



Goal 3: Field Detection & Diagnostics (FDD) Committee
Monday April 24, 2017, Meeting Notes

WHPA Code of Conduct: Please note that all participants of all Western HVAC Performance Alliance (WHPA) meetings, standing committees, working groups, and ad hoc groups shall adhere to the WHPA Code of Conduct: <http://www.performancealliance.org/Home/CodeofConduct/tabid/205/Default.aspx>.

Call to Order

Co-Chair Sean Gouw (SCE) called the April 24, 2017, FDD Committee Meeting to order at 10:02 a.m. PDT.

Agenda

TOPIC	FACILITATOR
Roll Call Agenda Review Approval of March 20, 2017, Meeting Minutes	Bonnie Gustavson Sean Gouw Elsia Galawish
Discuss FDD Roadmap	Joe Schmutzler
Discuss FDD-CQM Activities	Sean Gouw Elsia Galawish
Next Steps and Adjourn	Joe Schmutzler Sean Gouw

Roll Call

Organization	First Name	Last Name	WHPA Category	P=Present
Voting Members				
ACCA (Air Conditioning Contractors of America)	Glenn	Hourahan	Contractor Association	P
Carrier Corporation	Dick	Lord	HVAC Manufacturer	
Daikin Applied	Skip	Ernst	HVAC Manufacturer	P
Ezenics, Inc.	Benjamin	Kelderman	Other Stakeholder	P
FDSI (Field Diagnostic Services, Inc.)	Dale	Rossi	Third Party Quality Assurance Providers	P
Goodman Manufacturing	Aniruddh	Roy	HVAC Manufacturer	P
JCI (Johnson Controls, Inc.) (YORK)	Wayne	Guelfo	HVAC Manufacturer	
NBI (New Buildings Institute)	Alexi	Miller	Energy Efficiency Organization	
Proctor Engineering	Abram	Conant	Other Stakeholder	P
Purdue University	Andy (Andrew)	Hjortland	Research Organization	
SCE (Southern California Edison)	Sean	Gouw (Co-Chair)	California IOU	P
Trane-Ingersoll Rand, Inc.	Caleb	Joiner	HVAC Manufacturer	P
Transformative Wave	Joe	Schmutzler (Co-Chair)	Controls (Manufacturer or Distributor)	P
TRC, Inc.	Farhad	Farhamad	Other Stakeholder	P



**Goal 3: Field Detection & Diagnostics (FDD) Committee
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Organization	First Name	Last Name	WHPA Category	P=Present
Verified, Inc.	Robert	Mowris	Third Party Quality Assurance Providers	
XCSPec	Janet Jeff	Peterson Aalfs	Controls (Manufacturer or Distributor)	
Guests				
Energy Solutions	Jim	Hanna	Energy Efficiency Program Consultant	P
Staff				
BJGustavson Consulting (WebEx)	Bonnie	Gustavson	Other Stakeholder	P
Galawish Consulting Associates (Staff Support)	Elsia	Galawish	Energy Efficiency Program Consultant	P

To avoid repetition, the abbreviation for the name of the member organization will be used in the body of the minutes.

Agenda Review

Sean Gouw (SCE) reviewed the agenda:

1. He reported that FDD Committee Members approved the FDD Committee’s Goals and Implementation Plan via email vote.
2. Discuss FDD Roadmap:
 - a. 1st round updates discussion on 4/24
 - b. 2nd round updates discussion on 5/15
 - c. Incorporate updates to roadmap by 6/12
3. Discuss FDD-CQM Activities:
 - a. Update CA CQM Considerations & Recommendations Document = Advise on structure of CQM Measures, role of FDD.
 - i. 1st round updates discussion on 4/24
 - ii. 2nd round updates discussion on 5/15
 - iii. Incorporate updates by 6/12
 - b. Formal link with WHPA CQM Committee?
4. 2019 California T-24 Codes & Standards FDD Activities:
 - a. Hold discussions for CASE FDD topics as needed by 6/12
 - i. Nonresidential – Economizer FDD for built-up HVAC
 - ii. Residential Quality HVAC FDD topics

Approval of March 20, 2017, Meeting Minutes
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Sean Gouw (SCE) motioned to have the March 20, 2017, Meeting Minutes approved. Dale Rossi (FDSI) seconded. No one opposed or abstained. The March 20, 2017, meeting notes were unanimously approved. Motion carried.

Discuss FDD Roadmap

Sean Gouw (SCE) solicited comments on the old FDD Roadmap but received none.

Joe Schmutzler (Transformative Wave) presented the FDD Committee Industry Roadmap approved in July 2013. He noted that FDD is still an integral part of the California Long-Term Strategic Plan. The Residential and Technical

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Action Plan mentions FDD. However, it may need updating, even though the Committee is moving along on some FDD activities, but it is beneficial to look at integrating programs. FDD is not on the ASHRAE and CEE radars. Some programs are using FDD tools more, and we need to understand how they are used and how to better support them.



4-24-17 Discuss FDD
Roadmap.pptx

Dale Rossi (FDSI) – My idea for the future of FDD is different from the Roadmap. I think it is part of the “internet of things,” systems produced by the OEM, and all this will be high iterative to some open standard. FDD is evolving quickly, but it is still an immature market until sensors are put into units by manufacturers and people get the data for analysis (cloud computing/hardware/software platform).

Joe Schmutzler (Transformative Wave) – The Roadmap saw those points as conditions for creating the market, and I believe there is already a good platform so customers can look at different alternatives – customer choice – getting quality products in front of customers.

Sean Gouw (SCE) – We need to have the right lens to recognize how technologies are evolving. Takeaways are:

1. Continue the compilation of FDD technologies begun in 2016 and summarize FDD technologies recommendations and considerations.
2. Continue to capture how things evolve as they iterate. The “internet of things” fits into this lens.

However, there are additional challenges in trying to look at everything out there:

- Lack of standards –we’ve made some progress
- Studies capturing fault incidences – we have compiled recognized accomplishments
- Take to the national level – unsure

It is critical to define FDD within CQM programs.

Both Joe Schmutzler (Transformative Wave) and Caleb Joiner (Trane) agreed with this.

ACTION ITEM: Joe Schmutzler (Transformative Wave) and Sean Gouw (SCE) will update the Roadmap and present at the next meeting.

Sean Gouw (SCE) requested Committee Member input by asking:

1. What is each member’s philosophy on FDD?
2. What is working and what is not working?

Dale Rossi (FDSI) – Company is working with big companies that are looking into the future with a decentralized approach—automated technologies that are not currently being envisioned (non-sequential-types).

Joe Schmutzler (Transformative Wave) – We may want to look at these. I will discuss this offline with Dale Rossi (FDSI).

Discuss FDD -CQM Activities

Sean Gouw (SCE) – How we can have a formal link with the CQM Committee?

Dale Rossi (FDSI) – The CQM Committee may not have the capacity to take any more workload given that they now only have quarterly meetings and three working groups. I recommend Sean Gouw (SCE) initiate a discussion with

Goal 3: Field Detection & Diagnostics (FDD) Committee Monday April 24, 2017, Meeting Notes

Don Langston (Aire Rite), Chair of CQM Committee. In addition, I recommend in the near term to deal with what is available – what are the FDD products and tools out there? How does FDD include AMI? Where is the intelligence? Will it be in the cloud?

Sean Gouw (SCE) – Look at In Field and Onboard FDD as separate measures. I envision three phases:

1. Pre – data to detect problems
2. During – help guide solution
3. Post – used for EM&V: measuring a value

We need to maintain some product list that makes them understandable to customers. However, the Committee should not develop anything that dictates where the intelligence is located. How do we establish criteria and show that these products demonstrate achievement of the criteria? In the past, the approach centered on a more performance approach.

Dale Rossi (FDSI) – I believe we need to integrate CQM based on ASHRAE/ACCA 180. The 180 method is to create performance objectives (the CSA):

1. energy objective
2. air quality objective and
3. thermal objective.

At the evaluation level, either you are meeting those objectives or you are not. At the implementation level, you create a condition indicator. This is a value—subjective or objective—used to measure the current observed condition against a standard. For example, when performing maintenance, measure some value, present a standard for how to evaluate this, and recommend some prescribed action to take if outside the normal standard. Good data comes from the internal FDD technology. That is how it fits into the CQM program.

Sean Gouw (SCE) – I agree that a performance objective-based approach to measuring and reporting is the way to go. If we look at products to certify for use in CQM programs, you can either claim that it has the capabilities – a check mark approach. Another approach could be that you subject the product to some form of performance testing, PURDUE tests, or lab testing.

Dale Rossi (FDSI) – My understanding (in the near term) is that the Committee should look at what the CQM programs are already doing and what they are trying to accomplish. Where are their current activities aimed? You then ask what the risks are of not meeting their goals using those strategies. They want to know that the economizers are doing their jobs. FDD would track what is done to reduce risks and uncertainties around what they are trying to do.

Sean Gouw (SCE) – I'm trying to get a notion of performance testing of FDDs, recognizing that we currently do not have a good way of doing this test, and we are struggling with laboratory test method in ASHRAE group. The intent here is to recognize that we are not ready for that type of FDD certification-type approach.

Dale Rossi (FDSI) – It makes sense, but the approach you are trying to certify is too granular for what the current technology can really do well. However, you can certify other approaches that are available today. There are programmable thermostats and AMI data available today that are very predictive and illustrative of ongoing performance.

Skip Ernst (Daikin) – Condenser coil cleaning data is very granular but it is difficult to separate from five other issues.

Dale Rossi (FDSI) – I agree that it is hard to detect and distinguish low condenser airflow.

Sean Gouw (SCE) – SCE programs do not use a granular approach. What would certification look like?

Dale Rossi (FDSI) – It would have to show that the FDD meets its claims and that those claims are acceptable. FDD can help mitigate risks, save energy, and save money. Within the existing structure of measures, does FDD play a passive role for realization of savings or should there be a separate FDD measure? What do you want to see?



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Next Steps and Adjourn

Action Item

Joe Schmutzler (Transformative Wave) and Sean Gouw (SCE) will update the Roadmap and Recommendation List and present at the next meeting.

Next Meeting: Monday, May 15, 2017, 10:00-11:00 a.m. [PDT](#)

Upcoming 2017 FDD Committee Meeting scheduled Monday, June 12, 2017, 10:00-11:00 a.m. [PDT](#).

The meeting adjourned at 11:10 a.m. [PDT](#).

Submitted by Elsia Galawish, WHPA Staff
Galawish Consulting
415-482-1079
Galawish1@gmail.com
www.performancealliance.org