



# WHPA FDD Committee Meeting May 15, 2017

Co-Chair Sean Gouw, P.E., SCE  
and

Co-Chair Joe Schmutzler, CEM, CLEP, LEED AP, Transformative Wave

...**For Announcing** your **name** and your **organization**  
when you speak



*and*



...**For Muting** your phone when you are not speaking



WESTERN HVAC  
PERFORMANCE  
ALLIANCE

# Agenda

- ▶ Roll Call
- ▶ Approval of April 21, 2017, FDD Meeting Minutes
- ▶ Intro
- ▶ Discuss FDD Roadmap
- ▶ Discuss FDD-CQM Activities
- ▶ Next Steps and Adjourn


# Roll Call

- ▶ Bonnie Gustavson



# Approval of April 21, 2017, FDD Meeting Minutes

## ► Elsia Galawish



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

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**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>.

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**Call to Order**

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

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**Agenda**

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

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**Roll Call**

Organization	First Name	Last Name	WHPA Category	P=Present
<b>Voting Members</b>				
ACCA (Air Conditioning Contractors of America)	Glenn	Hourahan	Contractor Association	P
Carrier Corporation	Dick	Lord	HVAC Manufacturer	
TruSkin Applied	Skip	Ernst	HVAC Manufacturer	P
... Inc.	Benjamin	Kelderman	Other Stakeholder	P
... (Diagnostic Services, Inc.)	Dale	Rossi	Third Party Quality Assurance Provider	P





# Intro

- ▶ Co-Chair Sean Gouw, P.E., SCE



SOUTHERN CALIFORNIA  
**EDISON**

- ▶ Co-Chair Joe Schmutzler, CEM, CLEP, LEED AP, Transformative Wave



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## Next Steps from Previous Meeting

- ▶ ~~Vote on 2017 Goals & Implementation Plan via e-mail~~
- ▶ Committee e-mail comments on FDD Roadmap
- ▶ Present updated FDD Roadmap at 5/15 meeting



# Confirmed Meetings for 2017

- ▶ ~~2/13/2017~~
- ▶ ~~3/20/2017~~
- ▶ ~~4/24/2017~~
- ▶ **5/15/2017**
- ▶ 6/12/2017
- ▶ ...?

<http://www.weighthacker.com/wp-content/uploads/2012/10/dietcola.jpeg>



# Goals for 2017

- ▶ **Re-Visit FDD Roadmap**

- Update document

- ▶ **Continue CQM-FDD Activities**

- Update CA CQM Considerations & Recommendations Document = Advise on structure of CQM measures, role of FDD
- Formal link with WHPA CQM Committee?

- ▶ **2019 California T-24 Codes & Standards FDD Activities**

- ~~Hold discussions for~~

- ~~▪ Nonresidential – Economizer FDD for built-up HVAC~~
- ~~▪ Residential Quality HVAC FDD topics~~





# Implementation Plan 2017

## ▶ Re-Visit FDD Roadmap

- ~~◦ 1<sup>st</sup> round updates discussion on 4/24,~~
- 2<sup>nd</sup> round updates discussion on 5/15
- Incorporate updates to roadmap by 6/12

## ▶ Continue CQM-FDD Activities

- Update CA CQM Considerations & Recommendations Document = Advise on structure of CQM Measures, role of FDD
  - ~~▪ 1<sup>st</sup> round updates discussion on 4/24,~~
  - 2<sup>nd</sup> round updates discussion on 5/15
  - Incorporate updates by 6/12
- Formal link with WHPA CQM Committee?

## ▶ 2019 California T-24 Codes & Standards FDD Activities

- ~~◦ Hold discussions for CASE FDD topics as needed by 6/12~~
  - ~~▪ Nonresidential – Economizer FDD for built-up HVAC~~
  - ~~▪ Residential Quality HVAC FDD topics~~



# WHPA FDD Committee 05-15-2017 Meeting

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DISCUSS FDD ROADMAP

JOE SCHMUTZLER

# FDD Committee Industry Roadmap Updates

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- **CLTEESP HVAC Goal 4:** *New climate--appropriate HVAC technologies (equipment and controls, including system diagnostics) are developed with accelerated market penetration. **Goal Results :** At least 15 percent of equipment shipments are optimized for California's climate by 2015 and 70 percent by 2020.*
  - **Is there any data on % of units sold with Title 24 approved FDD systems?**

# FDD Committee Industry Roadmap Updates

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- **CLTEESP HVAC Strategy 4--5:** *Develop nationwide standards and/or guidelines for onboard diagnostic functionality and specification for designated sensor mount locations.*
  - **Short Term Milestones:**
    - *Establish an industry--wide task force to develop national standard diagnostic protocols.*
      - **2015 IECC has economizer FDD requirement. At least WA has this code**
    - *Begin implementation.*
    - *Incorporate into HVAC industry and utility programs.*
      - **Service programs in CA have incentives for FDD**

# FDD Committee Industry Roadmap Updates

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- **CLTEESP Strategy 4--6** : *Prioritize in--field diagnostic and maintenance approaches based on the anticipated size of savings, cost of repairs and the frequency of faults occurring.*
  - **Short Term Milestones:**
    - *Benchmark existing diagnostic, repairs and maintenance protocols and develop appropriate products.*
  - **Mid Term Milestones:**
    - *Commercialize On--Oboard Diagnostic systems*
  - **Long Term Milestones:**
    - *Incorporate mandatory Onboard Diagnostic Systems in California Building Codes*
- **Economizer FDD part of CA code, moving to faults being listed at/near Tstat**

# FDD Committee Industry Roadmap Updates

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- ***Lack of Availability*** . Existing residential and commercial HVAC systems have limited ability to detect operating faults. There are third--party FDD tools, but most are not readily available or understood by consumers. Few embedded, automated residential FDD tools are available. There are no tools that can detect multiple faults, which are much more common than individual faults.
  - **FDD is common in commercial systems**
- ***Research into FDD on Thermostat*** .
  - **Being implement in Title 24**

# FDD Committee Industry Roadmap Updates

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- **Lack of Standards**
- Currently, there is no established method to prove that an FDD tool works properly and will not generate excessive false alarms.
  - **Standards good enough to implement in state codes, but no simple comparison tool, similar to LEDs on DLC**
  - **Need to re-engage with other standard setting groups, or would this just slow things down with little benefit?**
- ***ASHRAE Standard Method of Test for RTU FDD***
  - **ASHRAE Standard 207 – currently on hold, WAS THIS INCORPORATED into 90.1/90.2?**



# FDD Committee Industry Roadmap Updates

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- **Lack of Customer Pull**

- ***High Performance RTU Challenge***

- DOE has ongoing annual awards and promotion

- ***Program Pilot Test***

- IOUs have implemented programs that incorporate promoting FDD

- ***Research into Market Acceptability***

- Currently implemented by all OEMs. Limited research shows little or no communication to customers and no setup of faults notice to customer or contractor.

- ***Design IOU FDD Program***

- IOUs have implemented programs that incorporate promoting FDD

- ***Launch IOU FDD Program***

- IOUs have implemented programs that incorporate promoting FDD

# Thank You

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QUESTIONS?

## Discuss FDD–CQM Activities

- ▶ Sean Gouw
- ▶ Southern California Edison
- ▶ Engineer

## FDD-CQM Activities Open Discussion

- ▶ **Strategy 1: Create a stand-alone HVAC CQM statewide FDD measures, in addition to the current measures**
  - Pros: Directly recognizing FDD's value in achieving kW/kWh savings, empower CQM offering to a measurement-based approach rather than checklist, establish a feedback loop for field data to inform forecasting & verification activities.
  - Cons: Lot's of upfront work, much uncertainty, rigid approach is not easily adaptable with changing technology landscape. Risk of bias towards certain offerings?
- ▶ **Strategy 2: Maintain a qualified FDD product list, let FDD enhance the realization rates of current CQM measures by acting as a “validation tool” for CQM implementers and evaluators**
  - Pros: Allows more flexibility to learn/adapt to landscape of FDD technologies, choice for CQM implementers to explore/choose solutions
  - Cons: FDD plays a passive role in CQM, may not be fully utilized

# FDD-CQM Activities Open Discussion

## ▶ FDD qualification criteria

- “Performance” criteria = each FDD technology is subjected to test runs (lab, simulation), outputs have to meet an established performance metric
- “Prescriptive” criteria = each FDD technology should provide documentation of capabilities, that meets the “checklist” of established target capabilities.

## ▶ FDD offering mechanisms

- In-field tools that help techs during visit
- Onboard, remote monitoring tools that leverage historical data from one or more of a variety of sources
  - Factory-installed devices
  - 3<sup>rd</sup> party/long-term/field installed
  - Thermostat
  - Building energy management systems
  - Advanced metering infrastructure (AMI) smart meter data

## Next Steps

- ▶ Present updated FDD Roadmap at 6/12 meeting



# Adjourn

- ▶ Next FDD Committee Meeting
  - Monday
  - June 12, 2017
  - 10–11 a.m. PDT



Adjourn