1. Accenture
2. Advanced Energy
3. Alectra Utilities
4. Ally Energy Solutions
5. Alternative Energy Systems Consulting
6. Ameren
7. American Public Power Association
8. Apex Analytics
9. Apogee Interactive
10. Applied Energy Group
11. APTIM
12. Aquanta
13. Arizona Public Service
14. Armada Power
15. Austin Energy
16. Baltimore Gas and Electric
17. Benton PUD
18. Berkshire Hathaway Energy
19. Black & Veatch Management Consulting
20. Bonneville Power Administration
21. Bowen Capital Advisors
22. Bristol Tennessee Essential Services
23. Cadmus
24. Calico Energy
25. Central Electric Cooperative
26. Central Hudson Gas & Electric
27. Chelan PUD
28. City of Tallahassee Utilities
29. Clean Power Research
30. CLEAResult
31. Cobb EMC
32. COI Energy Services
33. Commonwealth Edison
34. Con Edison
35. Connected Energy
36. Connected Energy Limited
37. Consumers Energy Company
38. Contract Callers
39. Copper Labs
40. CPower Energy Management
41. CPS Energy
42. Customized Energy Solutions
43. Dairyland Power Cooperative
44. DemandQ
45. DNV GL
46. DTE Energy
47. Duke Energy
48. E Source
49. E4TheFuture
50. Eaton
51. ecobee
52. Edison Electric Institute
53. Efficiency Vermont
54. EFI
55. EGM
56. Elocity
57. Emerson Commercial & Residential Solutions
58. EMI Consulting
59. Enbala
60. Encycle
61. Enel X
62. Energy Solutions
63. EnergyHub
64. EnerVision
65. Entergy
66. EPRI
67. ERS
68. Evergy
69. Eversource
70. Extensible Energy
71. FirstEnergy
72. FleetCarma
73. FPL
74. Franklin Energy
75. GDS Associates
76. Generac
77. Georgia Power Company
78. Google (Nest)
79. Great River Energy
80. GridBeyond
81. GridFabric
82. GridOptimize
83. GridPoint
84. GridX
85. Guidehouse
86. Hawaiian Electric Company
87. High West Energy
88. Honeywell Smart Energy
89. ICF
90. Idaho Power
91. IGS Energy
92. Illume Advising
93. Indianapolis Power & Light Co.
94. Integral Analytics
95. IPKeys Power Partners
96. Itron
97. Jackson EMC
98. Kiwi Power
99. Leap
100. Mitsubishi Electric TRANE HVAC
101. Modesto Irrigation District
102. National Grid
103. National Rural Electric Cooperative
104. NB Power
105. New Braunfels Utilities
106. New Hampshire Electric Cooperative
107. New York Power Authority
108. Nexant
109. North Carolina Electric Membership Corporation
110. NTC
111. OATI
112. Oklahoma Gas & Electric
113. Olivine
114. Oncor Electric Delivery
115. Open Systems International
116. OpenADR Alliance
117. Opinion Dynamics
118. Opus One
119. Oracle Utilities
120. Orange and Rockland Utilities
121. Otter Tail Power
122. Pacific Gas & Electric
123. Packetized Energy
124. PECO, An Exelon Company
125. Pepco, an Exelon Company
126. Portland General Electric
127. Powerley
128. Public Service Company of Oklahoma
129. RacePoint Energy
130. Rappahannock Electric Cooperative
131. Resideo
132. RF Demand Solutions
133. Sacramento Municipal Utility District
134. Saint John Energy
135. Salt River Project
136. San Diego Gas & Electric
137. Santee Cooper
138. Schneider Electric
139. Scope Services
140. Seattle City Light
141. Shifted Energy
142. Smart Electric Power Alliance
143. Smartenit
144. Snohomish County PUD
145. Southern California Edison
146. Southern California Gas Company
147. Steffes
148. Sunverge Energy
149. Swell Energy
150. Tantalus
151. Tennessee Municipal Electric Power Association
152. Tennessee Valley Authority
153. Tetra Tech
154. The Brattle Group
155. Threshold
156. Tierra Resource Consultants
157. TRC
158. Tri-State Generation & Transmission
159. Trickle Star
160. Tucson Electric Power
161. Uplight
162. Utility Load Management Exchange
163. Vectren, A Centerpoint Company
164. Warranty Design
165. Waseda University
166. West Monroe Partners
167. Xcel Energy
168. Zen Ecosystems
169. Zeuthen Management Solutions

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Meet Your Fellow PLMA Members!

DERs in the New Energy Economy Panelists

Peter Kelly-Detwiler
Northbridge Partners

Tony Johnson
So. Cal Edison

Bob Manning
UI: An Avangrid Company

Rick Kornfeld
Kitu Systems, Inc.

Moderator
Ross Malme
Bowen Capital Advisors

Moderator
Joseph E. Childs
Eaton

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DERs and the New Energy Economy

Peter Kelly-Detwiler
Founder

NORTHBRIDGE
ENERGY PARTNERS

FERC Order 2222

New Energy Networks are foundation to enable FERC 2222 throughout North America

- Recent Federal Energy Regulatory Commission rule issued allowing DERs to participate in wholesale markets
- Each wholesale market operator must revise tariffs to allow DER participation
- Each State and/or utility must determine DER grid interconnection rules
- DER interconnection rules must allow for DER shared control, utility situational awareness, topology and primacy

"Order No. 2222 will help usher in the electric grid of the future and promote competition in electric markets by removing the barriers preventing distributed energy resources (DERs) from competing on a level playing field in the organized capacity, energy, and ancillary services markets run by regional grid operators."

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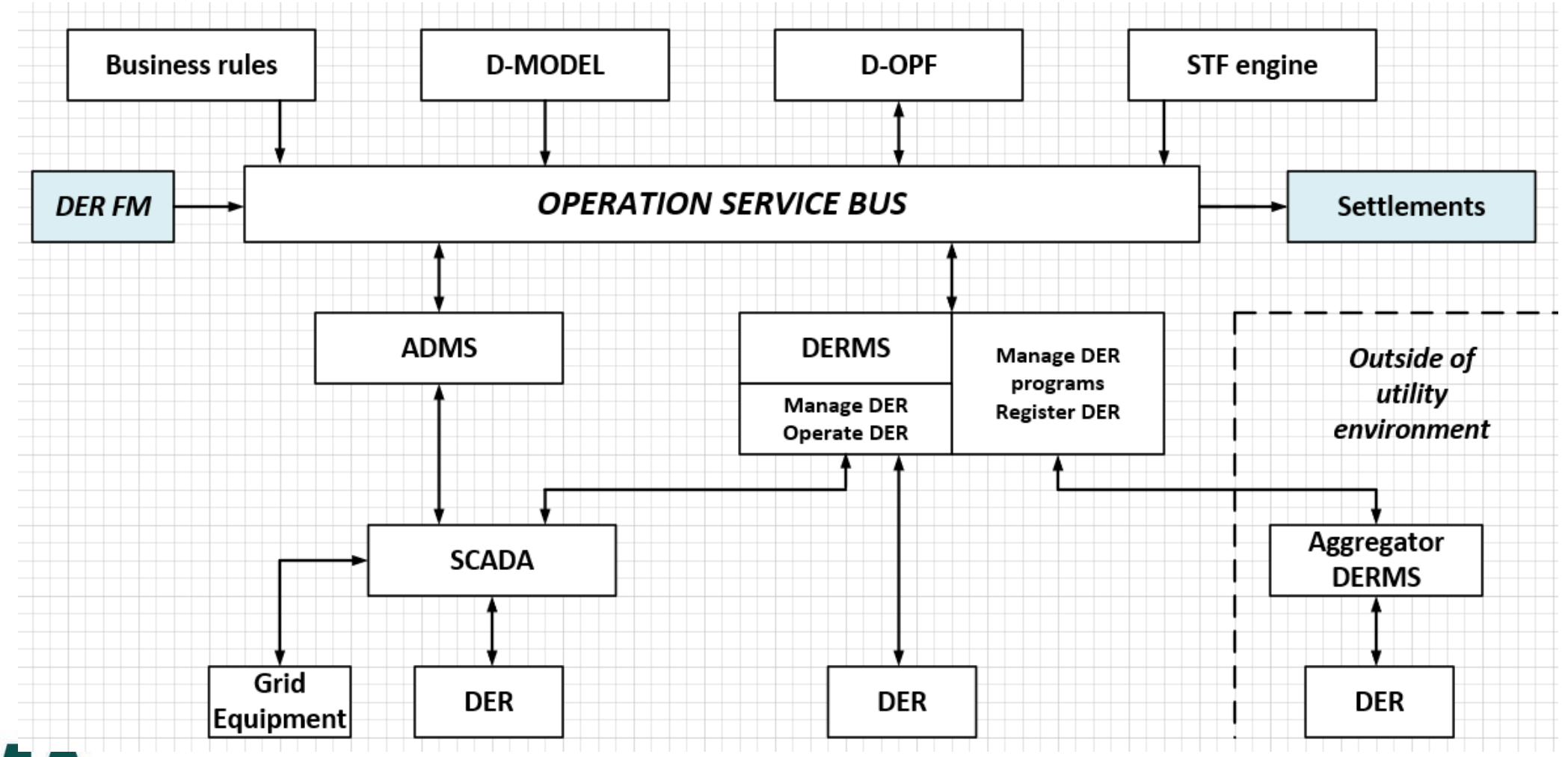
SCE's Next-Generation Grid Management System

Anthony Johnson
Consulting Engineer

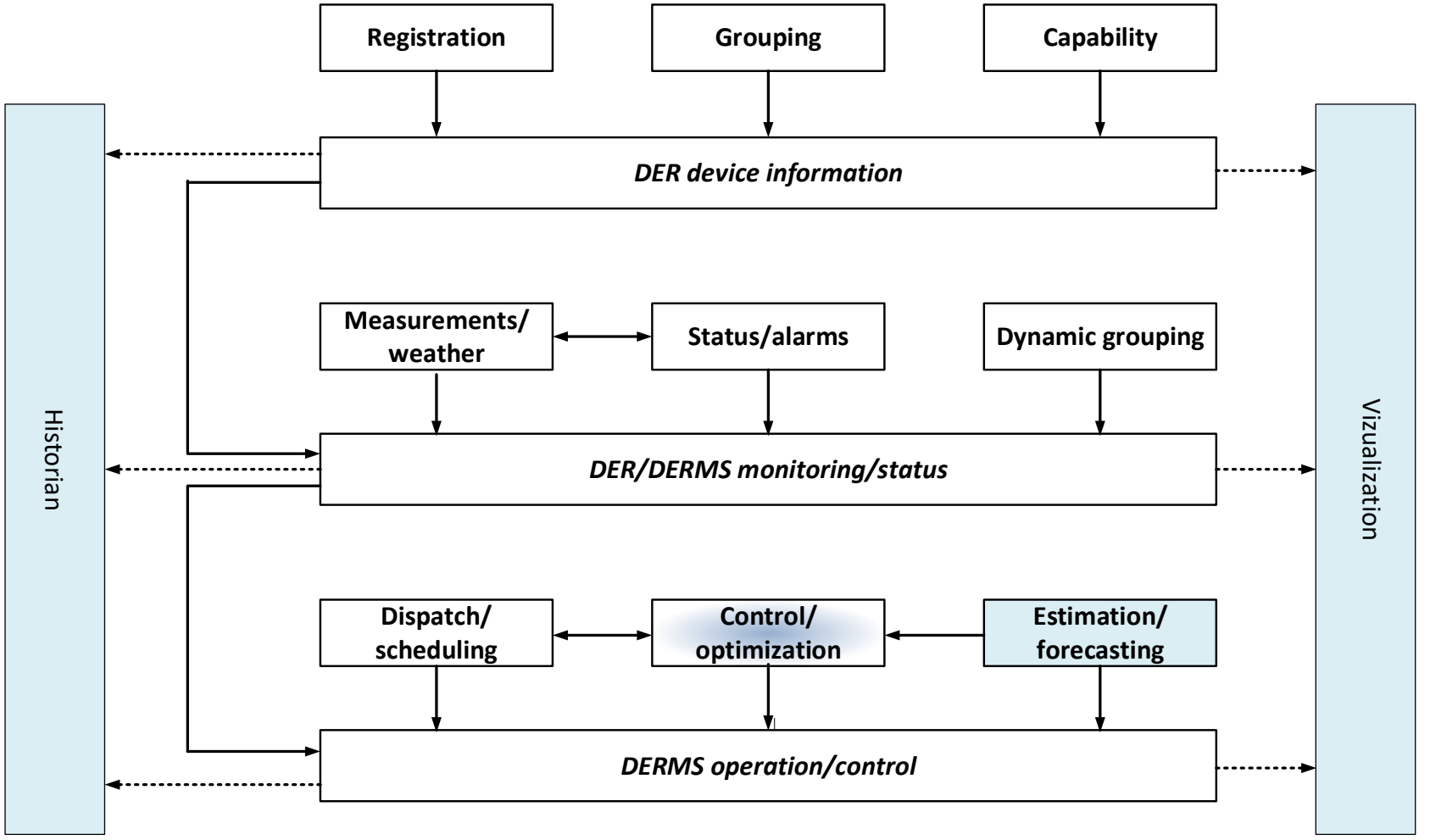
SOUTHERN CALIFORNIA EDISON

DERMS Integration with ADMS



From draft IEEE 2030.11 Guide to DERMS

DERMS Functional Architecture



From draft IEEE 2030.11 Guide to DERMS

Interesting Links - To be Included with Recording

- https://www.edison.com/home/our-perspective/pathway-2045.html
- https://www.edison.com/home/our-perspective/reimagining-the-grid.html
- https://www.edison.com/home/our-perspective.html

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DERs and the New Energy Economy

OptimizEV & FICS REV Demonstration Projects

Bob Manning
Program Director,
Smart Grids Innovation
and Planning

AVANGRID

What is OptimizEV?

- Charging pilot that uses an algorithm and incentives to flatten the residential EV load
- OptimizEV aims to answer the following questions:

1. Are EV owners willing to delay the time required to charge their EV if they are offered a discount for that delay?

2. Can the utility increase network efficiency through direct load control of EVs?

3. Will utility-based EV coordinated charging optimize cost to serve in the face of increased EV adoption?

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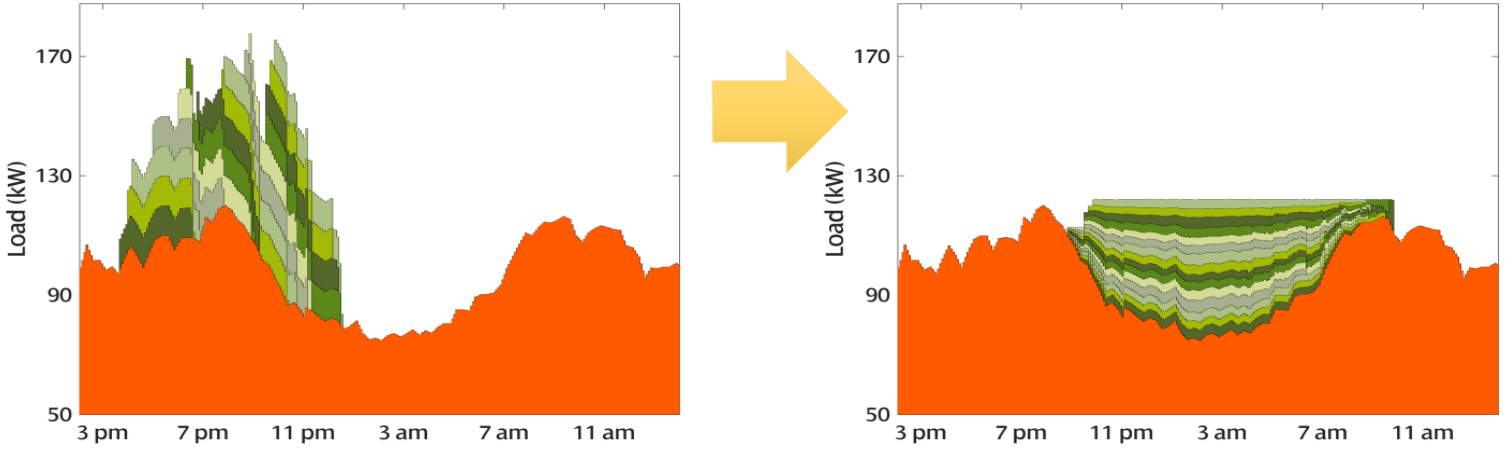
AVANGRID

How Does OptimizEV Work?

- 35 networked residential chargers with cellular connection
- Web-based UI on smartphone – set desired charge, time flexibility and view discount
- Scheduling algorithm - reduces power (kW), redistributes kWh, and replaces TOU rates by avoiding nighttime peak:



Uncoordinated Charging

Coordinated Charging with OptimizEV

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Active Network Management

Two FICS control schemes are in the process of being deployed:

Robinson PV

- 2 MW
- Mason's Corner 451
- **Constraint**: Voltage

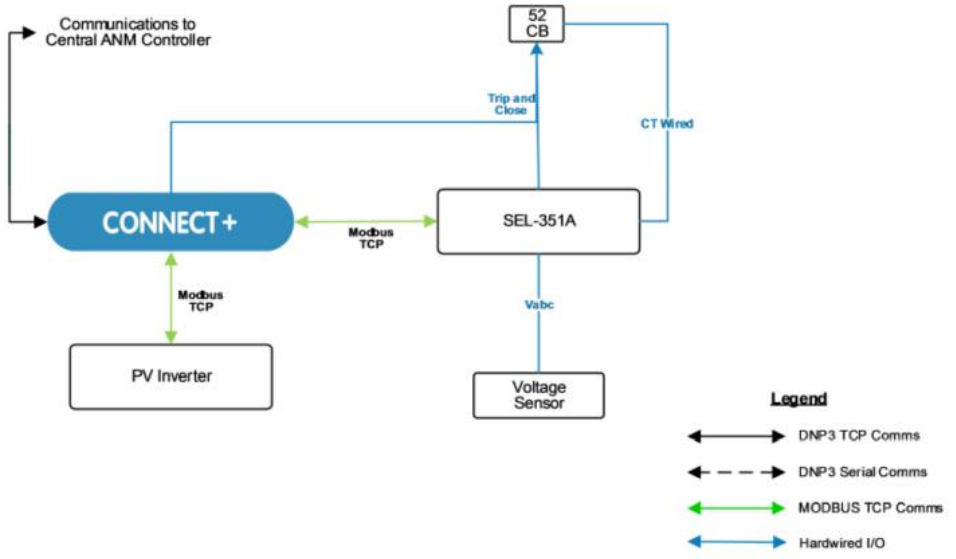
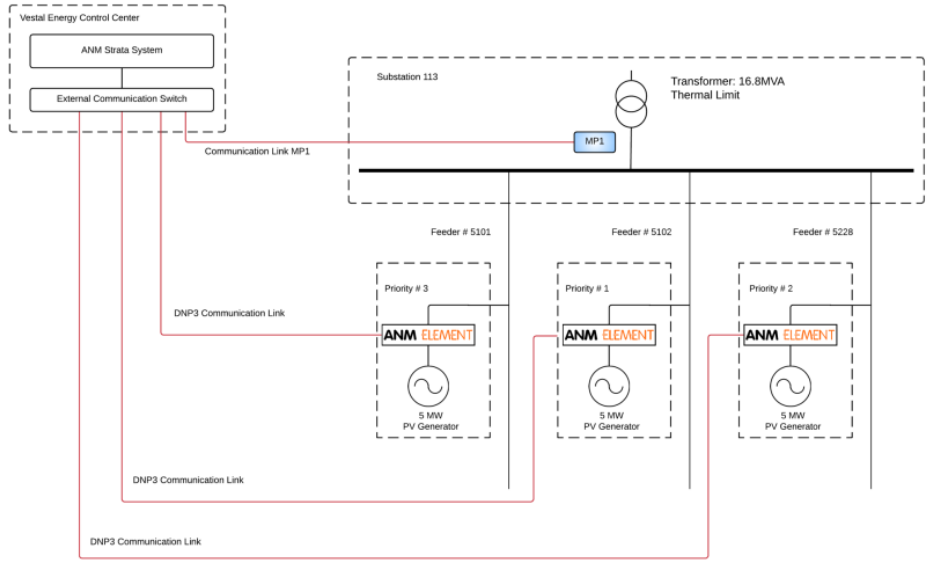


Figure 4: Integration of SGS connect+ device at Robinson PV site

Spencerport PV

- 15 MW (3 sites @ 5 MW each)
- Substation 113
- **Constraint**: Substation Transformer Bank Thermal Rating – 16.8 MVA



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Taitem

KITU SYSTEMS

smarter grid solutions

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

NYSEG

Bob Manning
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Robert.Manning@uinet.com

Cornell University

RG&E

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DERs and the New Energy Economy
The "New Energy Network"

Rick Kornfeld
CEO

KITU SYSTEMS

Distributed Energy Resources Are Triggering a Fundamental Shift in the Electricity Grid

Macro Drivers

Decarbonization

Clean electricity programs are proliferating across states, cities & utilities

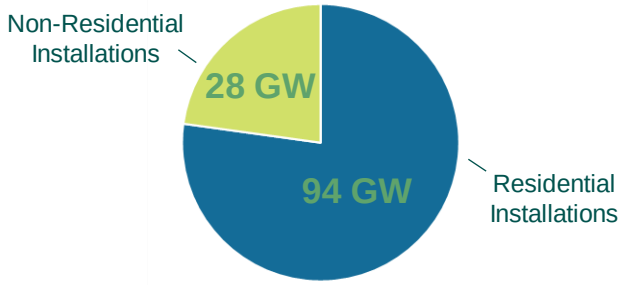
Decentralization

By 2025, Distributed Energy Resources will account for up to 400 GW of capacity in the U.S.

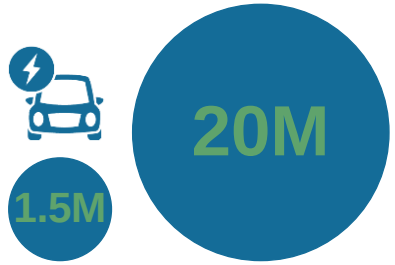
Digitization

New technologies in automation, analytics, AI and more are being added to the grid

Market Growth



DER Installations Between 2016 and 2025 will Total 122 GW of Capacity



Estimated Electric Vehicles in the U.S. in 2020 and 2030

Essential Infrastructure for New Energy Networks

Utilities, service providers, EVs and device manufacturers require a consistent, secure way to integrate DERs and ensure data flows & transactions between market participants

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Sources: 1 - Wood Mackenzie, 2 - Brattle Group

New Energy Networks Are Emerging

New Energy Networks are fundamental to enable the transformation of the electricity grid. Qualities of New Energy Networks include:

Intelligent

- Smart meter data helps improve distribution system operations
- New computing capabilities process data in real-time to provide actionable grid insights

Resilient

- Increased energy storage options allow for uninterrupted power flow
- Microgrids integrated to the grid or operating independently provides resilience

Adaptive

- DERs able to provide system-wide load reduction and voltage regulation
- Automatically reactive to environment changes

Efficient

- Seamless integration of new variable energy resources
- Unified interaction between all types of energy grid assets

Scalable

- Millions of BTM devices able to integrate with the grid

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Building a Service-Based Ecosystem

Delivery of cloud based closed loop automation

Expand from Monitoring & Analytics to Integrated Control

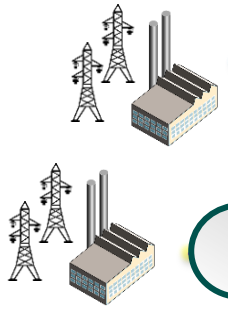
Connect to all relevant devices

3rd Party Operators & Networks

- Data Center
- Renewable
- Industrial

- Load Management
- Distributed Generation
- Fault Detection and Outage Management
- Substation Monitoring
- Conservation Voltage Reduction

Utilities



OpenADR

DERMS

IEEE 2030.5

New Energy Network Cloud

Rule21 | Control Sharing | Topology Control | Primacy | EV Mgmt

Situational Awareness | Orchestration | Aggregation

IEEE 2030.5
OpenADR
OCPP

- Microgrids
- EV/Solar networks
- Smart Devices
- Fuel Cells
- Batteries
- Solar/Inverter
- EV Charging Station
- Generators

EV charging

Thermostat
Heater

Closed loop automation

Cloud native control and automation applications

Data from any device

Connect to more devices

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DERs in the New Energy Economy

Joe Childs
PLMA Secretary,
Eaton

Ross Malme
Global Load Mgmt Co-Chair,
Bowen Capital Advisors

Peter Kelly-Detwiler
PLMA Guest Speaker,
NorthBridge Energy Partners

Rick Kornfeld
PLMA Guest Speaker,
Kitu Systems, Inc.

Bob Manning
PLMA Guest Speaker,
UI: An Avangrid Company

Tony Johnson
PLMA Guest Speaker,
So Cal Edison

LAST CALL!

PLMA Live Online Training Classes

DR Wholesale Markets (Mar 24-25)

DR Program Design and Implementation (Apr 7-8)

Evolution of DR to DER (Apr 21-22)

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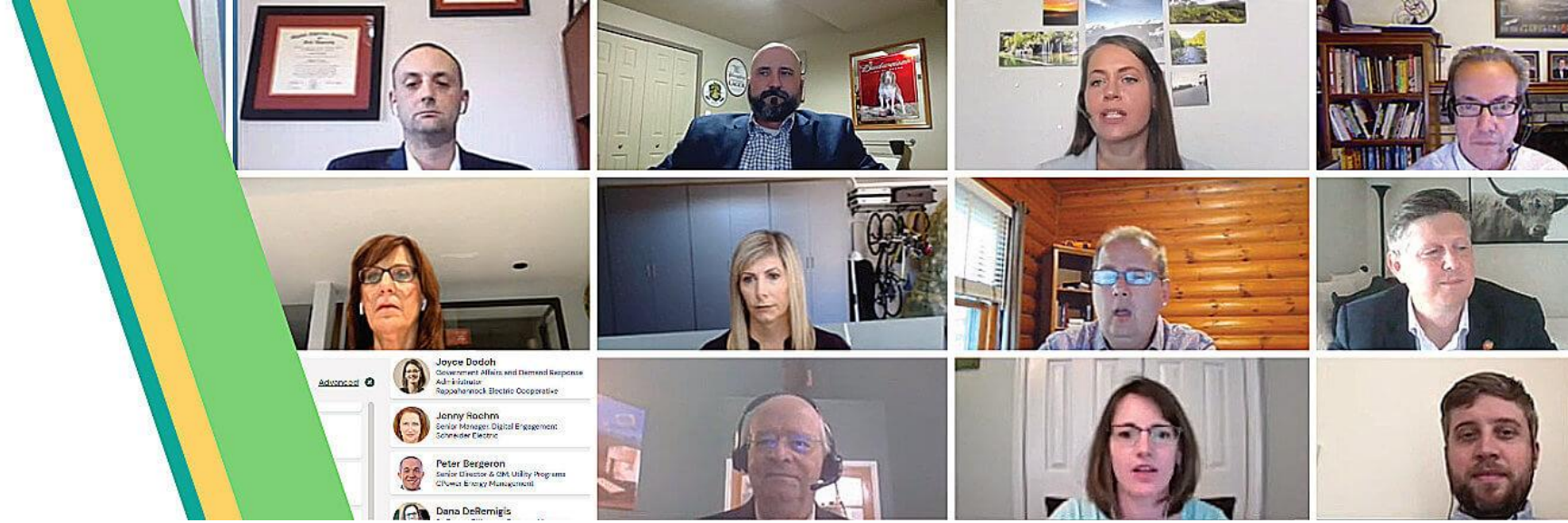
43RD PLMA Conference

Online | May 10-12, 2021



Registration is Open

Sponsorship Opportunities Available

www.peakload.org/43rd-conference

Appendices

Appendix A: Acronym List

Acronym	Definition
ADMS	Advanced Distribution Management System
API	Application Programming Interface
CAISO	California Independent System Operator
CPUC	California Public Utilities Commission
CSP	Communication Service Provider
DER	Distributed Energy Resources
DERMS	Distributed Energy Resources Management System
DMS	Distribution Management System
DNP	Distributed Network Protocol
DRPEP	Distribution Resources Plan External Portal
Dx	Distribution SCADA
EMS	Energy Management System
FAN	Field Area Network
FLISR	Fault Line Location Service & Restoration

Appendix A: Acronym List (continued)

Acronym	Definition
GAA	Gate All Around
GIPT	Grid Interconnection Processing Tool
GMS	Grid Management System
HMI	Human Machine Interfaces
IEEE	Institute of Electrical and Electronic Engineers
MPLS	Multiprotocol Label Switching
OMS	Outage Management System
PV	Photovoltaic
RFI	Remote Fault Indicator
RIS	Remote Intelligence
SA	System Administrator
SCADA	Supervisory Control and Data Acquisition
Tx	Transmission SCADA
UL	Underwriters Laboratories

Peter Kelly-Detwiler
Northbridge Partners
pkd@northbridgeep.com

Peter Kelly-Detwiler has 30 years of experience in the electric energy arena. He writes for Forbes.com and other publications on topics related to disruptive innovation and its impact on the electricity infrastructure. He provides strategic advice to clients and investors, helping them to navigate this transitional period.

Mr. Kelly-Detwiler has spent much of his career in various areas of competitive power markets. As Senior Vice President at Constellation Energy, he oversaw creation of VirtuWatt – a market leading platform to facilitate real-time awareness of electricity pricing and consumption and bidding of assets into competitive markets. He is currently writing a book on the global transformation of electric power markets.

Bob Manning
UI: An Avangrid Company
robert.manning@uinet.com

Bob Manning is a Smart Grids Innovation & Planning Program Director at AVANGRID and has been with the company for more than 30 years. Throughout his career, he has held various positions in the areas of grid modernization, Distributed Generation, operations, planning and reliability.

Mr. Manning is a member of IEEE and is a registered Professional Engineer in the State of CT. He received his B. Sc. degree in Electrical Engineering from Worcester Polytechnic Institute, Worcester, MA and an MBA degree from the University of New Haven, New Haven, CT.

Anthony P. Johnson, P.E.

So. Cal Edison

anthony.johnson@sce.com

Anthony Johnson is a Consulting Engineer in the Asset Management, Strategy, and Engineering Group in the Transmission and Distribution Business Unit of Southern California Edison Company (SCE). He has been working at SCE for more than 29 years and is currently leading the development and implementation of SCE's next-generation Grid Management System. He also provides technical expertise for the development of advanced technologies across the company. He has previously held positions as a responsible engineer, area engineer, test technician supervisor, and as a project manager. He is also an active participant in IEEE Power System Relaying Committee and the Power System Communications and Cybersecurity Committee.

Mr. Johnson received his Engineering degree in Electrical Engineering from Montana State University in 1986, and MS in electrical engineering from Montana State University in 1988. Mr. Johnson is a Senior Member of IEEE, and registered professional electrical engineer in the State of California.

Rick Kornfeld

President & CEO

Kitu Systems, Inc.

rkornfeld@kitu.io

Rick Kornfeld has worked for some of the Southern California's most notable tech companies, including M/A-Com Linkabit, Qualcomm and Texas Instruments. Currently he served as President and CEO of Kitu Systems.

Previously, Mr. Kornfeld was vice president and general manager of Texas Instruments' Wireless Chipset Business Unit where he managed a $750MM business. He joined TI through their $475MM acquisition of Dot Wireless, where he was co-founder, chairman, and CEO. Prior to founding Dot Wireless, he was a founding member of NextWave Telecom, Inc. where he was the senior vice president and general manager of the Consumer Products division. Previously, Mr. Kornfeld was vice president of engineering at Qualcomm, where he led the development of the world's first commercial CDMA-based cellular phones. Prior to joining Qualcomm, Rick held technical positions at M/A-Com Linkabit focusing on RF Systems for commercial and government customers.

Mr. Kornfeld holds a B.S. from the University of California, San Diego where he was also named the Alumni of the Year in 2001. He continues his affiliation with UCSD by serving on the Engineering School's Council of Advisors. He also serves on the national board of AIPAC and is involved in numerous philanthropic actives. He had served as the vice Chairman of San Diego's Telecom Council, CommNexus, and was the founding Chair of San Diego's incubator EvoNexus.

Ross Malme
Bowen Capital Advisors
rmalme@bowenadvisors.com

Ross Malme is Senior Advisor with Bowen Advisors, a Boston based investment banking firm where he co-manages the Energy Technology Practice. Previously he was a Partner with Skipping Stone, an energy consulting company, where he led the Skipping Stone Smart Grid and international practice focusing on exports of US Smart Grid technology primarily though U.S. Trade and Development Agency, United Nations and work banking organizations. He has served on the Advisory Committee to the Secretary of the US Department of Commerce on Energy Efficiency and Renewable Energy, as well as Executive Committee of the Retail Gas Quadrant of the National Energy Standards Board.

Previously, Mr. Malme was Director of Schneider Electric's Demand Response Resource Center and prior to that, he was the Founder, President and Chief Executive Officer of RETX Energy Services Inc., a leading provider of application services and technology to the restructuring energy industry which was sold to Schneider Electric in 2008. Additionally, he is the past Chair of the Peak Load Management Alliance (PLMA), 2001 through 2005.

Mr. Malme is also the inventor of the first commercially successful wireless automatic meter reading (AMR) technology which was sold to Itron and became the utility industry standard for over two decades.

Joseph E. Childs
Eaton
josephechilds@eaton.com

Joseph E. Childs
Senior Manager, DR Strategy & Business Relations

Mr. Childs' primary responsibility at Eaton is to ensure that its solutions meet utility requirements and provide maximum lifecycle ROI. He has worked the last 35 years on the design, development, delivery, training, and operation of utility control systems as a supplier and user. He worked at Western Area Power Administration's Loveland Office as Manager of Software for the SCADA/EMS and was the Technical Manager for the Replacement of BPA's RODS and SCADA systems.

Mr. Childs began work in DR in 1999. He joined Eaton in 2002 and has provided leadership roles in the organization with various responsibilities since that time. He holds a B.S. in Computer Science and an M.S. in Bioclimatology from Colorado State University. He has been awarded two patents in the fields of DR and EE. In addition, Mr. Childs is the Secretary of PLMA.