



## WHPA Goal 2: CQM Standard 180 User Guide Working Group Thursday May 26, 2015 Meeting Notes

### Call to Order

The first planning meeting was called to order at 10:04 am PDT by Dale Rossi, Chair of this working group and a representative of Field Diagnostic Services Inc (FDSI).

### Roll Call

The Chair considered one member of each organization to be a voting member for this new working group, He intends to work toward consensus on all decisions. 10 of 18 voting members in attendance would constitute a quorum. 9 voting members attended this meeting. In addition, 1 non-voting members, 1 guest and 1 staff were present for a total of 12 attendees.

P = Present at meeting				
A = Absent from meeting; if proxy has been assigned it will be noted below.				
Although Voting Members have been designated by Staff, this group acts primarily by consensus.				
<b>CQM Maintenance Task Working Group Voting Members</b>				
ACCA (Air Conditioning Contractors of America)	Donald	Prather	Contractor Association	P
AHRI	Warren	Lupson	HVAC Manufacturer Association	
Aire Rite AC & Refrigeration	Don	Langston	Contractor (Nonresidential)	
BELIMO	Darryl	DeAngelis	Controls (Manufacturer or Distributor)	P
BMI (BuildingMetrics, Inc.)	Pete	Jacobs	Energy Efficiency Program Consultant	
CLEAResult (formerly PECD)	Michael	Blazey	Energy Efficiency Program Consultant	P
FDSI (Field Diagnostic Services Inc.)	Dale	Rossi	Third Party Quality Assurance Providers	P
GWP (Goodheart-Willcox Publisher)	Sandy	Clark	Educator, Trainer	P
Honeywell ECC, Commercial Buildings, Trade	Michael	Lawing	Controls (Manufacturer or Distributor)	P
HSGS (Honeywell Smart Grid Solutions)	Shayne	Holderby	Energy Efficiency Program Consultant	
Marina Mechanical	Denny	Mann	Contractor (Nonresidential)	
National Comfort Institute	Jeff	Sturgeon	Educator, Trainer	
Richard Danks Consulting - FacilityPro	Richard	Danks	Other Stakeholder	P
SCE (Southern California Edison)	Steve	Clinton	California IOU	
Charles Segerstrom, Energy Efficiency Consulting	Charles	Segerstrom	Energy Efficiency Program Consultant	
Tre' Laine Associates	Pepper	Hunziker	Energy Efficiency Program Consultant	P
UC Davis EEC (Energy Efficiency Center)	Kristin	Heinemeier	Research Organization	
Western Allied Corporation	Mike	Gallagher	Contractor (Nonresidential)	P
<b>CQM Maintenance Task Working Group Non-Voting Members</b>				
CLEAResult	Michael	Blazey	Energy Efficiency Program Consultant	P
CLEAResult	Mike	Withers	Energy Efficiency Program Consultant	
Honeywell ECC, Commercial Buildings	Adrienne	Thomle	Controls (Manufacturer or Distributor)	
HSGS (Honeywell Smart Grid Solutions)	Steve	Varnum	Energy Efficiency Program Consultant	
<b>CQM Maintenance Task Working Group Guests</b>				
California Public Utilities Commission (CPUC) - Energy Division			California PUC	
SCE (Southern California Edison)	Todd	Van Osdol	California IOU	P
SCE (Southern California Edison)	Scott	Higa	California IOU	
<b>WHPA Staff (Non-Voting)</b>				
BBI (Better Buildings Inc.)	Mark	Lowry	WHPA Executive Advisor/BBI COO	
BNB Consulting/WHPA Staff	Bob	Sundberg	Energy Efficiency Program Consultant	P (scribe)
Empowered Solutions/WHPA Staff (WHPA Co-Director)	Shea	Dibble	Energy Efficiency Organization	

\*\* Organization is Not a Member of the WHPA; + Individual is NOT Registered with the WHPA; <sup>(P)</sup> after last name = Member/Registrant is Pending Approval from the WHPA Executive Committee



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*To avoid repetition, the name of the member organization will not be repeated in the body of the minutes past the first identification with the name of the representative participant.*

**Welcoming and Member Introductions**

Todd Van Osdol, SCE, attended at Scott Higa’s request to provide commercial maintenance program coverage.

**New Business**

None.

**Approve Previous Meeting Draft Notes**

The April 28 meeting draft notes were distributed May 15. Minor revisions were received from attendees. The finalized meeting notes would be posted to the WHPA website by Bob Sundberg.

**ACTION Items**

April 28 ACTION: Michael Blazey would provide copies of several CQM program contracts which would provide examples of how maintenance plans were detailed to comply with Standard 180 requirements. Completed.

April 28 ACTION: Steve Clinton, SCE program training, agreed to seek out working group participants from the program side of their staff. No present. Ongoing.

April 28 ACTION: Dale Rossi agreed to write up a draft of working group objectives. He’d first get feedback from Pepper Hunziker and then forward the revised draft out to the entire working group for their input. They then intended to get specific feedback from program implementers and, ideally, contractors and end users.

Dale Rossi reported that he’d held discussions with Pepper Hunziker as well as with Don Langston, full committee chair. He intended to present a draft of the WG objectives at the beginning of this meeting. Completed.

April 28 ACTION: Bob Sundberg would send all working group members the three previous work products of the previous Maintenance Task Working Group. Completed.

**AGENDA**

<b>Topic</b>	<b>Discussion Leader</b>	<b>Desired Outcome</b>
Welcome, Roll Call, Member Introduction, Approve Past Meeting Notes, Review Action Items, New Business, Meeting Agenda	Chair, WHPA Staff	Record attendees, welcome any new members, approve previous meeting minutes, review status of any open Action items, planned agenda and bring up any new business items for the WG to consider addressing.
WG Goals& progress milestones	Dale Rossi	Gather member input on suggestion content areas/topics in order to begin establishing goals and scope of 2016 work product. .
Set next meeting date/time, assign actions and proposed agenda and adjourn.	Chair, WHPA Staff	Clear understanding of member responsibilities for the next meeting. Next meeting date/time established.

**User Guide Objectives, Scope and Target Audience – Dale Rossi**

Dale Rossi, Field Diagnostic Services Inc. (FDSI), began the meeting with a review of the objectives document he’d written after discussions with Pepper Hunziker and Don Langston. The document provided background information,

topics which the WG would explore to include in the user guide and the amount of remaining meeting resources provided to support their effort.

#### Topics

The following list of topics that the working group intend to explore in the current effort

1. Understanding performance objectives and condition indicators
2. Making a maintenance plan
3. Investigating unacceptable conditions and performance
4. Communicating the value proposition
5. Customer facing reporting

Dale proposed spending one meeting focused on each of the topics and then to devote the balance of the remaining meeting resource time to do a deep dive and complete a work product for it before the end of 2016. He thought they should reserve the last two meetings for editing and finalizing the work product and prepare it for delivery to the full CQM Committee for consideration.

#### **Current SCE program maintenance plan goal setting and evaluation process**

The group then reviewed the SCE contract requirements listed in the program MPS (maintenance planning system) provided by Michael Blazey, CLEAResult. Michael explained that they were looking at the Standard 180 checklist of required maintenance tasks which included an option to increase task frequency but not reduce it from the standard minimum frequency. They concluded that those MPS entries were oriented to technical maintenance tasks and not maintenance plan goals.

Michael Blazey also provided a screen shot of the maintenance plan basics related to maintenance agreement goal setting. It listed the three primary goals of Standard 180, thermal comfort, indoor air quality and energy efficiency. Michael explained that the goals were established and stored in the maintenance planning system. He was not familiar with there being a review process once the goals were established or an auditing to see how appropriate the selected goals were.

Dale Rossi asked about how the goals would be measured, what metrics were established for each one. It seemed that there were none established. Dale concluded that this was a good example of what he believed to be a misunderstanding of how performance objectives were intended to be treated.

Todd Van Osdol, SCE, responded that he thought Dale had pointed out one of their challenges with having contractors fill out the current maintenance plan forms. They tried to encourage contractors to choose and complete measurable objectives but that was difficult without additional guidelines, something like what this working group could provide. What objectives were measurable and how they could be measured. At this time the SCE program really didn't enforce the process of measuring performance objectives. He related that the degree of objectives detailing varied widely among participating contractors. Some went into the IAQ CO2 levels of concentration while others were much vaguer like indicated in the plan basics document.

Dale asked whether the program offered contractors any help like in the area of measuring energy efficiency. Did the program offer or require any reporting which would document comparisons and any gains?

Todd responded that the program did offer estimated savings based on deemed savings (CPUC ED deemed/estimated savings developed for the purpose of determining IOU program savings evaluation). But, no measured savings or meter information.

Dale thought that one of the purposes of the program was market transformation. That customers would experience and receive documentation of program benefits so that they'd be willing to retain the higher cost level of maintenance. He asked what the program offered which would communicate the benefits they had received?

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Todd replied that the program offered annual reports to the contractor and their customer that communicated equipment condition and estimated energy savings. The program provided reporting tools to the contractor. Todd agreed to provide examples of those tools and reports at a future meeting.

**ACTION:** Todd Van Osdol, SCE, agreed to provide get together with Scott Higa to locate examples of the reporting tools which the program provided customers and examples of reports delivered to customers.

Bob Sundberg, WHPA staff, asked the Todd and Dale about the deemed savings which Todd had referred to. Whether the deemed savings was a valuable metric or would unit performance data or whole building meter based usage data be more appropriate for customer facing reporting rather than savings data by which the utility program would be evaluated by the CPUC? Maybe current meter usage compared to a three-year average or individual rooftop unit power consumption before/after servicing would be better metrics for customer reporting.

Dale agreed. The deemed savings which the program claimed to the regulators would be of little use to the customer, in his opinion.

Pepper Hunziker, Tre' Laine Associates, mentioned that she believed CLEAResult, program implementers, had been working to collect and analyze building meter data toward developing savings case studies. She also thought that EMI had conducted some kind of study which included customer and contractor interviews, feedback from the SCE program, which she thought this group would find interesting.

Bob Sundberg, WHPA staff, clarified that general feedback on the program would be interesting but wasn't the point Dale Rossi was trying to focus on. He was interested to determine whether the current programs had established quantifiable metrics for maintenance agreement goals between customers and their service providers. The metrics, many related to energy user and savings, which would help document the value of program participation and report that value to customers to enable market transformation and continuation of that level of maintenance after the SCE program incentives expired. But, those other variables

Todd Van Osdol, SCE, recalled the EMI customer forums which contained discussions about customer drivers. He agreed to relay the request to Scott Higa. They'd see what information they could pull from the interviews about customer decision-making related to when they completed the three-year program.

**ACTION:** Todd Van Osdol, SCE, would work with Scott Higa to gather information obtained through EMI conducted customer interviews related to program information and variables related to their interest to continue HVAC Optimization maintenance practices after IOU program incentives expired.

### **Standard 180 Purpose and goal setting – Performance Objectives**

Dale Rossi commented that the additional information would be very interesting as they focused on communicating the value proposition and customer facing reporting. But, he wanted to focus the rest of this meeting on performance objectives and condition indicators. Dale read through Standard 180 Section 1 – Purpose for the group. It outlined the overall “objectives” of this standard. He thought this identified the three performance objectives of the standard. He believed that other goals such as equipment reliability needed to be considered a subset of acceptable thermal comfort as well as other possible goals such as maintenance service costs. He asked the group whether these three were the only performance objectives or that the standard allowed for others.

## 1. PURPOSE

The purpose of this standard is to establish minimum HVAC inspection and maintenance requirements that preserve a system's ability to achieve acceptable thermal comfort, energy efficiency, and indoor air quality in *commercial buildings*.

Bob Sundberg, WHPA staff, suggested that those three items identified in Section 1 might be the overall goals of the standard and not really performance objectives. That performance objectives would be established by a responsible party to meet one or more of the overall goals identified in Section 1. Maintaining acceptable CO2 levels, reduced levels of customer complaints, maintaining space temperature setpoints within an acceptable range and others could be performance objectives with established metrics under the overall goal of thermal comfort, for example.

The group then moved to Section 3 - Definitions to review the one for performance objective. There was no definition for condition indicator.

*performance objective*: the metrics for evaluating performance. They include written statements of performance, descriptions of normal operating characteristics, and measurable and observable indicators that are the basis for evaluating or inspecting elements of a system.

The group then discussed the performance objectives were expressed as a metric. Dale Rossi suggested that the metric needed to be a number. Mike Gallagher thought that there were many "observable indicators" which were not necessarily a metric. Donald Prather, ACCA, offered the example for observation of Tilly in the corner office noting whenever she smelled smoke which was the result of the building going into a negative pressure condition. The group concluded that this was an observation but that the metric could be reduced to a number, a count of the number of times Tilly reported the smoke smell. The metric was the frequency count of her reports. If the reports of smoke exceeded the goal number for the year, they wouldn't have met their performance objective.

Mike Gallagher wondered whether noting the frequency of observations of growth in condensate pans would be the count for a performance objective. Dale Rossi answered that he thought Mike's example was a condition indicator. The performance objective above it would probably be indoor air quality. The metric might be the number of IAQ complaints or sickness reported, not the observation of biological growth in the pan which would be observed during routine maintenance and probably reported as part of the maintenance service record.

Richard Danks did agree with the description that the purpose of the standard did have three umbrella goals to meet its intended minimum requirements. The inferred goal was to take some sort of measurement and trend it. One performance objective might be as simple as fewer reported complaint calls for too hot or too cold. Those complaints could be considered a leading indicator. The underlying cause might be a failing piece of equipment or its setup and operation.

Pepper Hunziker thought that not all performance objectives could be reduced to a number, they could be based on subjective observations like in educational objectives where an objective could be measured by some other criteria than a count or number. She couldn't immediately provide an example but committed to try and come up with several examples later.

Possibly helpful links for further discussions about performance objectives. The discussion might have at times mistakenly addressed people oriented educational/learning performance (behavioral) objectives while the WG discussion had to do with HVAC system performance objectives.

[http://www.nwlink.com/~donclark/hrd/isd/develop\\_objective.html](http://www.nwlink.com/~donclark/hrd/isd/develop_objective.html)

Employee performance assessment -

**Observable Action (task)**

This describes the observable performance or behavior. An action means a verb must be in the statement, for example "type a letter" or "lift a load." Each objective covers one behavior, hence, normally only one verb should be present. If there are more than one behavior or the behavior is complicated, then the objective should be broken down into one or more enabling learning objectives that supports the main terminal learning objective.

**At Least One Measurable Criterion (standard)**

A criterion states the level of acceptable performance of the task in terms of quantity, quality, time limitations, etc. This will answer any question such as "How many?" "How fast?" or "How well?" For example, "At least 5 will be produced", "Within 10 minutes", and "Without error." There can be more than one measurable criterion.

<http://www2.phy.ilstu.edu/pte/311content/testconstruction/stperforobjectives.html>

Educational cognitive behavioral objectives.

"As you create your student performance-based objectives, don't forget to address the various levels within the cognitive domain. Bloom's Taxonomy of Educational Objectives - Cognitive Domain can help in this effort. Don't forget the six areas listed here from the lowest level of cognitive performance to the highest: knowledge (recall of information), comprehension (students can recall information and are familiar with the meaning of the information to the extent of being able to make some use of it), application (the act of applying some abstraction to a new or unique concrete example), analysis (ability to break down an idea into its constituent elements or internal organizational principles, and to perceive relationships among those elements or principles within one "whole" or between several "wholes"), synthesis (creation of something new from previously existing elements or principles), and evaluation (formation of a judgment and the justification of that judgment by reference to facts, examples, or specific criteria)."

HVAC system oriented performance objective related statements from ACCA Standard 5 for residential quality maintenance, page 5.

"The performance objective of the system will be based primarily on the equipment manufacturer's performance data. Acquiring this performance data, however, may be more difficult for older equipment. Original Equipment Manufacturers (OEMs) will generally have performance data for equipment dating back several decades, and the data is usually available at the distributor level."

Pepper Hunziker offered that the performance objective would be what you would expect to observe. The condition indicator would be something indicating that there was a variance from what was expected. She didn't know how this would relate to HVAC equipment and machines. She was looking at the discussion from an educational perspective and what would be used for performance assessment criteria.

Dale Rossi clarified that they were trying to determine how to set objectives for HVAC system maintenance plans from a whole building perspective, not performance assessments of people.

Bob Sundberg, WHPA staff, suggested they look in the standard under Section 4.2.2 where both performance objectives and condition indicators were described in more detail.

Richard Danks suggested that establishing performance objectives could be conditional. That was, the degree of a maintenance program from which the customer was starting. If they'd neglected equipment or had very minimal inspections in the past, goals could be established to describe more comprehensive efforts. A more mature maintenance plan might be starting after they had a completed inventory and a detailed work order maintenance system established. In that situation they might focus on drawing better conclusions from work orders and service delivery reporting and metrics for measuring the effectiveness of their particular program approach. The challenge for a user guide was how to address different end users who were at different starting points when they approached establishing maintenance plan goals. The owner would have to determine what, for them, defined success.

Dale Rossi asked whether a performance objective could be subjective? Or, did the metric have to lead to a number? Pepper Hunziker didn't think so but wanted to give it some more thought and see if she could come up with any examples of metrics which didn't involve numbers.

**ACTION:** Pepper Hunziker would try to come up with HVAC system performance objective examples which had measurements and metrics which didn't need to be quantified.

Richard Danks went back to Donald Prather's example of Tilly. You could take a poll of all occupants several times per year of the degree to which they were satisfied with comfort conditions in subjective terms – no at all, somewhat, quite satisfied, very satisfied. You could then collect the subjective data and quantify it during the analysis phase.

Mike Gallagher added that which things to be measured would vary with goals selected by the end user buy, ultimately, you had to quantify what was being measured or you couldn't determine whether you'd achieved your goal or not. The measurement needed to be something numerical.

Dale Rossi wondered, if they'd mostly agreed on how the performance objective metric would be quantified, whether they also needed to note the source of the data? Did they need to define where that number came from? Members agreed. So, Dale concluded, part of determining a performance objective was defining how it was going to be measured and where the information would come from, the data source. If the objective was reduced complaints for space comfort, they'd have to identify who was being asked for input. If the goal was a comfortable temperature range, and energy management system could monitor if and how often the space varied from the goal temperature range.

### **Standard 180 Condition Indicators**

Dale Rossi, FDSI, indicated that he understood that condition indicators were related to Section 5 maintenance tasks lists. A condition indicator was established to determine whether condition of a component or the system was acceptable or unacceptable. For each maintenance task, they needed to define when the observed condition was considered unacceptable, how they would tell when coils were clean or not clean, similarly for each task.

Richard Danks commented that the primary intent of the standard was that there was a discussion regarding details of the maintenance plan and that they reached agreement on those plan details and how the program will be monitored.

Dale Rossi suggested that the group might develop a template to help guide the owner/service provider plan development process. Whatever this group developed would/could inform the ASHRAE/ACCA Standard 180 Committee and User Manual Subcommittee as well as any CA IOU or other utility program. But, his intent was that they would try to determine what should or could be done to meet the intent of the standard, not limited to the perspective of any utility program requirements or any focus solely or mostly on energy efficiency and savings. It could be used by utility program designers and implementers as well as by contractors working with customers completely outside of utility programs.



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Bob Sundberg, WHPA staff, added that the output of this group would be made public and available to all interested parties. And, while CA utility programs seemed to currently be focused on maintenance task requirements and energy savings, not really addressing the other goals of the standard, if those or other programs professed to be based on Standard 180, they should evolve to require the dialogue necessary for program planning and goal setting beyond energy efficiency which Richard Danks had referred to earlier. Establishing a plan with clear performance objectives, determining means to measure performance against their objectives and also a process for reporting results and modifying the plan as needed. It should include goals for IAQ and occupant comfort in addition to energy efficiency.

**Closing Comments/Adjournment**

Dale Rossi suggested they schedule the next week for Thursday June 2 at 10 am PDT. Their agenda would focus on making a maintenance plan and how to provide advise on how to go about producing one based on the standard.

The Chair adjourned the meeting at 11:02 am PDT.

\* \* \* \* \*

ACTION Items listed on following page.

**Action Items and Key Decisions (not referenced above)**

May 26 ACTION: Todd Van Osdol, SCE, agreed to provide get together with Scott Higa to locate examples of the reporting tools which the program provided customers and examples of reports delivered to customers.

May 26 ACTION: Todd Van Osdol, SCE, would work with Scott Higa to gather information obtained through EMI conducted customer interviews related to program information and variables related to their interest to continue HVAC Optimization maintenance practices after IOU program incentives expired.

May 26 ACTION: Pepper Hunziker would try to come up with HVAC system performance objective examples which had measurements and metrics which didn't need to be quantified or expressed with a number.