



## WHPA Goal 2: CQM Standard 180 User Guide Working Group Thursday February 9, 2017 Meeting Notes

### Call to Order

The meeting was called to order at 10:01 am PST 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 working group. 9 of 16 voting members in attendance would constitute a quorum. 7 voting members, 1 non-voting members, 1 guests and 1 staff were present for a total of 10 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 User Guide Working Group Voting Members</b>				
ACCA (Air Conditioning Contractors of America)	Donald	Prather	Contractor Association	P
Air Management Industries	April	Yungen	Contractor (Nonresidential)	
Aire Rite AC & Refrigeration	Don	Langston	Contractor (Nonresidential)	
AMS (American Mechanical Services)	Marc	Pickett	Contractor (Nonresidential)	P
Charles Segerstrom, Energy Efficiency Consulting	Charles	Segerstrom	Energy Efficiency Program Consultant	P
CLEAResult (formerly PECEI)	Todd	Van Osdol	California IOU	P
FDSI (Field Diagnostic Services Inc.)	Dale	Rossi	Third Party Quality Assurance Providers	P
GWP (Goodheart-Willcox Publisher)	Sandy	Clark	Educator, Trainer	
Honeywell E&ES, Commercial Buildings, Trade	Michael	Lawing	Controls (Manufacturer or Distributor)	
HSGS (Honeywell Smart Grid Solutions)	Shayne	Holderby	Energy Efficiency Program Consultant	
National Comfort Institute	Jeff	Sturgeon	Educator, Trainer	P
Richard Danks Consulting - FacilityPro	Richard	Danks	Other Stakeholder	
SCE (Southern California Edison)	Scott	Higa	California IOU	
Tre' Laine Associates	Pepper	Hunziker	Energy Efficiency Program Consultant	P
Western Allied Corporation	Mike	Gallagher	Contractor (Nonresidential)	
Warren Lupson and Associates	Warren	Lupson	Other Stakeholder	
<b>CQM User Guide Working Group Non-Voting Members</b>				
BELIMO	Darryl	DeAngelis	Controls (Manufacturer or Distributor)	
BMI (BuildingMetrics, Inc.)	Pete	Jacobs	Energy Efficiency Program Consultant	P
CLEAResult (formerly PECEI)	Michael	Blazey	Energy Efficiency Program Consultant	
HSGS (Honeywell Smart Grid Solutions)	Steve	Varnum	Energy Efficiency Program Consultant	
SCE (Southern California Edison)	Steve	Clinton	California IOU	
UC Davis EEC (Energy Efficiency Center)	Kristin	Heinemeier	Research Organization	
<b>CQM User Guide Working Group Guests (Non-Voting)</b>				
Adrienne Thomle, Consulting**	Adrienne	Thomle+		P
Fresno Unified School District	Frank	DiLiddo		
Little Caesar's **	Wendy	Gallo+		
<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

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.



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**Welcoming and Member Introductions**

Attendees were welcomed. There were no new guests or members.

**Approve Previous Meeting Draft Notes**

The February 2 meeting draft notes were distributed February 7. Finalized meeting notes would be posted to the WHPA website by Bob Sundberg.

**ACTION Items**

July 18 ACTION: Todd van Osdol would talk with Scott Higa about how they thought the implementation of AB 802 might have an impact on their program and about how they might consider addressing the energy use reduction sort of performance objective which Dale Rossi described. Completed.

**New Business – Bob Sundberg**

None.

**AGENDA**

Topic	Discussion Leader	Desired Outcome
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 Topic Outline	Dale Rossi	Agree on 2016 topics the WG will address.
Develop Tasks for each Topic	Dale Rossi	Tasks listed for next topics discussed.
Confirm last meeting date/time, assign actions and proposed agenda and adjourn.	Dale Rossi, WHPA Staff	Clear understanding of member responsibilities for the next meeting. Next meeting date/time established.

**User Guide Working Group Planning – Dale Rossi**

Dale Rossi, FDSI and Chair – he proposed a short-term agenda of establishing the long term 2017 objectives, a plan for what the WG intended to achieve. Their short-term goal was to complete the outline with some progress milestones for all topics by February 28 for the first ½ of 2017.

Dale asked Bob Sundberg, WHPA staff, what meeting resource the WG had for the first half of 2017.

Bob Sundberg responded – a total of 18 one hour meetings were allocated for the first half of 2017. Don Langston, CQM Committee Chair, might chose to re-allocated a small portion of this to another WG which Don wanted to be supported during this same period.

Dale said the WG needed to determine what they wanted to achieve for each topic before July. Was there sufficient time to produce templates, explanations, step by step instructions and/or examples for all the topics they'd selected. He asked for the group to discuss what level of detail they thought would be reasonable goals. He understood their 2017 overall task to include the following topics:

1. Making a maintenance plan
2. Implementing a maintenance program

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3. Measurement, data collection, making progress/status reporting and validation
4. Introduction and conclusions for their work product

Charles Segerstrom, Energy Efficiency Consulting – he hoped they could spell out the value proposition for adopting Standard 180 in as much detail as possible. He'd like to see the metrics for how things would be measured so that the savings, the actual value could be expressed or modeled. There was a lot of difference between a visual inspection of an air filter vs. measuring static air pressures.

Dale Rossi asked Charles if he meant metrics around the performance objectives like thermal comfort and energy efficiency rather than maintenance measurements like the pressure drop across a coil or filters in any one particular unit.

Charles Segerstrom – he meant all of the metrics which added up to what degree of performance was being delivered. He deferred to other experts in the WG for how those could best be measured. The reporting mechanism, the metrics and value which could be expressed to provide the best comparison for a Standard 180 maintenance approach vs. reactive approaches.

Todd Van Osdol, CLEAResult – the challenge for utility programs was to provide guidance for contractors on setting performance objectives. Also, how to translate that data into meaningful descriptions of performance their systems now delivered. How to deliver information to mostly a non-technical audience. He hoped to see them provide how more detailed condition indicators might lead up to a broader measure of performance which could be understood by lay persons.

Dale Rossi summarized – he heard requests to have some level of detail around the maintenance program where performance objectives were developed as well as around the maintenance plan where condition indicators were established. He asked how members thought that information could be delivered. Was it a table, a step-by-step description, a form which would be filled out? What form could this take?

Jeff Sturgeon, NCI – a form template to complete for collecting site system data.

Bob Sundberg, WHPA staff – a spreadsheet which could list the conditions in a column, condition indicators for each in another and conditions found/document in a third column. They might focus in the template on listing key conditions known to have a great impact on system performance. In Appendix B of Standard 180 there were a few examples which seemed to mix condition descriptions and some visual indicators of unacceptable conditions which indicated degraded performance but no examples with metrics. The WG template might provide some condition indicators with examples of normal readings or appearance and measured condition limits for condition indicators. Laying out a row for each key maintenance task condition indicator would provide contractors with a much clearer picture of what they could develop and provide their customers. They'd need to state that these were only examples and the specific metrics or measurements would depend on the equipment they would maintain.

Todd Van Osdol – they should also indicate how those condition indicators related to a specific performance objective – which objective was a condition linked to. This could help the customer connect individual tasks with their overall program objectives. You wouldn't have to go to the detail or effort to provide evidence. Just list which performance objective or objectives each condition indicator was linked to.

Marc Pickett, AMS – he pictured this example being in a form which would be filled out for each maintenance program. He understood what Todd had suggested to just be another column to state whether that task was energy related energy, comfort, indoor air quality, equipment longevity or related to another or several objectives. It could be another check mark.

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The group agreed that their effort should be narrowed down to rooftop units (RTU), not all equipment listed in the standard. They also agreed that they'd make a table for the RTU table task condition indicators.

Dale Rossi asked the group how that approach might apply to maintenance program performance objectives for IAQ, comfort and energy efficiency. He also suggested that they might create an example of an equipment inventory showing what they thought was an appropriate amount of information and detail. What information was necessary?

The group agreed on the information needed would include: make, model, serial number – unique identifier; fuel/heating type; economizer system or not; supply fan VFD or not.

Dale Rossi - summary from Feb. 2 meeting:

### **1. Maintenance plan**

- Select a task list from Section 5 tables for each type of equipment
- Create condition indicators for each individual piece of HVAC equipment or groups of similar equipment to determine whether operation is acceptable or not
- Develop the process to be followed when condition indicators indicated unacceptable performance or operation

### **2. Implementing a maintenance program**

- Establish an inventory for the equipment to be maintained with a unique identifier for each piece of equipment and a complete enough description to understand its use and application in order to select the right task list
- Create performance objectives to define what the program was intended to achieve (goals)
- Establish maintenance plans for each individual unit or groups of HVAC equipment
- Establish metrics for how that would be measured, how the data would be collected
- Regularly established client meetings or a reporting process to review and compare program performance against their goals

Next topic discussed:

### **3. Measurement, data collection, reporting and validation**

- Obtaining authorization to access client's building electrical meter data (AMI meter data)

Dale Rossi wanted to hear WG ideas about what they would produce during the first ½ year of work regarding reporting. He thought that the report making topic was complex and extensive enough, it might take the whole 2<sup>nd</sup> ½ of 2017.

Jeff Sturgeon, NCI – collect, analyze and report back to customer on data related to performance objectives. Completing examples of condition indicators and examples of measurements and data collection might be all they could handle in the first half year.

Bob Sundberg, WHPA staff – thought that reporting on performance objectives accomplishments was one of the most neglected aspects of attempts to implement Standard 180. Reporting provided the feedback to encourage continuous program improvement. Bob and Dale Rossi agreed that reporting contributed directly to establishing the value proposition that would support continued implementation of this maintenance approach.

Dale Rossi – asked should the group start with what a report should include to determine the data that should be collected or should they start with suggested data and then move onto how it could be reported? There were different theories on how this could be approached. It had often been said, you managed what you decided to measure. Did you figure out what you were going to measure just from the maintenance task tables or from the maintenance plan performance objectives? Once you determined that source, you could begin laying out a reporting plan.

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Marc Pickett, AMS – he hadn't thought before about which end should be started on first and needed to consider the idea. One of the reasons he'd decided to join and participate with this group was his interest in how to get back to a customer and show them what the staff had been doing and accomplishing through this new approach. He could do task lists all day long and go into great detail on what and how they'd measure status and finding what was wrong. But, getting that information fashioned into a report that customers could understand was the most essential and important part of this user guide project. The reporting would show what they were spending their money on and what it was doing for them.

The group decided to limit their detailed goals and effort for the first half of the year to the working the maintenance program and maintenance plan topics. They would plan to work on the measurement, data collection and reporting third topic during the second half year. They expected to gain insights from completion of the first two topics which would help them detail what they thought could be completed on this third topic. Dale agreed with Marc that reporting would likely be the biggest and hardest piece of their work.

Dale Rossi – during the next two meetings, if they could get a picture for what they thought reporting should be, he thought the rest of their work would become a lot clearer. They'd be in a better position for how to produce a more detailed plan. He asked everyone to bring their ideas around maintenance program reporting to the next meeting.

**ACTION:** Dale Rossi asked all members to bring their ideas around maintenance program reporting to the next meeting.

Some online report leads:

Lots of task lists, forms and software offerings:

<https://www.google.com/search?q=commercial+HVAC+maintenance+program+reports&sa=N&biw=1234&bih=664&tbm=isch&tbo=u&source=univ&ved=0ahUKEwie1Y7t7Y3SAhXKNSYKHcebA9c4ChDsCQha>

Several company takes on various maintenance reports:

<http://www.dynamicairstervices.com/commercial-and-retail/commercial-service-report/>

<http://engineeringexcellence.com/how-we-do-it/tracking-reporting/>

### **Validating vs. Reporting for Standard 180**

Todd Van Osdol, CLEAResult – validation would be proving the impact, the value which Standard 180 base maintenance had on achieving the selected performance objectives. A document to convince the customer of the link between the physical maintenance work being done and the measurable objectives they worked to accomplish. A snapshot comparison between the condition units were in before the program began, the condition they were brought up to and later status confirming the level of operation, condition of units at intervals like yearly as measures of progress or sustained higher levels of operation. Reporting would provide validation, showing positive progress towards established performance objectives. The validation would be the conclusions drawn from the progress reports.

Dale Rossi – asked whether this should be considered by unit, one site or could it be considered for those who had an entire portfolio of properties? Would this be a lot of manual, hand work or could it be considered for building automation and going to scale for entire portfolios?

Todd Van Osdol – scalability was very important since that's what many customers faced.

Charles Segerstrom – there was a lot of electronic and automated report & proposal generation product displayed and promoted at the recent AHR Exposition. The tools designed for iPhones and other handheld devices would allow technicians to do a much better job of being involved in the selling, validation process and in report making.



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Dale agreed. Just how he pictured automated dispatch and reporting software being used. He wondered whether the validation step, conclusions from the summarized reports would need some kind of a script?

Bob Sundberg, WHPA staff – after performance objectives were established, couldn't the reporting be framed around a list of them? He pictured a spreadsheet table with rows for those objectives and then specific columns to address status at the designated intervals with however status/progress was going to be measured. For each interval, there could be a Y/N box for whether it was achieved or not. If not, what additional steps were recommended to try and achieve it. That summary would provide a framework for the discussion with their customer. The “validation” could be a scorecard summary for all the objectives, what percentage were being met and not met. Measurement of individual performance objectives could be tracked as well as an overall score – 8 of 10 objectives being met = 80%.

Todd Van Osdol – the SCE program was moving towards a listing, summary of the maintenance agreement objectives but it wasn't really a summary scorecard. It was intended to be the basis for the contractor and their customer to hold discussions about progress towards the program objectives. He thought the idea of a scorecard would be a good idea for customers with portfolios who needed scalable summaries.

Dale Rossi – he'd already considered performance objectives would be established which were measurable and, therefore, scorable. You could compare the current to the desired situation. He wondered if the user guide could help provide guidance on how to evaluate a report, instructions for contractors on how to summarize their report to establish benefits to their customers. He could picture each performance objective being graphed with a base line for the goal and another line for each of the review intervals, monthly maybe for utility bills. It could apply equally well for occupant comfort performance objectives – space complaints from Myrtle, for example, which were quantifiable.

The group discussed % progress towards a goal but the approach was discounted because the starting baseline point could have a huge impact on how much progress was claimed – in effect, the outcome could be “gamed.” The % improvement could be based on how bad the equipment was before their program began which could dramatically skew the reported results. It could have been more of a measure of how bad the equipment was to begin with. It would make small improvements look bad for equipment which was already running pretty well.

Bob Sundberg, WHPA staff – thought that a building's energy use might be an objective which could be used for individual locations and also scalable for enterprise level customers. Past energy data could be evaluated per square foot of space and monthly usage averaged, then compared to current usage for the same spaces over time. The validation would be if there was reduced energy use compared to average past usage monthly and probably for annual usage as well.

### Closing Comments/Adjournment

Dale thought the group had two more meetings to discuss and decide on their approach for the year. At the next meeting they could continue their discussions about reporting and validation. He asked everyone to try and bring examples of what they considered to be good approaches to reporting for the next meeting.

Dale thanked everyone for attending and suggested confirmed the next meeting would be Thursday February 23 at the same time, 10:00 am PST, to continue their outline planning for 2016.

The meeting was adjourned at 11:02 am PST.

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### Action Items and Key Decisions

February 9 ACTION: Dale Rossi asked all members to bring their ideas around maintenance program reporting to the next meeting.



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