

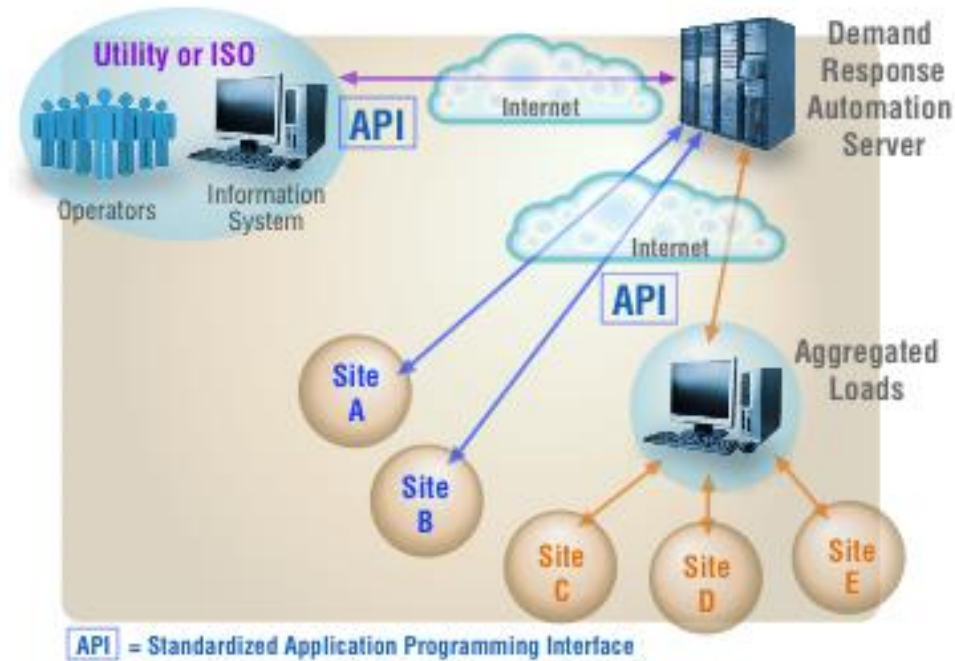


OpenADR DER Tutorial and Workshop

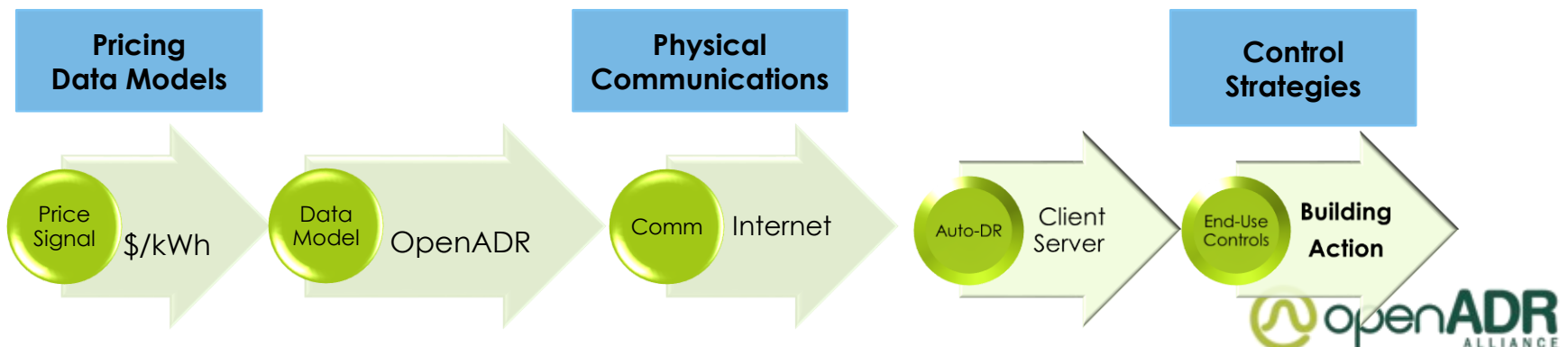
April 18, 2017

OpenADR in a Nutshell

- Open Automated Demand Response (OpenADR) provides a non-proprietary, open standardized DR interface that allows electricity providers to communicate DR signals directly to existing customers using a common language and existing communications such as the Internet.



Source: LBNL



What is the OpenADR Alliance?

- California-based nonprofit 501(c)(6) corporation.
- Member-based organization comprised of industry stakeholders interested in fostering OpenADR adoption.
- Leverages Smart Grid-related standards from OASIS, UCA and NAEBS.
- Supports development, testing, and deployment of residential, commercial & industrial OpenADR.
- Global membership organization with 140 members.

Program Implementation Guide

- There is no such thing as a standardized DR program
- Each DR program design tends to be unique based on the structural, regulatory, and regional needs
- Each program has numerous possible deployment scenarios involving a variety of actors
- Message behavior must be specified on a deployment specific basis



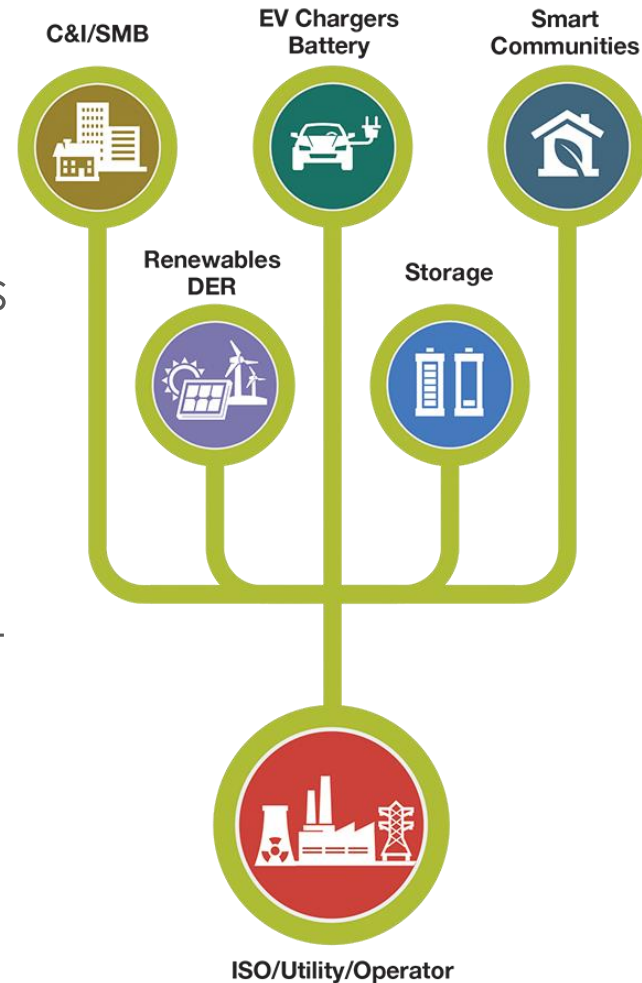
Potential Updates to OpenADR 2.0b

- General DER control can already be achieved with OpenADR 2.0b
- It is envisioned to add some signal types to the event messages (e.g. additional energy flow messages, etc.)
- Further, creating an addendum specification with protocol message exchanges for quotations, tenders, delivery, and transactions
- Defining implementation scenarios that incorporate the relevant standards with OpenADR. E.g. IEEE 2030.5

Energy Industry Transformation

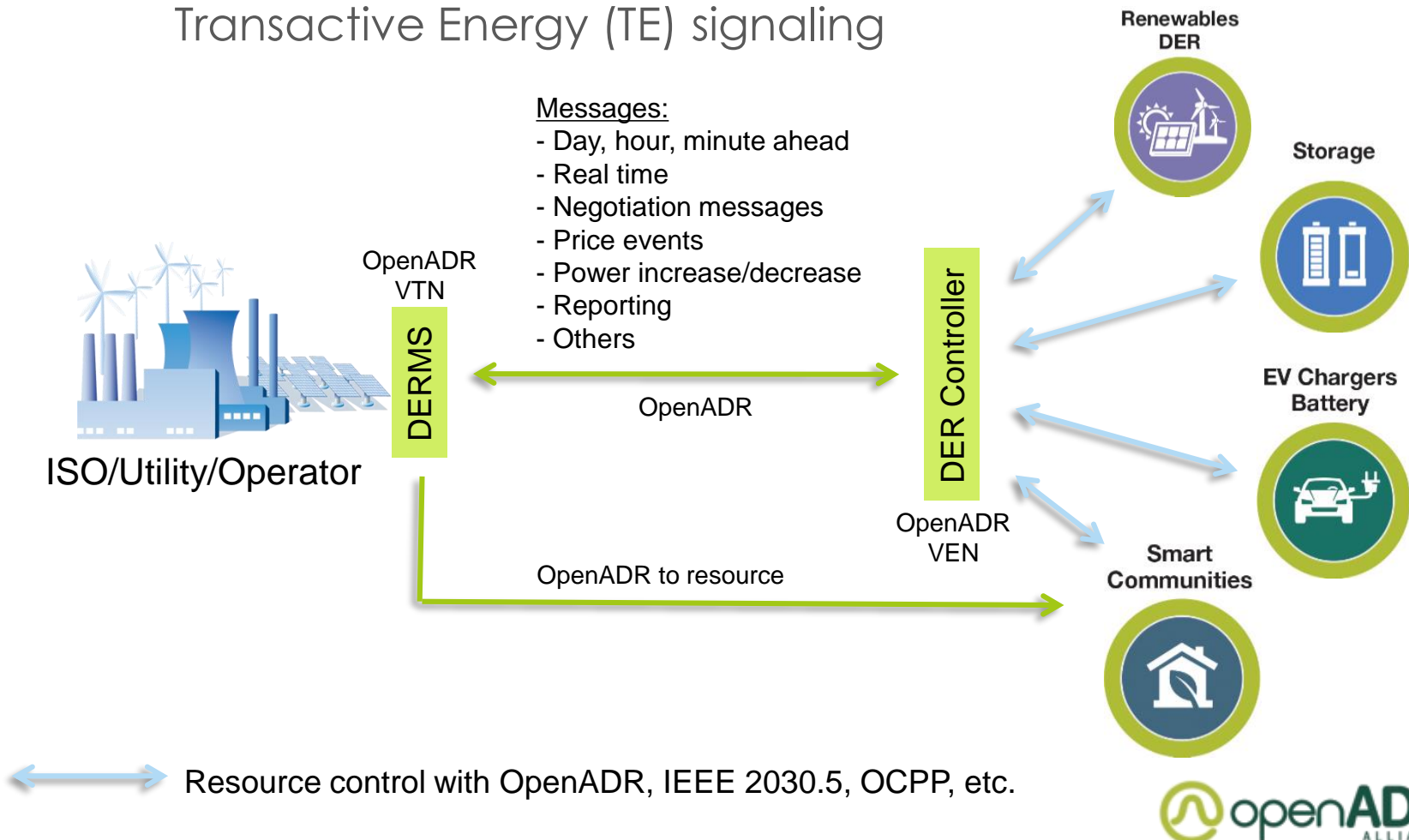
- More renewables
 - Residential
 - Commercial
- Affordable storage solutions
- Increased EV adoption
- Emerging microgrids
- Development of IoT & smart communities
- Implementation of rate & market-based programs

All able to vary their energy flow with smart controls (DR or DER)



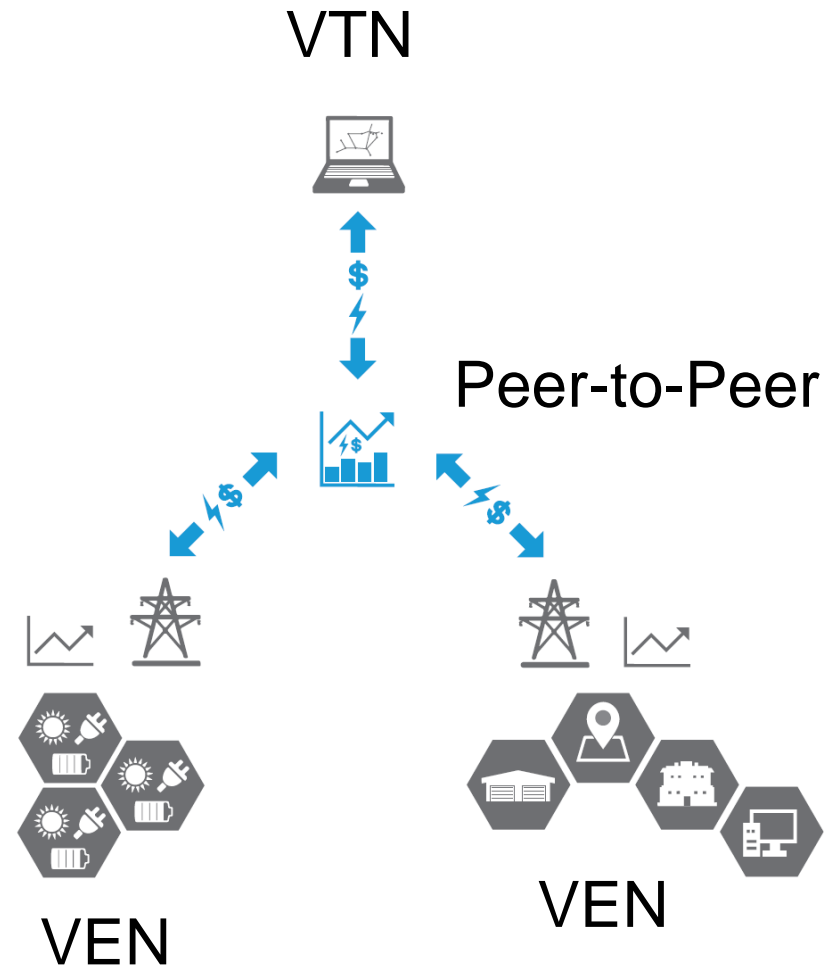
Using OpenADR For DER Management

- OpenADR can help manage non-grid controlled resources using DR messaging and enhanced DER and Transactive Energy (TE) signaling



Looking Into The Future: Transactive Energy

- The proliferation of (DER) increases bi-directional flow of energy and the complexity of balancing grid loads.
- Transactive Energy markets allows energy transactions to take place in an automated, distributed fashion among market participants.
- OpenADR can be easily adapted to support TE by extending the profile to support quote, tender, transaction, delivery information.



Next Steps

- OpenADR being used in DER applications today.
- Need to formalize OpenADR extensions for DER management.
- EPRI hosted workshop to identify DER opportunity for OpenADR.
- Considering rebranding to support expanded scope.
- Expanded scope to include PV inverters, energy storage, EV chargers and more.
- Certification program eliminates need to test products, saving time and money



Technical Update

April 18 - 19, 2017

Palo Alto, CA

Certified Products Update

- Up to 127 products listed now (2 in the queue)
- Mostly 2.0b products lately but still 2.0a certifications
- Several EVSE systems



OpenADR certified product database

Welcome to our new and improved certified products database! Please feel free to search through the growing pool of OpenADR 2.0 certified products. We are proud of our existing products and hope to add many more for you to choose from. Happy searching...



FILTER PRODUCTS ▶

Search for products



Program Guide & Test Harness

- Program Guide released and test cases added
- Close to having the first product tested and certified
- See <http://www.openadr.org/openadr-dr-program-guide>
- Test harness is being updated
 - Some Program Guide test modifications
 - Some bugs are being fixed
 - Self-test run is being added
 - Exploring automated test interface



Marketing Update

April 18 - 19, 2017

Palo Alto, CA

Marketing Chair & Co-Chairs

Chair

- James Mater, General Manager,
QualityLogic

Co-Chairs

- Mark Rupnik, CEO, BPL Global
- Orly Hasidim, Business Development,
Universal Devices

**The MWG Committee has bi-weekly calls on Fridays at 11am-11:45am. Next call April 21st.*

Marketing Objectives

- **Raise Brand Awareness**

- Engage and educate the industry about the OpenADR Alliance

- **Build Membership**

- Strategically build OpenADR membership domestically and internationally

- **Support adoption OpenADR 2.0 certified products**

- Generate awareness for OpenADR certified products

OpenADR Press Releases

- **January 2017: DTECH Media Advisory**
 - Over 30 members exhibited and members BPL Global, Gridwiz, QualityLogic and ZEN Ecosystems

- **October 2016: OpenADR Alliance, USEF Foundation Partnership takes first step to standardize flexibility programs**
 - Updated OpenADR Demand Response Program Guide to Include New Program Templates for Europe

- **October 2016: Combining Industry Standards OpenADR and OCPP Provides Powerful Solution For Electric Vehicles**
 - New whitepaper explains how combining the two protocols turns electric vehicles from threats to the electricity grid into demand-response assets

Media Coverage Jan -April

- Continue to see positive-neutral coverage regarding OpenADR.
- 600 online mentions of OpenADR

**Business
Energy**
GENERATION | EFFICIENCY | TECHNOLOGY



renew  **GRID.**

Fierce Smart **GRID**



appliance
DESIGN

 **DIGITAL JOURNAL**

entechmedia:



Market  **Watch**

 **openADR**
ALLIANCE

OpenADR and Members in the News

- How Utilities Can Harness Electric Vehicles as Flexible Loads- **GreenTech Media – April 2017**
- National Grid Aggregator IPKeys Power Partners Enrolls First Customer in the Utility's Connected Solutions Demand Response Program- **Utility Dive –April 2017**
- EV-Box winner using OpenADR: The 2017 Grid Edge Awards: Projects Defining the Future Integrated, Interactive Electric Grid **GreenTech Media- April 2017**
- Demand Response Management System Market Worth \$35.9 Billion By 2025- **Grand View Research Report –April 2017**
- Bringing the Smart Grid into Homes- *by Rolf Bienert, Technical Director, OpenADR Alliance and Michel Kohanim, CEO, Universal Devices* –**Appliance Design- March 2017**
- AeroVironment Picks EMotorWerks as Smart EV Charging Platform Provider- **GreenTech Media –March 2017**
- Fujitsu, Powertech labs launch OpenADR project at DistribuTECH 2017
- As utilities turn to cloud-based DR platforms, cybersecurity is key concern –**Utility Dive January 2017**

Events/ Endorsements

- DistribuTECH 2017: Jan. 31-Feb. 2 –San Diego, CA -10x20 booth and panel: **The Connected Home and Connected Utility: Bring Your Own Device**
- Smart Energy Summit 2017: February 20-22 -Sponsor
- 35th PLMA Conference: April 3-5- Nashville, TN –Sponsor
- EPRI/OADR DER Tutorial and Workshop – Palo Alto- April 18-19
- Transactive Energy Conference: June 13-15 –Portland, OR –submitted paper
- Energy Storage North America: Aug. 8-10-Sna Diego, CA
 - Mark Martinez, SCE panelist to discuss: The Emerging Market of Energy Storage and Automated Demand Response on Panel ***“Intelligence through Software: Optimizing Loads, Orchestrating Resources, and Aggregating Fleets”*** – sponsor -no booth
- Solar Power International –Sept.10-13 - Las Vegas, NV- exploring opportunities
- European Utility Week –Oct. 3-5-Amsterdam –exploring opportunities

Web Stats (Jan-April)

- TOP COUNTRIES: United States, Japan, Canada, S. Korea,, India, United Kingdom
- Page views 26,720 (64.5% new visitors)
- Top pages:
 - Home
 - Specification
 - FAQ
 - DER Workshop
 - About Us

Social Media Clippings



OpenADR Community Growing:

-946 followers on Twitter
over 100 new followers in last 12 months

-Since January: 31,940 impressions; 807 profile visits & 23 mentions
April impressions up 49.4% -Workshop promotion

Top Tweet earned 1,810 impressions, 6 engagements

Only a few spots left! Register for the [@EPRINews](#) &
[@OpenADRAlliance](#) workshop April 18-19:
openadr.org/derworkshop

appliance DESIGN

@AplncDsgn Mar 6

On connecting [#smartappliances](#) through the #
and to the energy environment bit.ly/2m8RdMQ
[@UDlautomates](#) [@OpenADRAlliance](#)

Zen Ecosystems

@ZenEcosystems Jan 31

Check out Zen HQ at [#dtech2017](#) . We're in
[@OpenADRAlliance](#) Booth #3238. Sharing our
simple, smart, connected controls.
pic.twitter.com/cHqWzszzkA

LinkedIn

- Audience: 393 members
 - industry leaders/influencers, global utilities, members
- Need to boost profile:
 - Showcase speaking engagements, member news, etc
- Build credibility as a resource and drive engagement
 - Share industry articles/reports
 - Case studies

Engage the Community

- Ways to boost profile and drive engagement
 - Highlight notable media coverage
 - Promote speaking opportunities and upcoming events
 - Share OpenADR news and member news
 - Follow industry media and influencers
 - Follow OpenADR members
 - Twitter: Include hashtags #OpenADR, #DemandResponse, #SmartGrid, etc

Follow OpenADR



[Follow: @OpenADRAlliance](#)



[Connect: OpenADR Alliance Open Group](#)



[Like: OpenADR Alliance](#)



[Explore: OpenADR Alliance Channel](#)

Focus for 2017

- Thought Leadership: OpenADR Using Automated DR to Manage DER
 - Repurpose materials from workshop (webinars, blog posts, articles, speaking engagements)
 - Create a high-level PPT for speaking engagements
 - MWG to develop plan for actions that come out of the workshop sessions and
- DistribuTECH 2018 Planning and support other events (speaking, partnership, exhibit)
- Generate application stories and case studies



DistribuTECH 2017

Jan. 31-Feb 2.
San Diego, CA

Member Pavilion

Goals:

- Grow membership
- Demonstrate client and server implementations (demos at kiosks/ theater presentations)
- Gather new projects that emerged from booth discussions, etc (50 leads captured with retrieval-but lots of interest and conversations at the booth)

Objectives:

- Create awareness of the OpenADR Alliance and standard
- Create a strong sense of community for members (Pre-show and at show promotions)
- Coordinate key announcements from members/Alliance
- Create an understanding of the OpenADR standard and why is important for utilities and system operators to adopt

DistribuTECH 2017



Promotion

BEFORE SHOW

- OpenADR media alert
- Pre-show email blast sent from PennWell- to all registered for conference
- Email blast to contacts/social media/OpenADR newsletter–ongoing by OpenADR

AT SHOW:

- Business Cards to promote online collateral /media materials
- Flyer with members exhibiting and member signs
- **Panel: The Connected Home and Connected Utility: Bring Your Own Device**
 - SCE, PG&E, CPS Energy and NBT – OpenADR Alliance moderator –standing room only –top rated
- Approx 100 leads captured



Member Companies Exhibiting at DistribuTECH 2014



OpenADR Member	Booth #
Aclara	2130
AutoGrid	4223, 3811
Eaton	2313
ECOBEE	2246
Embertec	3737
Enbala Power Systems	3139
EnerNOC	3921
EPRI	4217
Fujitsu	3811
Hitachi	4305
Intelligent Energy Solutions	4107
Lockheed Martin	3245
Mitsubishi Electric	3523
Panasonic	2322
Powerit Solutions	3811
Quality Logic	4013
Schneider Electric	1913
SIEMENS	1719
Silver Spring Networks	1221, 1226
Sumitomo Electric	3816
Toshiba	2912
Universal Devices	3811



DistribuTECH 2018- San Antonio Jan. 23-25

- Speaking proposals deadline **May 22nd —need utility support**
- Booth Planning Options will begin within MWG
 - 20x20 Member Pavilion
 - Highlight OpenADR 2.0 Case Studies
 - Member Certified 2.0 Products (storage, EV charger, etc)

Summary

- Get Involved! Join the Marketing Working Group
- Contact OpenADR staff for any OpenADR-related announcements, case studies, etc *(extension to your team to help promote via website, social media channels, monthly e-newsletter sent to over 6,000 contacts)*
- Networking Reception get to know others within the OpenADR Community

Group 1

1. Angie Eide, Hawaiian Electric - Facilitator
2. Angela Chuang, EPRI - Note Taker (Day 1)
3. Joseph Carr, ABB
4. Amrit Peck, Energy Outlet Inc
5. Janie Page, LBNL
6. Christopher Wiacek, NRG Energy, Inc.
7. George Lee, PowerFlex Systems, LLC
8. Denver Hinds, SMUD
9. SYED ABBAS, SUNVOLTS
10. Michel Kohanim, Universal Devices Inc.
11. Justin Regnier, CPUC

Group 2

1. Pierre Mullin, Siemens Canada Limited - Facilitator
2. Stephanie Palmer, Air Resources Board – Note Taker
3. Frank Menocal, EnTouch Controls
4. Don Shirey, EPRI
5. Lin Wang, Honeywell
6. Lucian Ion, LION Energy Partners
7. Hector Dominguez, NV Energy
8. Jeff Davis, Self
9. Mark Johnson-Barbier, SRP
10. Geoffrey Noakes, Symantec Corporation
11. Ahmad Amer, Verizon

Group 3

1. Aditya Aggarwal, Siemens Canada Limited
2. Rish Ghatikar, EPRI
3. Brenda Chew, SEPA
4. Vish Ganti, AutoGrid Systems
5. Scott Brennan, Evolve Controls
6. Thomas Koshy
7. Farrokh Rahimi, OATI
8. Danny Pham, Sungenix Energy Solutions, inc.
9. Edward Cazlalet, TeMix Inc.
10. Hideo Ishii, Waseda University
11. David Herron, LongTailPipe.com
12. Terry Rohrer, BPL Global LLC

Group 4

- Walt Johnson, EPRI – Facilitator
- Shannon Mayette, OpenADR Alliance – Note Taker
- Adam Todorski, AutoGrid Systems
- Kevin Moy, Geli
- Ron Ih, Kyrio, Inc.
- Paul Liotsakis, MCE Clean Energy
- Jhimye Jones, Sharp Electronics
- Nandita Singh, Sunrun
- Hiroaki Kitajima, TEPCO
- Vijay Israni, Wisual Power
- Jasmine Figueroa, Salt River Project

Group 5

- Rolf Bienert, OpenADR Alliance - Facilitator
- Ajit Anbiah Renjit, EPRI – Note Taker
- Jed Crosby, Crosby Data Science
- Ty Peck, Zen Ecosystems
- Ben Davey, Geli
- Kyuichiro Kitagawa, Laplace Systems Inc
- Benjamin DuPont, nebland software, LLC
- Gerhard Walker, Opus One Solutions
- Zack Derich, Siemens
- Sam Lee, Sunrun
- Nobuyuki Nagayama, TEPCO

Group 6

- James Mater, Quality Logic - Facilitator
- Mukesh Khattar, EPRI – Note Taker (Day 1)
- Arthur James, CSR Technology Inc. - A Qualcomm Company
- Trudie Wang, Geli
- Francis Rubinstein, Lawrence Berkeley Lab
- Kiyoshi Nakayama, NEC Laboratories America
- Babak Asghari, NEC Labs America
- John Lin, PG&E
- Michael Sizemore, Sunrun
- Naoki Hosaka, TEPCO/EPRI
- William Cox, Cox Software Architects LLC

Group 7

- Mark Martinez, SCE - Facilitator
- Sara Beaini, EPRI – Note Taker
- Chris Seeley, Duke Energy
- Ivan Cooper, Geli
- Rongxin Yin, LBNL
- Yao-Jung Wen, Philips
- Heidi Hauenstein, Energy Solutions
- Vibha Kant, Sunrun
- Jim Westover, THG Energy Solutions
- Michael Bourton, Kitu Systems
- Rahul Kar, AutoGrid