AEE West Energy Conference and Expo 2022

Seattle, Washington, USA 15-16 June 2022

ISBN: 978-1-7138-5753-2

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2022) by Association of Energy Engineers (AEE) All rights reserved.

Printed with permission by Curran Associates, Inc. (2022)

For permission requests, please contact AEE Energy Books at the address below.

Association of Energy Engineers (AEE) 3168 Mercer University Drive Atlanta, Georgia 30341 USA

Phone: (770) 447-5083 Ext. 222 Fax: (770) 446-3969

www.aeecenter.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2633 Email: curran@proceedings.com Web: www.proceedings.com

2022 AEE West Proceedings - Table of Contents



| Page: | | Track A – Policy, Trends, and Local Initiatives |
|-------|-----------|--|
| 1 | Chapter 1 | Public Safety Power Shut-Offs (PSPS's): Risk Mitigation for Who and What? James Dodenhoff, Principal, Silent Running LLC |
| 12 | Chapter 2 | How to Find and Win the New U.S. Government Grants Nancy Najarian, Managing Director, NAJ Enterprises, LLP |
| 27 | Chapter 3 | Building Sector Decarbonization, WA State Policy Overview Emily Salzberg, LEED AP, Managing Director, Building Codes & Standards, WA State Department of Commerce Luke Howard, Clean Buildings Performance Standard Technical Lead, WA State Department of Commerce |
| 33 | Chapter 4 | Incentives, Financing, and Utility Programs (Panel Discussion) Beth Robinweiler, CEM, CMVP, Supervisor, Energy Management Engineering, Puget Sound Energy Jacob Goldman, LEED, AP, Vice President/Chief Engineer, Energy Tax Savers, Inc., d/b/a R&D Tax Savers Jennifer Ewing, Environmental Stewardship Program Manager, City of Bellevue Morgan Torres, ENV SP, Executive Climate and Energy Program Manager, Office of the King County Executive Rebecca Sheppard, BOC II, MBA, Senior Project Manager, Northwest Energy Efficiency Council |
| 65 | Chapter 5 | Building Decarbonization Education for the Next Generation Avril Levasseur, PE, Program Manager, Stanford Building Decarbonization Learning Accelerator |
| 79 | Chapter 6 | Collaborative Decarbonization Projects Andrew Mangan, Founder, US Business Council for Sustainable Development |

| Page: | | Track B – High Performance and Green Buildings |
|-------|------------|--|
| 84 | Chapter 7 | Boots on the Ground Retro Commissioning and TAB Kami Valentine, TAB, CxA, Project Manager, Neudorfer Engineers, LLC |
| 100 | Chapter 8 | Using an Energy Audit to Estimate Return on Investment for Retro- Commissioning Vincent Sage, PE, CxA, EMP, CEA, LEED AP, Northwest Engineering Service, Inc. |
| 110 | Chapter 9 | Solving Complex Problems with Utility Programs Jason Hyatt, CEM, CMVP, Senior Energy Management Engineer, Puget Sound Energy |
| 118 | Chapter 10 | Industrial Compressed Air Energy Management, Success Stories From 20 Years in the Pacific NW Tim Dugan, President, Compression Engineering Corporation |
| 131 | Chapter 11 | Energy Efficiency as a Service vs COVID Colm Otten, Senior Program Manager Customer Energy Solutions, Seattle City Light |
| 140 | Chapter 12 | Big Data Performance Analysis of FDD and ASO Implementations Pavan Ryali, CEM, CMVP, PMP, Consulting Engineer, NYSERDA Thomas I. Yeh, CEM, CMVP, CBCP, CDSM, Technical Advisor, NYSERDA |
| 148 | Chapter 13 | Pathways to Building Electrification Wes Hoppler, PE, CEM, Citywide Resource Conservation Advisor, City of Seattle Office of Sustainability and Environment |

| Page: | | Track C – Trends and Leading-Edge Initiatives |
|-------|------------|---|
| 155 | Chapter 14 | Getting into Hot Water: Commercial Heat Pump Water Heating for Multifamily Applications Jack W. Zeiger, CEM, PE, Energy Conservation Engineer, Tacoma Power |
| 171 | Chapter 15 | The Cheapest Energy Is the Energy You Don't Use: New Technologies to Reduce Energy Demand in Older Buildings Vytau Virskus, JD, Principal, Millenium Energy Company |
| 188 | Chapter 16 | Advanced Efficiency Technologies for Health, Safety and a Rapid ROI Scott Milne, President, Rocky Mountain Efficiency Group |
| 195 | Chapter 17 | Leveraging Software to Scale Energy Efficiency Projects CP Pitones, Solutions Consultant, Yardi Systems, Inc. |
| 200 | Chapter 18 | MPTS Technology for Significant Reduction in GHG and Energy Efficiency Adil H. Khan, BSEE, MBA, Electrical Engineer - Applications and R&D, TransPower Company |
| 206 | Chapter 19 | Human Centric Sustainability - A love motivated carbon reduction strategy Scott Jenkins, EVP Partnerships, Planled |
| 214 | Chapter 20 | The Clean Hydrogen Civil War and its Implications for Decarbonization Mike Hopkins, CEO, Bakken Energy |
| 219 | Chapter 21 | Materials Compatibility in a Hydrogen Economy Kevin Simmons, Ph.D., Chief Materials Scientist, Pacific Northwest National Lab |

| Page: | | Track D – The Grid in Transition |
|-------|------------|---|
| 232 | Chapter 22 | How can Buildings Support a Decarbonized Grid? Randall T. Higa, PE, LEED BD+C, Consulting Engineer, Southern California Edison |
| 243 | Chapter 23 | How Offshore Wind and Hydrogen Could Advance Grid Decarbonization in the Western U.S. Bill Henry, CEM, Program Director, Pacific Ocean Energy Trust |
| 251 | Chapter 24 | Why is Grid Modernization Important at Seattle City Light? Uzma Siddiqi, PE, Sr. Manager Grid Modernization & Strategic Tech, Seattle City Light Kincheiu Wei, Principal Engineer – Grid Modernization, Seattle City Light |
| 262 | Chapter 25 | How Decarbonization Drives a Need for Grid Integration Mark Frankel, Director of Research and Innovation, Ecotope, Inc. |
| 278 | Chapter 26 | Case Study: Wastewater Energy Recovery at leləm Development Lynn Mueller, President & CEO, SHARC Energy Systems Inc |
| 286 | Chapter 27 | Pyrolysis in Waste to Energy Bernard R. Brown, REP, Chief Technology Officer, Empire Diversified Energy |
| 294 | Chapter 28 | Thermal Energy Storage (TES) Larry Henkel, Sr. Director of Business Development, CB&I (a McDermott company) |
| 306 | Chapter 29 | Using Renewables to Meet Sustainability Goals Leslie Myers, Clean Energy Product Manager, Puget Sound Energy |
| 321 | Chapter 30 | The Role of Electric Vehicles in Reaching Carbon Reduction Goal Mark Gooden, Transportation Electrification Analyst, Edison Energy |
| 335 | Chapter 31 | Snohomish PUD EV Shelley Pattison, Manager, Strategic Policy & Partnerships, Snohomish PUD |