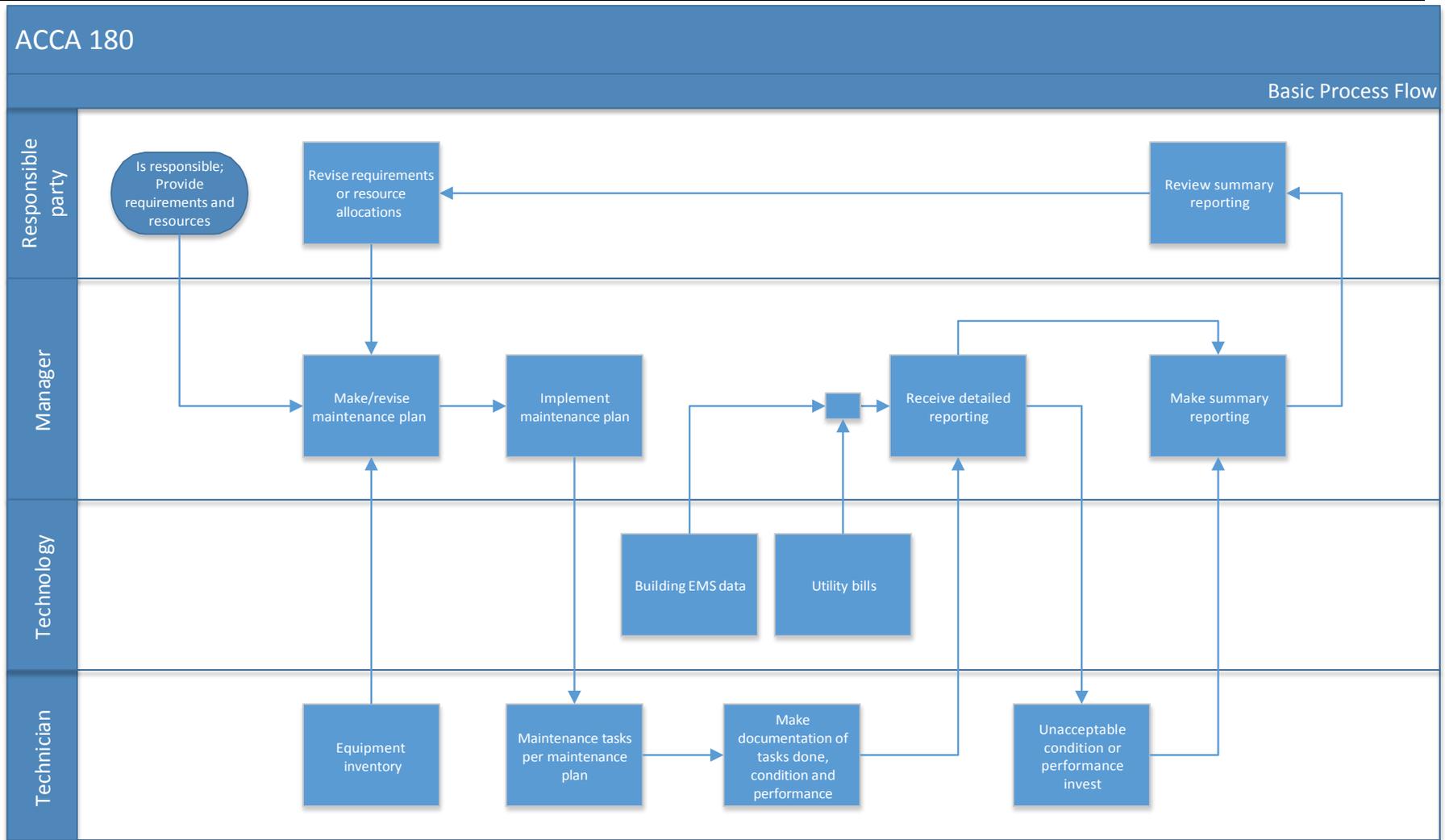
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WHPA   4 of 6   12/09/2015

ACCA 180

Basic Information Flow

Responsible party

Requirements and resources Reporting metrics

Revise requirements, resource allocations

Manager

Maintenance Plan
Inventory
Tasking
Frequency
Condition indicators
Performance objectives

Schedule
Tasking

Facility level
Condition assessment vs. condition indicators
Performance assessment vs performance objectives

System Level
Tasking completion
Condition assessment vs. condition indicators
Performance objectives vs performance assessment

Energy metrics
IAQ metrics
Comfort metrics
Compliance metrics
Investigation results
Maintenance plan
revision suggestions

Technology

Building EMS data

Utility bills

Unacceptable condition or performance investigation

Technician

Equipment inventory

Tasking completion
Condition assessment
Performance assessment

Poor field practices
Insufficient time budgeted
Repairs not made
Design issues
Obsolete equipment
Other outside factors

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